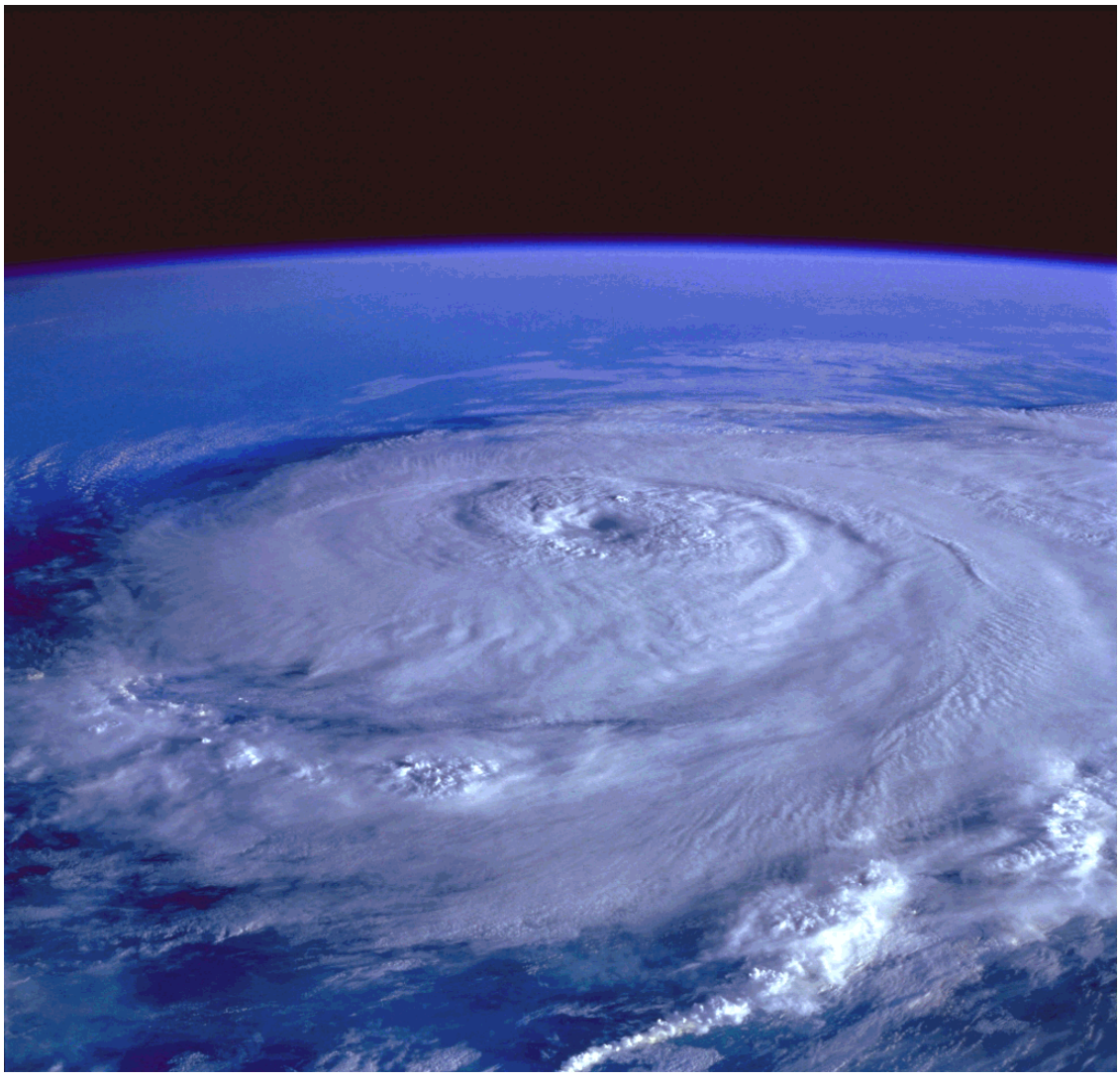
HURRTRAK & Global Tracker Users Manual



Professional Hurricane/Typhoon Tracking and Analysis System

HURRTRAK EM/Pro 2008

HURRTRAK RM/Pro 2008

Global Tracker EM/Pro 2008

Global Tracker RM/Pro 2008

HURRTRAK Advanced 2008

Users Guide

- Getting Started
- System Components
- FAQ
- Technical Support

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Getting Started:

Welcome to the Hurricane/Tropical Cyclone Tracking Systems from PC Weather Products!

About this documentation

This documentation covers the functions and features of the HURRTRAK EM/Pro, HURRTRAK RM/Pro and Hurrtrak Advanced systems. Items specific to RM/Pro and Hurrtrak Advanced will be shown in **red** while items unique to Hurrtrak Advanced will be shown in **green**. Other differences will be noted as required.

ONLINE Video Training

While this documentation is an excellent way to become more familiar with the software, we strongly suggest that you go through the online training which is available on the web at http://www.pcwp.com/training.html. There are over 12 hours of training modularized in a manner which allows the trainee to cover the various topics at their own pace. Access to these modules is free because we want everyone to take this training.

Introduction

The hurricane tracking products from PC Weather Products represent the most advanced and easy to use Tropical Cyclone Tracking and Analysis Systems available. It has assisted emergency planning professionals and risk managers around the world for years.

Our software products, HURRTRAK RM/Pro and HURRTRAK EM/Pro offers an advanced set of functions and capabilities related to the analysis of Atlantic tropical systems as well as their potential impact to land/sea areas. HURRTRAK-ONLINE is the company's on-line service which provides all of the latest National Hurricane Center information, via dial-up modem or an Internet connection, to the HURRTRAK Systems. In addition, PC Weather Products offers Global Tropical Cyclone Tracking Systems which track and analyze tropical cyclones around the world.

The main components of the system are Graphical and Reporting.

Graphical:

Highly detailed tracking charts
Ability to show counties and roadways on charts
Graphical representation of the storm's eye, eyewall, gale, storm and hurricane force
Ability to plot storm track on satellite or radar tracking charts
Wind Field" analysis that displays the likely wind speed and wind direction conditions at any point
Ability to display the NHC forecast path on any chart
Ability to display a storm's forecasted position & wind field at any hour
Ability to calculate/display a climatology based forecast
Display the areas of hurricane and tropical storm watches and warnings
Display the storm's past and forecasted wind band analysis
Display the average forecast error along with the official NHC forecast
Graphically depict internally calculated Strike Probabilities
Animate the storm's past and forecasted motion
Ability to print historical tracks on the same tracking chart as a current storm
SLOSH Inundation Analysis
SLOSH MOM and MEOW Inundation Analysis

Reporting/Decision Support:

Ability to compute a Location Impact Summary report
Ability to compute a detailed Location Impact Analysis report
Historical analysis program included to analyze past storm patterns
RiskAlert feature
Email Alerts
Automatically create a summary report for a set of locations.
Create a Location Impact Summary Report for a large number of locations
Calculate a county 'impact analysis" which analyzes the storm impact by numbers of people and households
Display hourly wind profiles for selected locations
Maintain EM user "diary" documenting the emergency actions taken
Display internally calculated Strike Probabilities for a set of location
Enhanced Decision Support capabilities with action point and decision arc support
"What IF capabilities"
Zip Code Analysis
Ability to define up to 10 custom county / zip code fields used in the impact summary report
Advanced Wind Estimation
Damage Estimate Report

Other:

Ability to customize the tracking chart colors
Ability to add/change any location in the vast 20,000 location database
Ability to define location groups
Text size, font and color can be customized

You will learn more about these and other system features in the following pages.

System Requirements

To use the system, you will want the following:

- A PC with at least 512 MB of RAM
- Hard disk space required: 4000mb
- Windows 2000, XP (recommended), VISTA (32 bit)
- A Pentium IV class processor with a CD Drive
- An internet connection

Installation

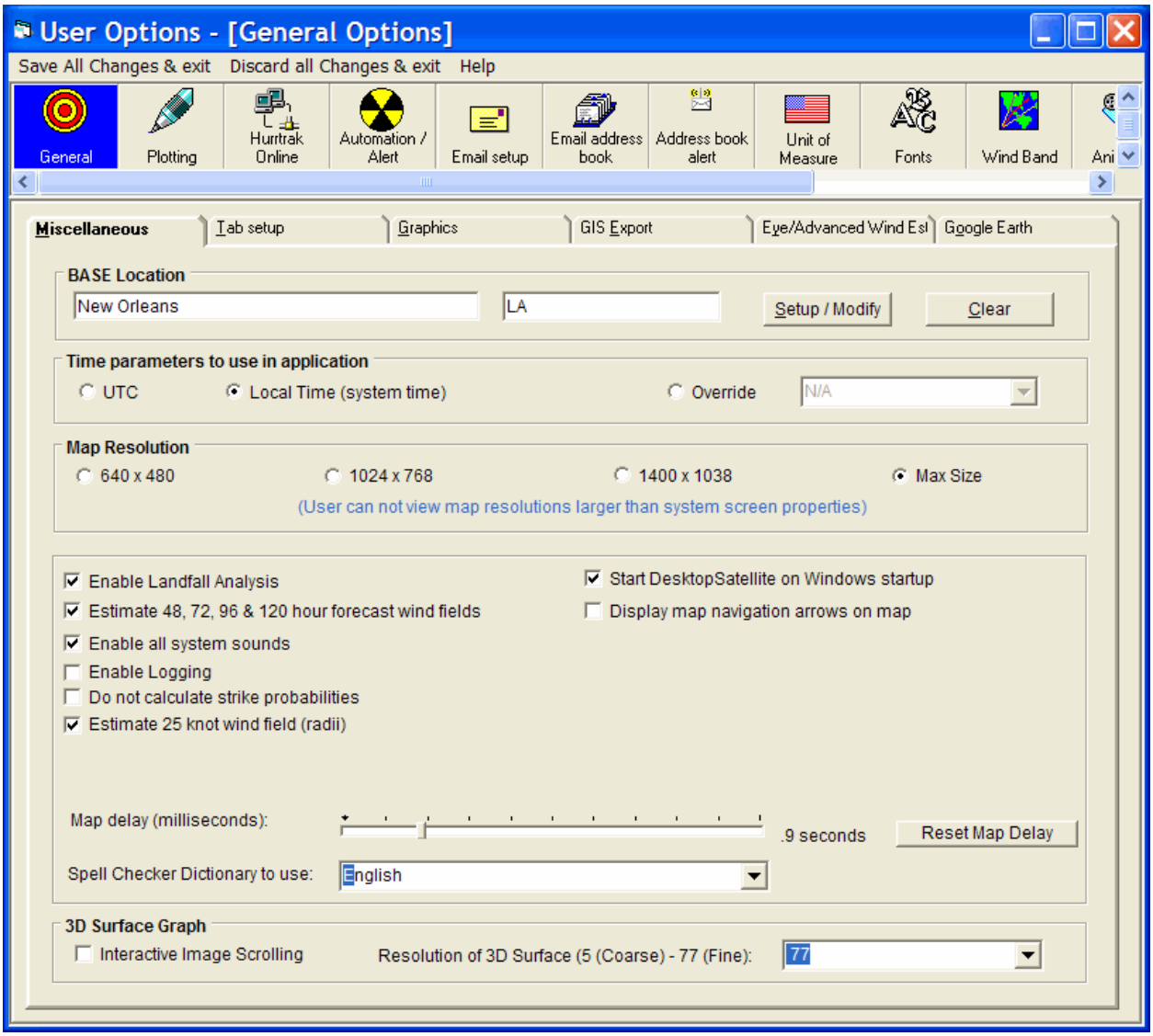
1. If CD was shipped Insert CD into your computer CDROM drive.
2. Browse the CD if shipped or if downloaded locate the install.exe file.
3. Follow the install directions entering the unlock key when requested. It is usually best to copy and paste this key, if possible, to avoid key entry errors.
4. When the installation is complete, reboot

Notes: The installation key that was shipped/sent with the order is required to install the system, please make a note of it.

You are now ready to start using the system. Let's review each of the system's main components.

SYSTEM COMPONENTS

SYSTEM SETUP



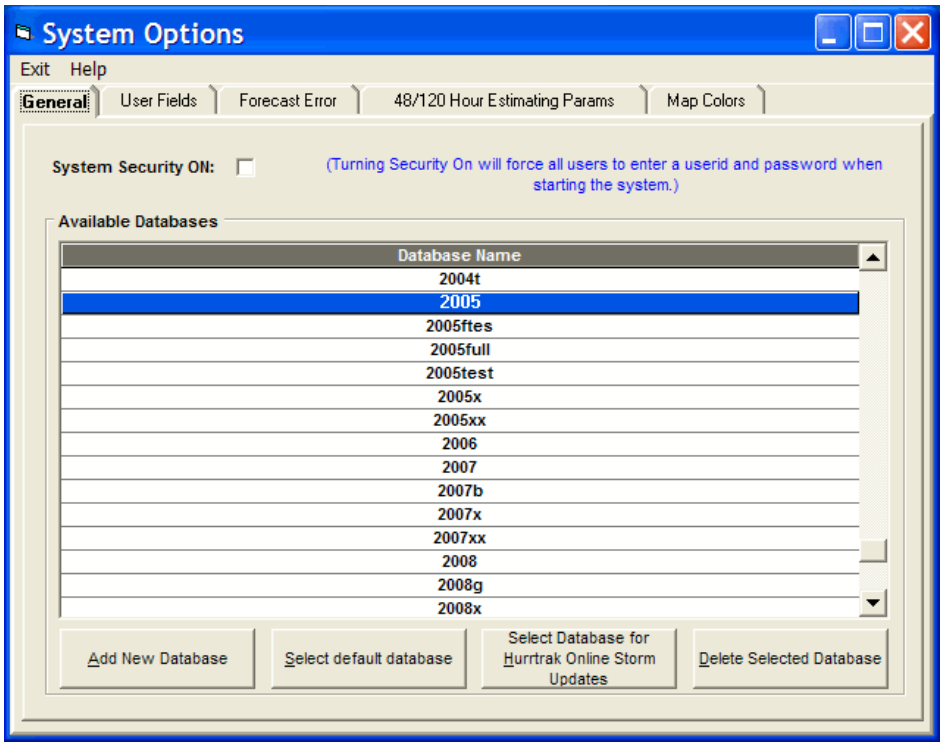
This portion of the system, which can be started from the program group or from the tracking program allows the user to set up and maintain some of the global system parameters as well as take care of database maintenance. This is especially important in network installations as these are the settings that ALL users will share. Individual user preferences are maintained in the Tools-Options function as shown on page 75. There are 7 system options available:

- System Options
- User Maintenance
- Location Maintenance

- Database Maintenance
- Tracking Chart maintenance
- Watch and Warning Area Maintenance
- Flood Point Maintenance

System Preference Setup

General Options

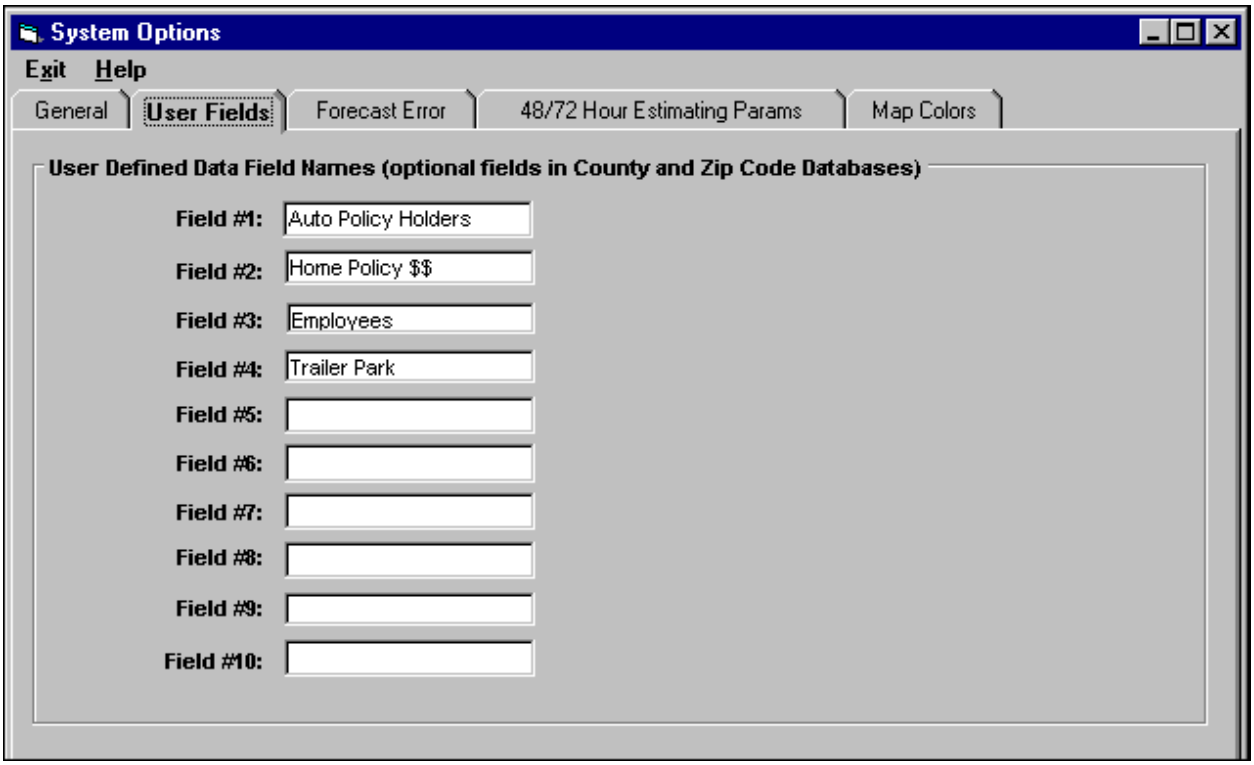


This option allows the user to create or delete storm databases in addition to establishing system wide security. To establish a new database, select the Add new Database option and then change the database name. To make a database the current default, select that database's row and exit. To select which database you want Hurrtrak Online updates to be applied to, select that option. For more information on the difference between the default database and the Current Hurrtrak Online Active Database please review the appendix topic Default vs. Hurrtrak Online Active database on page 311.

It is advised that you create a new database for each Hurricane Season. i.e. 2005, 2006, etc. To add a new database, key in the new name and select the CREATE option. To delete a database and all its content, select that database and the DELETE option. To make a database "current", simply select that database name.

The security option is typically used only for network installations; however it is available to single workstation users. If selected, it will prompt for a system signon and password when entering most of the tracking applications. NOTE: Be sure you setup a new password for the ADMIN userid before selecting this option.

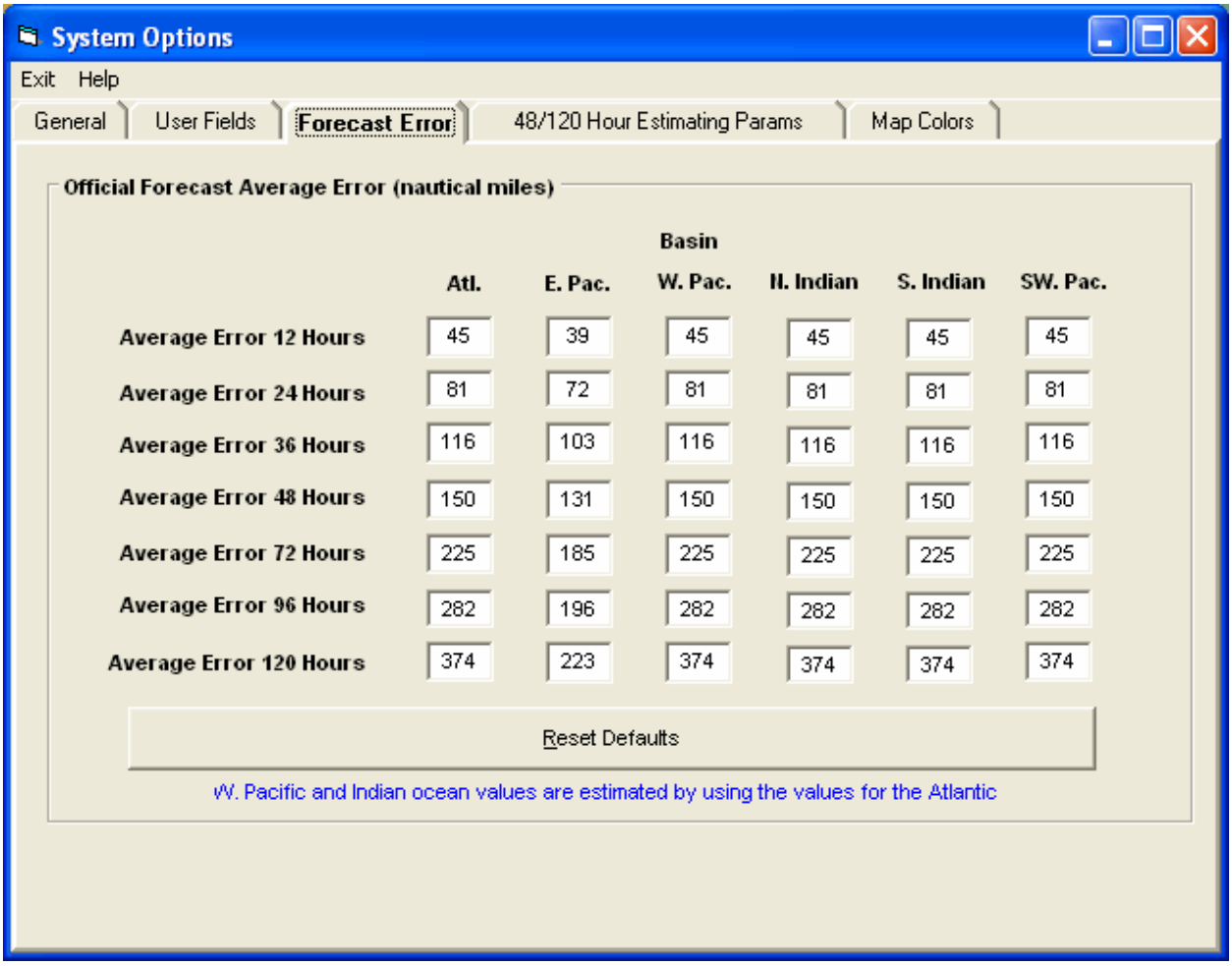
User Fields



This page sets the following global system options:

User Defined Data Field Names - There are up 3 extra user data fields (10 in RM/Pro) that can be defined in the user in the County and Zip Code databases. This option allows the user to enter the name/description of these "extra" data fields. Care must be taken when establishing these as changing the fields later requires the data in the County and Zip code databases to be reinitialized for this data. For more information see the County or Zip code data maintenance section.

Forecast Error

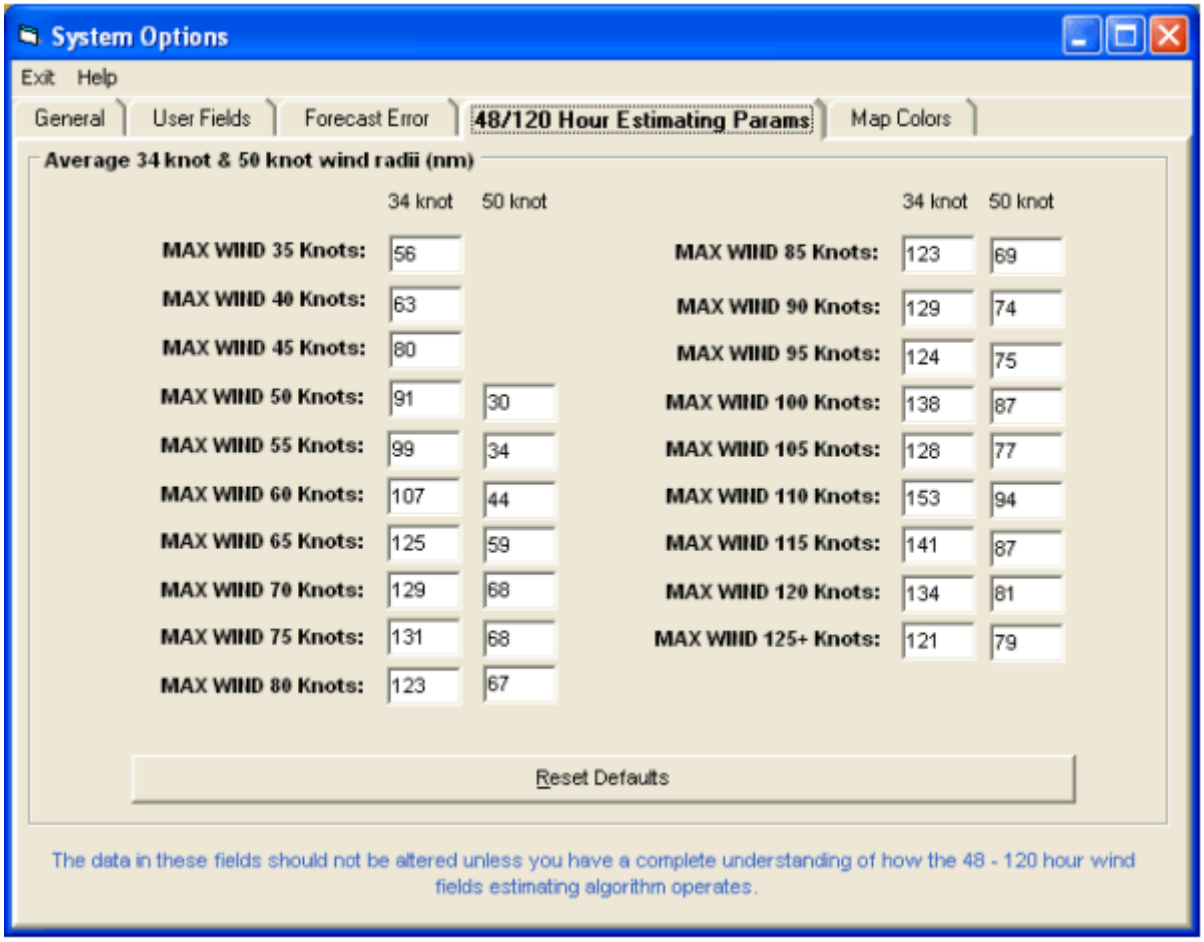


This page sets the following global system options:

Official Forecast Average Error - These data values correspond to the NHC official forecast average error (10 year average) for the 12, 24, 36, 48, 72, 96 and 120 hour verification times. The Global user is allowed to enter different values for each tropical cyclone basin. #1 - Atlantic, #2 - East Pacific, #3 - West Pacific, #4 - N. Indian Ocean, #5 - S. Indian Ocean, #6 - SW Pacific

The values for the Atlantic and the Eastern Pacific basins are updated yearly by the NHC.. but do not change significantly from year to year.

48 / 120 Hour Estimating Parameters

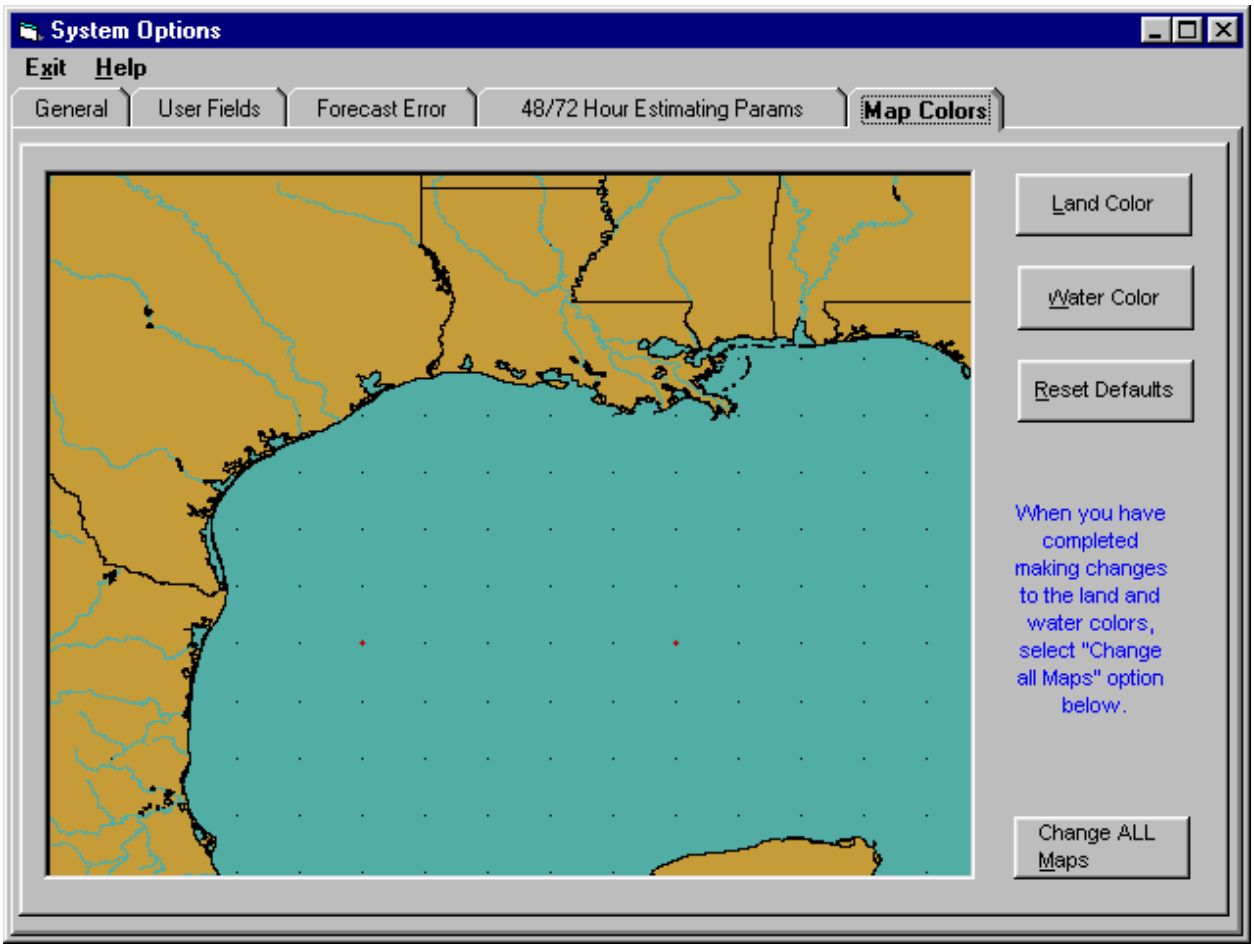


This page sets the following global system options:

This option allows the user to vary the estimating parameters used to determine the likely areas of 34, 50 and 64 knot winds at the 48, 72, 96 and 120 hour forecast positions.

The parameters represent the average radius of 34 and 50 knot winds by maximum wind speed. They are used in certain circumstances when estimating the 48, 72, 96 and 120 hour 34, 50 and 64 knot wind area. These values should not be altered unless directed by PC Weather Products.

Map Colors



This page sets the following global system options:

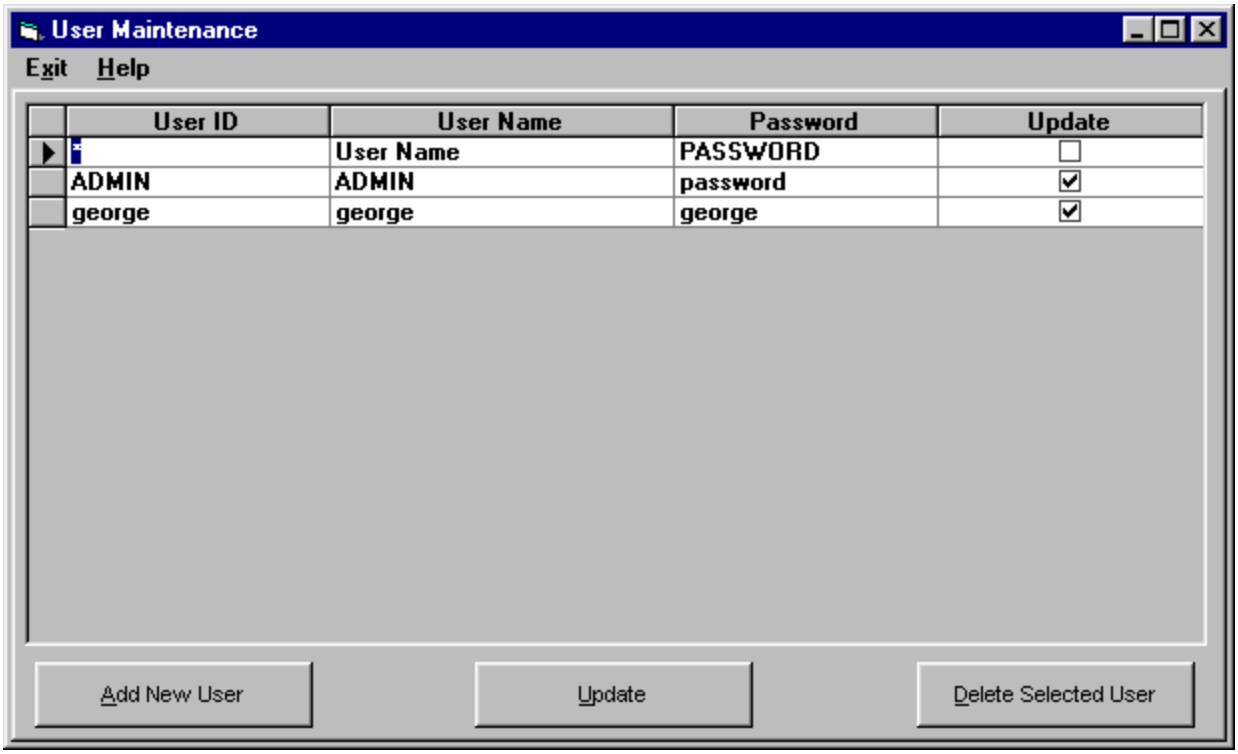
Land Color - This option allows the user to select the color of the land areas on all the tracking charts.

Water Color - This option allows the user to select the color of the water areas on all the tracking charts.

Restore Defaults -This option will reset the land and water colors back to the shipped defaults.

Change ALL Maps - This option will process the color changes to all of the tracking charts on the system.

USER Maintenance



This option allows for the setup and maintenance of users. It is only required for networked users who desire security on their system but is available to single workstation users who desire an extra level of security to the tracking system. Database Security must be "turned on" for user security to apply.

USER ID - A unique identifier assigned to a user or group of users.

USER NAME - The name of the user or user group.

PASSWORD - A password assigned to a user or user group.

UPDATE - Select this option to allow the user all system update privileges except for the ability to run the system setup program.

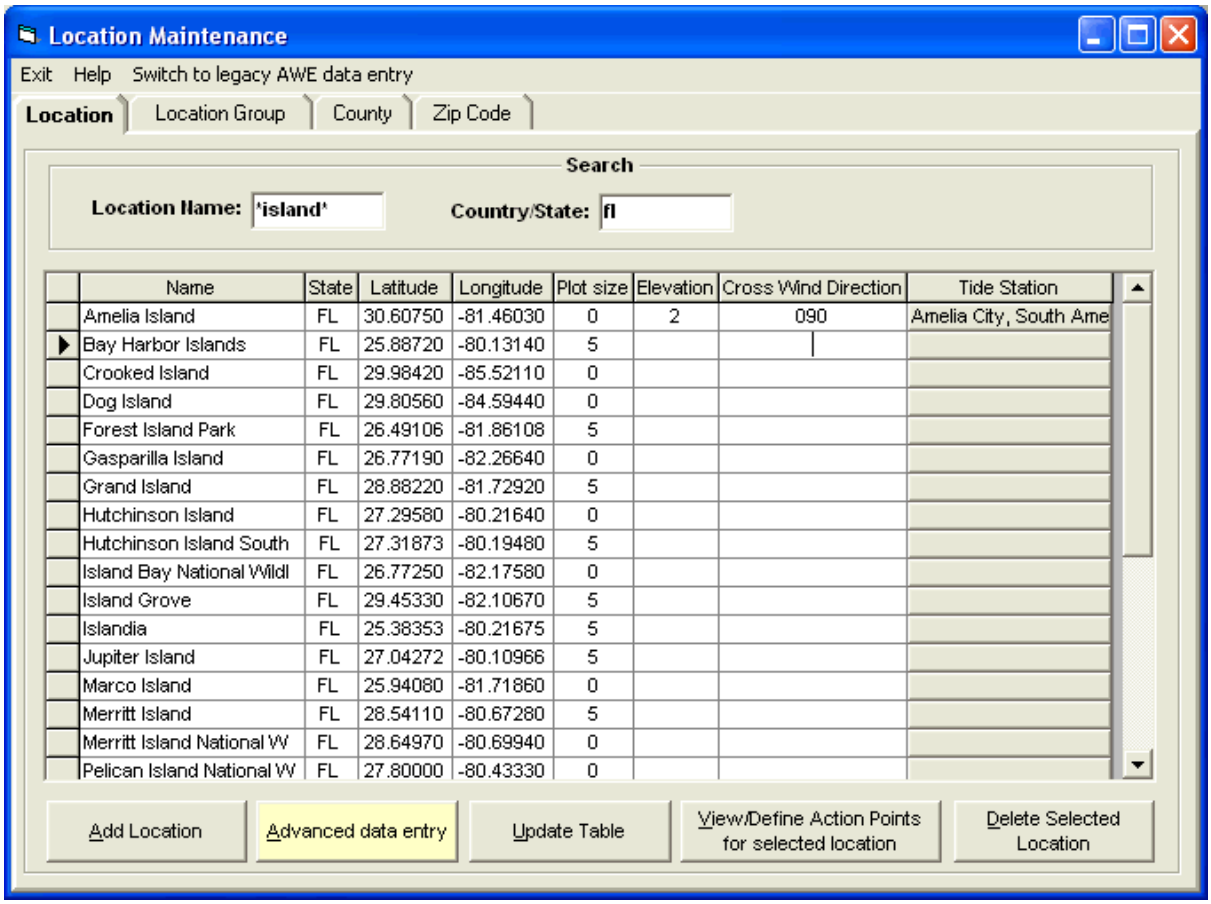
The options available from here are:

To **ADD** a user, select the add user option.

To **Change** a user's information, make the required changes in the data table and select update.

To **DELETE** a user, highlight that user in the list and select the delete option. You cannot delete the ADMIN user.

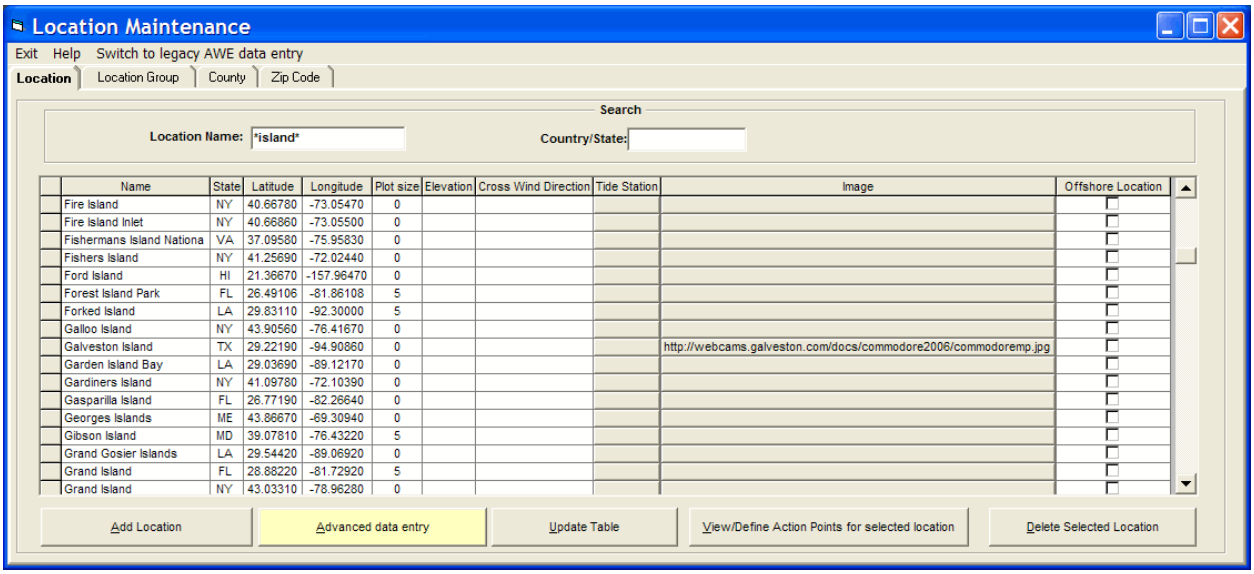
Location Maintenance Options

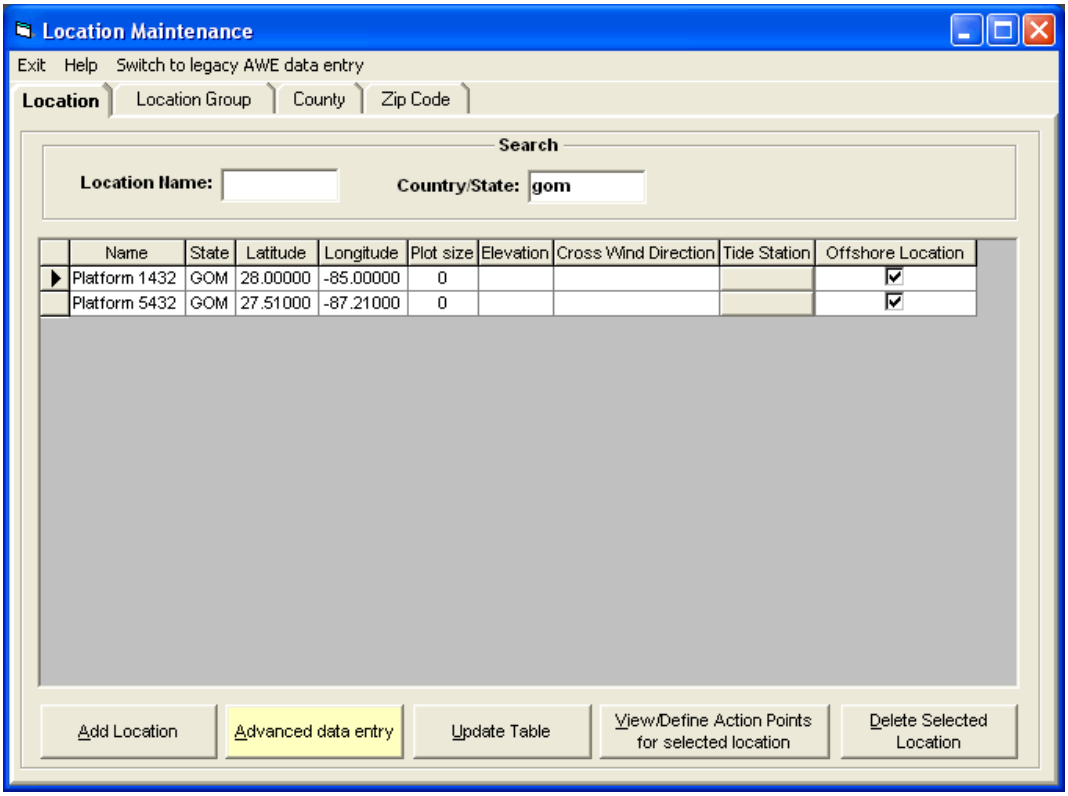


This portion of the system allows the user to set up and maintain location information. There are 4 options available:

- **Location maintenance**
- **Location Group maintenance**
- **County / Parish maintenance**
- **Zip Code maintenance**

Location ("City") Maintenance





This option allows the user to establish new or change/delete existing locations. Locations can be anything that has latitude and longitude and size attributes. i.e. A city, island, point, lighthouse, etc.. Remember western longitudes are negative while eastern longitudes are positive. Selecting the "home locations only" option will display only locations that have been designated as such. The 2nd image above is an example of 2 user-defined oil platforms in the Gulf of Mexico. Note the "OFFSHORE LOCATION" column is checked. This will allow the system to calculate wave heights for this location.

Name - This identifies the location's name

State - This identifies the location's state or country code (2 or 3 digits)

Latitude - This identifies the location's latitude in decimal degrees. All latitudes north of the equator are positive and those south are negative. Latitudes for the North Atlantic and Eastern Pacific are positive. NOTE: DO NOT USE DEGREES AND MINUTES. To convert degrees/minutes to degrees and tenths of a degree, take the number of minutes, divide by 60 and add it to the degree value. I.E. 29 degrees 36 minutes is 29.6 degrees.

Longitude - This identifies the location's longitude in decimal degrees. All Western longitudes are negative while all Eastern longitudes are positive. Longitude values for the Atlantic and Eastern Pacific locations are negative. NOTE: DO NOT USE DEGREES AND MINUTES. To convert degrees/minutes to degrees and tenths of a degree, take the number of minutes, divide by 60 and add it to the degree value. I.E. -78 degrees 54 minutes is -78.9 degrees.

Plot Size - This represents the circular size of this location. This can range anywhere from 0 to 100 nautical miles. A zero value will not draw any circle, thus being well suited for geographical landmarks like points, bays, etc. Other values will draw circles or points depending on the size of the location and size of the map they are plotted on.

Elevation – This indicates the location's elevation above mean sea level in feet. It is only used by the SLOSH report function and supersedes the elevation calculated by the DEM (digital elevation model) data included with the system.

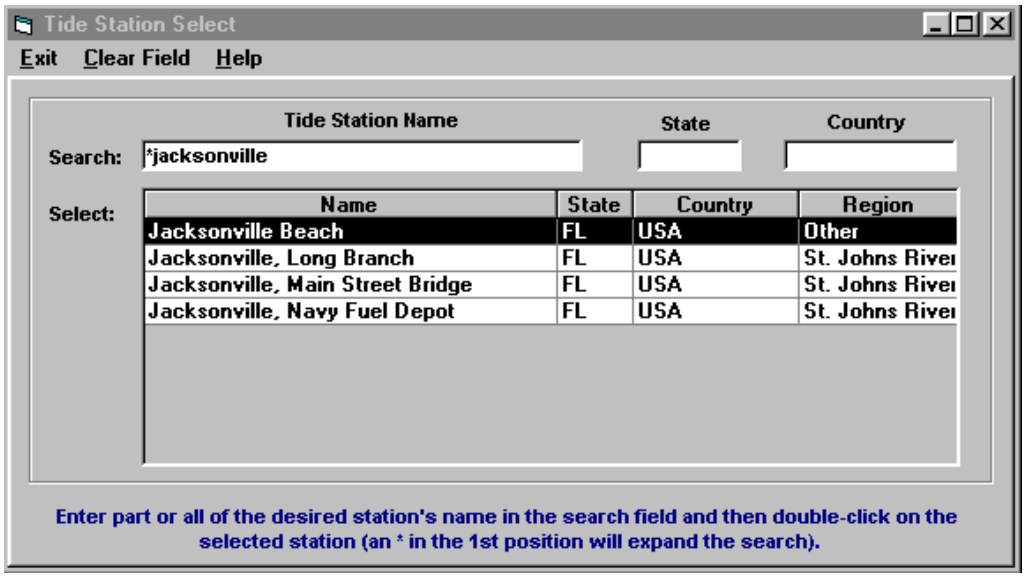
Cross Wind Direction – This field can be used in 2 different ways. If a coastal location, this can be used to identify the wind direction that typically causes the most flooding. For example, in Savannah a direct East wind (090 degrees) is the direction that flooding occurs. In Panama City, FL, the direction is more like SSW or 200 degrees. This is used in the detail location reports when calculating onshore wind flow and also the location report flood index graph. If this is an airport location, this field can be used to identify the cross wind direction. i.e. a 360 runway would have the max cross wind from 270 or 090. Either value can be used. This will then generate the cross runway component of wind on detailed "hourly" reports.

If the Legacy AWE menu option is selected the following additional field is displayed.
AWE Location - This indicates whether this location "qualifies" for Advanced Wind Estimation. If information has been added via the advanced data entry option, this option will be checked. This is a read only indicator.

Image – This field allows the user to identify a web or local image file to the system which is used when exporting report data to Google Earth. For more information see the appendix topic Webcam / Location Images on page 313.

Tide Station - This identifies the tide station associated with this location. To associate a location to a tide station, click on this data cell. The user will then be presented with the tide selection update window shown on the next page.

Offshore Location - This identifies the location as a fixed offshore location, such as an oil platform, etc. When checked, the system will include wave height calculations in the summary and detailed impact report for this location.



The options available from here are:

To **ADD** a location, select the add location option.

To **Enter advanced information** about this location, select the Advanced data entry option (see next page). One of two possible entry forms will be presented.

To **Change** a location's information, make the required changes in the data table and select update.

To **Define Action Points**, highlight that location in the list and select the View/Define Action Point option on page 26.

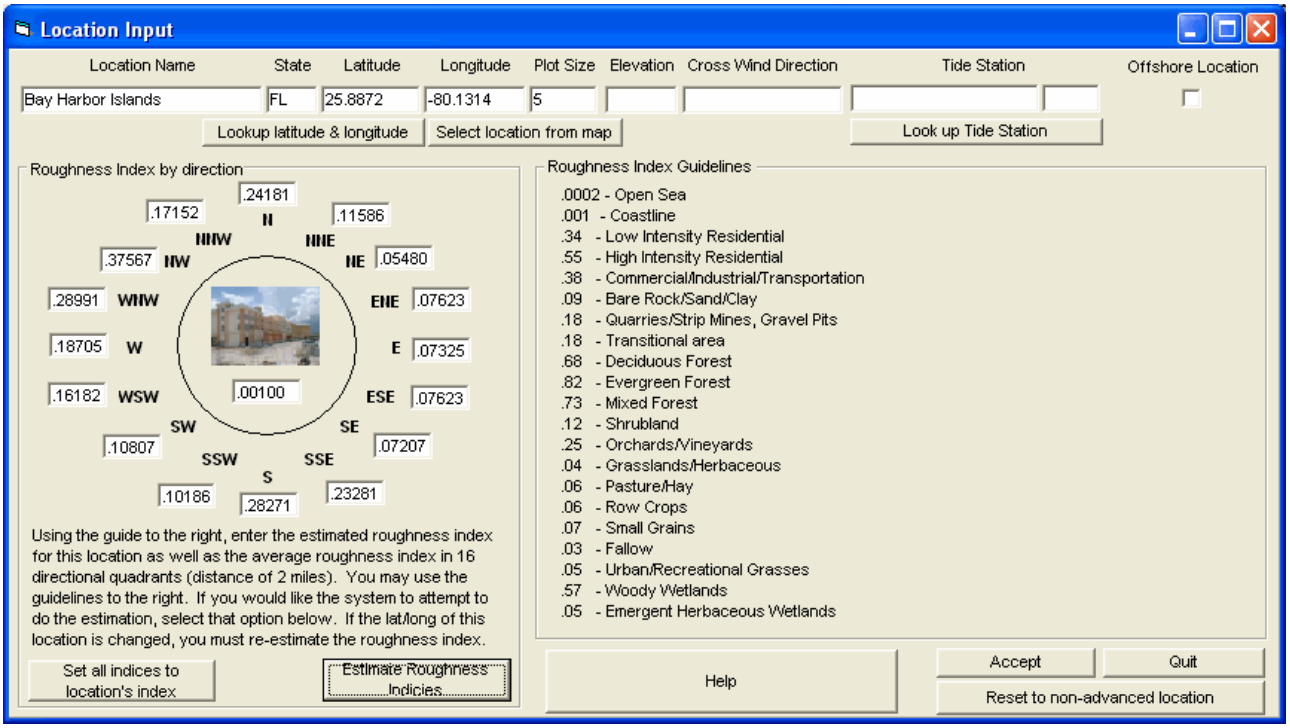
To **DELETE** a location group, highlight that location in the list and select the delete option.

** Note: you can quickly find a location by using the search fields

Advanced Location Data Entry (Default)

Data entry on this form should be considered with extreme care as it can result in lowering the estimated wind speeds significantly for this location on all reports (Advanced Wind Estimation).

The following is the "default" / new AWE data entry form. Generally you will not change the roughness index values on this form unless you have good knowledge of the locations environment. Changing the roughness index value will have a significant affect on calculated wind speeds.



This option allows the user to enter "advanced" information about locations. Locations can be anything that has latitude and longitude and size attributes. I.E. A city, island, point, lighthouse, etc. Remember western longitudes are negative while eastern longitudes are positive.

Location Name - This identifies the location's name

State - This identifies the location's state or country code (2 or 3 digits)

Latitude - This identifies the location's latitude in decimal degrees. All latitudes north of the equator are positive and those south are negative. Latitudes for the North Atlantic and Eastern Pacific are positive. NOTE: DO NOT USE DEGREES AND MINUTES. To convert degrees/minutes to degrees and tenths of a degree, take the number of minutes, divide by 60 and add it to the degree value. I.E. 29 degrees 36 minutes is 29.6 degrees.

Longitude - This identifies the location's longitude in decimal degrees. All Western longitudes are negative while all Eastern longitudes are positive. Longitude values for the Atlantic and Eastern Pacific locations are negative. NOTE: DO NOT USE DEGREES AND MINUTES. To convert degrees/minutes to degrees and tenths of a degree, take the number of minutes, divide by 60 and add it to the degree value. I.E. -78 degrees 54 minutes is -78.9 degrees.

Plot Size - This represents the circular size of this location. This can range anywhere from 0 to 100 nautical miles. A zero value will not draw any circle, thus being well suited for geographical landmarks like points, bays, etc. Other values will draw circles or points depending on the size of the location and size of the map they are plotted on.

Elevation – This indicates the location's elevation above mean sea level in feet. It is only used by the SLOSH report function and supersedes the elevation calculated by the DEM (digital elevation model) data included with the system.

Cross Wind Direction – This field can be used in 2 different ways. If a coastal location, this can be used to identify the wind direction that typically causes the most flooding. For example, in Savannah a direct East wind (090 degrees) is the direction that flooding occurs. In Panama City, FL, the direction is more like SSW or 200 degrees. This is used in the detail location reports when calculating onshore wind flow and also the location report flood index graph. If this is an airport location, this field can be used to identify the cross wind direction. i.e. a 360 runway would have the max cross wind from 270 or 090. Either value can be used. This will then generate the cross runway component of wind on detailed "hourly" reports.

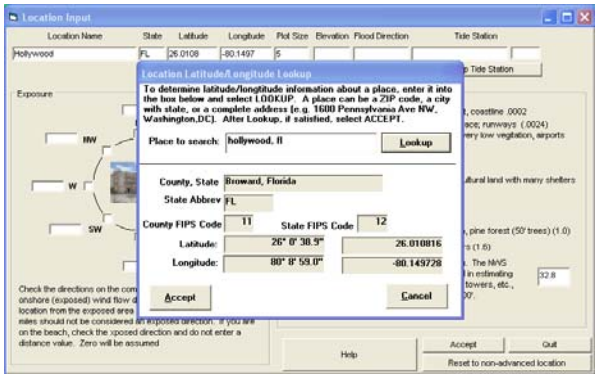
Tide Station - This identifies the tide station associated with this location. To associate a location to a tide station, click on the "Look up Tide Station" option. The user will then be presented with a tide station selection window.

Offshore Location - This identifies the location as a fixed offshore location, such as an oil platform, etc. When checked the system will include wave height calculations in the summary and detailed impact report for this location

Roughness Index (by direction) - This is an important data element. It describes the exposures that are characteristic for this location. For each of the 16 compass directions the average roughness index for 2 NM in this direction is shown. These values have been pre-calculated for the default locations. If you add a new location and do not choose the "Estimate Roughness Index" option, the system will prompt the user to automatically calculate the roughness indices upon exit of this screen. If you update a location's position (Lat, Long), the user should select the "estimate roughness indices" option. These values have a significant impact on the wind speeds estimated by Advanced Wind Estimation.

The options available from here are:

To **lookup a location's latitude / longitude**, select the Lookup Latitude and Longitude option.



To select a location's lat / lon via a map select the "Select Location from Map" option. You can then simply point at the location on a map.

To **associate a location to a tide station**, select the "Look up Tide Station" option.

To **accept the changes**, select the "Accept" option.

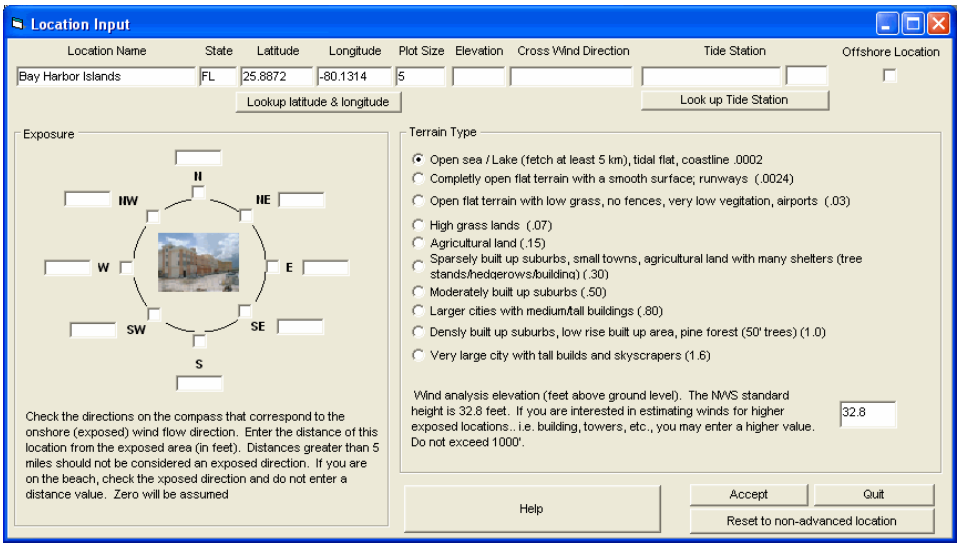
To **reject all changes,** select the "Quit" option.

To **clear all advanced location data for this location**, select the "Reset to non-advanced location", option. This will clear all exposure and terrain type information for this location.

Advanced Location Data Entry (Legacy)

Data entry on this form should be considered with extreme care as it can result in lowering the estimated wind speeds significantly for this location on all reports (Advanced Wind Estimation).

The following is the legacy / prior AWE data entry form. It is included to support the prior version's AWE capability. Usage of this form and filling in exposure and terrain type information requires an excellent knowledge of the locations environment. Changing the roughness index value will significantly affect calculated wind speeds.



This option allows the user to enter "advanced" information about locations. Locations can be anything that has latitude and longitude and size attributes. I.E. A city, island, point, lighthouse, etc. Remember western longitudes are negative while eastern longitudes are positive.

Location Name - This identifies the location's name

State - This identifies the location's state or country code (2 or 3 digits)

Latitude - This identifies the location's latitude in decimal degrees. All latitudes north of the equator are positive and those south are negative. Latitudes for the North Atlantic and Eastern Pacific are positive. NOTE: DO NOT USE DEGREES AND MINUTES. To convert degrees/minutes to degrees and tenths of a degree, take the number of minutes, divide by 60 and add it to the degree value. I.E. 29 degrees 36 minutes is 29.6 degrees.

Longitude - This identifies the location's longitude in decimal degrees. All Western longitudes are negative while all Eastern longitudes are positive. Longitude values for the Atlantic and Eastern Pacific locations are negative. NOTE: DO NOT USE DEGREES AND MINUTES. To convert degrees/minutes to degrees and tenths of a degree, take the number of minutes, divide by 60 and add it to the degree value. I.E. -78 degrees 54 minutes is -78.9 degrees.

Plot Size - This represents the circular size of this location. This can range anywhere from 0 to 100 nautical miles. A zero value will not draw any circle, thus being well suited for geographical landmarks like points, bays, etc. Other values will draw circles or points depending on the size of the location and size of the map they are plotted on.

Elevation – This indicates the location's elevation above mean sea level in feet. It is only used by the SLOSH report function and supersedes the elevation calculated by the DEM (digital elevation model) data included with the system.

Cross Wind Direction – This field can be used in 2 different ways. If a coastal location, this can be used to identify the wind direction that typically causes the most flooding. For example, in

Savannah a direct East wind (090 degrees) is the direction that flooding occurs. In Panama City, FL, the direction is more like SSW or 200 degrees. This is used in the detail location reports when calculating onshore wind flow and also the location report flood index graph. If this is an airport location, this field can be used to identify the cross wind direction. i.e. a 360 runway would have the max cross wind from 270 or 090. Either value can be used. This will then generate the cross runway component of wind on detailed “hourly” reports.

Tide Station - This identifies the tide station associated with this location. To associate a location to a tide station, click on the "Look up Tide Station" option. The user will then be presented with a tide station selection window.

Offshore Location - This identifies the location as a fixed offshore location, such as an oil platform, etc. When checked, the system will include wave height calculations in the summary and detailed impact report for this location.

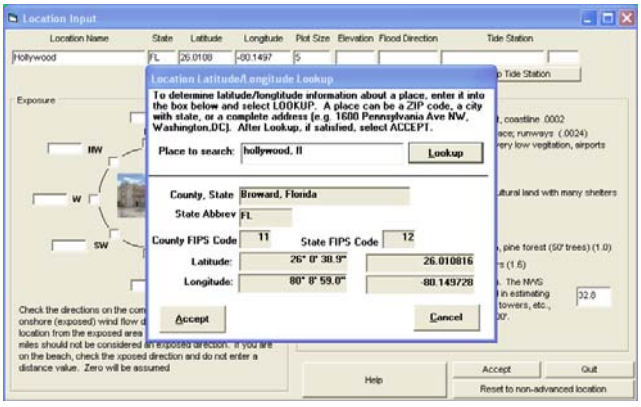
Exposure - This is an important data element. It describes the exposures that are characteristic for this location. For each of the 8 compass directions where there is an open exposure within 5 miles, the user should mark that direction as well as indicate (in feet) the distance from that exposure. Open exposures include large lakes (> 3 miles) or ocean/sea areas. In the example above, we are describing a location that has an open ocean exposure nearby to the east (500 feet) and less of an exposure in other directions (N, S, NE, SE). All western directions are not exposed. This value has an impact on the wind speeds estimated by Advanced Wind Estimation.

Terrain Type - This is also an important data field. It describes the frictional characteristics of the location's area. The user should select the option that best describes the location's environment. It is highly suggested that the user initially "under value" frictional (lower friction) considerations until experience indicates otherwise. This value has a large impact on the estimated wind speeds calculated by Advanced Wind Estimation.

Wind Analysis Elevation - Not to be confused with the location's elevation above sea level. This value indicates the elevation above ground level that the user would like used in by Advanced Wind Estimation. A standard of 10 meters is the default; however you can change this from 5 to 999 feet AGL.

The options available from here are:

To **lookup a location's latitude / longitude**, select the Lookup Latitude and Longitude option.



To **associate a location to a tide station**, select the "Look up Tide Station" option.

To **accept the changes**, select the "Accept" option.

To **reject all changes,** select the "Quit" option.

To **clear all advanced location data for this location**, select the "Reset to non-advanced location", option. This will clear all exposure and terrain type information for this location.

Define Action Points

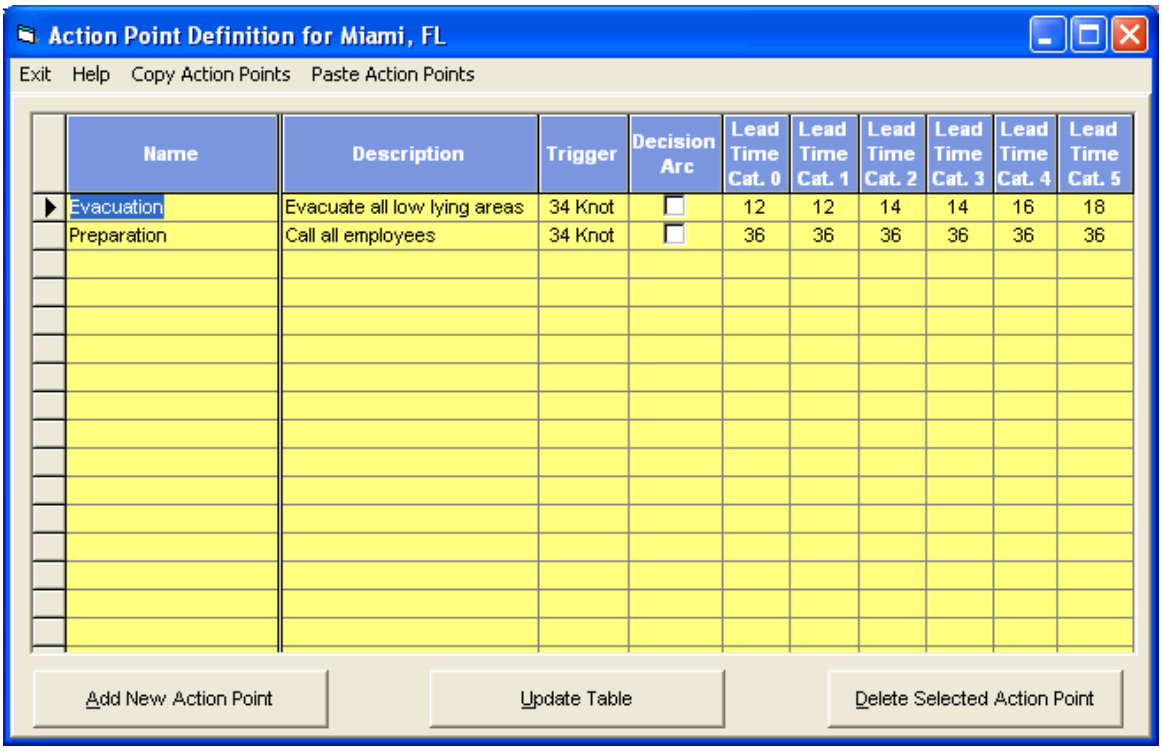


Figure 1

This option allows the user to establish and maintain actions point for a specific location or county.

Name - This identifies the action point's name

Description - This field contains a description of the Action Point. Multi-line input is accepted.

Trigger - The event that triggers the action point. The options are the arrival of 34, 50 or 64 knot winds.

Decision Arc - This option specifies whether the user will ever request to draw a decision arc for this action point. It may not make sense to draw some action points with large lead times.

Lead Times (Cat. 0-5) - These data fields specify the lead time in hours by category of storm. This information in combination with the trigger data is all that is needed to determine the timing of the action point.

Functions Available:
Menu Items

Exit - Exits this option

Help - This Help

Copy Action Points - This function copies all of the current location's action points to be pasted to another location at a later time.

Paste Action Points - This function takes a previously copied set of action points and pastes them to the current location.

The options available from here are:

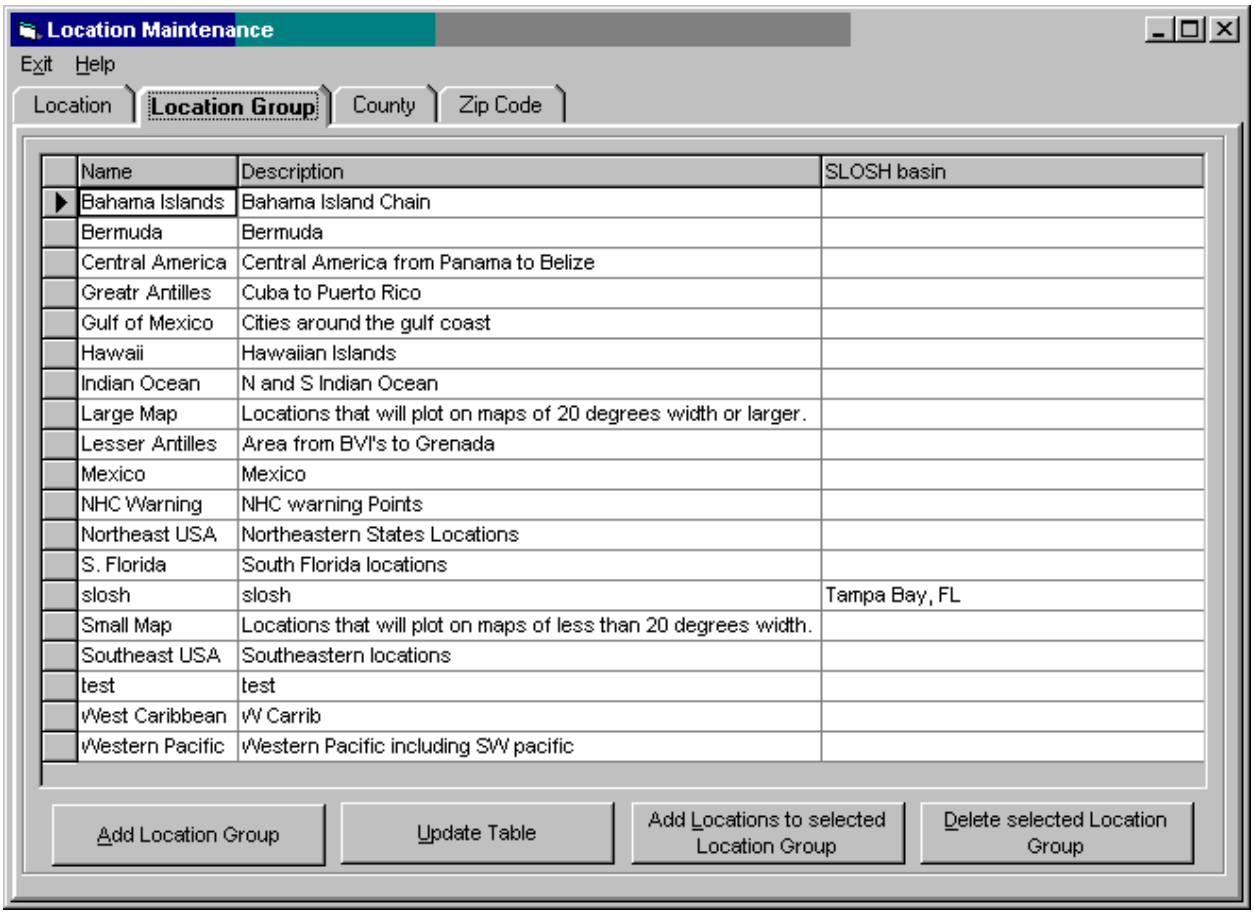
To **ADD** an Action Point, select the add new Action point option.

To **Change** an Action Point's information, make the required changes in the data table and select update.

To **DELETE** an Action Point, highlight that Action Point in the list and select the delete selected action point option.

For more information on the system's decision support capabilities see APPENDIX B: Decision Support Capabilities on page 249.

Location Group



This option allows the user to establish new or change/delete existing location groups. Location groups are any logical collection of locations. For example if you are responsible for 10 locations you can create a location group that has all of those locations in it. The association of location to location groups is done in "Add Locations to selected Location Group" function. There are several pre-defined location groups supplied with the system.

Name - This identifies the location group's name

Description - A short description of the location group.

SLOSH Basin – This identifies the SLOSH basin that is associated with this location group. It only needs to be specified when the location group is being used to generate a SLOSH report.

The options available from this report:

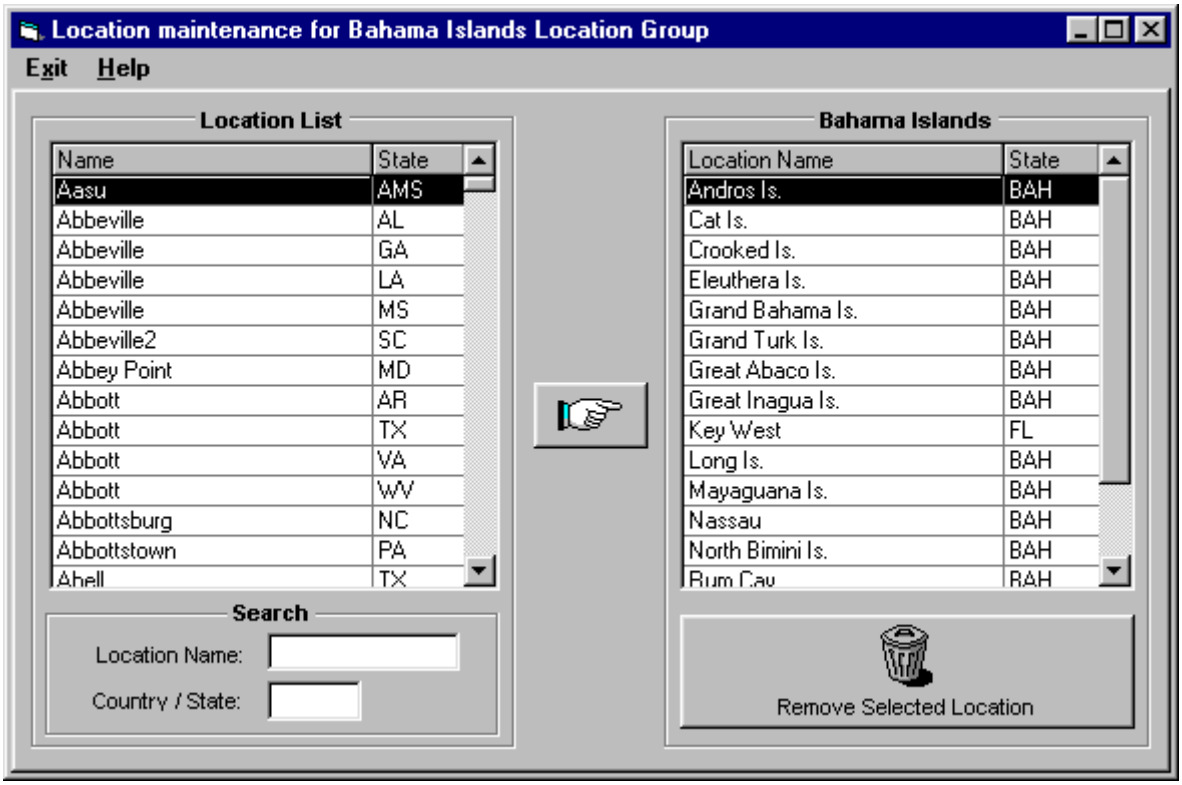
To **ADD** a location group, select the add location group option and modify data fields.

To **Change** a location group's information, make the required changes and select the update table option.

To **Add Locations to a Location Group**, highlight that location group in the list and select the Add Location to selected Location Group option. See page 29.

To **DELETE** a location group, highlight that location group in the list and select the delete selected Location Group option.

Location Group Association



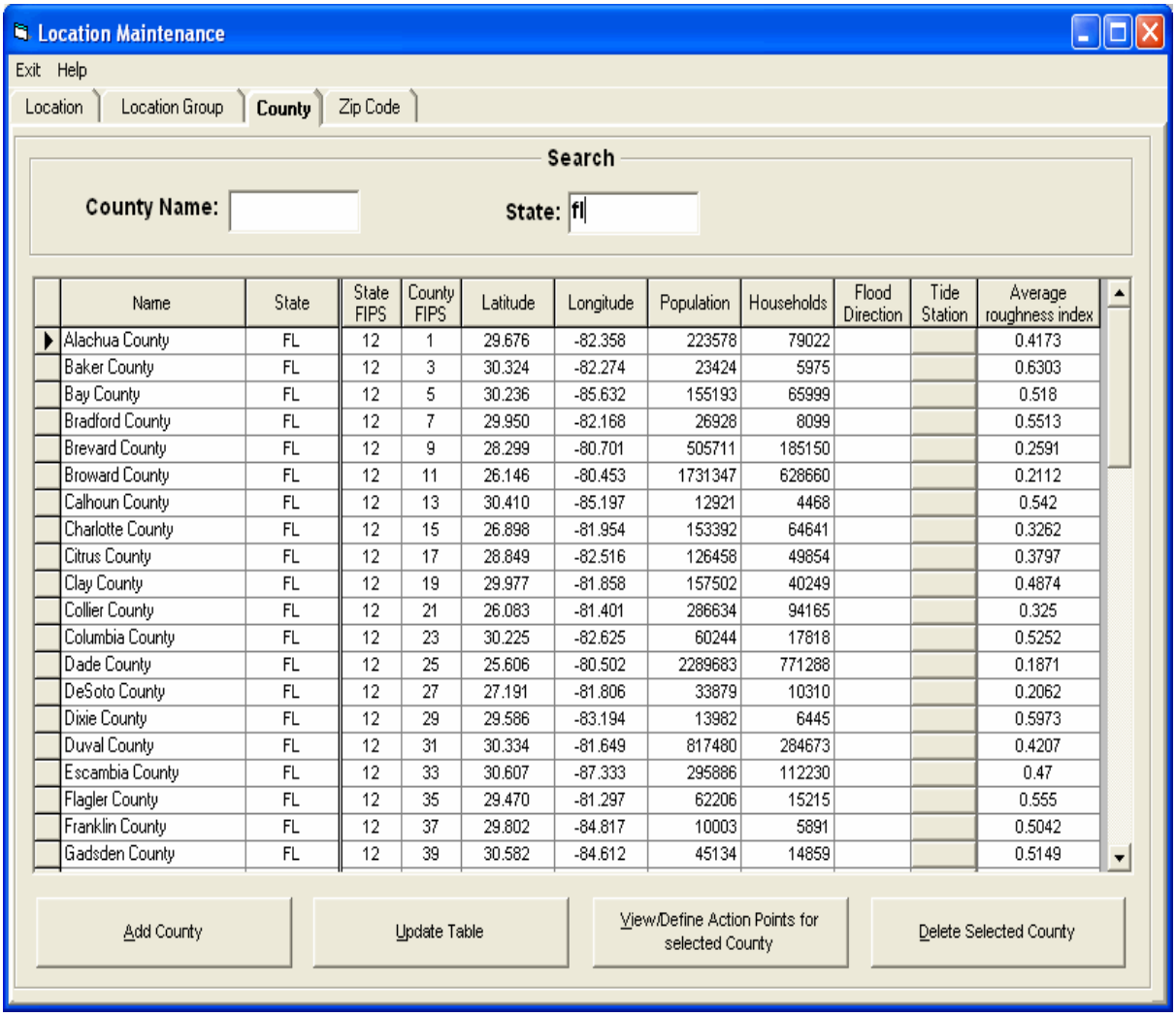
This option allows the user to easily associate and un-associate locations to location groups.

To **add** a location(s) to a location group, simply click on the desired location and click on the "hand" arrow to move it into the group. You may select multiple locations by using the ctrl or shift key. Please hold down the shift key until you have click on the “hand”.

To **remove** a location from a group, again click on the desired location in the selected list and click on the remove selected location option. This does not remove the location from the location database but only disassociates it from the location group.

To narrow your view of locations, enter partial names in the location lists search area.

County Maintenance



Name	State	State FIPS	County FIPS	Latitude	Longitude	Population	Households	Flood Direction	Tide Station	Average roughness index
Alachua County	FL	12	1	29.676	-82.358	223578	79022			0.4173
Baker County	FL	12	3	30.324	-82.274	23424	5975			0.6303
Bay County	FL	12	5	30.236	-85.632	155193	65999			0.518
Bradford County	FL	12	7	29.950	-82.168	26928	8099			0.5513
Brevard County	FL	12	9	28.299	-80.701	505711	185150			0.2591
Broward County	FL	12	11	26.146	-80.453	1731347	628660			0.2112
Calhoun County	FL	12	13	30.410	-85.197	12921	4468			0.542
Charlotte County	FL	12	15	26.898	-81.954	153392	64641			0.3262
Citrus County	FL	12	17	28.849	-82.516	126458	49854			0.3797
Clay County	FL	12	19	29.977	-81.858	157502	40249			0.4874
Collier County	FL	12	21	26.083	-81.401	286634	94165			0.325
Columbia County	FL	12	23	30.225	-82.625	60244	17818			0.5252
Dade County	FL	12	25	25.606	-80.502	2289683	771288			0.1871
DeSoto County	FL	12	27	27.191	-81.806	33879	10310			0.2062
Dixie County	FL	12	29	29.586	-83.194	13982	6445			0.5973
Duval County	FL	12	31	30.334	-81.649	817480	284673			0.4207
Escambia County	FL	12	33	30.607	-87.333	295886	112230			0.47
Flagler County	FL	12	35	29.470	-81.297	62206	15215			0.555
Franklin County	FL	12	37	29.802	-84.817	10003	5891			0.5042
Gadsden County	FL	12	39	30.582	-84.612	45134	14859			0.5149

This option allows the user to establish new or change/delete existing counties. The latitude and longitude values are the geographical center position of the county. Remember western longitudes are negative while eastern longitudes are positive.

Name - This identifies the county's name

State - This identifies the county's state code (2 digits)

Latitude - This identifies the county's geographical center latitude in decimal degrees. All latitudes north of the equator are positive and those south are negative. Latitudes for the North Atlantic and Eastern Pacific are positive. NOTE: DO NOT USE DEGREES AND MINUTES. To convert degrees/minutes to degrees and tenths of a degree, take the number of minutes, divide by 60 and add it to the degree value. I.E. 29 degrees 36 minutes is 29.6 degrees.

Longitude - This identifies the county's geographical center longitude in decimal degrees. All Western longitudes are negative while all Eastern longitudes are positive. Longitude values for the Atlantic and Eastern Pacific locations are negative. NOTE: DO NOT USE DEGREES AND MINUTES. To convert degrees/minutes to degrees and tenths of a degree, take the number of minutes, divide by 60 and add it to the degree value. I.E. -78 degrees 54 minutes is -78.9 degrees.

Population - This represents the population of the county.

Households - This represents the number of households in the county.

Cross Wind Direction – This field can be used in 2 different ways. If a coastal location, this can be used to identify the wind direction that typically causes the most flooding. For example, in Savannah a direct East wind (090 degrees) is the direction that flooding occurs. In Panama City, FL, the direction is more like SSW or 200 degrees. This is used in the detail location reports when calculating onshore wind flow and also the location report flood index graph. If this is an airport location, this field can be used to identify the cross wind direction. i.e. a 360 runway would have the max cross wind from 270 or 090. Either value can be used. This will then generate the cross runway component of wind on detailed "hourly" reports.

Tide Station - This identifies the tide station associated with this location. To associate a location to a tide station, click on this data cell. The user will then be presented with the tide selection window.

Average Roughness Index - This represents the average roughness index for this county. This is used for the county wind impact report when Advanced Wind Estimation (for counties) is active (ON). This value has been pre-calculated and should be changed with care.

User defined field 1 - This represents numerical data that is defined by the user. In the example shown here, we picked data fields that may be of interest to the insurance industry. If you have a large quantity of user data that you would like to import into the database it may be best to use MS ACCESS to do the chore rather than hand data entry. Call PC Weather Products for assistance in doing this.

User defined fields 2-3 - This represents numerical data that is defined by the user as described above.

User defined fields 4-10 - This represents numerical data that is defined by the user as described above (RM/PRO).

The options available from here are:

To **ADD** a county, select the add county option.

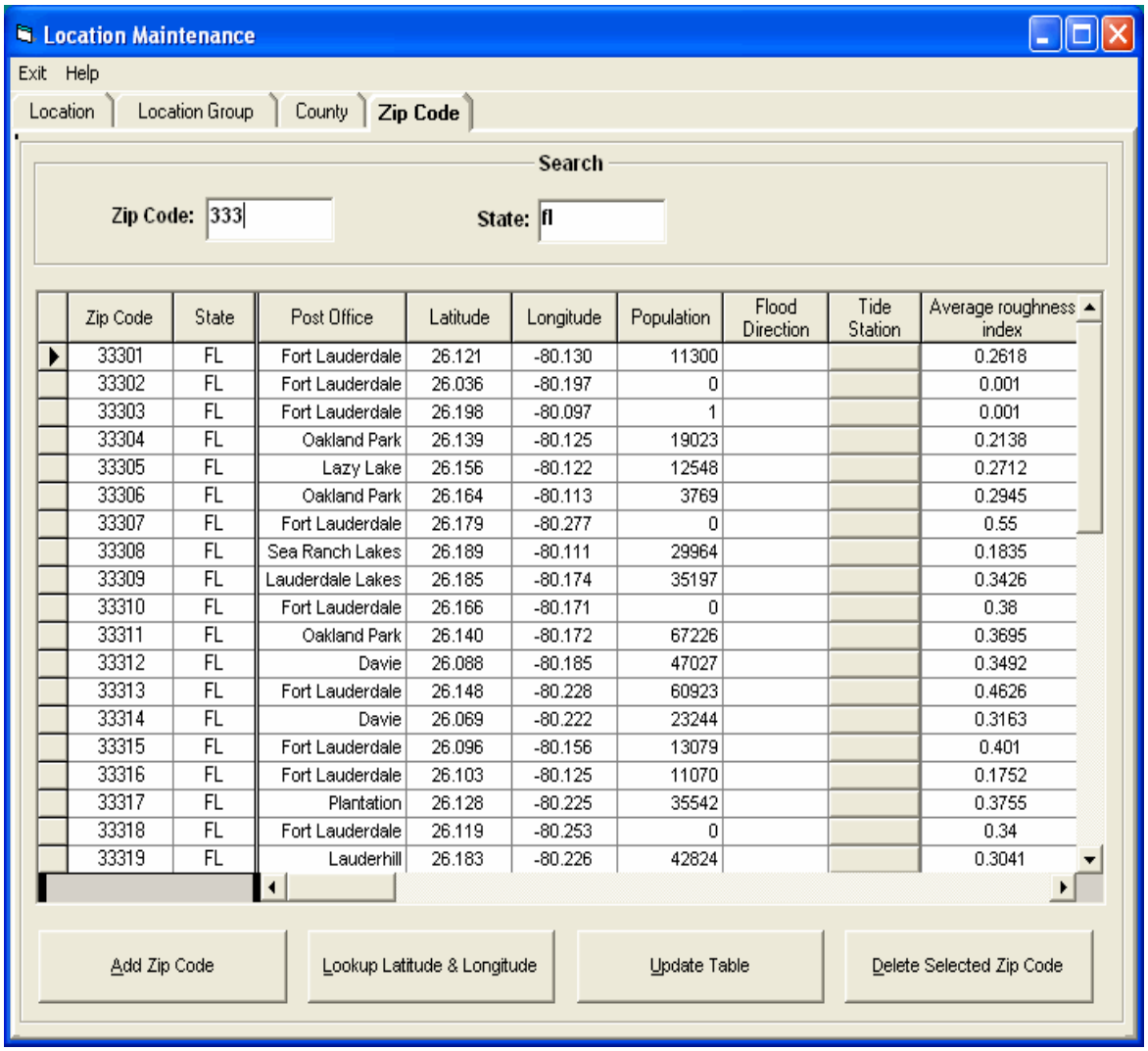
To **Change** a county's information, make the required changes in the data table and select update table.

To **Maintain** action points for a county, highlight that county in the list and select the View/Define Action Point option. See page 26.

To **DELETE** a county, highlight that county in the list and select the delete option.

* Note: To find a county use the search fields

Zip Code Maintenance



Zip Code	State	Post Office	Latitude	Longitude	Population	Flood Direction	Tide Station	Average roughness index
33301	FL	Fort Lauderdale	26.121	-80.130	11300			0.2618
33302	FL	Fort Lauderdale	26.036	-80.197	0			0.001
33303	FL	Fort Lauderdale	26.198	-80.097	1			0.001
33304	FL	Oakland Park	26.139	-80.125	19023			0.2138
33305	FL	Lazy Lake	26.156	-80.122	12548			0.2712
33306	FL	Oakland Park	26.164	-80.113	3769			0.2945
33307	FL	Fort Lauderdale	26.179	-80.277	0			0.55
33308	FL	Sea Ranch Lakes	26.189	-80.111	29964			0.1835
33309	FL	Lauderdale Lakes	26.185	-80.174	35197			0.3426
33310	FL	Fort Lauderdale	26.166	-80.171	0			0.38
33311	FL	Oakland Park	26.140	-80.172	67226			0.3695
33312	FL	Davie	26.088	-80.185	47027			0.3492
33313	FL	Fort Lauderdale	26.148	-80.228	60923			0.4626
33314	FL	Davie	26.069	-80.222	23244			0.3163
33315	FL	Fort Lauderdale	26.096	-80.156	13079			0.401
33316	FL	Fort Lauderdale	26.103	-80.125	11070			0.1752
33317	FL	Plantation	26.128	-80.225	35542			0.3755
33318	FL	Fort Lauderdale	26.119	-80.253	0			0.34
33319	FL	Lauderhill	26.183	-80.226	42824			0.3041

This option allows the user to establish new or change/delete existing zip codes. The latitude and longitude values are the geographical center position of the zip code. Remember western longitudes are negative while eastern longitudes are positive. The RM/Pro versions of the system use the zip code information in its impact analysis.

Zip Code - This identifies the zip code

State - This identifies the zip code's state code (2 digits)

Post Office - This represents the post office city associated with the zip code.

Latitude - This identifies the zip code's geographical center latitude in decimal degrees. All latitudes north of the equator are positive and those south are negative. Latitudes for the North Atlantic and Eastern Pacific are positive. NOTE: DO NOT USE DEGREES AND MINUTES. To convert degrees/minutes to degrees and tenths of a degree, take the number of minutes, divide by 60 and add it to the degree value. I.E. 29 degrees 36 minutes is 29.6 degrees.

Longitude - This identifies the zip code's geographical center longitude in decimal degrees. All Western longitudes are negative while all Eastern longitudes are positive. Longitude values for the Atlantic and Eastern Pacific locations are negative. NOTE: DO NOT USE DEGREES AND

MINUTES. To convert degrees/minutes to degrees and tenths of a degree, take the number of minutes, divide by 60 and add it to the degree value. I.E. -78 degrees 54 minutes is -78.9 degrees.

Population - This represents the population of the zip code. Note: some population figures are 0 because they are not "inhabited" zip codes.. I.E. Post Offices.

Cross Wind Direction – This field can be used in 2 different ways. If a coastal location, this can be used to identify the wind direction that typically causes the most flooding. For example, in Savannah a direct East wind (090 degrees) is the direction that flooding occurs. In Panama City, FL, the direction is more like SSW or 200 degrees. This is used in the detail location reports when calculating onshore wind flow and also the location report flood index graph. If this is an airport location, this field can be used to identify the cross wind direction. i.e. a 360 runway would have the max cross wind from 270 or 090. Either value can be used. This will then generate the cross runway component of wind on detailed “hourly” reports.

Tide Station - This identifies the tide station associated with this location. To associate a location to a tide station, click on this data cell. The user will then be presented with the tide selection update window.

Average Roughness Index - This represents the average roughness index for this zip code. This is used for the zip code wind impact report when Advanced Wind Estimation (for zips) is active (ON). This value has been pre-calculated and should be changed with care.

User defined field 1 - This represents numerical data that is defined by the user. In the example shown here, we picked data fields that may be on interest to the insurance industry. If you have a large quantity of user data that you would like to import into the database it may be best to use MS ACCESS to do the chore rather than hand data entry. Call PC Weather Products for assistance in doing this.

User defined fields 2-10 - This represents numerical data that is defined by the user as described above.

The options available from here are:

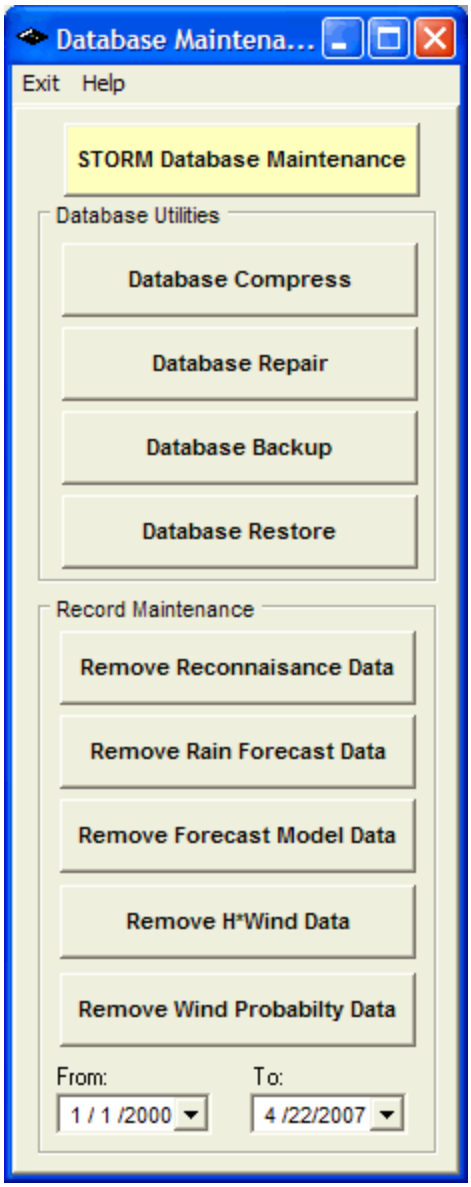
To **ADD** a zip code, select the add zip code option.

To **Change** a zip code's information, make the required changes in the data table and select update table.

To **DELETE** a zip code, highlight that zip code in the list and select the delete option.

* Note: To find a zip code, use the search fields

Database Maintenance



The options available are:

Storm Database Maintenance

This option takes the user to the system preferences as shown on page 12 and allows you to add and delete storm databases.

Database Compress

This option compresses the system's databases. It is a utility that reorganizes the databases taking advantage of empty space in the database file. The result should be a smaller database file (.MDB). The compress should be done only when there has been significant activity, especially adding and deleting of records, to the database. One a week during very active periods and once a month at other times is sufficient. You also may want to compress after doing a database repair.

Database Repair

The database repair utility is used to correct data integrity errors that were introduced to the database due to system failures, unplanned shutdowns, etc. While it is acceptable to do a repair even when you have not experienced any data problems, it will make the database slightly larger until a compress is done. Note: All database files will be saved in the \TEMP sub-directory (folder) before the repair is done.

Database Backup

This option will backup all of the system and storm MS Access (.mdb) files and stores them in a compressed format in a location specified by the user. We recommend an initial and then frequent backups of the system.

Database Restore

This option allows the user to restore the system's MS Access database files from a previous backup.

Remove Reconnaissance Data

This option allows the user to selectively, by date, remove hurricane reconnaissance records from the system. This is suggested when the recon.mdb database begins to get large.

Remove Rain Forecast Data

This option allows the user to selectively, by date, remove rainfall forecast records from the system. This is suggested when the qpf.mdb database begins to get large.**

Remove Forecast Model Data

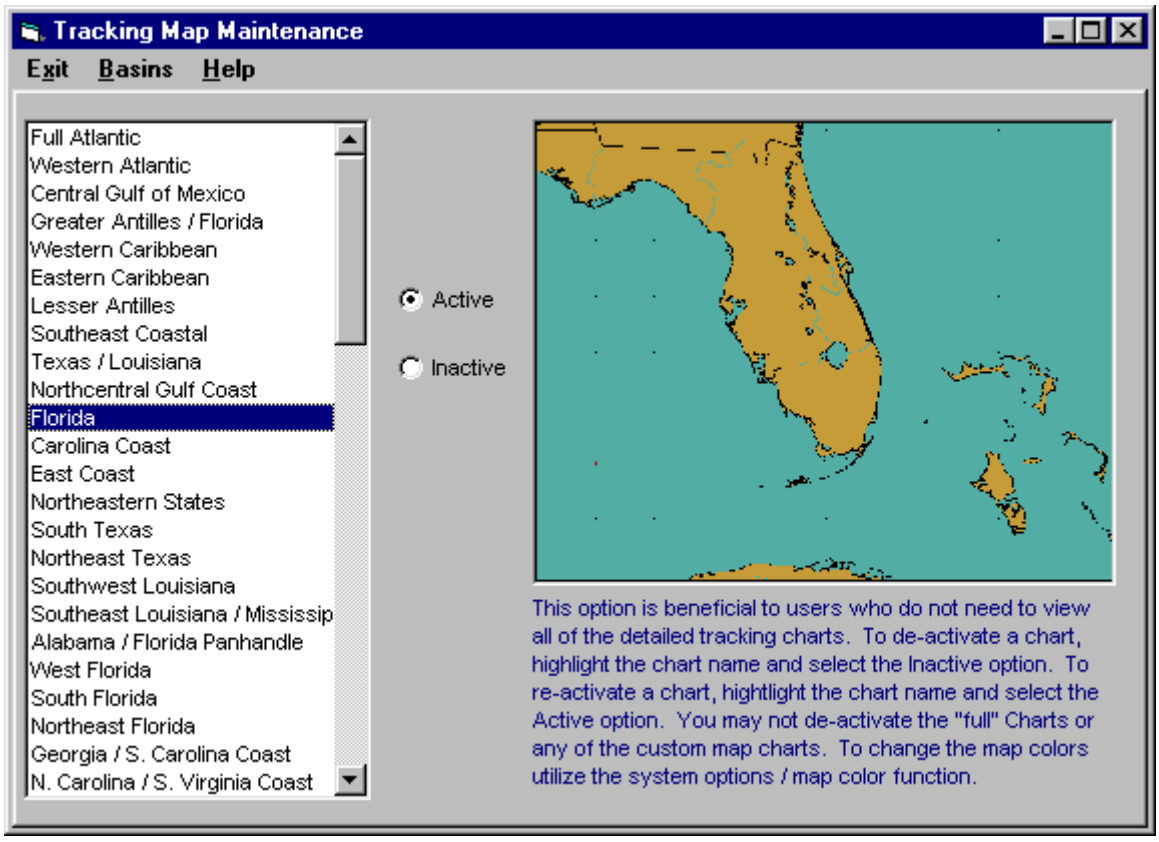
This option allows the user to selectively, by date, remove hurricane forecast mode records from the system. This is suggested when the model.mdb database begins to get large.

Remove Wind Probability Data

This option allows the user to selectively, by date, remove wind probability records from the system. This is suggested when the winprob.mdb database begins to get large.

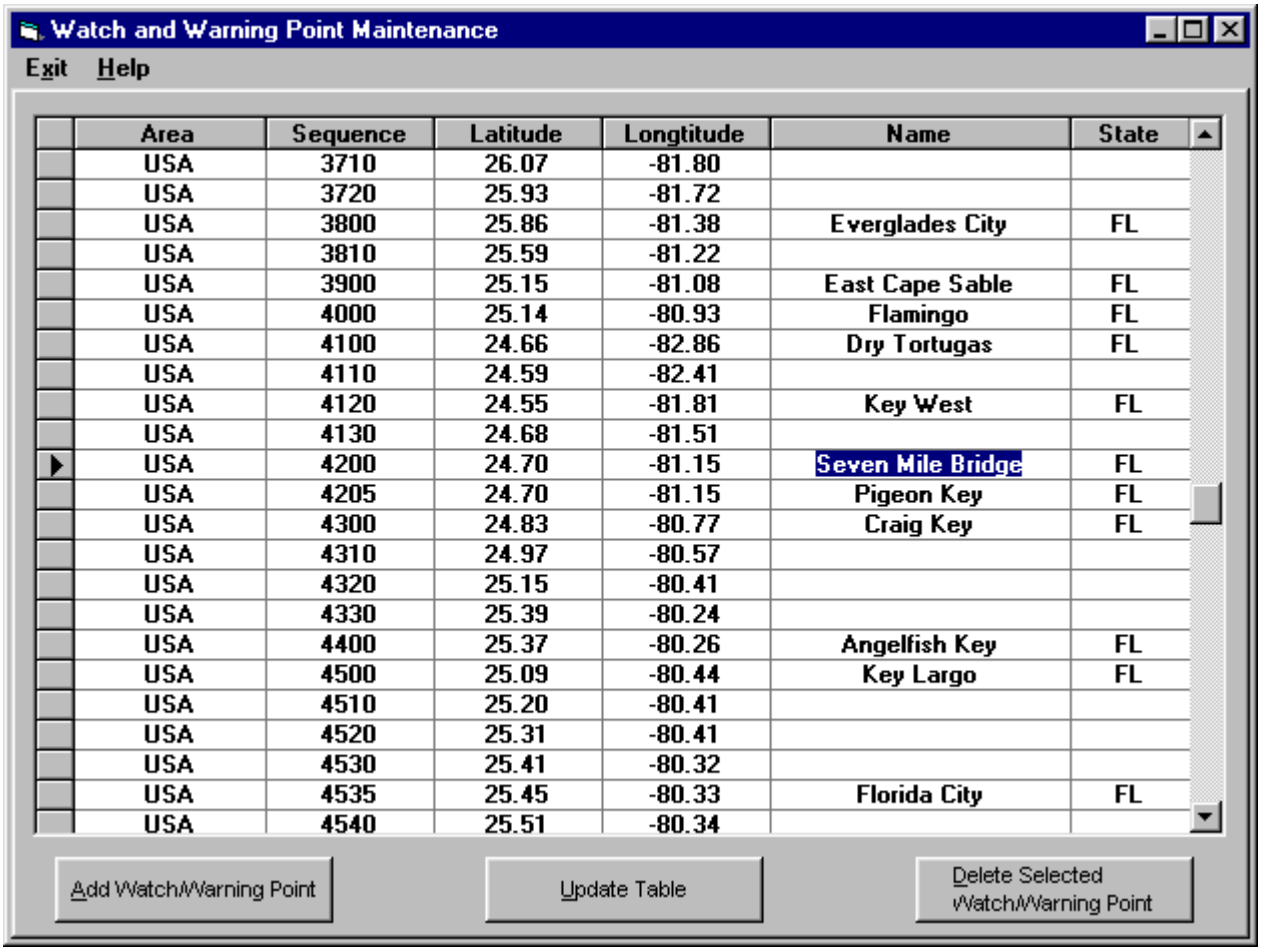
** Note.. the Hwind, Wind Prob and rain forecast databases are likely to get large quicker than the other databases.

Tracking Chart Maintenance



With the significant number of fixed tracking charts in the system, some users may find it beneficial to be able to de-activate certain charts that they would never use. This options allows the user to be able to do just that. To de-activate a chart, highlight the chart name and select the inactive option. To re-activate a chart, highlight the chart name and select the Active option. You may not de-activate the "Full Atlantic" chart or any of the custom map charts. Global Tracker users can change tropical cyclone basins by selecting that menu option. To change map colors utilize the change map colors option.

Watch and Warning Area Point Maintenance



Area	Sequence	Latitude	Longtitude	Name	State
USA	3710	26.07	-81.80		
USA	3720	25.93	-81.72		
USA	3800	25.86	-81.38	Everglades City	FL
USA	3810	25.59	-81.22		
USA	3900	25.15	-81.08	East Cape Sable	FL
USA	4000	25.14	-80.93	Flamingo	FL
USA	4100	24.66	-82.86	Dry Tortugas	FL
USA	4110	24.59	-82.41		
USA	4120	24.55	-81.81	Key West	FL
USA	4130	24.68	-81.51		
USA	4200	24.70	-81.15	Seven Mile Bridge	FL
USA	4205	24.70	-81.15	Pigeon Key	FL
USA	4300	24.83	-80.77	Craig Key	FL
USA	4310	24.97	-80.57		
USA	4320	25.15	-80.41		
USA	4330	25.39	-80.24		
USA	4400	25.37	-80.26	Angelfish Key	FL
USA	4500	25.09	-80.44	Key Largo	FL
USA	4510	25.20	-80.41		
USA	4520	25.31	-80.41		
USA	4530	25.41	-80.32		
USA	4535	25.45	-80.33	Florida City	FL
USA	4540	25.51	-80.34		

Figure 2

This option allows the user to establish new or change/delete existing watch and warning points. This function should only be utilized by users outside of the USA that want the ability to graphically depict the watch and warning areas. The key fields are...

Area - Watch and warning AREAS group together a contiguous series of geographical points. For example the US coastline is defined as one watch and warning area while the Puerto Rico coastline might be defined as another. I.E. There are no points that connect the 2 areas.

Sequence - The sequence number defines the sequence of geographical points within an area. To define an area from Texas to Maine as in the USA area, the sequence must be "in order" from Brownsville to Bar Harbour.

Latitude - This specifies the latitude, in decimal degrees, of the watch and warning point defined.

Longitude - This specifies the longitude, in decimal degrees, of the watch and warning point defined.

Name - The name field contains the watch and warning point's name. If this is blank then this point represents a "curve" in the coastline.

State - The state field contains the watch and warning point's state or county code information. If this is blank then this point represents a "curve" in the coastline.

The options available are:

To **ADD** a watch/warning point, select the add watch/warning point option.

To **Change** a point's information, make the required changes in the data table and select update.

To **DELETE** a watch and warning point, highlight that row in the list and select the delete option.
The maintenance of the hurricane watch and warning areas is a rather complex one. If you are only interested in watches and warnings along the US coast and the National Hurricane Center does not deviate from their "standard" set of watch and warning points, then you will never have to maintain this data set.

There are several circumstances where you will need to maintain this data set.

1. If the NHC uses a non-standard location along the US coastline. For example if they specify Mobile, AL as an end point for an area of watch or warning, you will need to insert that location into the database. (The other option in this case is to simply specify the nearest standard location to Mobile.)

2. If you need to display the watches and warnings for non US coastline areas, you will need to predefine those watch and warning areas before using this feature. The National Hurricane Center does NOT use a standard set of watch and warning points for areas outside of the US coastline so any watches and warnings issued for these areas will have to be pre-defined.

The database is organized sequentially by area and sequence number and contains latitude, longitude and location name information. An ascending sequence within an area defines that area's coastline. In the sample on page 37 we see the set of points that make up the coastline from Everglades City, FL to Key Largo FL within the USA area. The records that have a location name and state are the predefined NHC watch and warning points. The records in between those points represent the "curves" in the coastline in between the locations. See the chart on page 39 to get a better understanding of what this area of the coastline looks like.

Let's look at a couple of examples of how you could change the data set.

Example 1:
Let say the NHC decided to issue a watch or warning from Big Pine Key to Jacksonville. Since Big Pine Key is not one of the pre-defined points, you would have to insert Big Pine Key into this data set. By examining the above table, you could add that location in area USA with a sequence number of 4115.

Example 2:
If you wanted to create a watch and warning areas for all of Cuba you would have to define the entire coastline of Cuba and then specify the watch and warning locations that you will use. So you may define 25 points that roughly define the coast and then specify 10 geographical locations to be used as the end points of the watch and warning areas. The 25 points and 10 geographical locations are just used as an example.

The standard watch and warning areas pre-defined with the system:

USA - Main US coastline
N Chesapeake - Northern Chesapeake Bay
S Chesapeake - Southern Chesapeake Bay

Watch and warning sample data

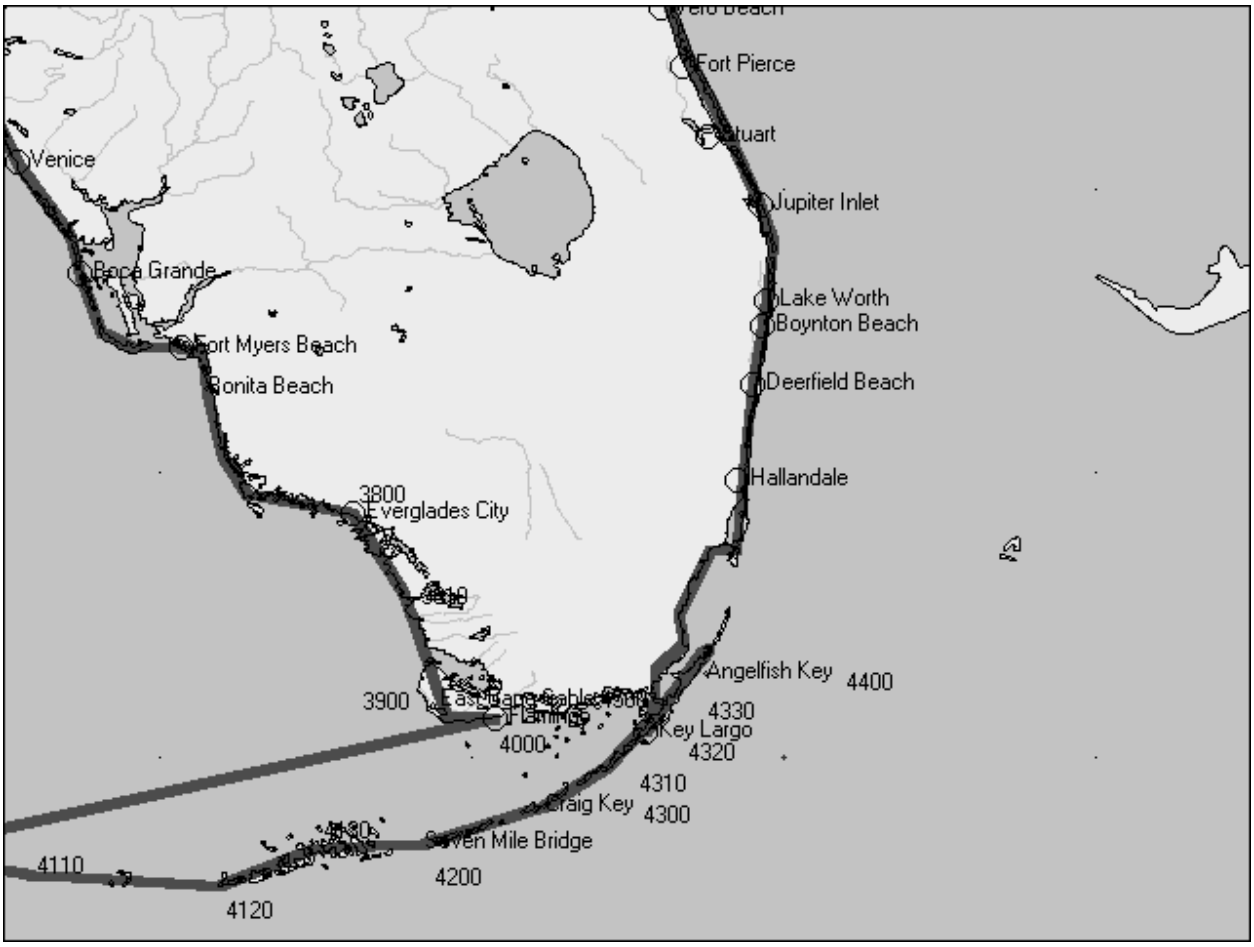
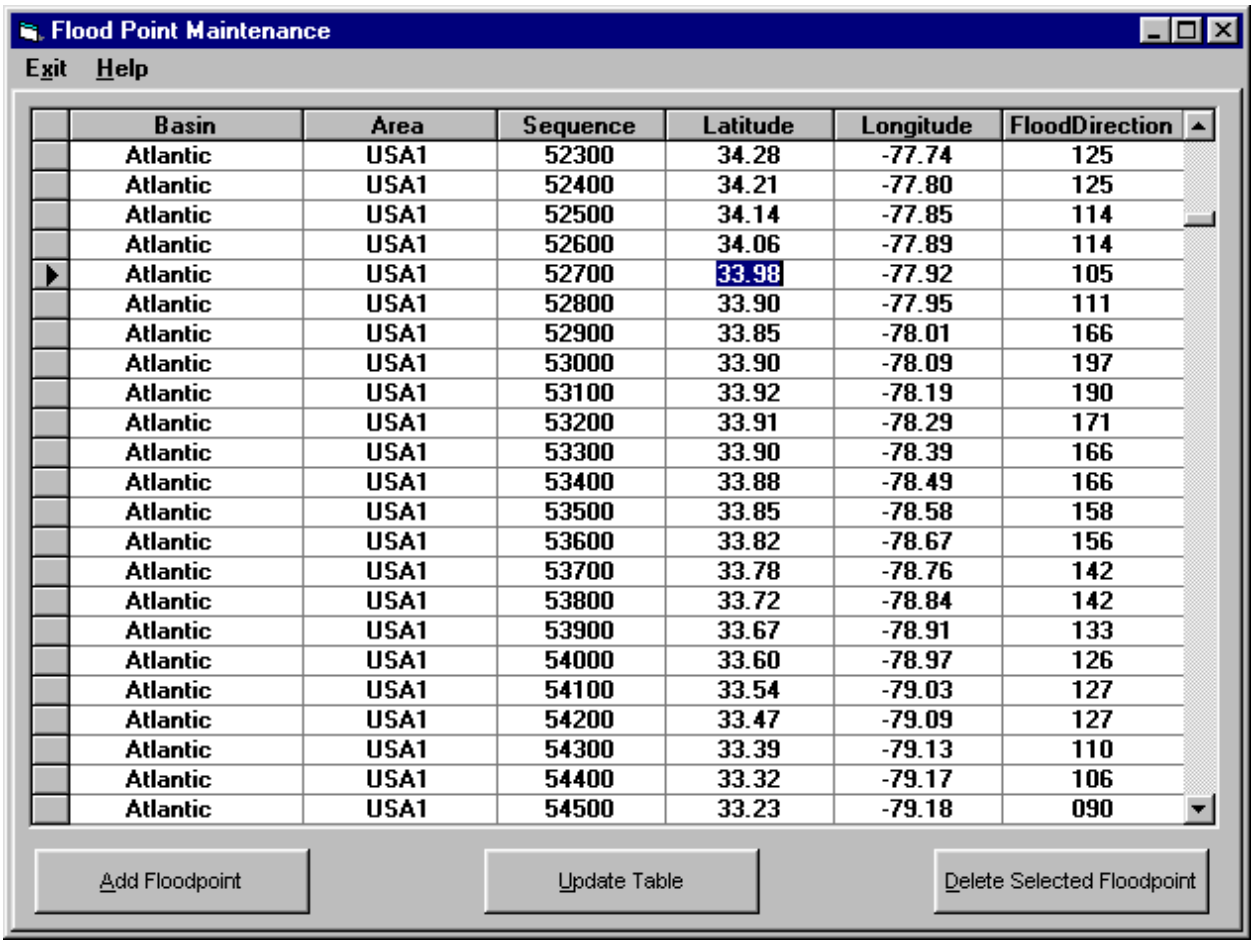


Figure 3

This chart has been annotated to show some of the sequence numbers in the USA watch and warning area. Note how by connecting the points a rough coastline is defined.

Flood Point Maintenance



Basin	Area	Sequence	Latitude	Longitude	FloodDirection
Atlantic	USA1	52300	34.28	-77.74	125
Atlantic	USA1	52400	34.21	-77.80	125
Atlantic	USA1	52500	34.14	-77.85	114
Atlantic	USA1	52600	34.06	-77.89	114
Atlantic	USA1	52700	33.98	-77.92	105
Atlantic	USA1	52800	33.90	-77.95	111
Atlantic	USA1	52900	33.85	-78.01	166
Atlantic	USA1	53000	33.90	-78.09	197
Atlantic	USA1	53100	33.92	-78.19	190
Atlantic	USA1	53200	33.91	-78.29	171
Atlantic	USA1	53300	33.90	-78.39	166
Atlantic	USA1	53400	33.88	-78.49	166
Atlantic	USA1	53500	33.85	-78.58	158
Atlantic	USA1	53600	33.82	-78.67	156
Atlantic	USA1	53700	33.78	-78.76	142
Atlantic	USA1	53800	33.72	-78.84	142
Atlantic	USA1	53900	33.67	-78.91	133
Atlantic	USA1	54000	33.60	-78.97	126
Atlantic	USA1	54100	33.54	-79.03	127
Atlantic	USA1	54200	33.47	-79.09	127
Atlantic	USA1	54300	33.39	-79.13	110
Atlantic	USA1	54400	33.32	-79.17	106
Atlantic	USA1	54500	33.23	-79.18	090

Figure 4

This option allows the user to establish new or change/delete existing watch and warning points. The key fields are...

Basin - Basin identifies the hurricane basin that the floodpoint "coastline" is in. The Atlantic Basin is 1, East Pacific = 2, West Pacific = 3, N. Indian = 4, S. Indian = 5, SW Pacific = 6

Area - A Flood Point AREA groups together a contiguous series of geographical points. For example the US coastline is defined as one Flood Point area while the Puerto Rico coastline might be defined as another. I.E. There are no points that connect the 2 areas.

Sequence - The sequence number defines the sequence of geographical points within an area. To define an area from Texas to Maine as in the USA1 area, the sequence must be "in order" from Brownsville to Bar Harbour.

Latitude - This specifies the latitude, in decimal degrees, of the flood point defined.

Longitude - This specifies the longitude, in decimal degrees, of the flood point defined.

Flood Direction - The onshore flood direction for this flood point. I.E. The direction that flooding would "come from". The direction is defined by the compass where East is 090, South is 180, West is 270 and North is 360 (0 is defined as having no value). For most coastal areas, this direction would be perpendicular to the coast. For example, Miami would be 090 (east), Panama City, FL would be 200 (SSW), Galveston, TX would be 135 (SE), etc. There are some cases, like inlets and bays where

the flood direction (maximum flooding) is due to funneling of water into the inlet or bay. Tampa Bay is an example of this where its maximum flooding occurs due to a SW flow.

The options available are:

To **ADD** a floodpoint, select the add floodpoint option.

To **Change** a point's information, make the required changes in the data table and select update.

To **DELETE** a floodpoint, highlight that row in the list and select the delete option.

The maintenance of the flood point areas is a rather complex one. Luckily there are only a few circumstances that require you to maintain this data set.

1. If you need to display the flood index for un-analyzed coastal areas. Although, we have "digitized" flood points for all of the large to medium sized coastal areas, including some inland lakes, we have not attempted to analyze every coastal area, like small islands. They present a special problem in that their onshore wind direction in reality is... "all directions". A storm surge coming in from the Southeast may inundate the entire island. You can however create a separate "flood" area for a specific island.

2. If you would like to modify the "digitized" flood points. Again, although we have digitized at a fairly detail level, your knowledge of local flood patterns like inlets, rivers, etc., may make it desirable to add more detail to the coastal flood point pattern.

In the sample on page 40 we see some of the flood points that define the coastline of North Carolina within the USA1 area. See the sample chart on page 42 to get a better idea of how this looks for that area.

Example 1:
If you wanted to add Smith Island (Cape Fear) to the flood point data base you would need to add new records with a unique area name. For example:

Area, Seq., Lat., Long, Onshore Flood Direction

SMITH,01,33.88,-78.02,270
SMITH,02,33.89,-78.00,329
SMITH,03,33.90,-77.99,360
SMITH,04,33.89,-77.97,050
SMITH,05,33.90,-77.96,310
SMITH,06,33.91,-77.95,102
SMITH,07,33.89,-77.96,102
SMITH,08,33.87,-77.96,102
SMITH,09,33.86,-77.96,090
SMITH,10,33.85,-77.97,197
SMITH,11,33.86,-77.99,197
SMITH,12,33.86,-78.01,197
SMITH,13,33.88,-78.02,270

define the points for Smith Island. Once these are entered in to the database, Smith Island would then be included in the Flood Point analysis.

Example 2:
If you wanted to include Cape Fear Inlet (river) into the flood point data base you would add new records to the existing USA1 database. For example:

USA1,52700,33.98,-77.92,180
USA1,52701,34.07,-77.93,180
USA1,52702,34.12,-77.93,180
USA1,52703,34.15,-77.95,180
USA1,52704,34.19,-77.96,180
USA1,52705,34.17,-77.97,180
USA1,52706,34.12,-77.95,180
USA1,52707,34.04,-77.95,180
USA1,52708,33.99,-77.95,180
USA1,52709,33.94,-77.98,180
USA1,52800,33.90,-77.95,180

would be inserted into the database in the appropriate sequence. (I have made an assumption that a due South (180) wind flow would result in the largest flooding in Cape Fear Inlet.)

If you modify the flood point database, we would be interested in getting a copy of these additions or changes for possible incorporation into future releases.

Flood Index Sample

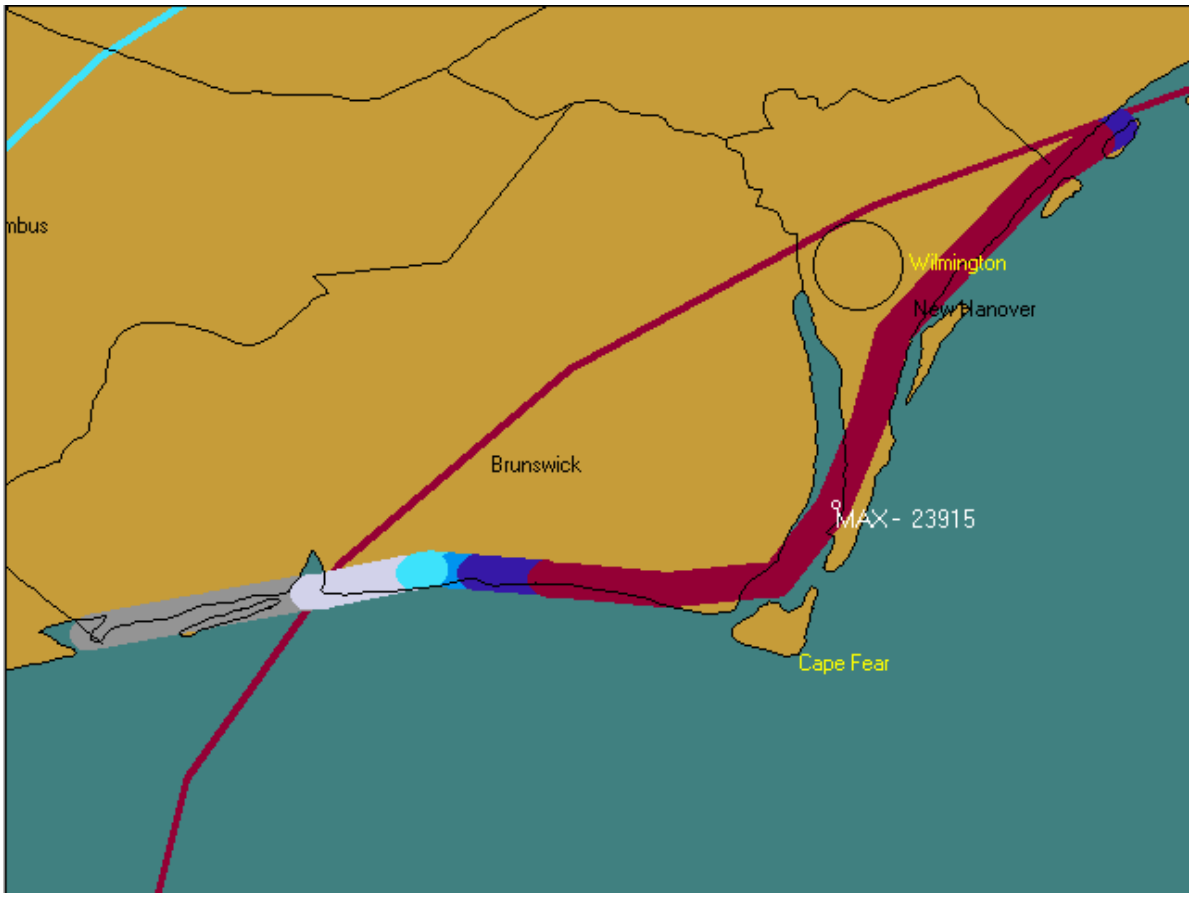


Figure 5

CUSTOM MAP MAKER

Note: While this original method of creating custom maps is still supported, we recommend that you create your custom maps in a different manner. Simply select the "save as custom map" menu function available on the Map Selection tab and the current image will be saved as a custom map. See page 131 for more information on this.

This option, accessible from the main program group or the tracking program, creates custom tracking charts (up to 5) that become integrated with the system. This feature is designed to compliment the predefined fixed tracking charts and allows the user to create tracking charts specific to their area. You may select the custom map area in one of 2 ways. Data Entry and Graphical. Please review APPENDIX J: on page 276 for more information on the various tracking charts available to the system

The data fields required to initiate the custom map creation are:

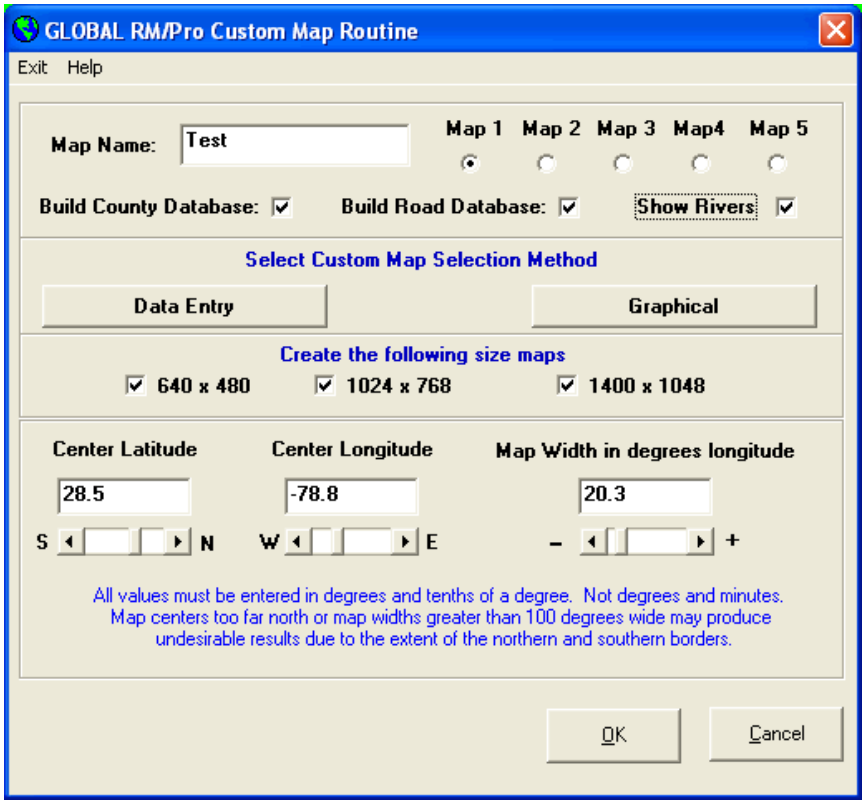
Map Name - The identifier for this map.

Map number - The number (1 to 5) of this map.

Create 640 X 480 Chart - If you primarily use the smaller scale 640x480 pixel charts then select this option.

Create 1024 X 768 Chart - If you primarily use the large 1024X768 pixel charts then select this option.

Create 1400 X 1048 Charts – If you primarily use the larger 1400x 1048 pixel charts then select this option.



Which size chart is used is partly determined by user selection in the general options and also by the desktop areas (pixels) being used by the user.

Center Latitude - The latitude of the center of the desired tracking chart. NOTE: North latitudes are positive while South latitudes are negative. Please enter in decimal degrees, i.e. 25.6, not degrees and minutes.

Center Longitude - The longitude of the center of the desired tracking chart. Western Longitudes, as in the US are negative and Eastern longitudes are positive. Please enter in decimal degrees, not degrees and minutes.

Map Width - The width of the desired tracking chart in degrees longitude. One degree of longitude is

typically 60 statute miles (varies by latitude). This value can range from .1 (6 miles) to 100 (6000 miles) degrees wide. It is advised that you use this feature for smaller scale charts that complement the large number of charts that are included with the system (Custom map example).

The optional data fields are:

Build County Database - If you are creating a custom map for the Atlantic basin, you may also build the database files that contain the county information for this specific chart.

Build Road Database - If you are creating a custom map for the Atlantic basin, you may also build the database files that contain the road information for this specific chart.

Show Rivers - If you are creating a custom map for the Atlantic basin, you may also show the major rivers.

NOTE: The selection of the road and county database creation add a significant amount of time to the creation process. It is advised that you don't select this option until you are satisfied that the custom chart area is what you desire.

If you select the **Graphical option** you will be presented with a chart as shown on page 45. Here you simply mark the area desired and select “next” from the menu bar. The center latitude and center longitude as well as the map width data will be transferred to the equivalent data fields. Selecting OK will initiate the creation process.

After the map has been created, you will be prompted to "Edit the chart". If you would like to do some color corrections to the tracking chart, select YES, otherwise select NO. This option is useful when certain portions of the chart like lakes and other bodies of water that were "cut off" by the edge of the chart did not turn blue and you would like to correct these before saving the chart. Click on the left mouse button will "paint" the selected area blue while clicking of the right mouse button will "paint" the area the "land color". A shift-left button combination while moving the cursor slowly will draw a line. This is useful if minor changes or corrections need to be made to the coastline, etc.

When done, select the menu option "Finish".

When the map is finished, the county and road databases will be created if they were selected.

After the chart is created, if the tracking portion of the system is active, the new custom map will become part of that system within several seconds. Also any open tracking chart windows will be closed. See page 46 for an example of a custom chart.

Graphical Selection Example

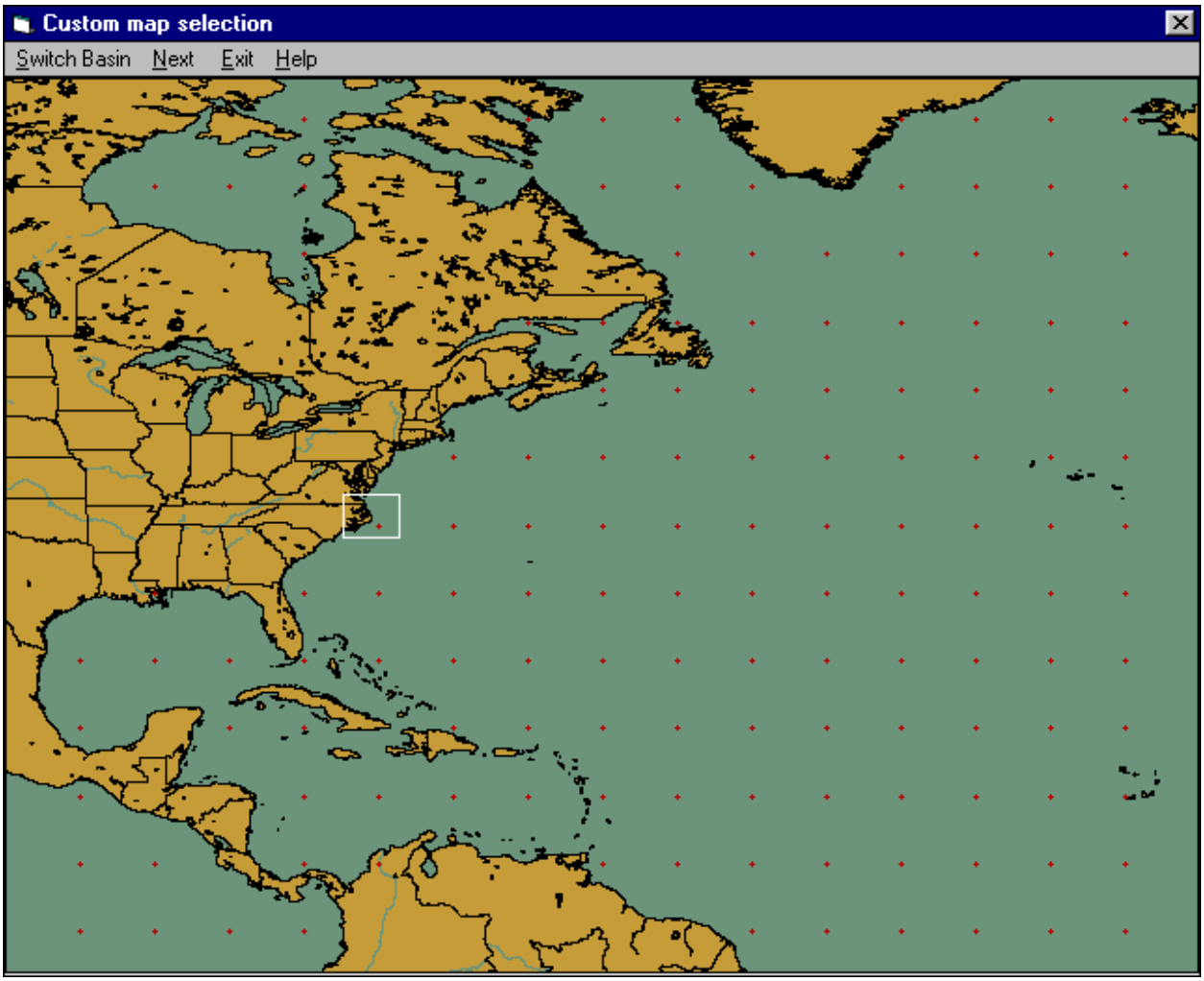


Figure 6

Custom Map Example

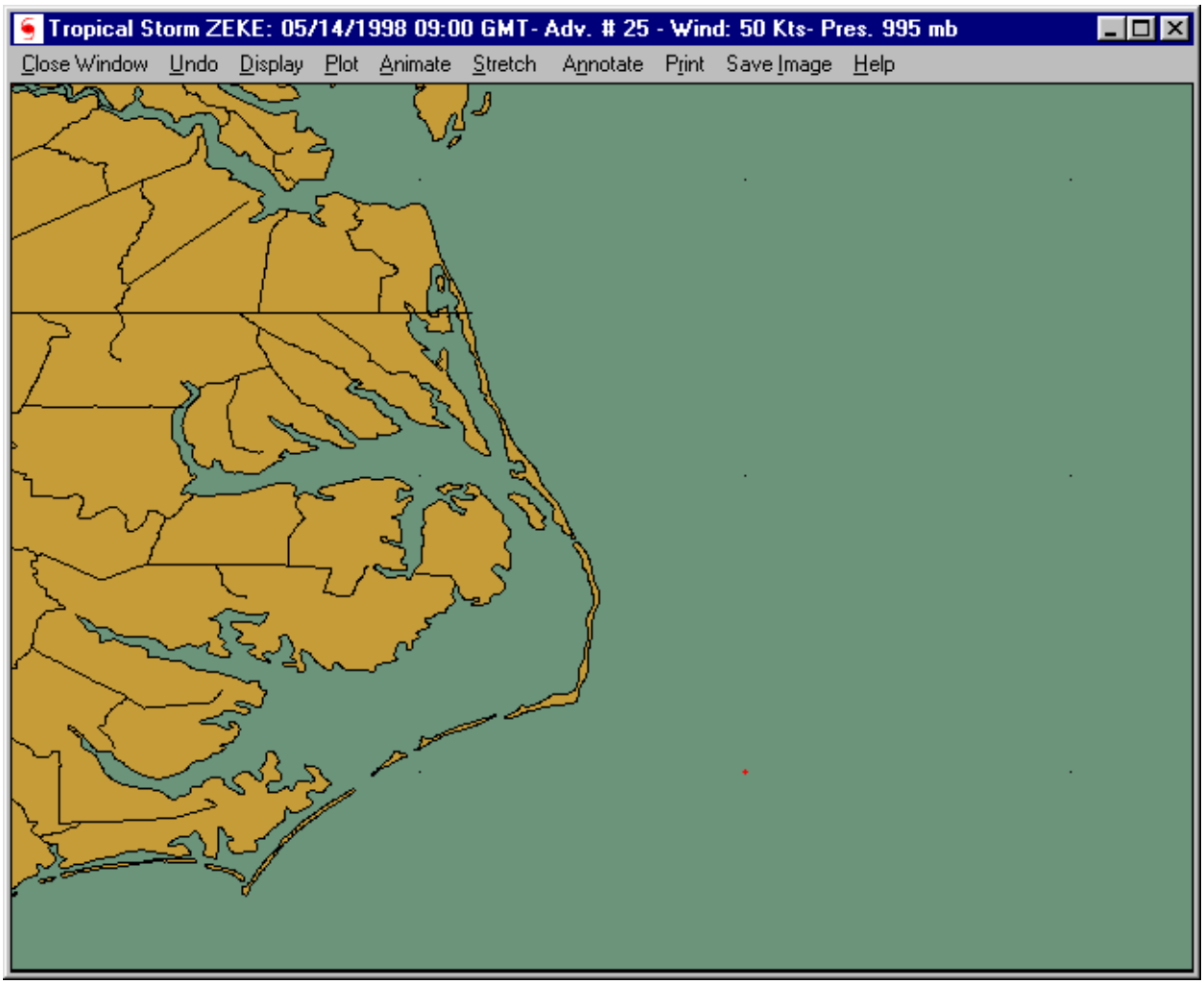
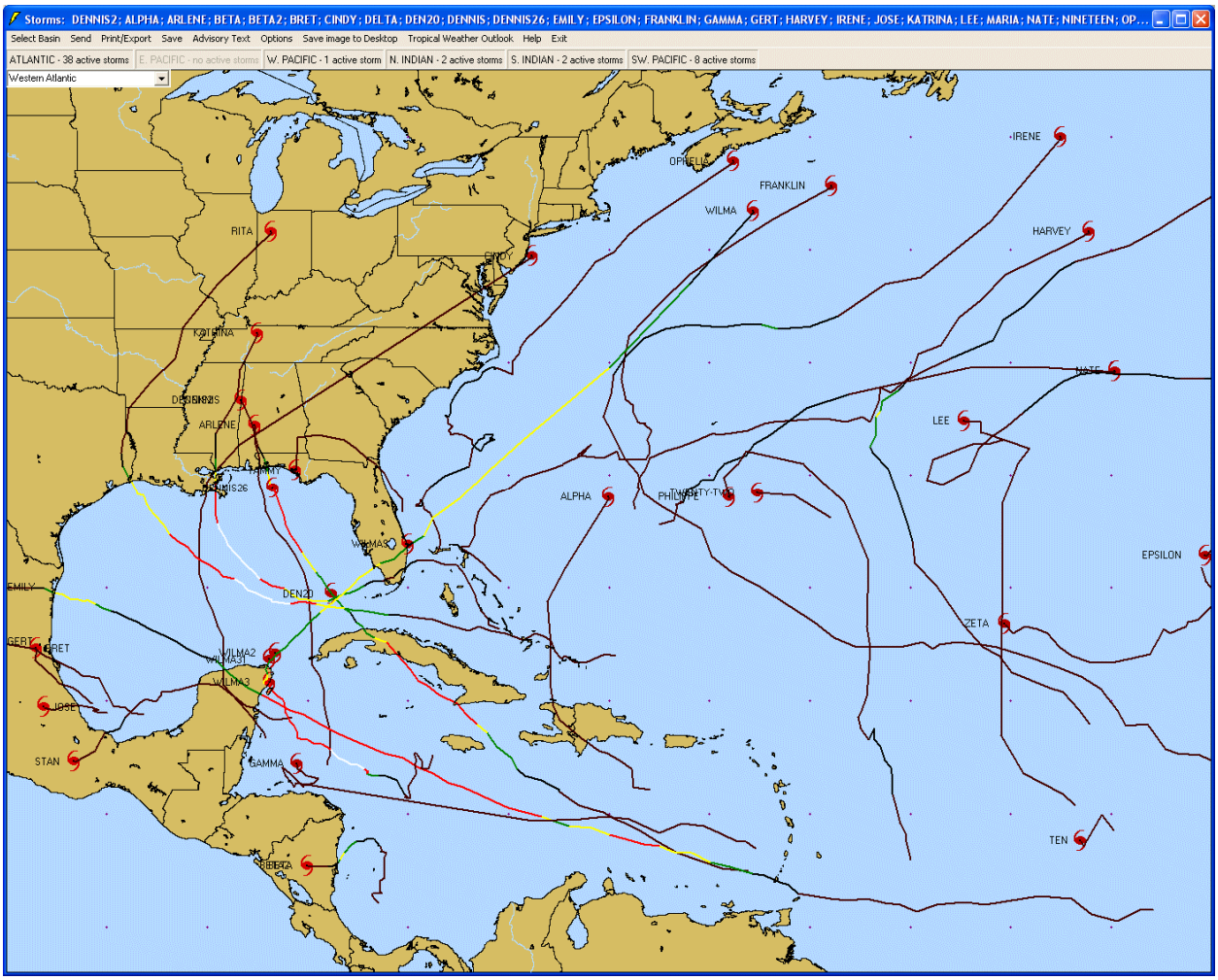

Tropical Storm ZEKE: 05/14/1998 09:00 GMT- Adv. # 25 - Wind: 50 Kts- Pres. 995 mb
Close Window Undo Display Plot Animate Stretch Annotate Print Save Image Help

Figure 7

QUICKPLOT



QuickPlot allows the user to find out exactly what is going on... FAST.

It quickly displays a single tracking chart image showing all of the "current" storms. From here, the user can opt to use the full capabilities of the entire HURRTRAK system with the simple click of the mouse. The key functions of Email sending, printing and saving of images is available allowing the user to easily share the information.

QuickPlot is typically selected from the desktop however it can also be initiated from within the main HURRTRAK program.

When using QuickPlot, the HURRTRAK ONLINE Timer program should be used to keep all of the databases current. See notes below.

The functions available from QuickPlot include:

Menu/Toolbar:

Basin – With Global systems this option allows the user to change to a different tropical cyclone basin

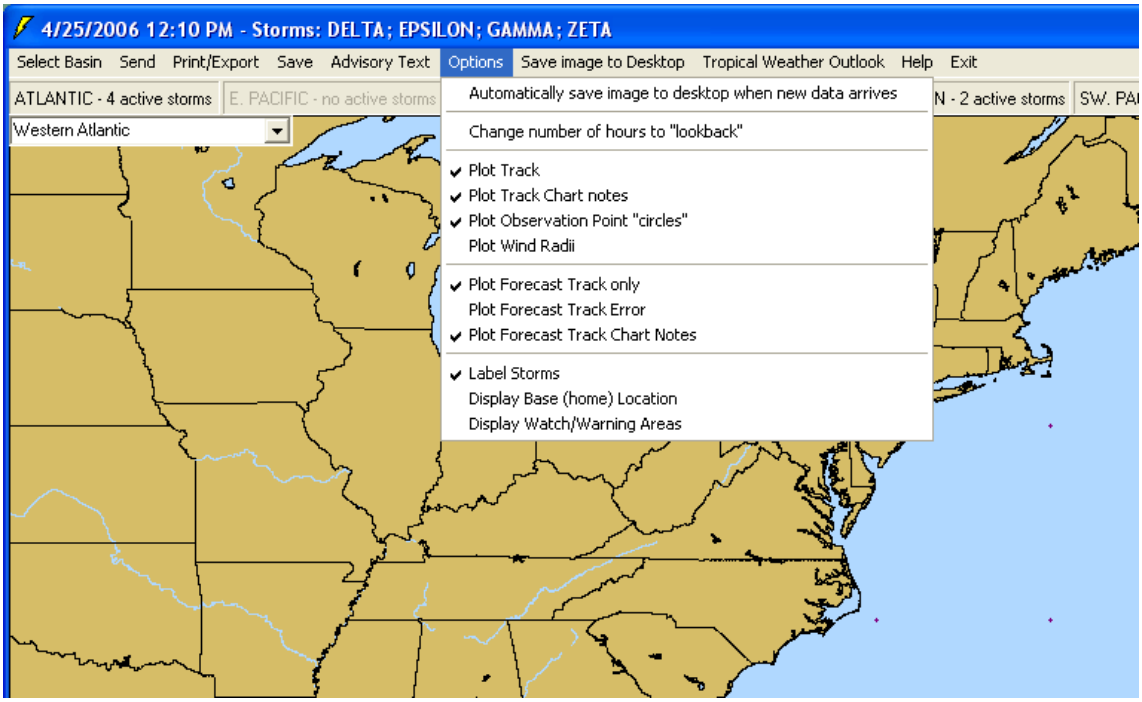
Send - Sends the current image via email image as shown on page 178.

Print/Export – Allows the user to print the current image in color, gray scale or B&W or export the image to Google-Earth. See APPENDIX NN. Google Earth Interface on page 287 for more information on Google Earth.

Save (image) – Saves the current image to the clipboard or file (color or B&W).

Advisory Text – Instructs the user to right click on a storm to display its NHC advisory text.

Options – This is most important function in the system. It allows the user to specify what to display on the tracking chart.



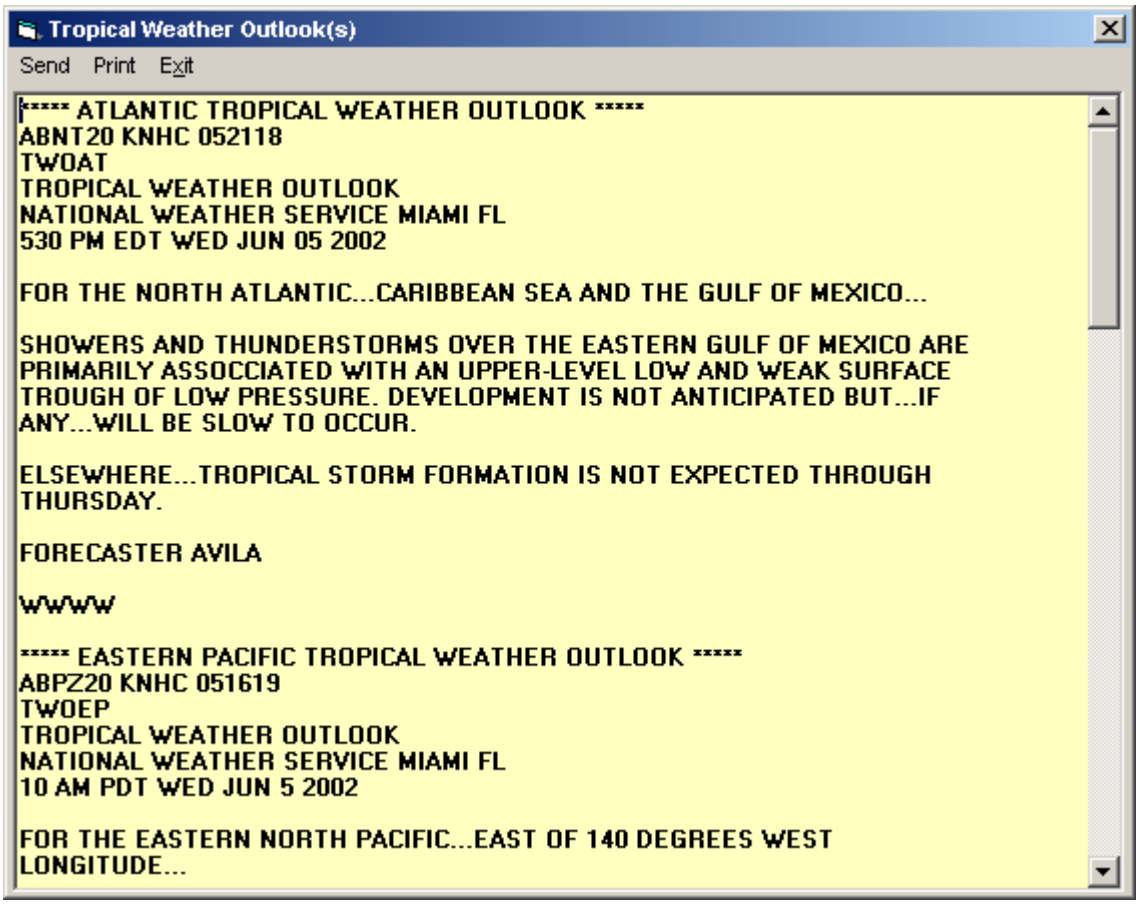
All of the options are on/off type and include:

- **Automatically save image to desktop when new data arrives:** When this option is selected, the current image is saved to the users Windows desktop when new information has been plotted.
- **Change number of hours to lookback**: This determines the storms that will be displayed based on their age. For example if this value is set at 48 hours, only storm that are less than 48 hours old will be shown. We suggest keeping this value at 24-48 hours.
- **Plot Track:** If selected the actual track will be shown
- **Plot Track Chart Notes:** If selected the chart notes are indicated.
- **Plot Observation Point "circles".** If selected each of the storm's observation points are plotted with circles. If showing an entire season or multiple storms, it is sometimes best to de-select this option.
- **Plot Wind Radii:** If this option is selected the storm's latest position is indicated with the traditional wind areas. If not, then a storm icon is shown instead.
- **Plot Forecast Track only**: If selected, the storm's forecast track is shown
- **Plot Forecast Track Error:** If this option is "on" then the forecast track along with average error area is plotted
- **Label Storms:** This option determines if the storm name is shown next to the storm. The font used is the same as the annotation font set in the main system

- **Display Base (home) Location:** Determines if the system's base location is plotted on the map. The base location is set in the main system's user preferences.
- **Display Watch/Warning Areas:** If selected, all current watch and warning areas are shown.

Save Image to Desktop – This will immediately save the current image to the user's Windows desktop.

Tropical Weather Outlook – This option will display a text box which displays the latest tropical weather outlook issued from the National Hurricane Center. See image below.



From here, the user can then send (email) and/or print the tropical weather outlook text

HELP – Displays help text for QuickPlot

Exit – Exits the QuickPlot system

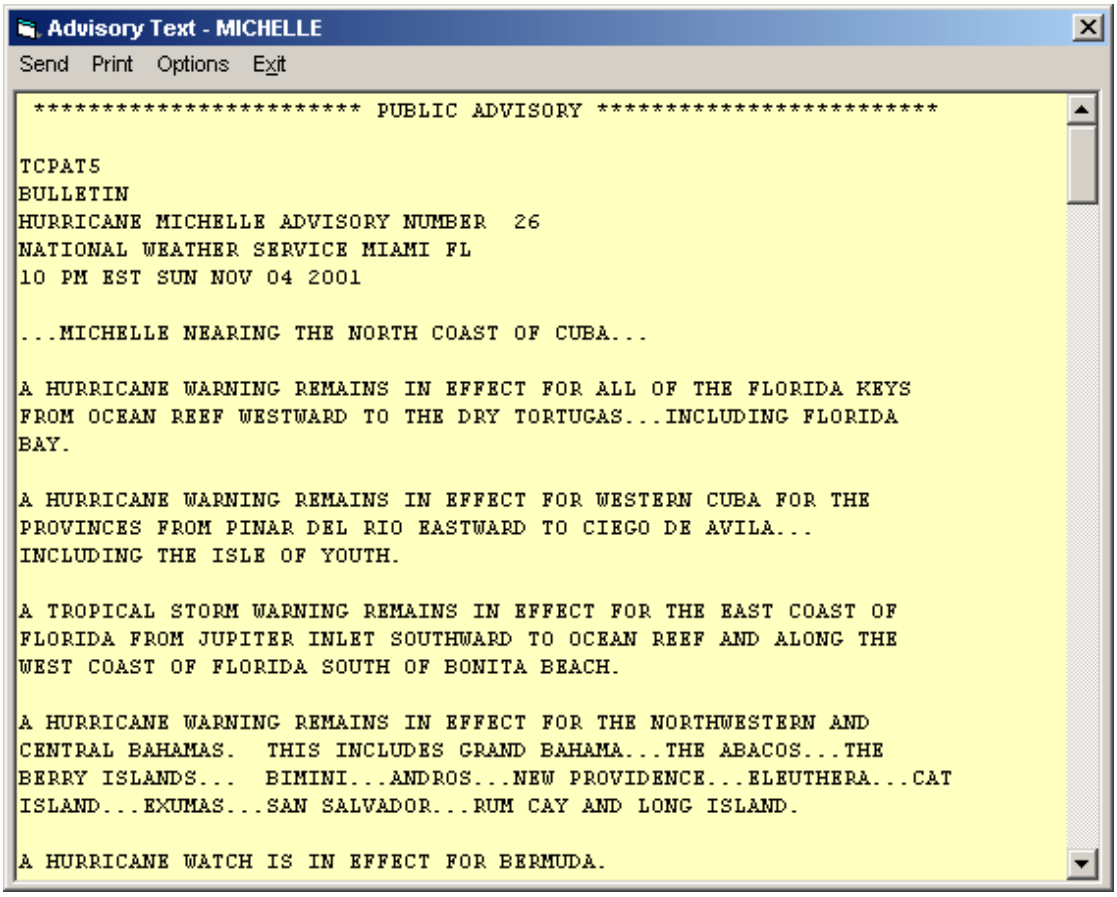
Other Functions:

Map Selection – The user can select the best map to use via the map drop down list in the upper left hand corner of the current image. Only standard ("fixed") tracking charts are available.

Double Click (near a storm) – If the user performs a mouse "double click" near a storm, QuickPlot will close and automatically load the main Hurrtrak system with that storm loaded. This allows the user to easily access the advanced features of the main system.

Right Click (away from the storm) – If the user performs a mouse "right click" away from a storm position, the option menu will display. This allows for quick option changes without having to navigate to the menu.

Right Click (near a storm) – If the user performs a mouse "right click" near a storm position, the advisory text for that storm will display in a text box as shown below.

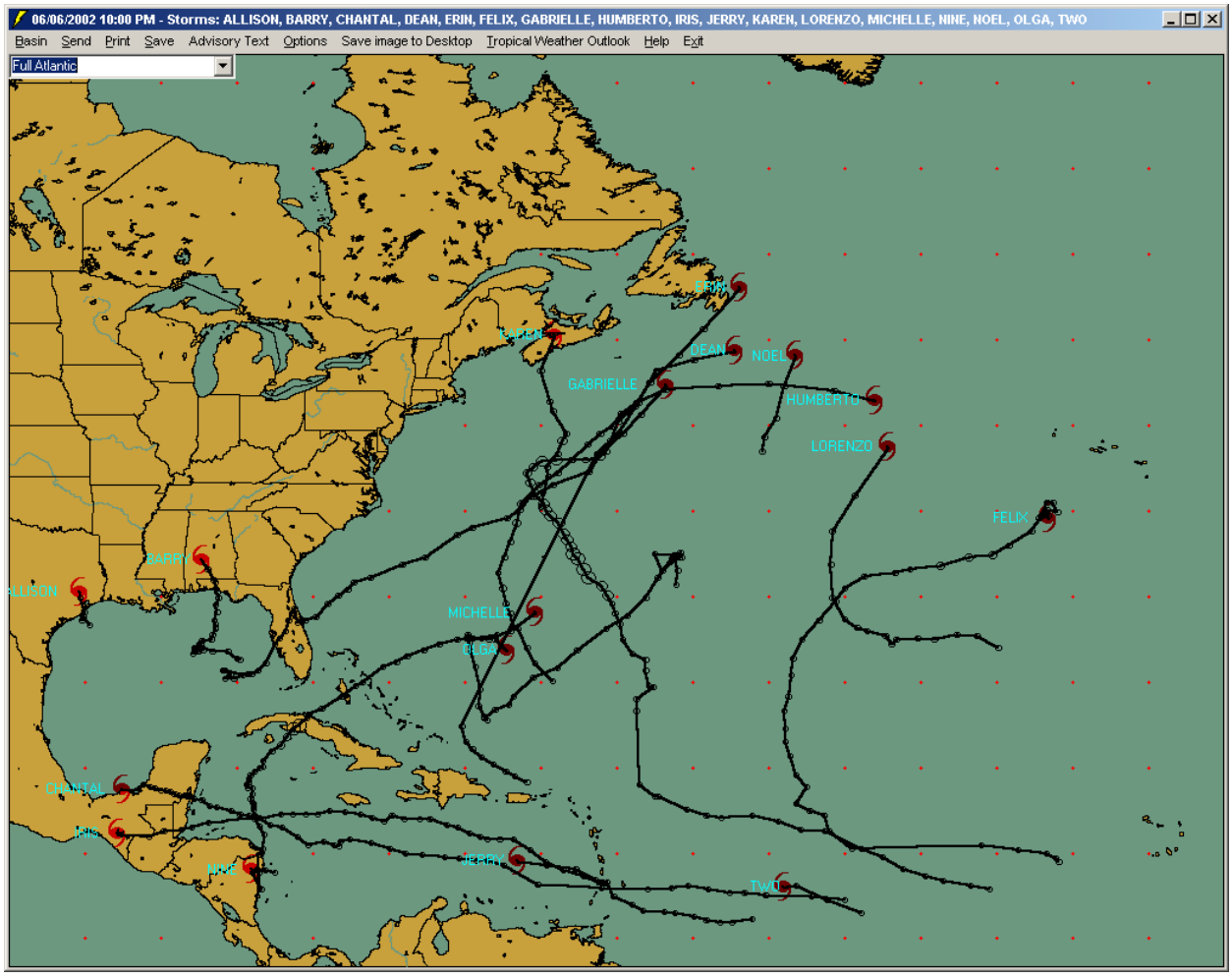


From here, the user can then send (email) and/or print the tropical weather outlook text. Also the user has the option of specifying which advisories they would typically like to see.

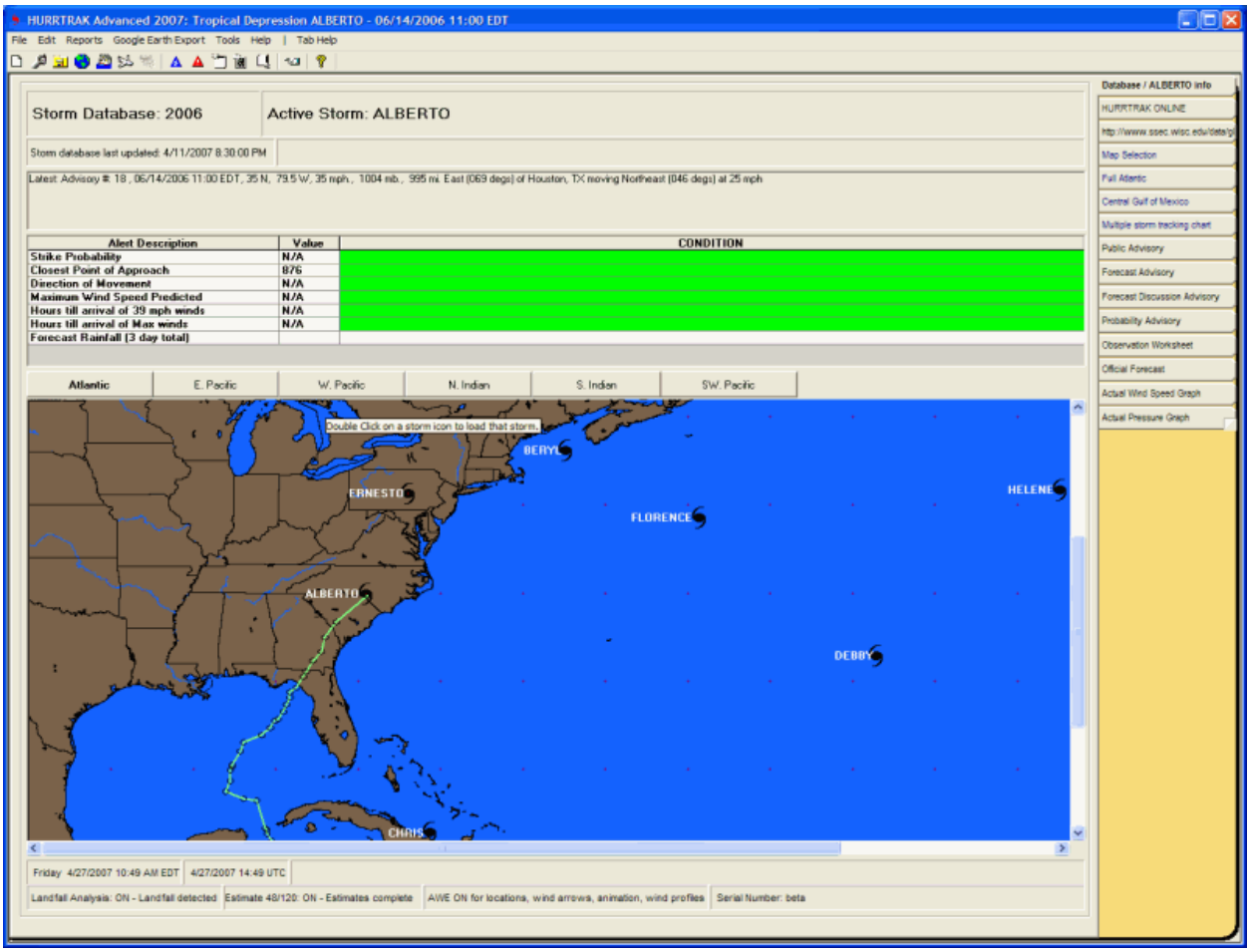
QuickPlot Notes:

1. All of the user options and current tracking map set during a session are saved. Subsequent sessions will start with the saved preferences.
2. In order to gain the most benefit from QuickPlot, the user should specify that the HURRTRAK ONLINE timer program be started with Windows startup. This can be done in the Hurrtrak Online user preferences as described on page 108.
3. QuickPlot is an easy way to show the entire hurricane season. At the end of the season (or during), simple set the "number of hours to look back" to a large number… like 5000. This will force the system to show all of the storms and by selecting certain options, you can create an image like the one below.

All storms in the 2001 hurricane season



HURRICANE TRACKING



This is the "heart" of the system. It is the Hurricane / Tropical Cyclone Tracking & Analysis component. It is designed to track current storms and analyze their past and forecast movement.

The "Tab Interface" places all of the storm graphics, text and report data on individual tabs. Many of the tabs (like advisory data, wind speed graphs, etc.) are automatically created for the user, others (reports, special graphics,…) … are created by a user action… while there are additional tabs that will "create/update" themselves when the system is started or the data is updated via Hurrtrak Online. See APPENDIX S: User Interface Considerations on page 309 for more information.

We will then review the system in 2 sections. First, we will cover all of the system's menu/toolbar functions in detail. In many cases these functions will create output that appears on a tab. Next, we will describe every possible "information tab" and detail the options available.

Let's first examine the Standard (always there) Menu Options.

Standard Menu Commands:

FILE
Database
New Storm
Open Storm
Delete (storm name)
Rename (storm name)
Copy Storm
Export Wind Data
Export to Shape File
Rainfall Forecast
QuickPlot
System Setup
Database Backup/Restore
Custom Map Maker
Send Email Message
SloshView
H*Wind Display
Hurricane Reconnaissance
Hurricane History
Model Plot
Inland Wind Model
Advisory Ticker
Print Setup
Display Log
Exit

EDIT
User Diary
Observations
Official Forecast
Model Forecast
Climatology Forecast
NHC Advisories
Watches & Warnings

REPORTS
Process Alert Email
Process Summary Report
Forecast Location Strike Probabilities
Forecast Location Wind Probabilities
Forecast Location Wind Profile
Forecast County Wind Profile
Forecast Zip Code Wind Profile
Forecast Damage Estimate Report
Forecast Map Select Location Wind Profile
Actual Location Wind Profile
Actual County Wind Profile
Actual Zip Code Wind Profile
Actual Map Select Location Wind Profile
Actual Damage Estimate Report

GOOGLE EARTH EXPORT
Current Storm Track & Observations
Current Wind Radii (poly)
Current Wind Field (points)
Current Watch and Warning area
Official Forecast path (track and points)
Official Forecast Average Error
Official Forecast Wind Radii
Official Forecast Wind Field Grid
Climate Forecast (latest)
Forecast Model Plots
Rainfall Forecast (latest)
Animation
Wind Band
Report (Impact Summary)
All selected outputs

TOOLS
Setup "What if" scenario
Post Storm Analysis
Setup Summary Report
User Preferences

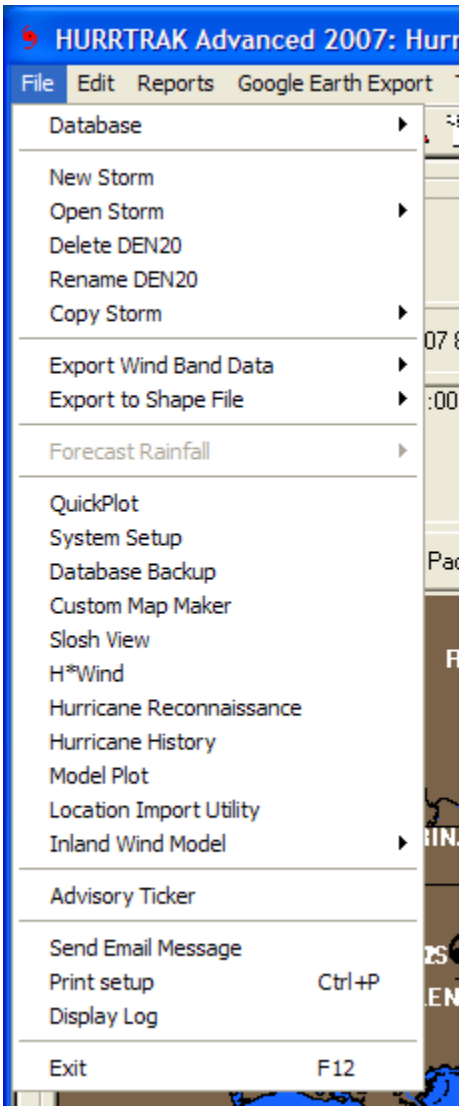
HELP

Information Tabs:

The HURRTRAK system information is presented using a "tab style" interface. This allows the user to easily and quickly create and view information. The tabs available on the system are:

General Information Tab
HURRTRAK ONLINE Tab
Internet Tab
Tracking Chart Select Tab
Variable Tracking Chart
Fixed/Favorite Tracking
Wind Band Analysis
Strike/Wind Probability Analysis
Forecast Rainfall Analysis
Forecast Rainfall Thematic
Animation
Forecast Position
3D Wind Surface
Latest Tropical Weather Outlook
Public Advisory
Forecast Advisory
Forecast Discussion
Strike Probabilities
User Comments (Diary)
Observation Worksheet Table
Official Forecast Table
Climate Forecast Table
Watch and Warning Table
Wind Speed Graph
Central Pressure Graph
Location Summary Report
County Summary Report
Zip Code Summary Report
Detailed Location/County/Zip Hourly Report
County/Zip Impact Analysis Report
Strike/Wind Probability Report
Detailed Location/County/Zip Wind Graph
Detailed Location/County/Zip Flood Index Graph
County Wind Thematic

FILE MENU OPTIONS



Database

This option allows you to easily change add or change storm databases.

New Storm

This option is rarely used because with a Hurrtrak Online subscription, new storm data is automatically added to the storm database. If you do want to create a storm, this option will prompt your for a storm name (up to 12 characters) and then take you to a data entry screen.

Open Storm

This option allows you to open an existing storm in the current storm database.

Delete Storm

This option deletes the current storm and all its associated data.

Rename Storm

This option renames the current storm. This is useful when a tropical depression becomes a named storm.

Copy Storm

This option allows the user to copy the current storm to the same or different database. This may be useful when creating an "exercise" storm where you would like to use the current storm as its "base".

Export Wind Data

This option allows the user to export the actual, forecast or both actual and forecast wind band data into a ArcInfo™ GIS importable format. See APPENDIX L. GIS Wind Band Export on page 282 for more information.

Export to Shape file

This option allows the user to export various storm, actual and forecast, parameters to ESRI ™ Shape File Format. See page APPENDIX T7: Shape File Export on page 325 for more information.

Forecast Rainfall

This option displays forecast rainfall on a county thematic chart for the next 3 days. You can display either each 24 hours period or a cumulative 3 day total. This option IS available even if no storm is loaded. You are required to either turn automated downloading on or manually select “retrieve forecast rainfall data” via the Hurrtrak Online tab.

QuickPlot

This option takes the user to the QuickPlot function.

System Setup

This option takes the user to the system setup function. See page 11 for more information.

Database Backup/Restore

This option takes the user to the database maintenance portion of the system. See page 16 for more information.

Custom Map Maker

This option takes the user to the custom map creation function. See page 43 for more information.

SloshView

This option takes the user to the Slosh View program. See page 214 for more information.

H*Wind

This option takes the user to the H*wind display program. See page 231 for more information.

Hurricane Reconnaissance

This option takes the user to the Hurricane Reconnaissance program. See page 231 for more details.

Hurricane History

This option takes the user to the Hurricane History program. See page 196 for more information.

Model Plot

This option takes the user to the Model Plot program. See page 239 for more information

Location Import Utility

This option takes the user to the Location Import program. It will force the Hurrtrak Tracking program to exit. See page 244 for more information.

Inland Wind Model

This option takes the user to the Inland Wind Model function. See page 247 for more information.

Advisory Ticker

This option rolls the text of the Public Advisory across the bottom of the screen.

Send Email Message

This option allows the user to send a general email message not associated to a particular storm.

Print Setup

This option allows the user to set up the printer for printing. Many print options throughout the system allow the user to setup before printing initiates.

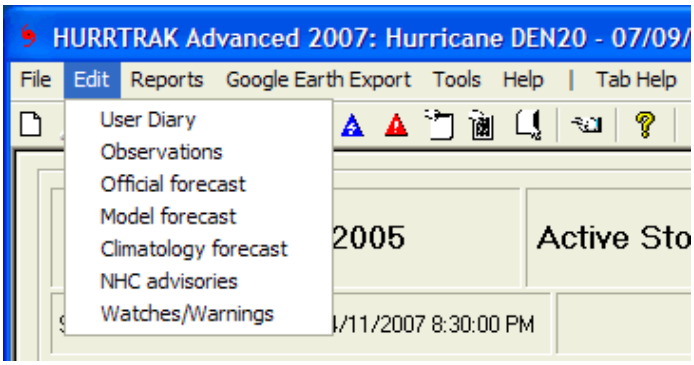
Display log

This option allows the user to view system log messages. They are sometimes useful when debugging automatic operations.

Exit

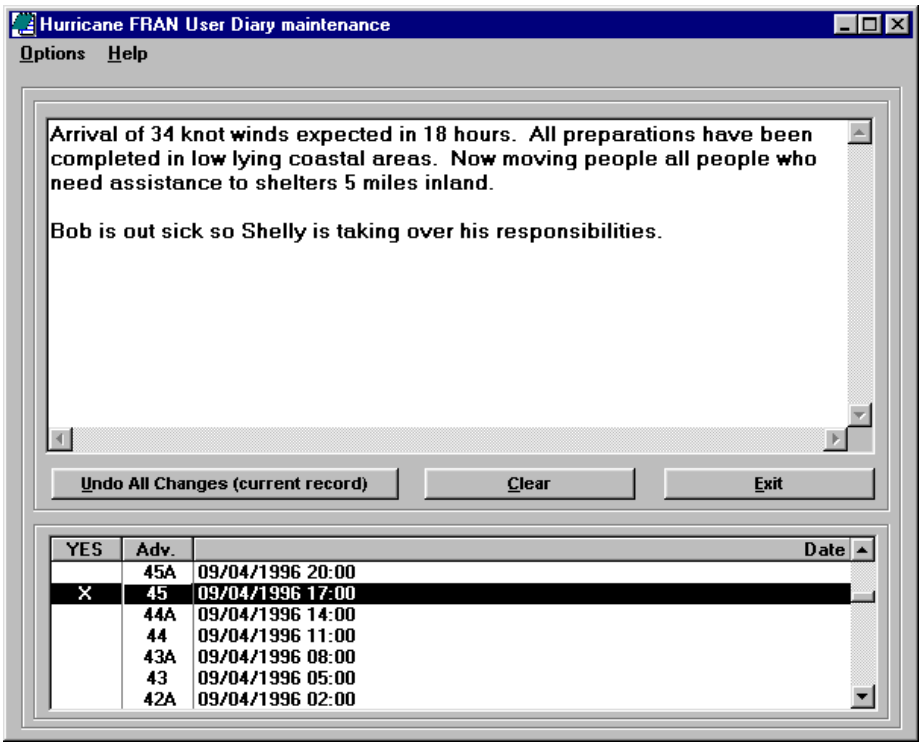
This option exits the system. The current storm will automatically be reloaded when it is started again.

EDIT (DATA MAINTENANCE)



User Diary Maintenance

This option allows the user to enter free form comments related to action taken at this advisory.



This option allows the user to enter free form comments related to action taken at this advisory.

Options Include:

Options - Allows the user to alter the font
Help - Displays the help text

Other commands are Undo all changes, Clear and Exit.

In addition, typical Windows right click options are available (cut, copy, paste)

Observation Maintenance

This option is not typically used as Hurrtrak Online updates all of the storm observation information. It does however allow the user to enter, change or delete any of the storm's observation data. The observation data shown in the data field boxes is determined by the highlighted observation row at the bottom of the window.

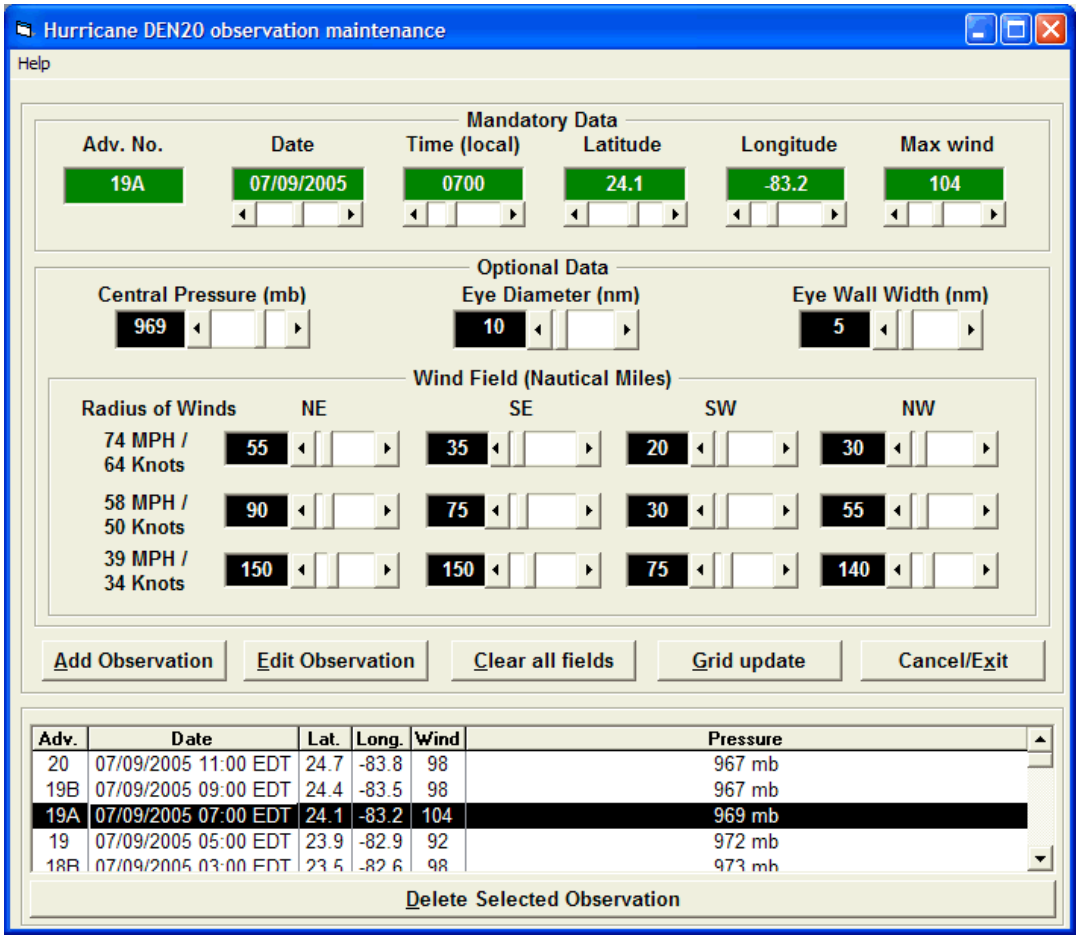


Figure 8

To add new observation data, fill in all of the required data and whatever portion of the optional data you wish, then select **ADD Observation** If you are adding data to an existing storm set, the latest observation information will be pre-loaded into the data field boxes, making for easier data entry.

To edit a prior observation, select that observation row at the bottom of the window, make the necessary changes, then select **EDIT Observation**

To **clear all fields**, select that option.

To perform a **GRID table update**, similar to a spreadsheet, select GRID UPDATE. All changes made in grid mode will be updated into the storm database. Note: No data edit checks are done in GRID mode so be very careful.

Select **CANCEL/EXIT** to exit out of this update function.

To delete a prior observation, select that observation at the bottom of the window and then select DELETE OBSERVATION. Remember deleting an observation will also delete all of its associated data. This includes the official forecast, climatology forecast and advisory information for that observation.

There are 2 "levels" of wind field data entry, standard and advanced. This is set in the user preferences option. While the advanced is more complex it allows you to do a more detailed analysis of the storm's wind field than the standard.

The data entry window contain the following data

Adv. No. - The advisory number of the observation

Date - The date of the observation either in UTC or local. The date/time preference is set in the system setup portion of the system.

Time - The time of the observation either in UTC or local time. The date/time preference is set in the system setup portion of the system. (HHMM)

Latitude - The latitude position of the center of the storm entered in decimal degrees. Northern Latitudes are positive.

Longitude - The longitude position of the center of the storm entered in decimal degrees. WESTERN LONGITUDES ARE ENTERED AS A NEGATIVE.

Max wind - The maximum wind speed of the storm. The unit used (MPH or KTS) is set within the UOM options function.

Central Pressure - The central pressure of the storm. Pressure must be entered in millibars.

Eye Diameter - The diameter of the eye (nautical miles). The eye is assumed to be closed and circular. Default values are 18 nautical miles. If there is no eye, a zero should be entered in this field.

Eye Wall Width - The width of the eye wall (nautical miles). The default value is 9 nautical miles. Valid range 1 - 100 miles. If there is no eye, a zero should be entered in this field.

Radius of 74 MPH / 64 Knot Winds (NE Sector) - The distance (nautical miles) that hurricane force winds extend from the center of the storm on the Northeast side of the storm.

Radius of 74 MPH / 64 Knot Winds (SE Sector) - The distance (nautical miles) that hurricane force winds extend from the center of the storm on the Southeast side of the storm.

Radius of 74 MPH / 64 Knot Winds (SW Sector) - The distance (nautical miles) that hurricane force winds extend from the center of the storm on the Southwest side of the storm.

Radius of 74 MPH / 64 Knot Winds (NW Sector) - The distance (nautical miles) that hurricane force winds extend from the center of the storm on the Northwest side of the storm.

Radius of 58 MPH / 50 Knot Winds (NE Sector) - The distance (nautical miles) that 50 knot winds extend from the center of the storm on the Northeast side of the storm.

Radius of 58 MPH / 50 Knot Winds (SE Sector) - The distance (nautical miles) that 50 knot winds extend from the center of the storm on the Southeast side of the storm.

Radius of 58 MPH / 50 Knot Winds (SW Sector) - The distance (nautical miles) that 50 knot winds extend from the center of the storm on the Southwest side of the storm.

Radius of 58 MPH / 50 Knot Winds (NW Sector) - The distance (nautical miles) that 50 knot winds extend from the center of the storm on the Northwest side of the storm.

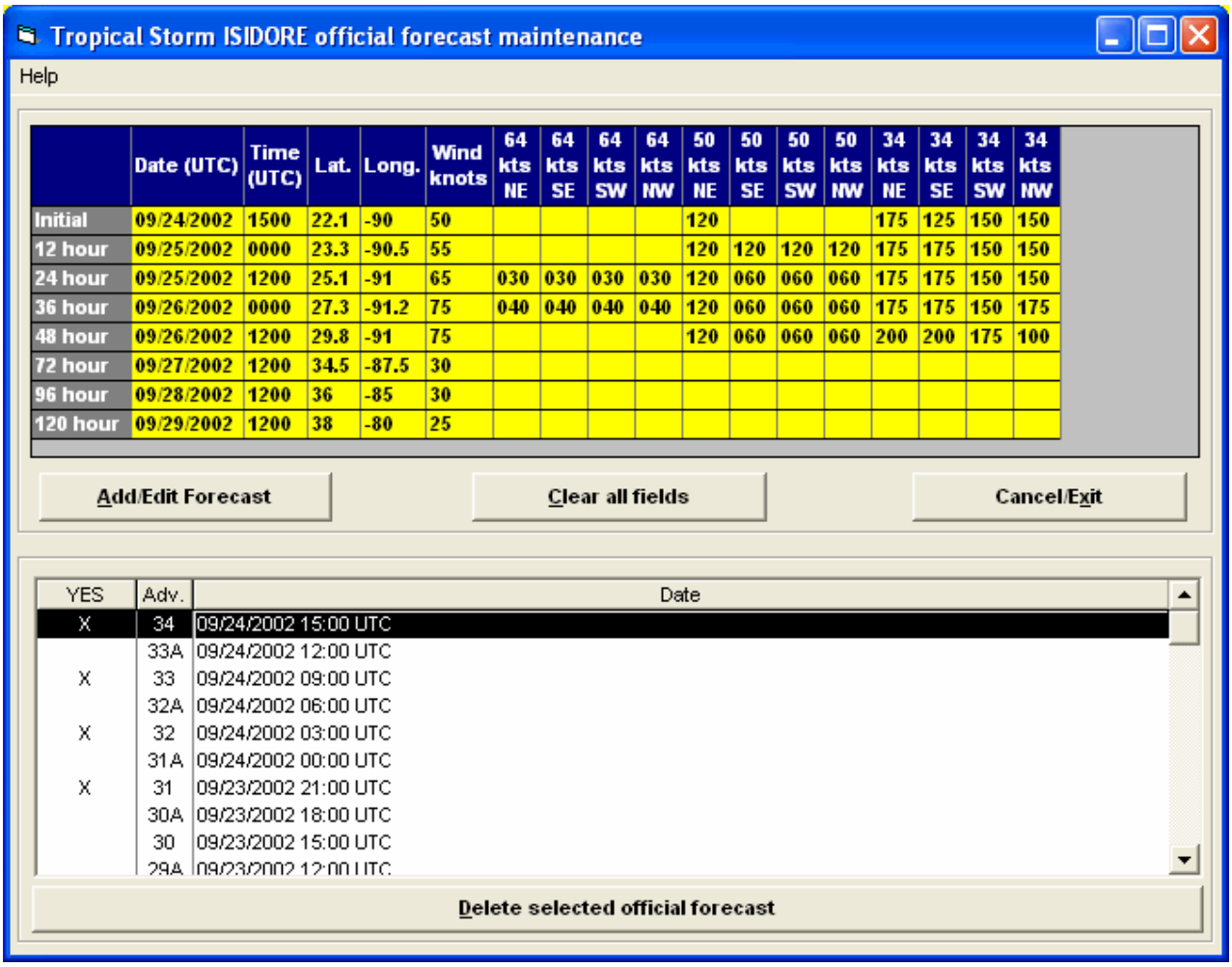
Radius of 39 MPH / 34 Knot Winds (NE Sector) - The distance (nautical miles) that 34 knot winds extend from the center of the storm on the Northeast side of the storm.

Radius of 39 MPH / 34 Knot Winds (SE Sector) - The distance (nautical miles) that 34 knot winds extend from the center of the storm on the Southeast side of the storm.

Radius of 39 MPH / 34 Knot Winds (SW Sector) - The distance (nautical miles) that 34 knot winds extend from the center of the storm on the Southwest side of the storm.

Radius of 39 MPH / 34 Knot Winds (NW Sector) - The distance (nautical miles) that 34 knot winds extend from the center of the storm on the Northwest side of the storm.

Official Forecast Maintenance



	Date (UTC)	Time (UTC)	Lat.	Long.	Wind knots	64 kts NE	64 kts SE	64 kts SW	64 kts NW	50 kts NE	50 kts SE	50 kts SW	50 kts NW	34 kts NE	34 kts SE	34 kts SW	34 kts NW
Initial	09/24/2002	1500	22.1	-90	50					120				175	125	150	150
12 hour	09/25/2002	0000	23.3	-90.5	55					120	120	120	120	175	175	150	150
24 hour	09/25/2002	1200	25.1	-91	65	030	030	030	030	120	060	060	060	175	175	150	150
36 hour	09/26/2002	0000	27.3	-91.2	75	040	040	040	040	120	060	060	060	175	175	150	175
48 hour	09/26/2002	1200	29.8	-91	75					120	060	060	060	200	200	175	100
72 hour	09/27/2002	1200	34.5	-87.5	30												
96 hour	09/28/2002	1200	36	-85	30												
120 hour	09/29/2002	1200	38	-80	25												

YES	Adv.	Date
X	34	09/24/2002 15:00 UTC
	33A	09/24/2002 12:00 UTC
X	33	09/24/2002 09:00 UTC
	32A	09/24/2002 06:00 UTC
X	32	09/24/2002 03:00 UTC
	31A	09/24/2002 00:00 UTC
X	31	09/23/2002 21:00 UTC
	30A	09/23/2002 18:00 UTC
	30	09/23/2002 15:00 UTC
	29A	09/23/2002 12:00 UTC

This option is seldom used as Hurrtrak Online downloads all of the storm forecast information. However it does allow the user to enter, change or delete any of the storm's official forecast data. The forecast data shown in the data table is determined by the highlighted forecast row at the bottom of the window.

To **Add a new forecast**, enter the forecast advisory information and select Add / Edit forecast.

To **Edit an existing forecast**, change the forecast information and select Add / Edit forecast.

To **Delete a forecast**, highlight that row in the table at the end of the window and select Delete forecast.

The data fields for each forecast position from initial to 120 hours:

Date - Forecast date (UTC) entered as MM/DD/YY

Time - Forecast time (UTC) entered as HHMM.

Latitude - Forecast latitude. North latitudes are positive.

Longitude - Forecast longitude. West longitudes are negative.

Max Wind Speed - Forecast maximum wind speed (knots).

Area of 64 knot winds - Forecast radius of 64 knot (Hurricane force) winds provided by quadrant (NE, SE, SW, NW). All distances are in nautical miles.

Area of 50 knot winds - Forecast radius of 50 knot winds provided by quadrant (NE, SE, SW, NW). All distances are in nautical miles.

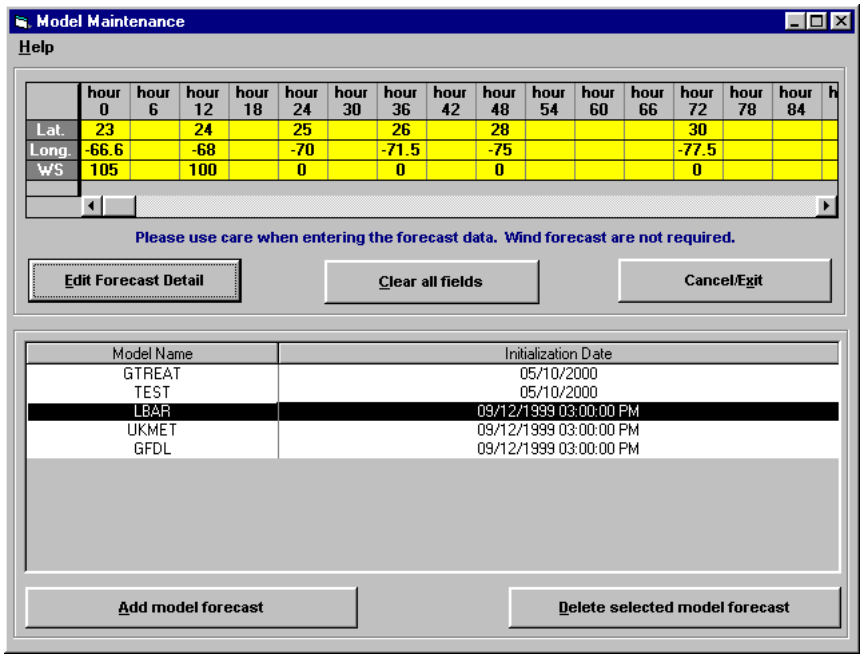
Area of 34 knot winds - Forecast radius of 34 knot (tropical storm force) winds provided by quadrant (NE, SE, SW, NW). All distances are in nautical miles.

Options Available:

Help - Displays this help text.

Clear all fields - Clears off of the forecast data fields.

Hurricane Model Forecast



HURRTRAK ONLINE imports many of the hurricane model forecast data into the system. This option only needs to be used if the user wants to include other forecast model information. The forecast data shown in the data table is determined by the highlighted forecast row at the bottom of the window.

To **Add a new forecast**, select Add Model forecast. You will be prompted for the name of the model, initial Data/Time (ENTERED IN UTC TIME ONLY), and initial latitude and longitude. After entering this data a forecast record will be shown on the grid. It will need to be edited to include forecast information.

To **Edit an existing forecast**, change the forecast information and select Edit forecast detail.

To **Delete a forecast**, highlight that row in the table at the bottom and select Delete Selected Model Forecast.

The data fields for each forecast position from initial to 120 hours (not all columns need to be entered):

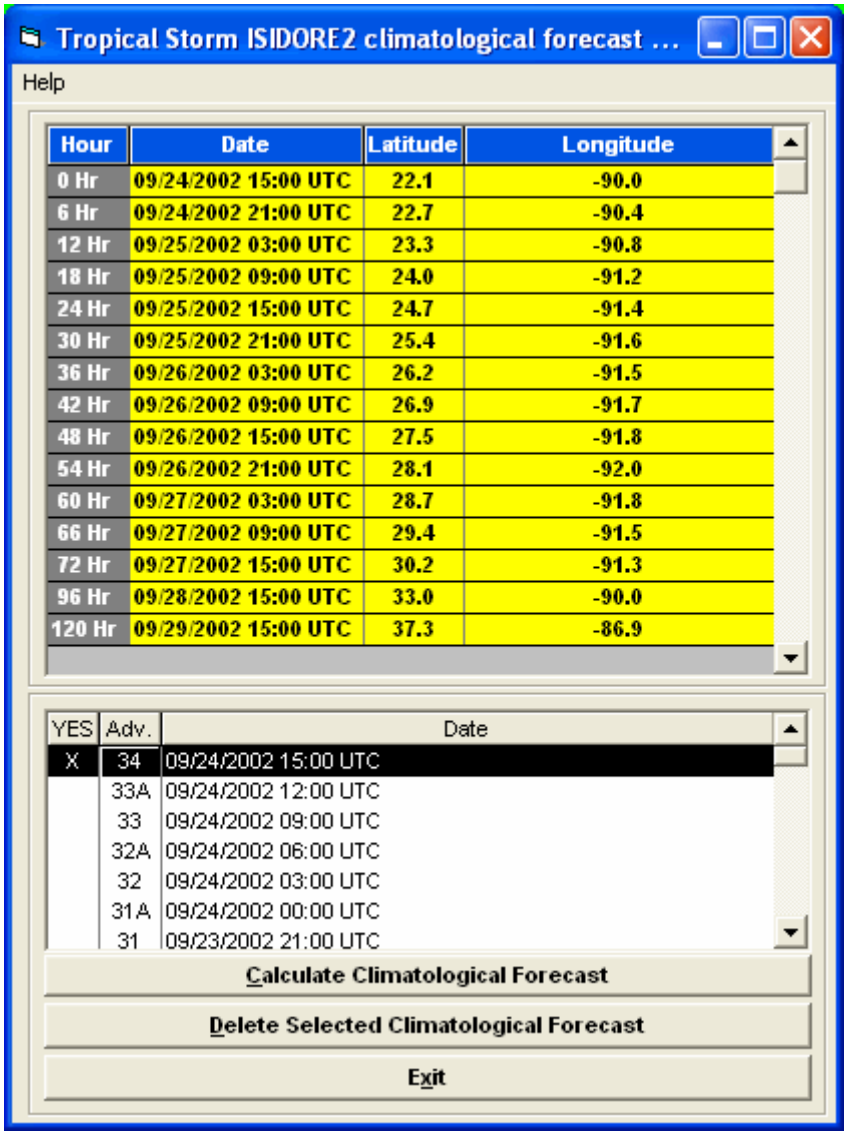
Latitude - Forecast latitude. North latitudes are positive.

Longitude - Forecast longitude. West longitudes are negative.

Max Wind Speed - Forecast maximum wind speed (knots). This data is usually not included in the hurricane model forecast.

Options Available:
Help - Displays this help text.
Clear all fields - Clears all of the forecast data fields.

Climatology Forecast Maintenance



This option allows the user to calculate or delete any of the storm's calculated climatology forecast data. The forecast data shown in the data table is determined by the highlighted forecast row at the bottom of the window.

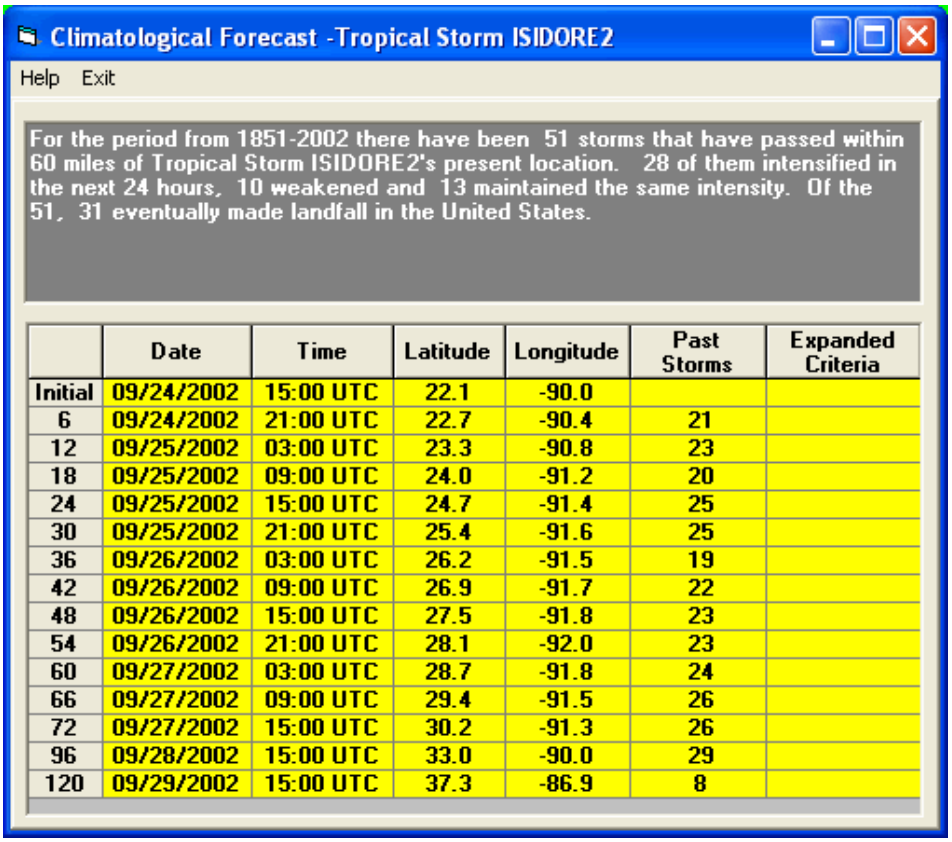
To **Calculate a new forecast**, select the advisories row at the bottom of the windows and select Calculate Climatological Forecast. This will display a new window, as shown on page 66, that displays the forecast calculations along with the option to save. When the forecast is saved, it will then appear as a new entry in this windows table.

To **Delete a forecast**, highlight that row in the table at the end of the window and select Delete Climatological Forecast.

Note: This forecast can also be calculated interactively while performing the PLOT - Climatology Forecast function by selecting the **"Latest"** option.

Calculate Climatological Forecast

The calculate Climatological Forecast option analyzes the storm's current movement and all "similar" storms in the historical database to compute a blended climatological forecast track. The historical database is analyzed for every 6 hour forecast position to determine the next forecast position. This is iterated (repeated) 14 times to compute a 120 hour forecast track. When the forecast calculation is complete, forecast comments are displayed along with forecast positions, number of similar storms found and whether the comparison criteria needed to be expanded to include a larger sample of storms.



	Date	Time	Latitude	Longitude	Past Storms	Expanded Criteria
Initial	09/24/2002	15:00 UTC	22.1	-90.0		
6	09/24/2002	21:00 UTC	22.7	-90.4	21	
12	09/25/2002	03:00 UTC	23.3	-90.8	23	
18	09/25/2002	09:00 UTC	24.0	-91.2	20	
24	09/25/2002	15:00 UTC	24.7	-91.4	25	
30	09/25/2002	21:00 UTC	25.4	-91.6	25	
36	09/26/2002	03:00 UTC	26.2	-91.5	19	
42	09/26/2002	09:00 UTC	26.9	-91.7	22	
48	09/26/2002	15:00 UTC	27.5	-91.8	23	
54	09/26/2002	21:00 UTC	28.1	-92.0	23	
60	09/27/2002	03:00 UTC	28.7	-91.8	24	
66	09/27/2002	09:00 UTC	29.4	-91.5	26	
72	09/27/2002	15:00 UTC	30.2	-91.3	26	
96	09/28/2002	15:00 UTC	33.0	-90.0	29	
120	09/29/2002	15:00 UTC	37.3	-86.9	8	

Figure 9

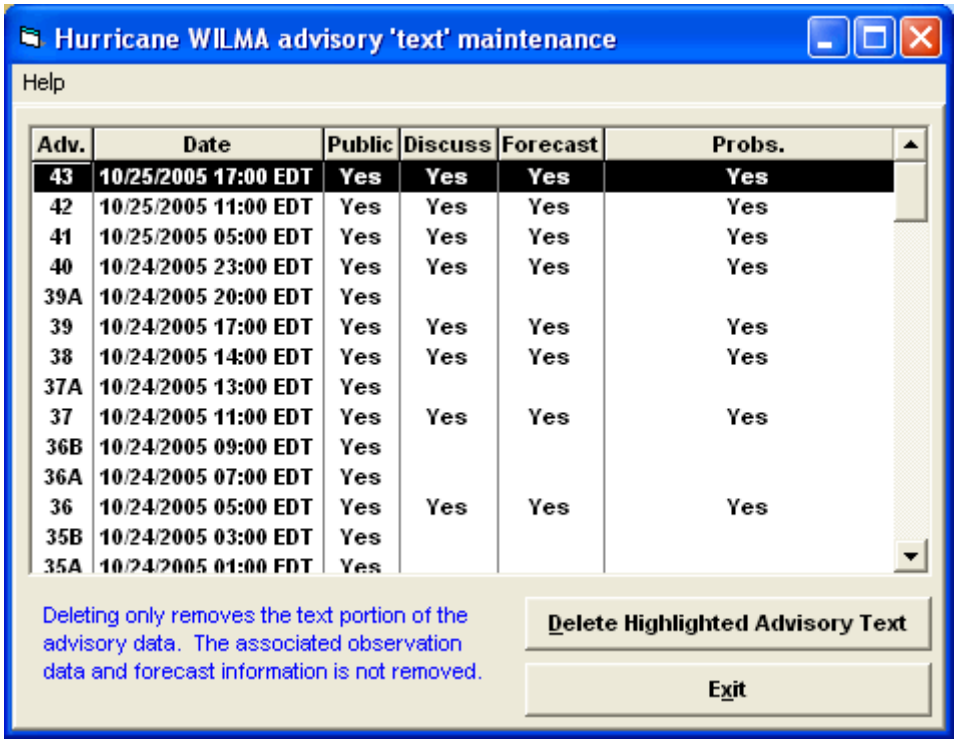
Options available:

Help - Displays this help text

Print - Prints the contents of the forecast to the windows printer.

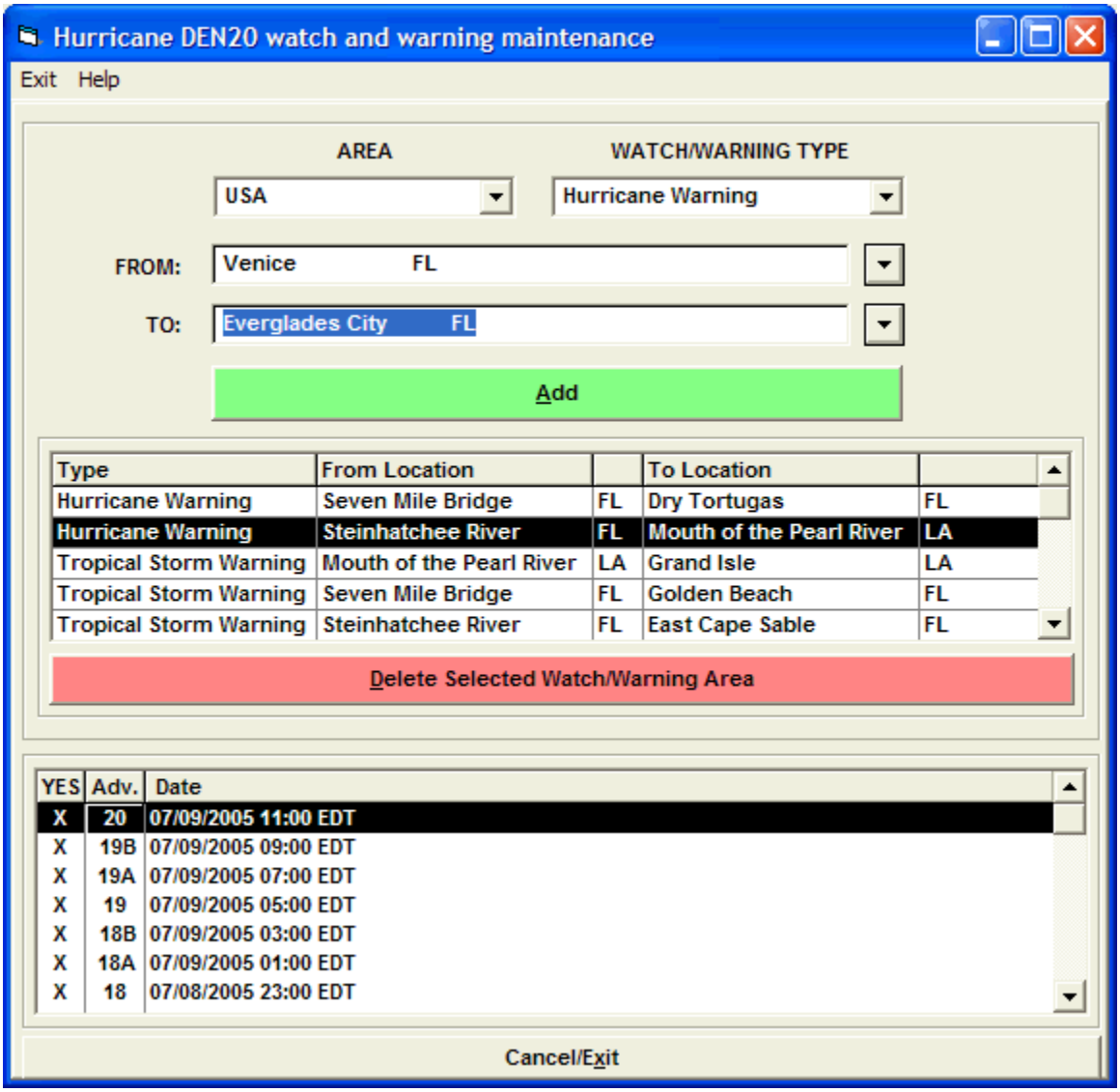
NOTE: The Climatological forecast is based solely on the historical database information. Movement of past storms, while sometimes a good predictor of the movement of a current storm, should not be relied upon.

NHC Advisory Maintenance



This option allows the user to delete the text portion of the advisory. The associated observation data is not affected. To delete, highlight the desired advisory and select delete advisory text. This option only applies to users of the HURRTRAK ONLINE service who have all of the text advisories automatically added to the HURRTRAK database.

Watch and Warning Maintenance



Hurrtrak Online imports the US based watches and warnings. This option allows the user to enter or delete any of the storm's Hurricane Watch and Warning area data. The watch and warning data shown in the top half of the windows is determined by the highlighted advisory row at the bottom of the window.

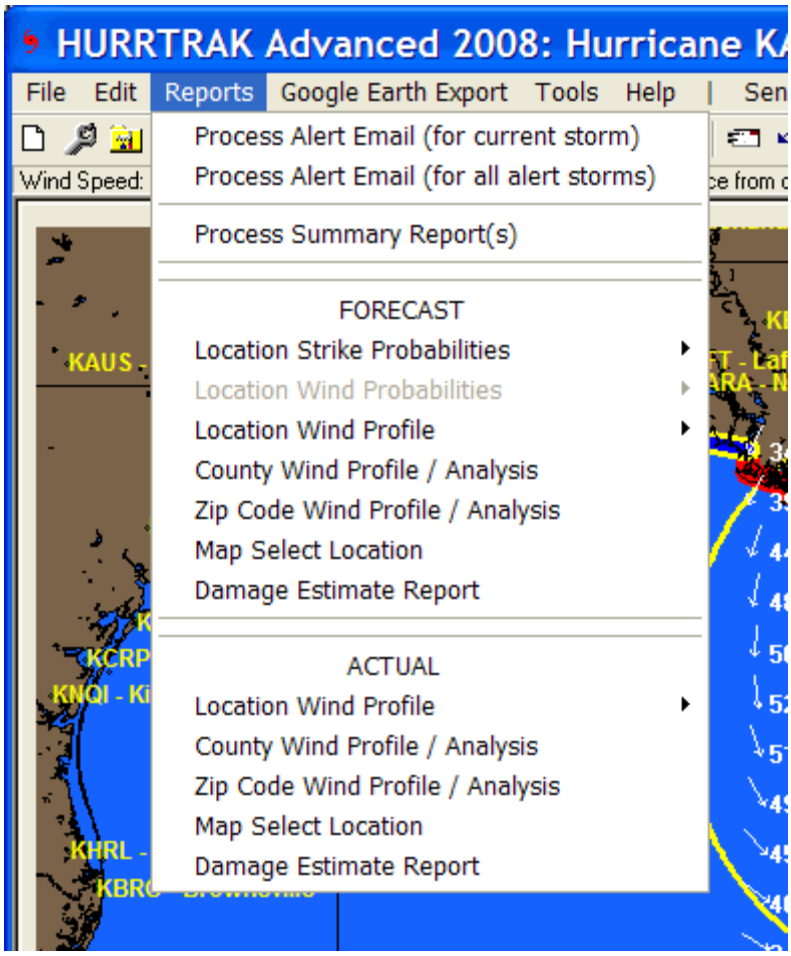
To add new watches and warnings, select the appropriate coastline area, watch/warning type and the from and to points of the watch or warning, and select the ADD button.

To delete a watch or warning, highlight the watch and warning area and select the Delete Highlighted Watch/Warning button.

You may enter as many watches and warnings as required.

The pre-defined set of watch and warning points are maintained in the system setup portion of the system. Please go to page 37 to find out more about how this data is structured.

REPORTS



The Reports Include:

Process Alert Email (for current storm)... See APPENDIX E: Alert Email Process on page 263.

Summary Report(s) - see page 71.

Selecting the following reports will display the reports on an information tab

Forecast Reports:
1. Location Strike Probabilities (see page 173)
2. Location Wind Probabilities (see page 174)
3. Location Wind Profile (see page 163)
4. County Wind Profile / Analysis (see page 166)
5. Zip code Wind Profile / Analysis (RM/Pro) (see page 168)
6. Map Select Location – see page 74.
7. Damage Estimate Report – see page 322.

Actual Impact Reports:
1. Location Wind Profile (see page 163)
2. County Wind Profile / Analysis (see page 166)

3. Zip code Wind Profile / Analysis (RM/Pro) (see page 168)
4. Map Select Location - see page 74
5. Damage Estimate Report – see page 322

These are all described in more detail in the following pages.

Summary Report

Summary reports are a powerful feature of the system.

Simply put, a summary report is information about how a storm and optionally how a storm is expected to affect a particular location or group of locations. There are two types of reports, standard and executive.

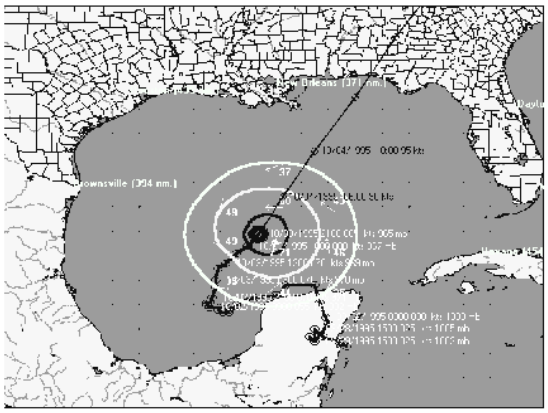
You may create them manually or define them to automatically send the output to the desktop, printer, or to another user via Email.

Standard:

The report optionally includes a user defined graphic, user diary contents, latest storm position information, watches / warnings, official forecast information, strike probabilities, wind probabilities (when available) forecast impact summary, forecast impact detail, and NHC advisory text. A sample report is shown below.

Hurricane OPAL *Page 1*

GLOBAL RM/Pro V2.0 **Summary Report for Destin, FL** **10/03/1995 2100 GMT, Adv. # 25**



Latest Position: 446 nm. Southwest (209 degrees) of Destin, FL

Latitude	Longitude	Motion (knots)	Wind Speed	Central Pressure	64 kt NE	64 kt SE	64 kt SW	64 kt NW	50 kt NE	50 kt SE	50 kt SW	50 kt NW	34 kt NE	34 kt SE	34 kt SW	34 kt NW	Eye diam	Eye wall
23.9	-90.6	036/12	85	965	60	60	30	30	125	125	75	100	200	200	150	150	18	9

Watches and Warnings

None

Official Forecast

Hour	Date (UTC)	Time (UTC)	Latitude	Longitude	Wind Speed	64 kt NE	64 kt SE	64 kt SW	64 kt NW	50 kt NE	50 kt SE	50 kt SW	50 kt NW	34 kt NE	34 kt SE	34 kt SW	34 kt NW
Initial	10/03/1995	2100	23.9	-90.6	85	060	060	030	030	125	125	075	100	200	200	150	150
12	10/04/1995	0600	25.4	-89.7	90	060	060	030	030	125	125	075	100	200	200	150	150
24	10/04/1995	1800	27.3	-88.5	95	060	060	030	030	125	125	075	100	200	200	150	150
36	10/05/1995	0600	29.5	-87	95	060	060	030	030	125	125	075	100	200	200	150	150
48	10/05/1995	1800	32	-85.5	60					050	050	030	030				
72	10/06/1995	1800	37	-82	25												

Strike Probabilities for Destin, FL

TOTAL	Next 24 hours	24 - 36 hours	36- 48 hours	48-72 hours
20	1	16	2	1

Forecast Impact Summary

Location	St.	Max Wind	CPA		Arr. hrs.	Time of arrival	Time of departure	Duration
Destin	FL	95 kts	3	34 knot	23	10/04/1995 20:00 UTC	10/05/1995 16:00 UTC	20
				50 knot	28	10/05/1995 01:00 UTC	10/05/1995 14:00 UTC	13
				64 knot	34	10/05/1995 07:00 UTC	10/05/1995 12:00 UTC	5

Figure 10

Forecast Impact Detail

Date / Time	Time of Day	Wind Speed	Wind Direction (degs.)	Onshore Wind Component	Distance to 34 knot winds (nm.)	Distance to 50 knot winds (nm.)	Distance to 64 knot winds (nm.)	Distance to center (nm.)	Action Points	Comments
10/03/1995 22:00 UTC	DAY				0243	0314	0380	0435		
10/03/1995 23:00 UTC	NIGHT				0232	0303	0369	0424		
10/04/1995 00:00 UTC	NIGHT				0220	0291	0357	0412		
10/04/1995 01:00 UTC	NIGHT				0209	0280	0346	0401		
10/04/1995 02:00 UTC	NIGHT				0197	0268	0334	0389		
10/04/1995 03:00 UTC	NIGHT				0186	0257	0323	0378		
10/04/1995 04:00 UTC	NIGHT				0175	0246	0312	0367		
10/04/1995 05:00 UTC	NIGHT				0163	0234	0300	0355		
10/04/1995 06:00 UTC	NIGHT				0152	0223	0289	0344		
10/04/1995 07:00 UTC	NIGHT				0141	0212	0278	0333		
10/04/1995 08:00 UTC	NIGHT				0130	0201	0267	0322		
10/04/1995 09:00 UTC	NIGHT				0119	0190	0256	0311		
10/04/1995 10:00 UTC	NIGHT				0108	0179	0245	0300		
10/04/1995 11:00 UTC	NIGHT				0097	0168	0234	0289		
10/04/1995 12:00 UTC	DAY				0086	0157	0223	0278		
10/04/1995 13:00 UTC	DAY				0076	0147	0213	0268		
10/04/1995 14:00 UTC	DAY				0065	0136	0202	0257		
10/04/1995 15:00 UTC	DAY				0054	0125	0191	0246		
10/04/1995 16:00 UTC	DAY				0043	0114	0180	0235		
10/04/1995 17:00 UTC	DAY				0032	0103	0169	0224		
10/04/1995 18:00 UTC	DAY				0021	0092	0158	0213		
10/04/1995 19:00 UTC	DAY				0008	0079	0145	0200		
10/04/1995 20:00 UTC	DAY	035 kts	095	-003 kts		0066	0132	0187		
10/04/1995 21:00 UTC	DAY	038 kts	095	-003 kts		0053	0119	0174		
10/04/1995 22:00 UTC	DAY	041 kts	095	-004 kts		0041	0107	0162		
10/04/1995 23:00 UTC	NIGHT	044 kts	095	-004 kts		0028	0094	0149		
10/05/1995 00:00 UTC	NIGHT	047 kts	095	-004 kts		0015	0081	0136		
10/05/1995 01:00 UTC	NIGHT	050 kts	095	-004 kts		0002	0068	0123		
10/05/1995 02:00 UTC	NIGHT	052 kts	095	-005 kts			0055	0110		
10/05/1995 03:00 UTC	NIGHT	055 kts	095	-005 kts			0043	0098		
10/05/1995 04:00 UTC	NIGHT	057 kts	090	-010 kts			0032	0085		
10/05/1995 05:00 UTC	NIGHT	060 kts	090	-010 kts			0019	0072		
10/05/1995 06:00 UTC	NIGHT	063 kts	090	-011 kts			0006	0059		
10/05/1995 07:00 UTC	NIGHT	071 kts	090	-012 kts				0045		
10/05/1995 08:00 UTC	NIGHT	083 kts	090	-014 kts				0031		
10/05/1995 09:00 UTC	NIGHT	095 kts	088	-020 kts				0017		** Eye Wall **
10/05/1995 10:00 UTC	NIGHT	000 kts	000					0003		** Eye **
10/05/1995 11:00 UTC	NIGHT	091 kts	299	-030 kts				0011		** Eye Wall **
10/05/1995 12:00 UTC	DAY	067 kts	275	006 kts				0025		
10/05/1995 13:00 UTC	DAY	058 kts	275	005 kts			0018	0039		
10/05/1995 14:00 UTC	DAY	052 kts	275	005 kts			0038	0053		
10/05/1995 15:00 UTC	DAY	045 kts	275	004 kts		0015	0057	0067		
10/05/1995 16:00 UTC	DAY	036 kts	275	003 kts		0035	0075	0081		
10/05/1995 17:00 UTC	DAY				0020	0055	0094	0095		
10/05/1995 18:00 UTC	DAY				0046	0076		0109		
10/05/1995 19:00 UTC	DAY				0064	0095		0124		

NHC Public Advisory

BULLETIN
HURRICANE OPAL ADVISORY NUMBER 27
NATIONAL WEATHER SERVICE MIAMI FL
4 AM CDT WED OCT 04 1995

...OPAL CONTINUES TO STRENGTHEN AS IT HEADS FOR LAND...
ALL PREPARATIONS SHOULD BE RUSHED TO COMPLETION

AT 4 AM CDT...0900Z...HURRICANE WARNINGS ARE EXTENDED WESTWARD FROM MOBILE ALABAMA TO THE MOUTH OF THE MISSISSIPPI RIVER INCLUDING COASTAL MISSISSIPPI. HURRICANE WARNINGS ARE NOW IN EFFECT FROM ANCLOTE KEY ON THE WEST COAST OF FLORIDA TO THE MOUTH OF THE MISSISSIPPI RIVER.

TROPICAL STORM WARNINGS AND A HURRICANE WATCH ARE IN EFFECT FROM THE MOUTH OF THE MISSISSIPPI RIVER TO GRAND ISLE AND ARE NOW EXTENDED WESTWARD TO JUST EAST OF MORGAN CITY INCLUDING METROPOLITAN NEW ORLEANS.

TROPICAL STORM WARNINGS ARE IN EFFECT FROM SOUTH OF ANCLOTE KEY TO VENICE FLORIDA. WARNINGS FOR FLORIDA SOUTH OF CEDAR KEY WILL LIKELY BE LOWERED LATER TODAY.

AT 4 AM CDT...0900Z...THE CENTER OF OPAL WAS LOCATED NEAR LATITUDE 26.4 NORTH...LONGITUDE 89.2 WEST OR ABOUT 180 MILES SOUTH OF THE MOUTH OF THE MISSISSIPPI RIVER.

OPAL IS MOVING TOWARD THE NORTH NORTHEAST NEAR 17 MPH AND THIS MOTION IS EXPECTED TO BRING THE CENTER TO THE COAST WITHIN THE WARNING AREA THIS EVENING.

MAXIMUM SUSTAINED WINDS HAVE INCREASED TO NEAR 120 MPH AND SOME ADDITIONAL STRENGTHENING IS LIKELY TODAY.

HURRICANE FORCE WINDS EXTEND OUTWARD UP TO 145 MILES FROM THE CENTER...AND TROPICAL STORM FORCE WINDS EXTEND OUTWARD UP TO 260 MILES...MAINLY TO THE EAST OF THE CENTER.

THE LATEST MINIMUM CENTRAL PRESSURE REPORTED BY AIR FORCE RECONNAISSANCE AIRCRAFT WAS 933 MB...27.55 INCHES.

COASTAL STORM SURGE FLOODING OF UP TO 15 TO 20 FEET ABOVE NORMAL TIDE LEVELS IS POSSIBLE NEAR AND TO THE EAST OF WHERE THE CENTER CROSSES THE COAST. THIS IS A LARGE HURRICANE AND SIGNIFICANT FLOODING IS EXPECTED QUITE FAR TO THE EAST OF WHERE LANDFALL OCCURS.

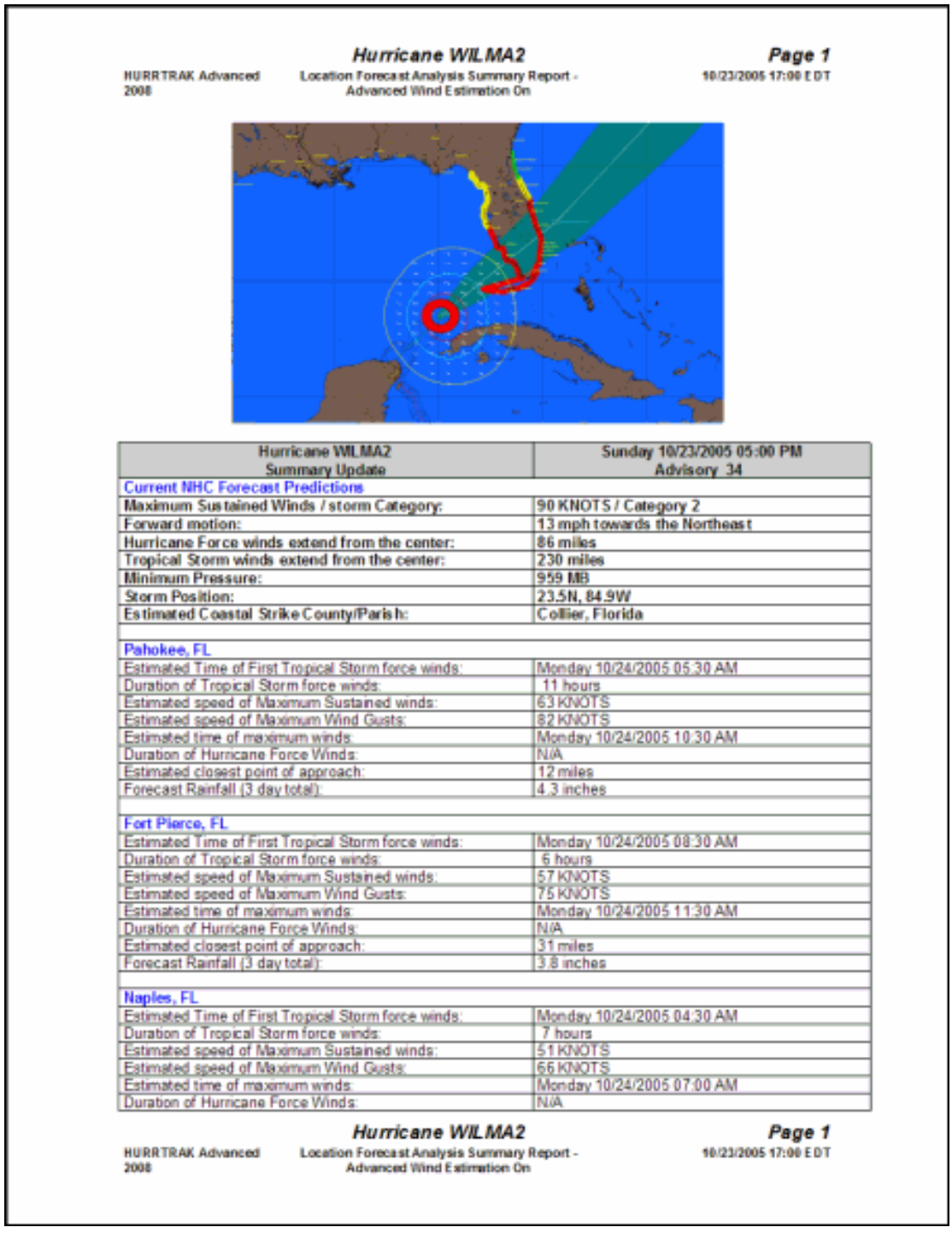
REPEATING THE 4 AM CDT POSITION...26.4 N... 89.2 W. MOVEMENT TOWARD...NORTH NORTHEAST NEAR 17 MPH. MAXIMUM SUSTAINED WINDS...120 MPH. MINIMUM CENTRAL PRESSURE... 933 MB.

AN INTERMEDIATE ADVISORY WILL BE ISSUED BY THE NATIONAL HURRICANE CENTER AT 7 AM CDT FOLLOWED BY THE NEXT COMPLETE ADVISORY ISSUANCE AT 10 AM CDT.

LAWRENCE

Executive:

The executive summary report is designed for users that prefer a non-tabular impact type report. An example of this is shown below.



Hurricane WILMA2 **Page 1**

HURRTRAK Advanced 2008 — Location Forecast Analysis Summary Report - Advanced Wind Estimation On — 10/23/2005 17:00 EDT

Hurricane WILMA2 Summary Update	Sunday 10/23/2005 05:00 PM Advisory 34
Current NHC Forecast Predictions	
Maximum Sustained Winds / storm Category:	90 KNOTS / Category 2
Forward motion:	13 mph towards the Northeast
Hurricane Force winds extend from the center:	86 miles
Tropical Storm winds extend from the center:	230 miles
Minimum Pressure:	959 MB
Storm Position:	23.5N, 84.9W
Estimated Coastal Strike County/Parish:	Collier, Florida
Pahokee, FL	
Estimated Time of First Tropical Storm force winds:	Monday 10/24/2005 05:30 AM
Duration of Tropical Storm force winds:	11 hours
Estimated speed of Maximum Sustained winds:	63 KNOTS
Estimated speed of Maximum Wind Gusts:	82 KNOTS
Estimated time of maximum winds:	Monday 10/24/2005 10:30 AM
Duration of Hurricane Force Winds:	N/A
Estimated closest point of approach:	12 miles
Forecast Rainfall (3 day total):	4.3 inches
Fort Pierce, FL	
Estimated Time of First Tropical Storm force winds:	Monday 10/24/2005 08:30 AM
Duration of Tropical Storm force winds:	6 hours
Estimated speed of Maximum Sustained winds:	57 KNOTS
Estimated speed of Maximum Wind Gusts:	75 KNOTS
Estimated time of maximum winds:	Monday 10/24/2005 11:30 AM
Duration of Hurricane Force Winds:	N/A
Estimated closest point of approach:	31 miles
Forecast Rainfall (3 day total):	3.8 inches
Naples, FL	
Estimated Time of First Tropical Storm force winds:	Monday 10/24/2005 04:30 AM
Duration of Tropical Storm force winds:	7 hours
Estimated speed of Maximum Sustained winds:	51 KNOTS
Estimated speed of Maximum Wind Gusts:	66 KNOTS
Estimated time of maximum winds:	Monday 10/24/2005 07:00 AM
Duration of Hurricane Force Winds:	N/A

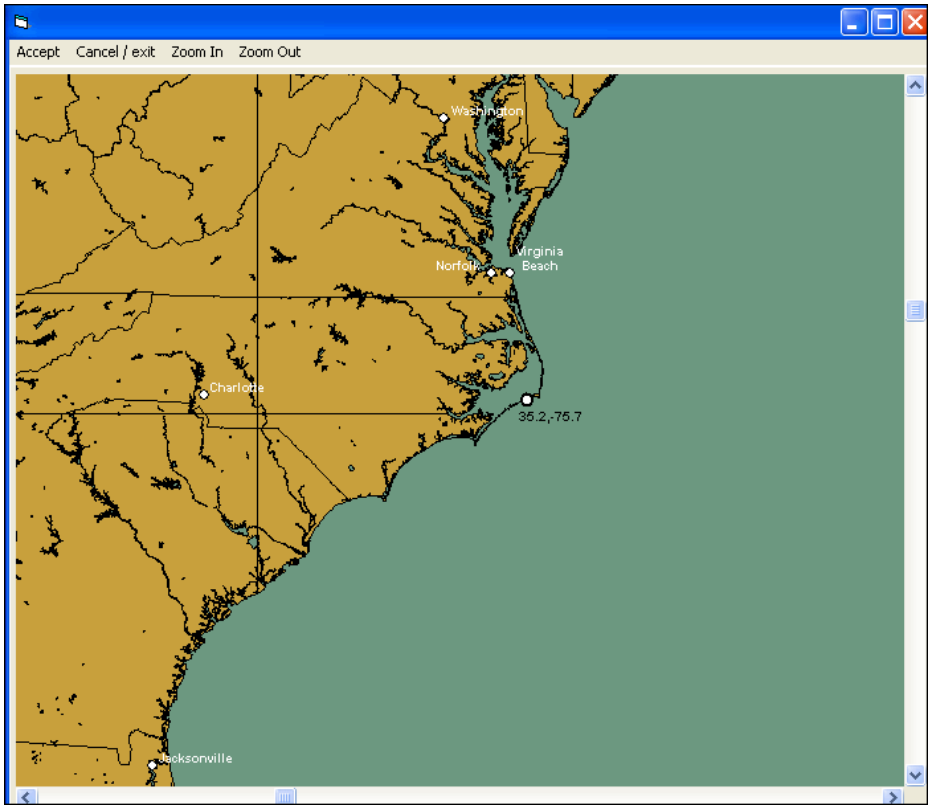
Hurricane WILMA2 **Page 1**

HURRTRAK Advanced 2008 — Location Forecast Analysis Summary Report - Advanced Wind Estimation On — 10/23/2005 17:00 EDT

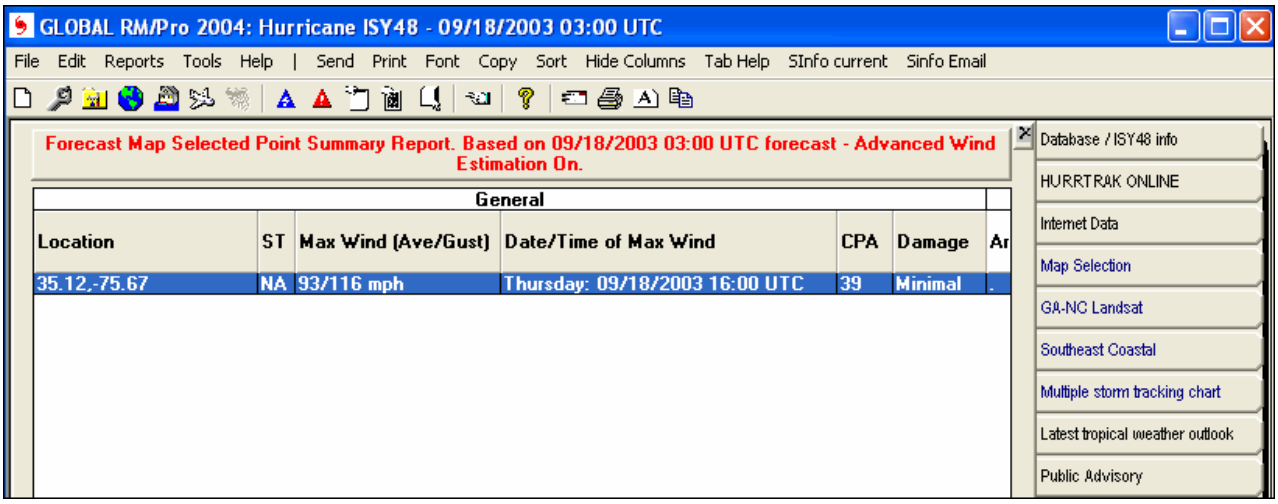
To find out more about creating automatic summary reports, check out page 266.

Report Map Select

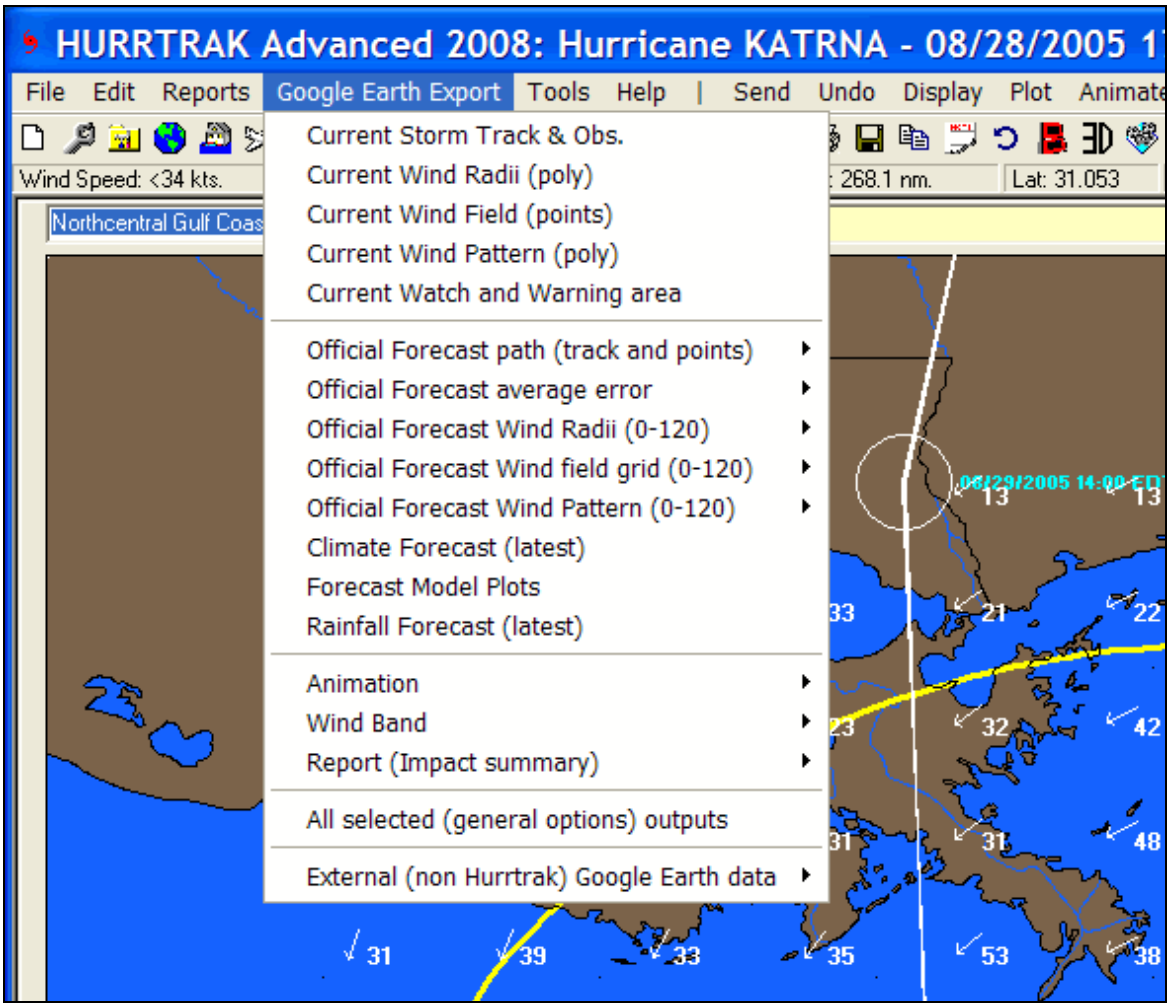
When the Forecast or Actual Map Select Location Report is selected the user is presented with a map where a point can be select by left clicking your mouse button.



When satisfied with the point selected, choose the accept option and the location report tab will be displayed and support all of the function of the location group summary report as shown on page 163.



GOOGLE EARTH EXPORT



The Google Earth export menu option exports KML to Google Earth (GE) and is available whenever there is an open storm. The data that is available for export is dependent on how current the storm forecast and other data is… but most of the export options are typically available. These options include:

Current Storm Track and Observations – This option exports the storm track and observations as KML for Google Earth (GE).

Current Wind Radii – When selecting this option, the system will export KML which contains up to 3 polygons representing the current 34, 50 and 64 knot wind areas.

Current Wind Field – This option will export a "grid" of points across the entire current wind field. When viewed on GE, it shows up as either arrows, point values and/or points which can then be interrogated (clicked on). This is controlled by the Hurrtrak User Preferences – General Options.

Current Wind Pattern – This option export up to 10 polygons representing different wind levels of a storm. The levels are is determined via the Wind Pattern Levels tab of the Plotting User Options. Advanced Wind Estimation (AWE) is not used in this export regardless of the AWE

settings elsewhere. This is because AWE wind calculations would invalidate the concept of a polygon.

Current Watch and Warning areas – As the same suggests, this option exports the current NHC watches and warnings.

Official Forecast Path (track and points) – Similar to the first option, this exports the storm's forecast track and the forecast points. The user can select to export the current or any prior forecast tracks.

Official Forecast Average Error – This option will export an area which represents the forecast's average error. The user can select to export the current or any prior forecast average error. This may take a few seconds to run.

Official Forecast Wind Radii – When selected, the system will export KML which contains up to 3 polygons representing the forecast 34, 50 and 64 knot wind areas… for a specific hour in the forecast.

Official Forecast Wind Field – This option will export a "grid" of points across the entire forecast wind field… at a specific forecast hour. When viewed on GE, it shows up as point values or points which then can be interrogated.

Climate Forecast –When selecting this option, the latest climate forecast will be exported and shown on GE.

Rainfall Forecast – This option will exports 3 sets of KML files which represent the forecast rainfall for the next 3 days. They are shown as unfilled polygons.

Animation – This is a powerful option which allows the user to export the entire past or forecast wind radii and view it using GE's animation capability. The latest version of GE is required to support this capability.

Wind Bands – This option allows the user to export the past or forecast wind bands to a 3D KML file for viewing on GE. The creating of this export may take a few minutes depending on the number of levels defined for export. This is controlled in the Hurrtrak User Preferences – General Options.

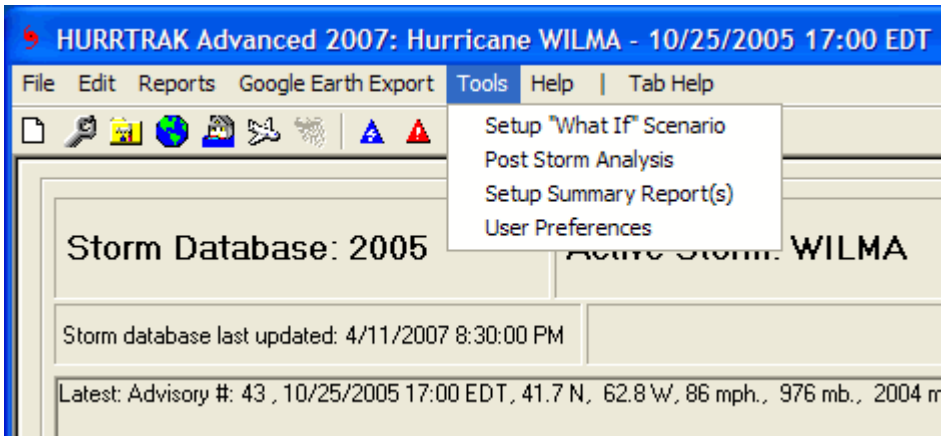
Report (impact summary) – This is another powerful feature whereby you can export all of the data in a location, county or zip code summary report to a point type KML file. When viewed on Google Earth, all of the summary data information is shown with a simple click on that location's point icon.

All Selected Outputs – This is a real time saving feature. It allows the user to create any/all of the outputs with a single selection. The data that is included with this "batch" export is controlled within the Hurrtrak User Preferences – General Options. Depending on what is included, this option may take a few minutes to complete.

External (non Hurrtrak) Google Earth Data - This option allows the user to export National Weather Service and other weather data onto Google Earth. When hurricane information is also exported from the Hurrtrak system, it allows the user to integrate the 2 sources of data on the same Google Earth interface..

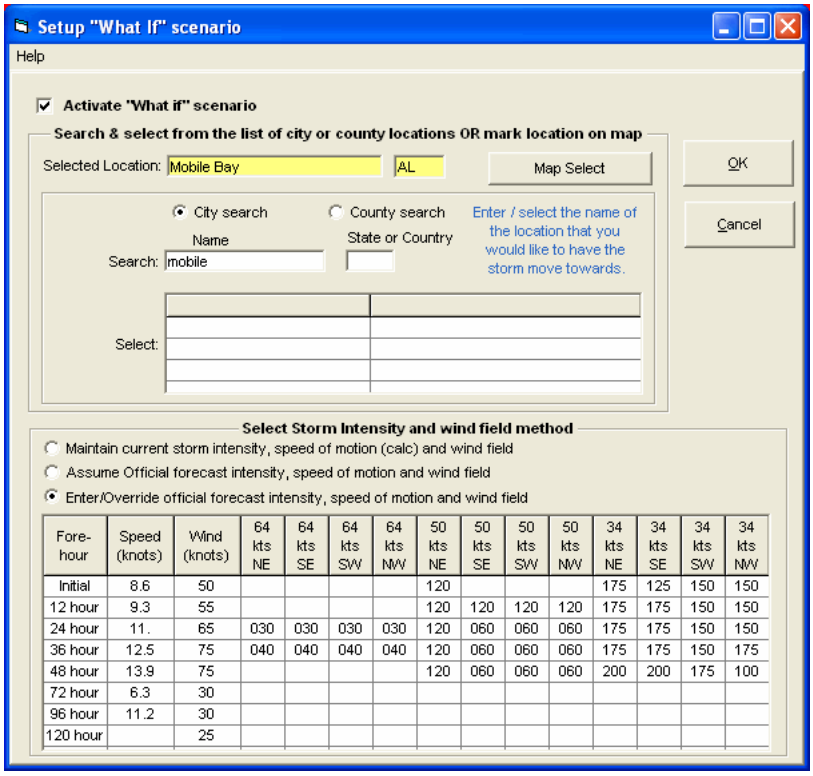
See page 287 and page 317 for more information on this topic.

TOOLS



The tools function allows the user to override the official forecast, conduct post storm analysis, setup Summary reports and establish user preferences.

Setup "What if" scenario



Fore-hour	Speed (knots)	Wind (knots)	64 kts NE	64 kts SE	64 kts SW	64 kts NW	50 kts NE	50 kts SE	50 kts SW	50 kts NW	34 kts NE	34 kts SE	34 kts SW	34 kts NW
Initial	8.6	50					120				175	125	150	150
12 hour	9.3	55					120	120	120	120	175	175	150	150
24 hour	11.	65	030	030	030	030	120	060	060	060	175	175	150	150
36 hour	12.5	75	040	040	040	040	120	060	060	060	175	175	150	175
48 hour	13.9	75					120	060	060	060	200	200	175	100
72 hour	6.3	30												
96 hour	11.2	30												
120 hour		25												

"What if" Options:

Activate "what if" - This option when selected will change the official forecast path of the current storm to a motion directly towards the location selected below.

Selected Location - This identifies the selected location that the official forecast will now be adjusted towards.

Selection Criteria - The user can select the "what if" location by keying in all or part of a county or city name. The location is selected by double clicking on its row.

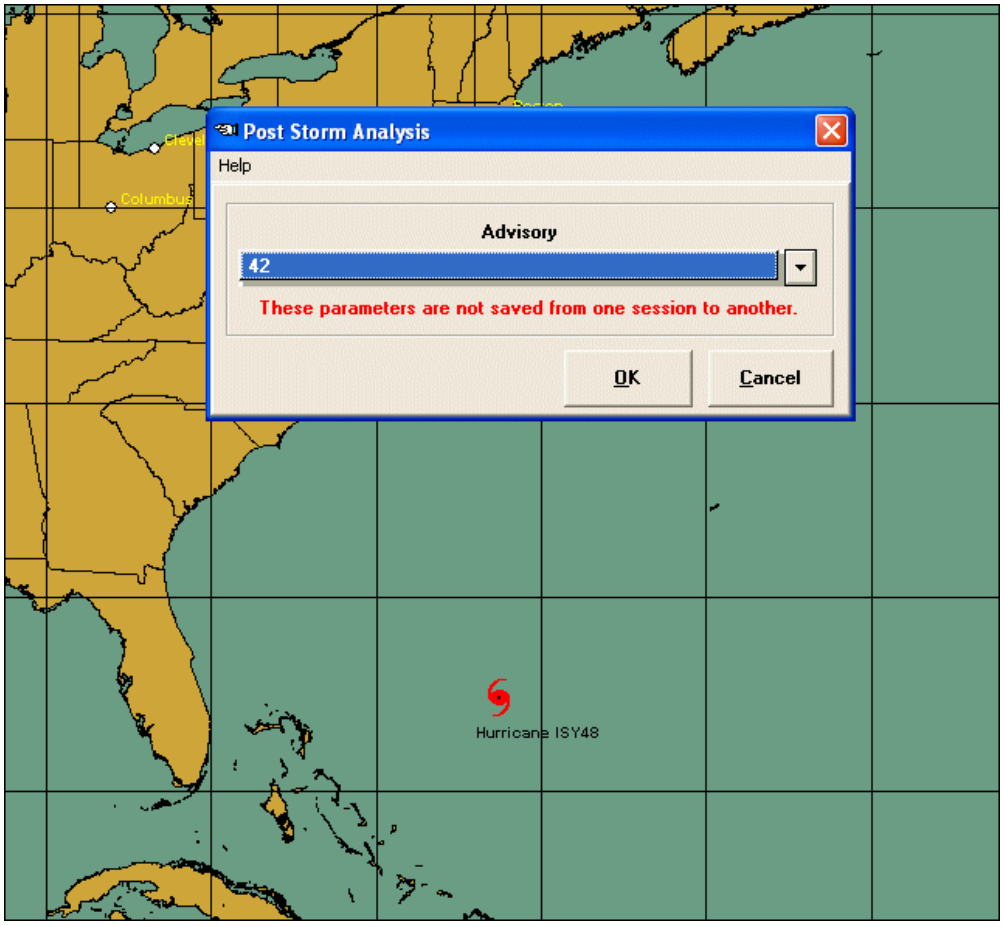
Map Select - By selecting this option, the user is presented with a large map covering the entire tropical storm basin. By left clicking on a map location, and selecting accept, this location (Latitude and Longitude) will be the selected target point.

Storm intensity and wind field method - There are 3 intensity options when selecting the Direct To Point tool.

- To maintain the storm's current intensity through 120 hours regardless of the official forecast intensity and wind field projections as well as ignoring landfall effects, etc.
- To utilize the official forecast intensity and wind field projections throughout the 120 hour forecast period. This method should only be used when the "what if" deviation from official forecast is relatively small and landfall times, etc. are similar to the official forecast track..
- To override the official forecast motion, intensity and wind field projections. When this option is selected, the user can then override the forecast parameters.

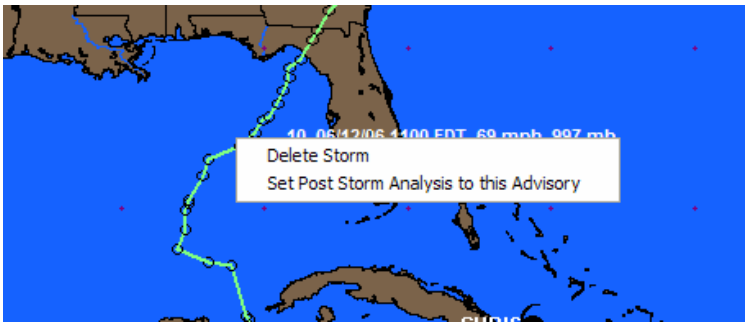
Intensity and wind field information - This is the area where the user can override the official forecast information. The user can adjust the storm's forward speed, wind intensity, and areas of 64, 50 and 34 knot winds.

Setup Post Storm Analysis



This option resets what the system "thinks" is the latest advisory. The user must select the advisory number to use as the latest one. This option is very useful in doing post storm analysis or during storm exercises. The only functions that are not affected by this are data maintenance and strike probability calculations.

An easier method to select a past advisory for post storm analysis is to move your mouse over a past observation point while viewing the database tab map image and right click, selecting "set Post Storm Analysis to this advisory".



Summary Report Setup

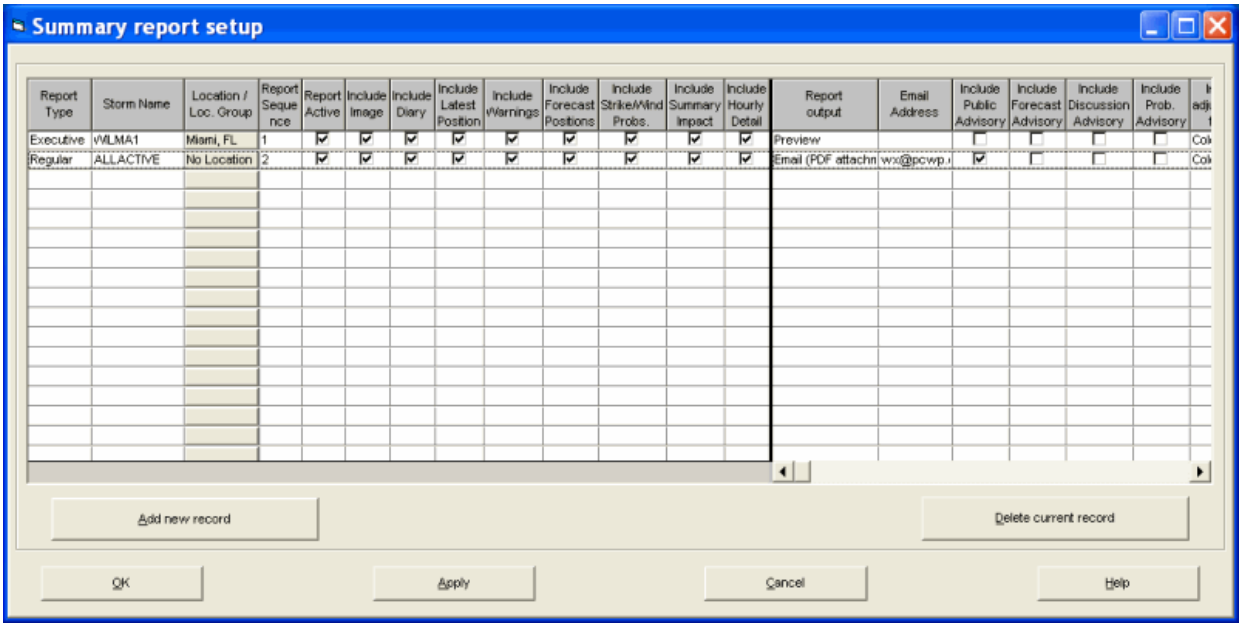


Figure 11

The summary report setup option defines the parameters needed to create the summary report. Please note when the report output is set to SAVE FILE, no report is generated… only the graphic image is saved.

Automation Fields:

Report Type - This identifies the type of report you would like to create.. Regular or Executive.

Storm Name - This identifies the storm you would like to create a summary report for. There are 2 options.

1. It must be a storm in the current database and can either be typed in or selected
2. Select the storm name of ALLACTIVE. When this is selected, a summary report will be generated for all "active storms" as defined in the User Preferences – Automation/Alert options.

Location/Location Group - This identifies the location (city, county, zip code) or location group to use for the summary report. There are 2 options.

1. Select a location or location group from the list of available locations. Remember, selecting a large location group will create a summary report for each location in that group resulting in a large number of reports.
2. Specify "No location". This will create a generic (not location specific) report about the storm. This is useful when you want to send a single report to multiple geographical locations.

Report Sequence - This numeric field identifies the order in which the summary report is generated.

Report Active - This identifies whether this report should be created (active). You may want to setup summary report automation records at the beginning of the hurricane season for each storm and set this indicator to inactive until the storm is named.

Include Image - This determines if a tracking map image is included with this report.

Include Diary - This determines if the user diary comments are included with the report.

Include Latest Position - This determines if the storm's latest position data is included with the report.

Include Watches and Warnings - This identifies is the current NHC watches and warnings are shown on the report.

Include Forecast Positions - This determines if the forecast position data is shown on the report.

Include Strike/Wind Probabilities - This determines if the strike/wind probability calculations are shown on the report. Valid only for location based reports.

Include Summary Impact - This determines if the summary impact information will be included in the report. Valid only for location based reports.

Include Hourly Detail - This determines if the "hourly" details for the summary report location will be included in the report.

Report Output - There are 4 options for report output.
Print will direct the output to the default printer.
Preview will create the report on a print preview window on your screen.
SAVE FILE will save ONLY the summary report graphic image on a hard drive location on your PC.
Email will send the report to an Email recipient using an HTML or PDF and graphic attachment.

Email address - Sets the Email address to send the report to when the report output is set to Email.

Include Public Advisory – Identifies whether the summary report will include the NHC Public Advisory with the summary report.

Include Forecast Advisory – Identifies whether the summary report will include the NHC Forecast Advisory with the summary report.

Include Discussion Advisory – Identifies whether the summary report will include the NHC Forecast Discussion Advisory with the summary report.

Include Probability Advisory – Identifies whether the summary report will include the NHC Wind Probability Advisory with the summary report.

Save File Name - Sets the file name to save when the Report Output is set to SAVE FILE.

Save File Type - Sets the file type to save when the Report Output is set to SAVE FILE.

Image Adjustment Type - Sets the type of adjustment to make to the summary report tracking chart graphic image. Color will keep the image as displayed on the PC, Gray forces a gray scale adjustment which is suitable for printing to a laser printer and FAX will change the image to a pure B&W image suitable for faxing.

Tracking Chart - This identifies the tracking chart to use for the summary report. It can be selected from the list of available charts. "Best Chart" will allow the system to "pick" a chart for you.

Location Group - Identifies the location group to plot on the summary report tracking chart

Plot Location Distances - Sets whether location distances will be plotted on the tracking chart

Plot Counties - Identifies whether county lines will be plotted on the tracking chart.

Plot County Name - Identifies whether county names will be plotted on the tracking chart.

Plot Roads - Identifies whether roads will be plotted on the tracking chart

Plot Lat./Long Grid - Identifies whether the lat./long grid will be plotted

Plot Lat./Long values - Identifies whether the lat./long values will be plotted along the edges of the tracking chart. Selecting Lat./Long Grid will automatically plot the values.

Plot Track Notes - Identifies whether chart notes will be plotted on the tracking chart.

Plot Wind Field - Identifies whether the wind field will be plotted on the tracking chart.

Plot Watch & Warning Areas - Identifies whether the watch and warning areas will be shown on the tracking chart. You may not want to select this if FAX or GRAY scale image adjustment has been selected.

Plot Official Forecast - Identifies if the official forecast track will be shown on the tracking chart.

Plot Official Forecast Error - Identifies whether the forecast error areas will be shown on the tracking chart. You may not want to select this if FAX or GRAY scale image adjustment has been selected.

Plot Decision Arc - Identifies whether a decision arc will be plotted.

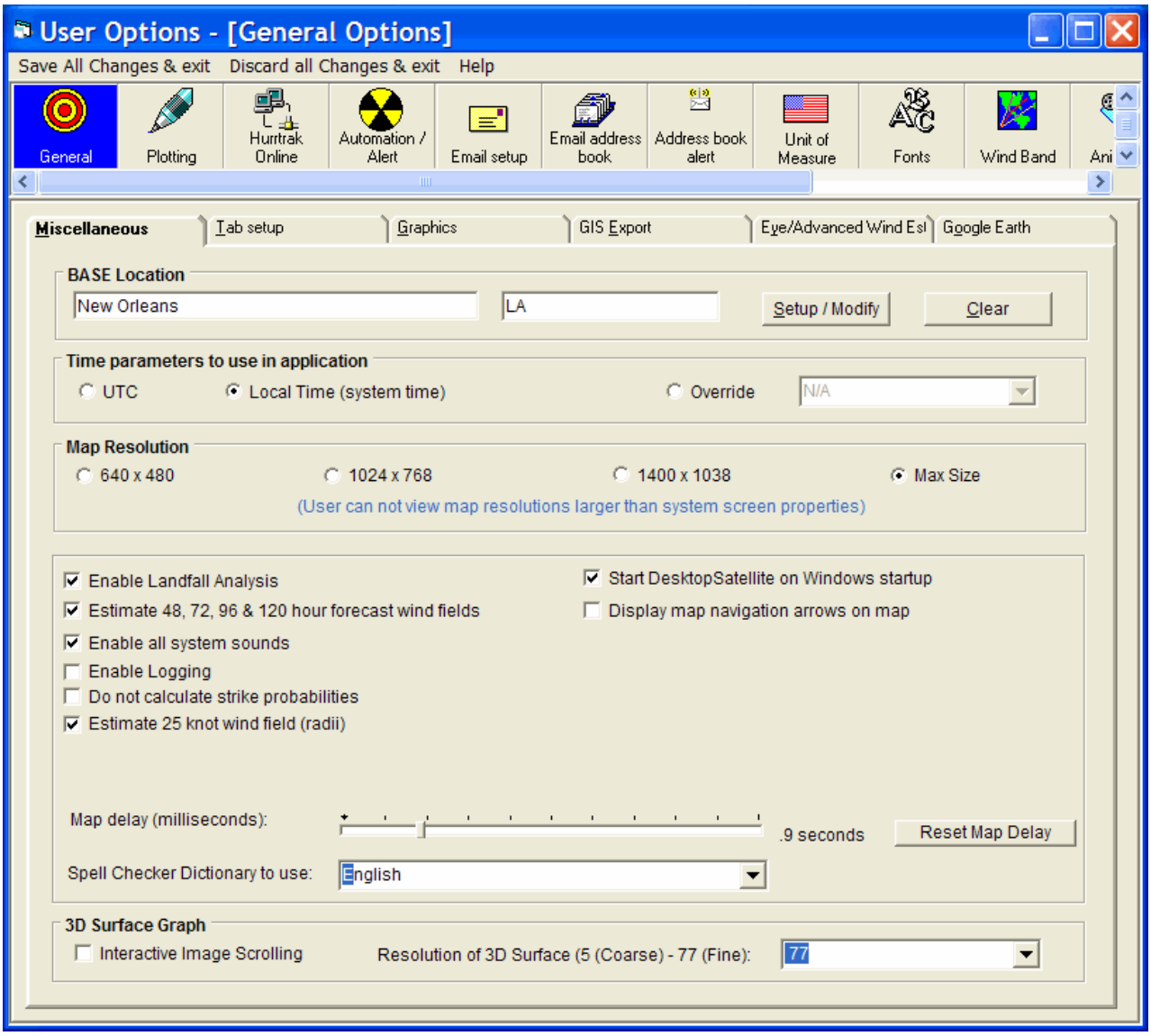
Decision Arc Action Point - Identifies the action point that you would like to use when displaying a decision arc on the tracking chart.

Decision Arc Storm Speed - Identifies the storm forward motion to assume when calculating the "radius" of the decision arc. If "no override" is selected, the system will use the forecasted storm speed.

Decision Arc Storm Category - Identifies the storm category to use when calculating the decision arc. If "no override" is selected, the system will use the forecasted storm strength.

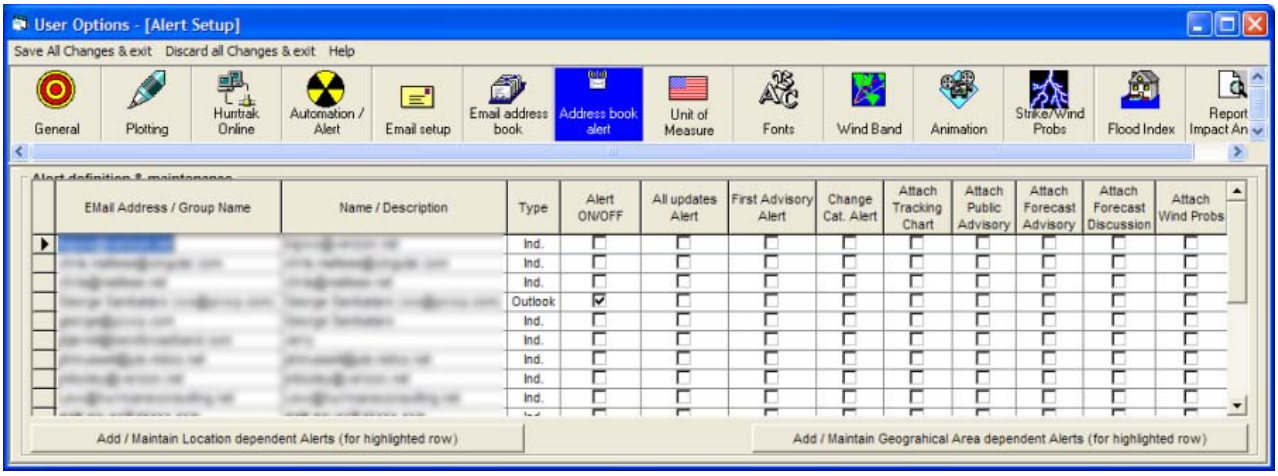
Tools - Options (User Preferences)

When user preferences are selected, the user is presented with windows containing ALL of the preferences shown. The user simply selects the category of preference and those fields are displayed below.



The categories of user preferences are explained below. They are presented in alphabetical order.

Addressbook Alert



After adding users into your addressbook, you may setup email alerts. This is furthered explained on page 262.

The data fields required are described below:

Email address/ group name - The Email address of the user you are setting up the alert for. This field cannot be changed here.

Name/Description - The name of the user. This cannot be changed here.

Type - The type of addressbook entry. This cannot be changed here.

Alert ON/OFF - The addressbook entries overall Alert switch. When this indicator is ON then all alerts defined for this user are active. When it is OFF, none of the alerts defined are active..

All Updates Alert – When All Update Alert is ON, the Email recipient will receive an Email whenever new data arrived. The Email consists of a message indicating the alert and optional advisory data. Warning.. this option will generate a lot of messages.

First Advisory Alert - When First Advisory Alert is ON, the Email recipient will receive an Email when the first advisory is issued for a tropical depression or when a tropical depression becomes a named storm. The Email consists of a message indicating the alert and optional advisory data.

Change Cat. Alert - When Change Cat. Alert is ON, the Email recipient will receive an Email whenever a storm's Category changes (either up or down). The Email consists of a short message indicating the alert and optional advisory data.

Attach Tracking Chart – When Attach Tracking Chart is ON, the Email recipient will receive a tracking chart centered on the storm... attached to the Alert Message. This image is automatically generated by the system and cannot be "controlled" by the user. To send images that can be determined by the user, use the summary report option. The EmailAlert location group is used to plot locations on the map generated for the EMail Alert.

Attach Public Advisory - When Attach Public Advisory is ON, the Email recipient will have the NHC Public Advisory attached to any Alert Message.

Attach Forecast Advisory - When Attach Forecast Advisory is ON, the Email recipient will have the NHC Forecast Advisory attached to any Alert Message..

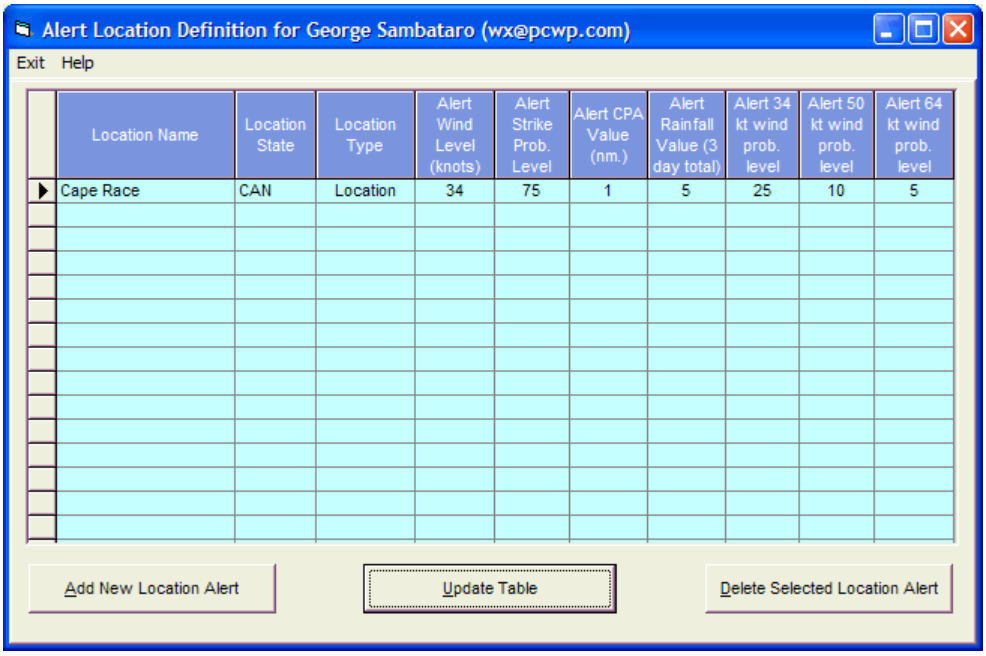
Attach Forecast Discussion - When Attach Forecast Discussion is ON, the Email recipient will have the NHC Forecast Discussion attached to any Alert Message.

Attach Wind Probs - When Attach Wind Prob. is ON, the Email recipient will have the NHC Issued Wind Probabilities attached to any Alert Message.

Satisfying any of the selected Alert conditions will generate an email.

Special Commands

Specify Location Dependent Alerts - This option allows the user to specify Alert Conditions based on a storm's potential impact to specific locations. See below.



Location Name - Name of the location for this Alert.

Location State - Name of the location's state

Location Type - Type of location (Location, County, Zip Code)

Alert Wind Level - The actual or forecast level of the wind (knots) that must be reached in order to satisfy the locations alert criteria.

Alert Strike Prob. Level - The forecast value of strike probability that must be met in order to satisfy the locations alert criteria.

Alert CPA Value - The actual or forecast value of closest point of approach (nautical miles) that must be met in order to satisfy the locations alert criteria.

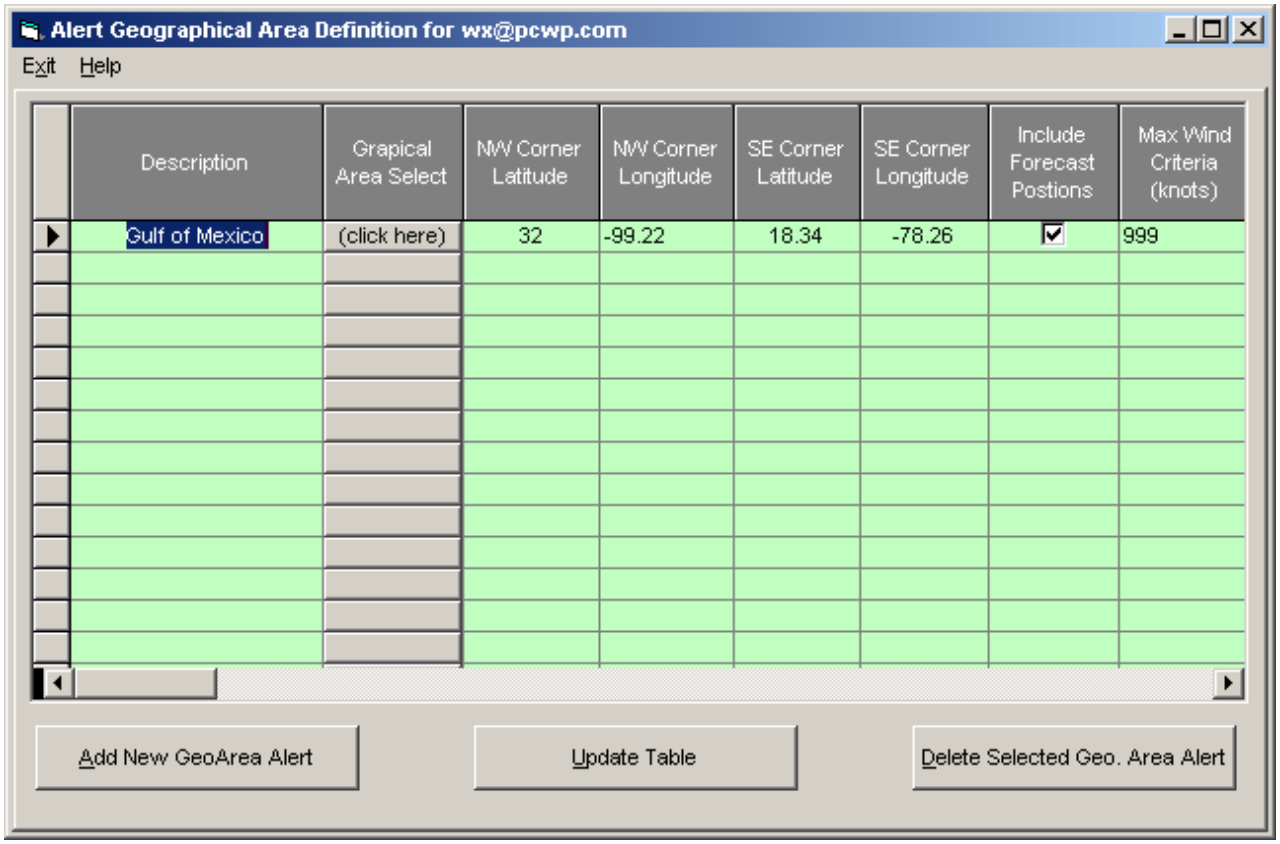
Alert Rainfall Value - The forecast rainfall that must be met in order to satisfy the locations alert criteria.

Alert 34 knot wind probability level - The forecast value of the 34 knot wind probability that must be met in order to satisfy the locations alert criteria.

Alert 50 knot wind probability level - The forecast value of the 50 knot wind probability that must be met in order to satisfy the locations alert criteria.

Alert 64 knot wind probability level - The forecast value of the 64 knot wind probability that must be met in order to satisfy the locations alert criteria.

Specify Geographical Area Alert - This option allows the user to specify Alert Conditions based the actual and/or forecast position of a storm.



Description - Description of the geographical area

Graphical Area Select – This command presents the user with a large map whereby via mouse commands they can easily select a geographical area. After accepting the area, the map corner latitude and longitudes are automatically filled in. This is much easier than defining them manually.

NW Corner Latitude - The geographical area defined must be in the shape of a rectangle. This defines the latitude of the NW corner of that rectangle.

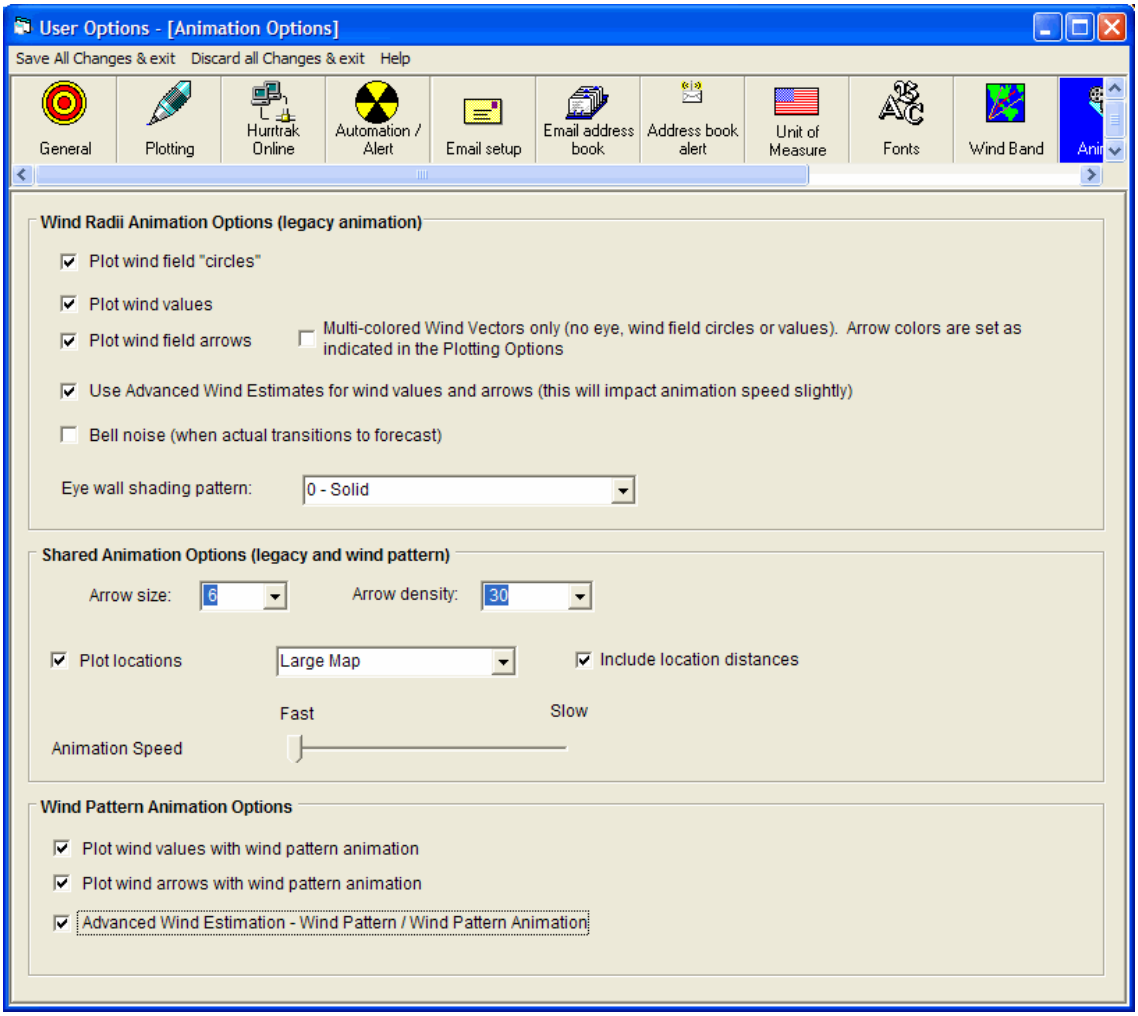
NW Corner Longitude - The area defined must be in the shape of a rectangle. This defines the longitude of the NW corner of that rectangle.

SE Corner Latitude - This defines the latitude of the SE corner of the geographical rectangle.

SE Corner Longitude - This defines the longitude of the SE corner of the geographical rectangle.

Remember... longitudes in the Western Hemisphere are negative so values decrease as you move westward.

Animation options



Display Options:

Wind Radii Animation Options:

Plot Wind Field Circles – Determines if the wind circles will plot during animation

Plot Wind Values - Determines if wind values will be shown next to the wind arrow during animation.

Plot Wind Field Arrows – Determines if the wind arrows will plot during animation.

Multi-colored Wind vectors- Changes the wind arrow display to one which has multi-colored arrows. The size and color of the wind vector is associated to the locations wind speed. It is best to increase the arrow density when choosing this option. The arrow colors are set within the plotting options. See APPENDIX PP. Multi-Colored wind vector display on page 297 for more information.

Use Advanced Wind Estimates… – This option determines if Advanced Wind Estimation is utilized during animation. It affects only the wind arrows and values, not the wind radii forecast. In addition, this slows down the initial loops animation speed.

Bell Noise - Determines if the PC "bell" noise will sound at the end of an animation cycle and when the actual motion changes to forecast motion.

Eye wall shading pattern - Determines if and how the storm's eye wall is depicted during animation.

Shared Animation Options (wind radii and wind pattern):

Wind arrow size - Sets the size of the wind arrows during animation

Wind Arrow density - Sets the density of the wind arrow pattern during animation

Plot Locations - Determines if a location group will be shown during animation. If so, the user must select the desired location group. If location distances are to be shown, check that option.

Animation speed - This option controls the speed of animation. Select the speed that best suits your processor. Note: The first animation loop may be slow due to the building of the animation file.

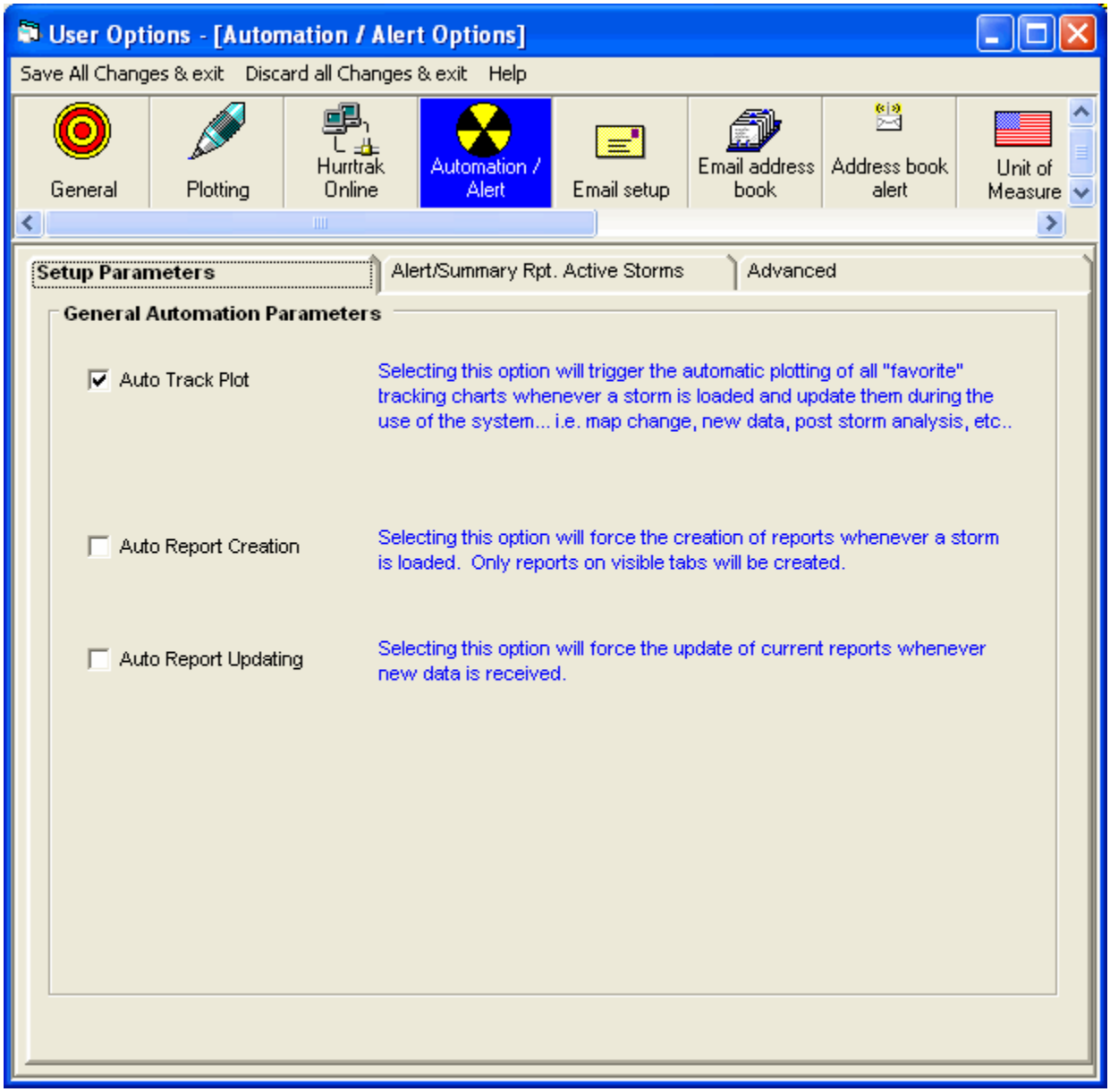
Wind Pattern Animation Options:

Plot wind values with wind pattern animation – Will plot the wind speed values while creating the Wind pattern animation.

Plot wind arrows with wind pattern animation – Will plot the wind vectors while creating the Wind pattern animation.

Advanced Wind Estimation – This option determines if Advanced Wind Estimation is utilized during the creation of wind patterns and wind pattern animation

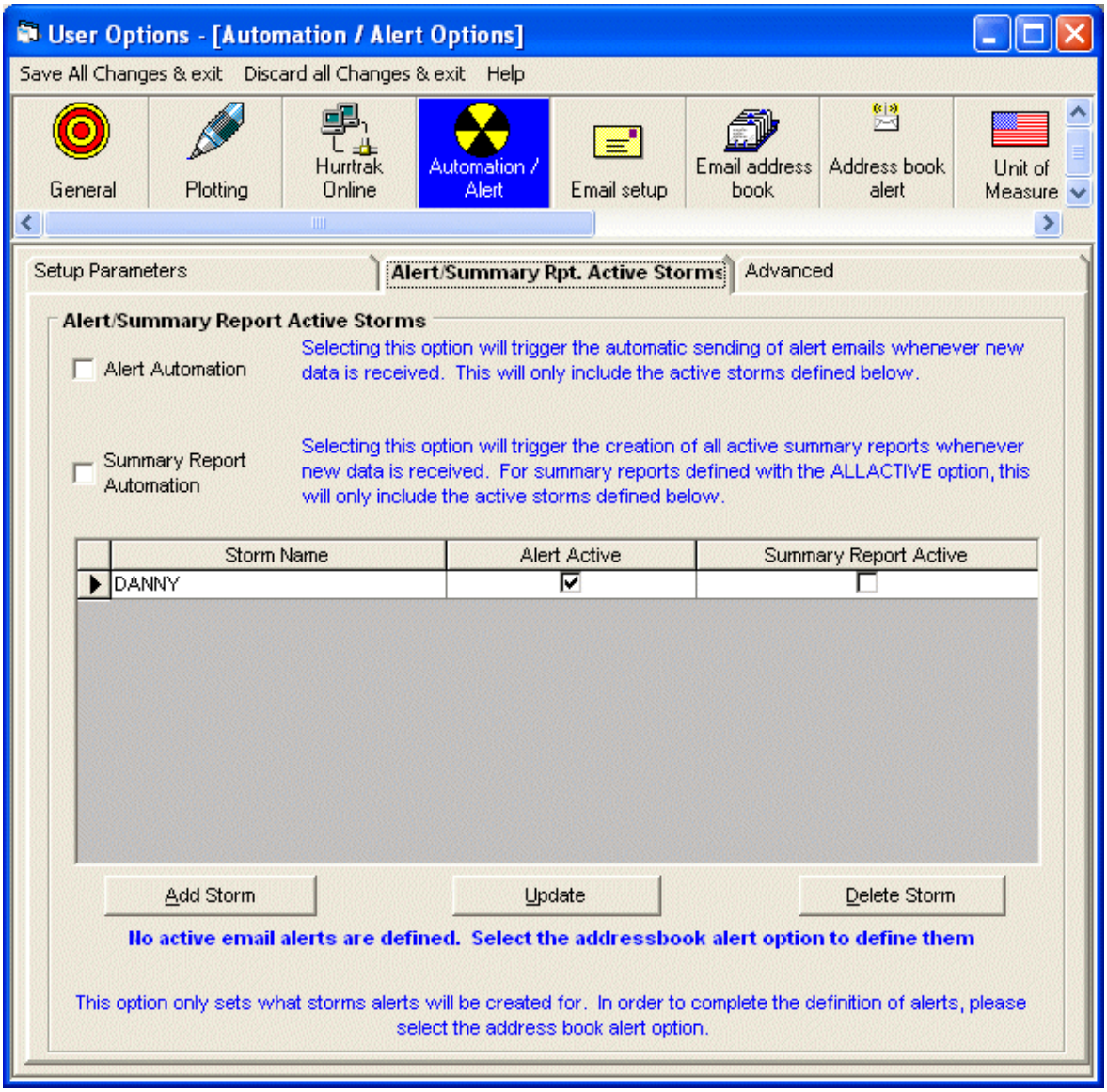
Automation/Alert options



Auto Track Plot - This option will force the system to plot the latest storm track and forecast track on all of the visible "favorite" tracking chart tabs whenever a new storm is loaded or updated.

Auto Report Creation - This "turns on" the indicator that allows the system to automatically create any “previously” opened reports when a storm is loaded.

Auto Report Updating - This "turns on" the indicator that allows the system to automatically update any open reports when new data arrives via HURRTRAK - Online.

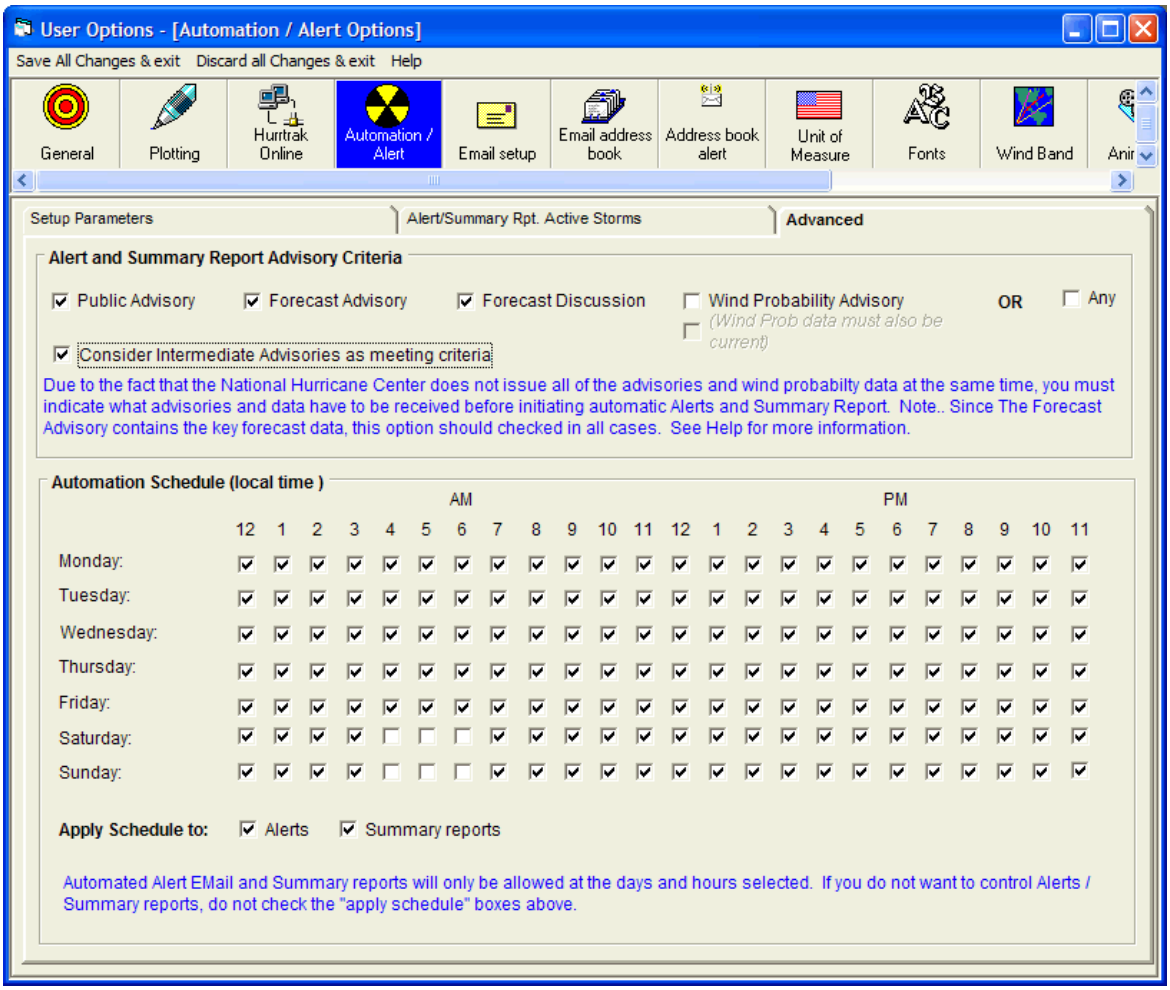


Alert Automation - This activates/deactivates the automatic generation of Email Alerts. Email Alerts are automatically generated when new data arrives via HURRTRAK - Online or can manually be initiated via the REPORT option on the main menu..

Summary Report Automation - This activates/deactivates the creation of all active summary reports whenever new data is received. For summary reports defined with the ALLACTIVE option, this will only include the active storms defined below.

Alert/Summary Storm Table - This table defines all of the valid Alert and Summary Report Storms as well as an active/deactivate indicator. This allows the user to turn on/off Automatic Email Alerts and summary reports by storm. This could be used by pre-defining all of the storms for a upcoming season and then activating them as required. One important exception.. the "new storm" Alert does not require an entry in this table in order for that condition to automatically send an email alert.

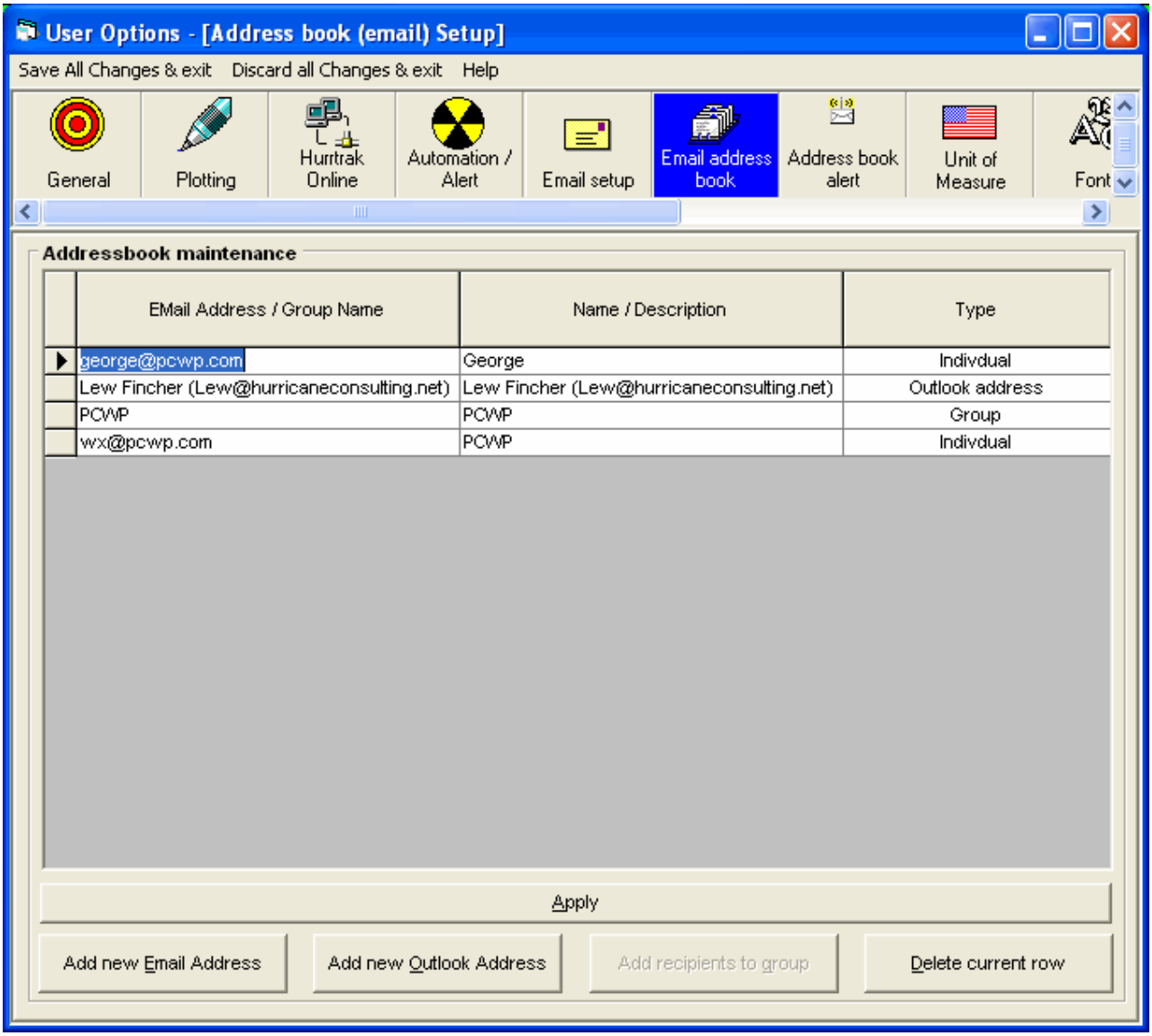
To setup specific alerts, select address book alerts.



Alert and Summary Report Advisory Criteria - This data allows the user to define what criteria the system should use to initiate Automated Alert and Summary Reports. We recommend the minimal selection be the Public Advisory, the Forecast Advisory, and the Intermediate Public Advisory. These advisories contain the critical current and forecast information. Be aware that selecting all of the advisories may result in a delay of any automated processing as the system waits for all of the advisories to become available. Selection of "ANY" on the other hand would cause the initiation of automatic process every time any type of new advisory becomes available. This is not recommended as multiple Alerts and Summary reports would be generated for each advisory package. *A special note about Wind Probability data… While the Wind Probability Advisory data comes in as part of the NHC advisory package with the other text advisories, the Wind Probability data can be issued at a later time. The timing of this data is uncertain at this time and may lag the advisory text data 30-45 minutes. Due to this, we suggest you do not select the Wind Probability Data option until this becomes better established.*

Automation Schedule - These checkboxes control the schedule at which the defined alerts and summary reports will automatically be sent. This allows the user to prevent reports from being sent at undesired times while allowing alerts and reports to be sent at other times. When a day / time checkbox is marked it pertains to the hour following the check time.

Email address book



Email address/ group name - The Email address of a potential recipient OR the name of a Email Group. The type of Addressbook entry is defined by the type field (Individual or Group). A typical individual email address has a name and a domain, i.e. terryforster@atlantabraves.com. A group name is a short identifier for the group, i.e. WX Group.

Name/Description - The name of the individual (if type is an individual) or the description of the group (if type is a group). This information is informational only and not used by the system..

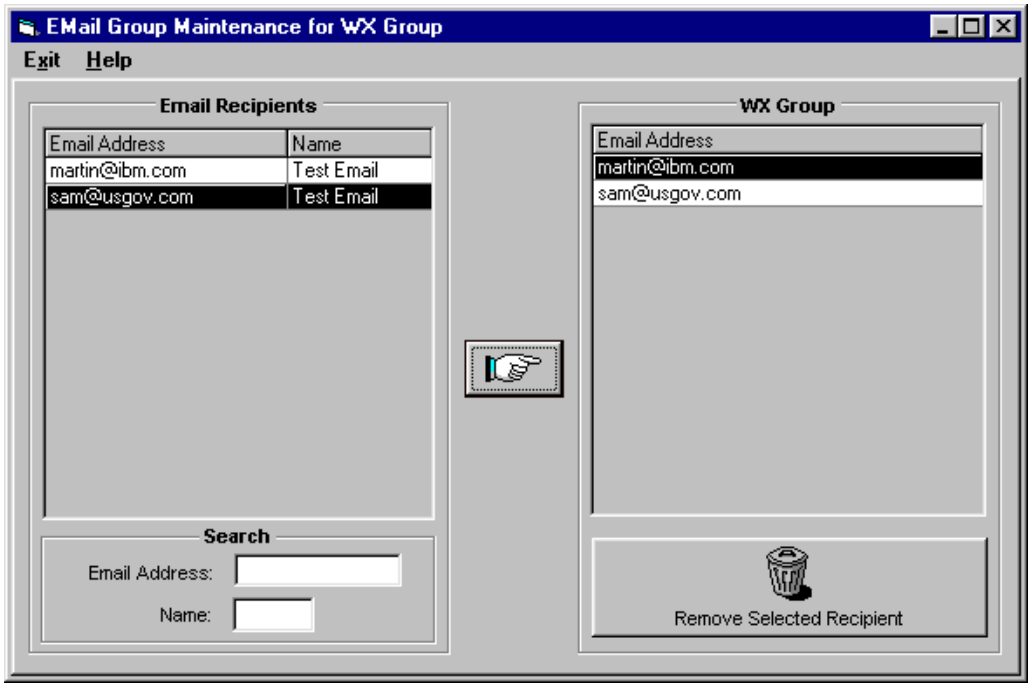
Type - Identifies the type of addressbook entry. Ind. is an individual Email recipient which Group is a list of Email recipients..

Commands

Add new Email address **-** This option adds a new Hurrtrak Email address.

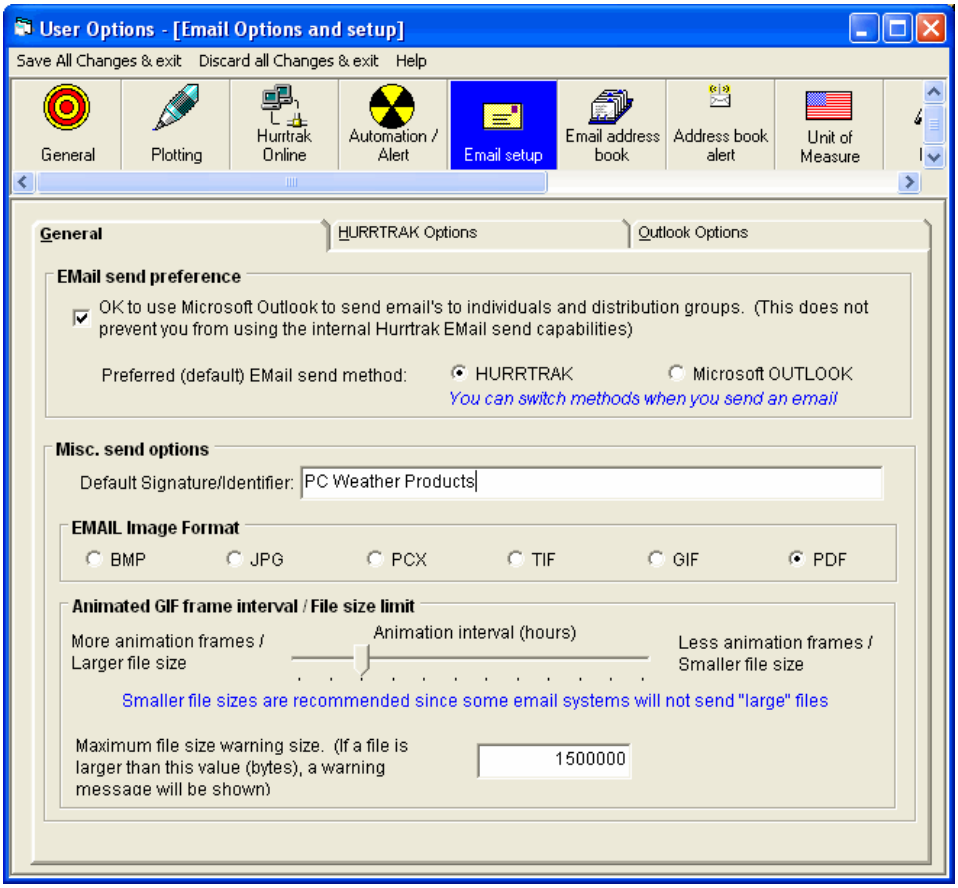
Add new Outlook address - This option adds a new MS Outlook address to the Hurrtrak email database. This is only necessary if you plan on setting up alerts or summary report for this email address.

Add Recipients to Group - This option allows the user to easily associate and disassociate individual Hurrtrak Email recipients to Hurrtrak Email groups. This does not apply to MS Outlook Email addresses.



Delete Current row **-** This option deletes the current email address.

Email General Setup

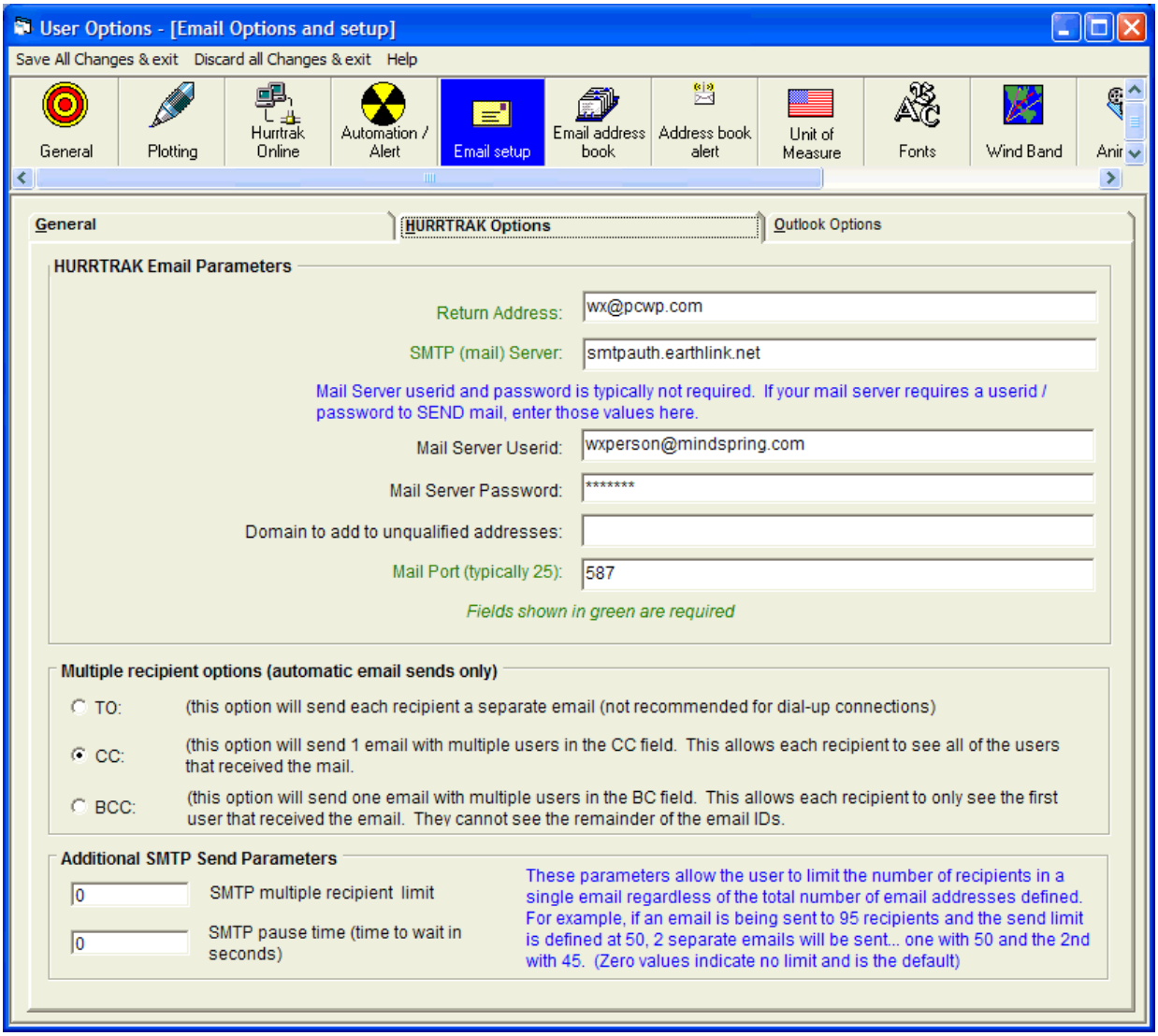


Email send preference - Specifies whether to allow MS Outlook to send e-mail from HURRTRAK and if so, the default/preferred method to send email. MS Outlook users may find it much easier to select the Outlook option as it removes the requirement of setting up your SMTP server information, etc. When you send e-mail you may change the send method. This is just the default method the system will assume.

Default Signature/Identifier - Contains the default signature you would like to appear at the end of your email notices. This can be blank if desired.

E-mail Image Format - Identifies the type of image you would like to send when attaching graphics to an email note. This applies to both manual and automatic generation of email. We recommend BMP format. For smaller file sizes, select the RLE Bitmap option in the general options. PDF is also a “non image” option for users that would rather send their images using Adobe Acrobat..

Animated GIF frame interval / file size limit - These options control the size of the animated gif file created when sending an animation sequence. You can control the animation interval by sliding the control left or right. A longer animation frame interval will result in a smaller number of frames and a smaller file size. You can also specify the "warning" filesize... Any files above this limit will generate a warning message before sending to confirm that the user really does want to send a file above this size. Generally, you should avoid sending animations where the background is a satellite, radar or landsat image.



Return Address - Enter a valid return address that you would like to use when sending email.

SMTP Server - This is the name of the server where you send your messages to. The name of this server is SMTP (Simple Mail Transfer Protocol).

Mail Server userid - This contains the userid needed to send email via the SMTP server. This is not required in most cases.

Mail Server Password - This is the password needed to send email via the SMTP server. In most cases this is not needed.

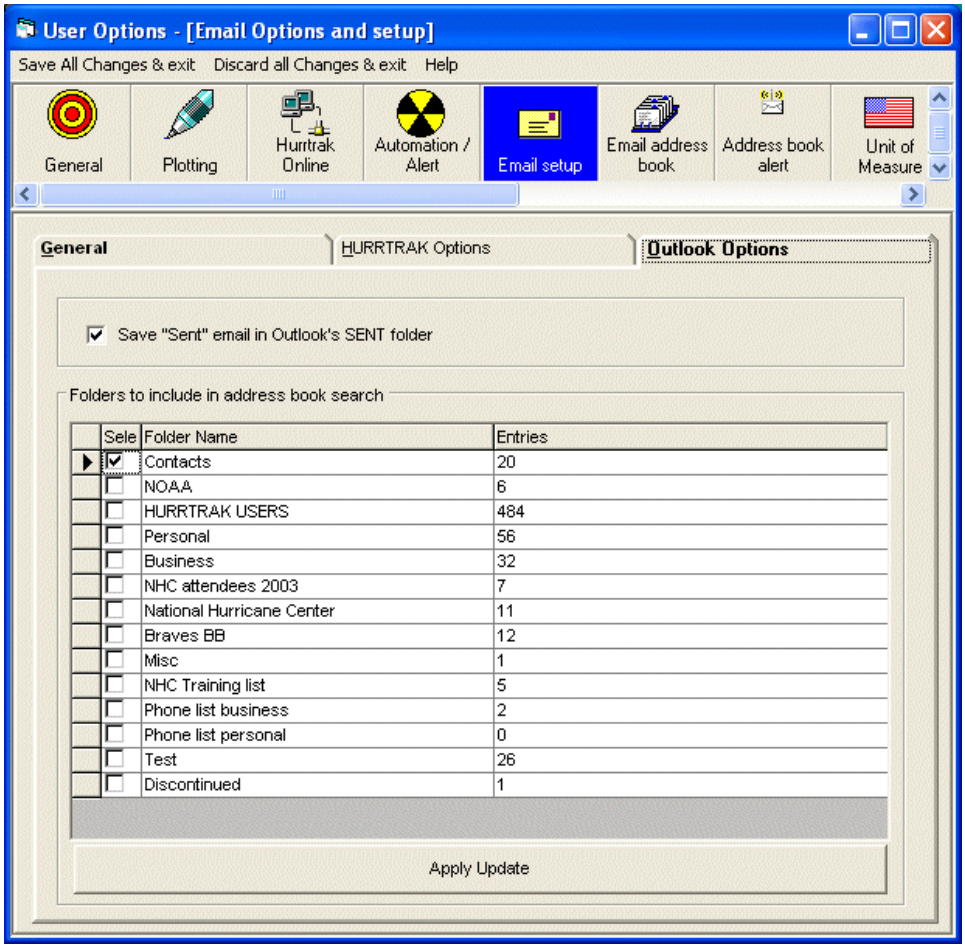
Domain to add to unqualified addresses - Specifies a domain to be added to unqualified names. An unqualified name is one that doesn't have an "@" sign followed by a domain name. If you address a message to someone without including their domain name, HURRTRAK automatically adds this domain to that address. This setting can be used as a time-saving device when addressing large numbers of messages to users who reside in the same domain.

Mail Port - Specifies the mail port that your email system uses to send mail. Typically a value of 25.

Multiple recipient options - This field indicates how you would like to send automatic email to multiple recipients within an Email Group.

Selecting the **TO** option will send each recipient a separate email to the mail server. This is usually not recommended for a large number of recipients.
Selecting the **CC** option will send 1 email to the mail server and "copy" the remaining recipients in the group.
Selecting the **BCC** will send 1 email to the mail server and send "blind copies" to the remaining recipients.

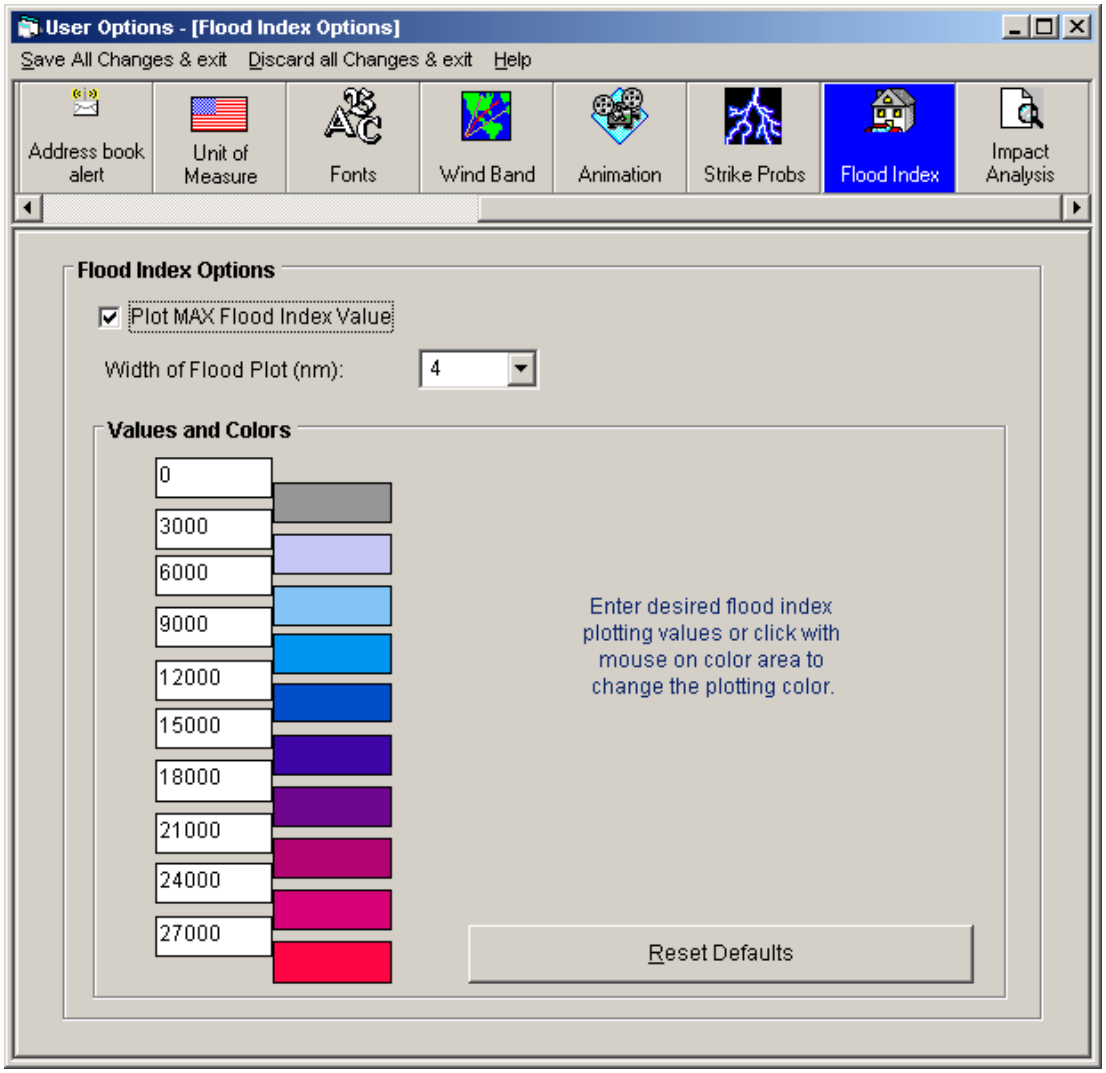
Additional SMTP Send Parameters – (This does NOT apply to email sent via MS Outlook)
These parameters allow the user to limit the number of recipients in a single email regardless of the total number of email addresses defined. For example, if an email is being sent to 95 recipients and the send limit is defined at 50, 2 separate emails will be sent… one with 50 and the other with 45. The 2 parameters available are
SMTP multiple recipient limit – max number of recipients in a send
SMTP pause time – time to wait in seconds between batches.



Save Sent Option - Specifies whether e-mail send via Outlook should be saved in Outlook's SENT folder. This is useful if you would like to keep a record of all email sent from the HURRTRAK system.

Outlook Folders - Specifies the folders that the user would like to be included in the address book search when sending email. DO NOT specify very large folders (>5000 addressbook entries) as it will greatly impact the performance of this function. If you have large Contact folders, you might want to copy your "key" contacts to a separate smaller folder (for use with HURRTRAK).

Flood Index Options

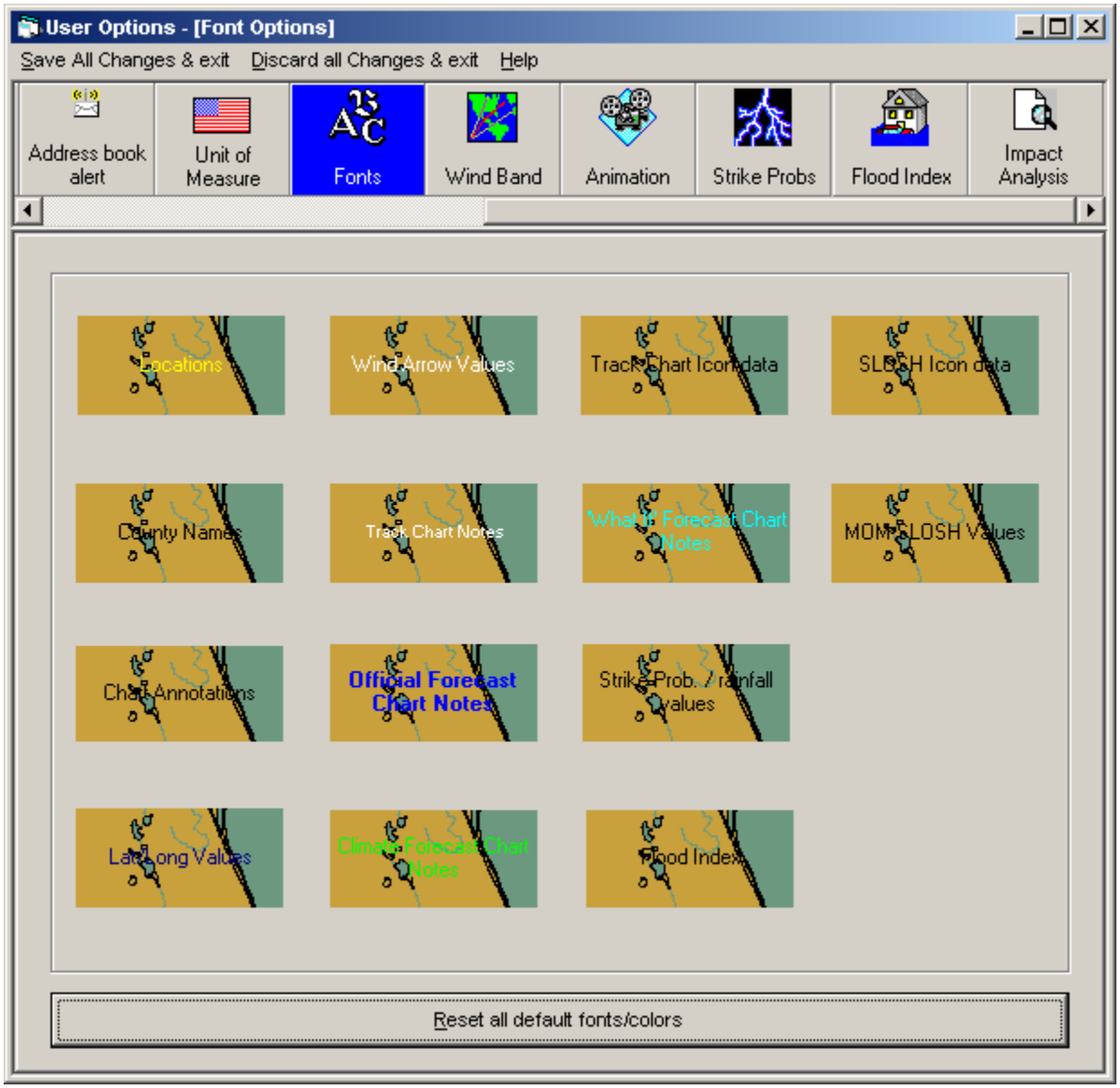


Plot max flood index - This option determines if the maximum flood index value will be labeled when a flood index analysis is done. Its font is controlled within the font options.

Width of Flood Plot (NM) - This controls the width (in nautical miles) of the flood index analysis. Width's of greater than 10 miles are not allowed due to the degradation in the quality of the plot.

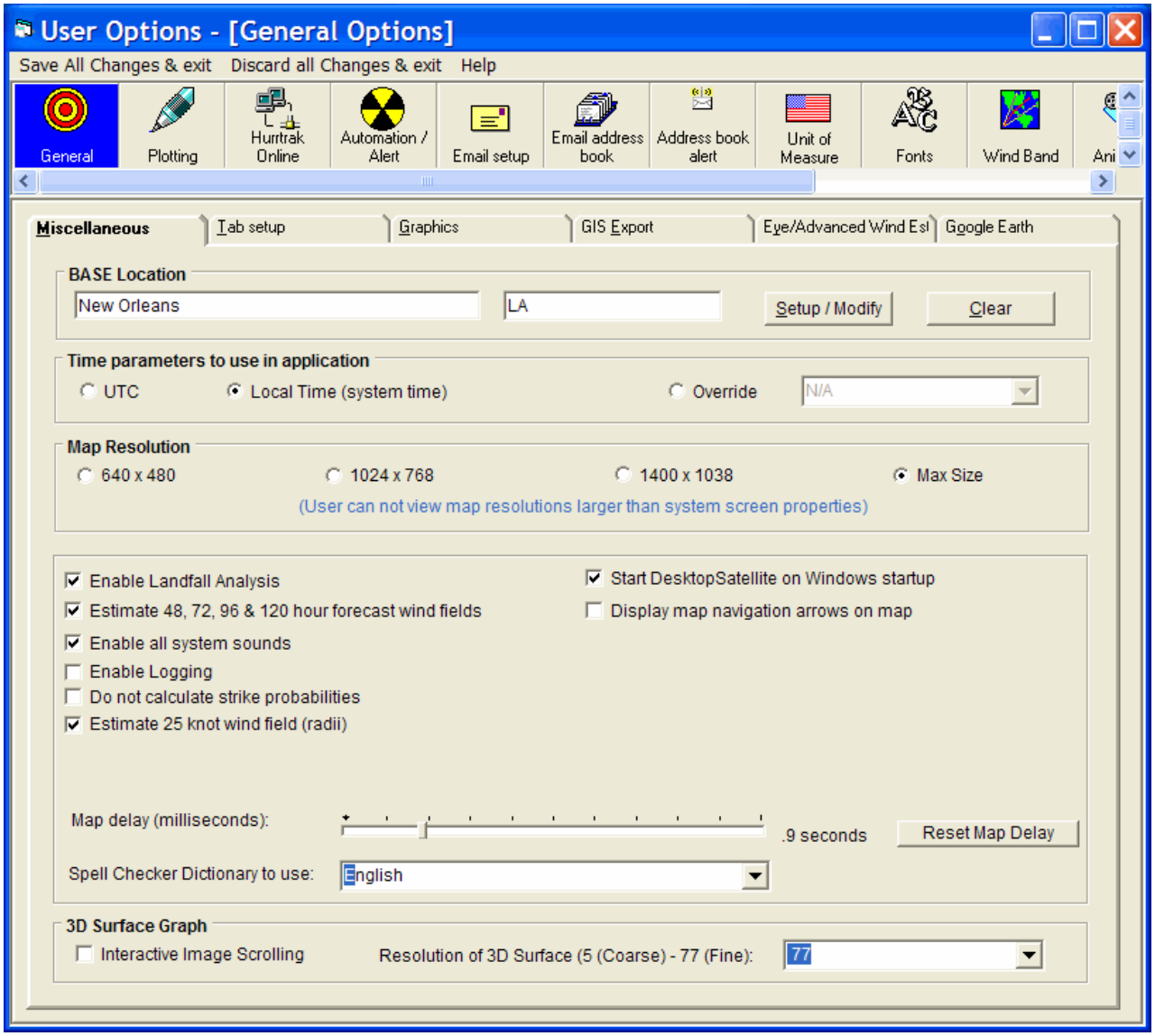
Flood Index Values and Colors - This allows the user to change the flood index values and associated colors. Any positive, ascending set of values can be used and any color (within the limits of the color mode your system is set at).

Fonts Options



This option allows the user to set the text properties for the display of locations, county names, chart notes, user notes, lat./ long values, wind arrow values, flood index, SLOSH MOM and strike probability values. These properties include the font name, size, color and whether it should be printed in bold and/or italic.

General Options



BASE Location - A user can identify a single "Base" location which typically represents the users operating location. It can be a "location", County or Zip Code. This location is used to automatically update the main windows status bar information.

Time - Identifies the time zone the user would like to use. UTC represents the global standard that is used by the NHC in their advisories and is time zone independent.

Map Resolution - Other than the pan and zoom mapping, the system includes 3 sizes of standard tracking charts... 640 x 480 pixels, 1024 x 768 and 1400 x 1048 pixels. You have 3 options. If you would like to work with the smaller, less detailed charts then select the 640 x 480 option. If you would like to use the larger, more detailed charts then select the 1024 X 768 option or 1400 x 1048. Finally if you change screen resolutions often and would like to use the largest available at all times then select the 3rd option. Keep in mind that the HURRTRAK system will not display charts that are larger then the screen resolution you are working in. I.E. If you select 1400X1048 and only have your Windows screen setting at 1024 X 768, then the HURRTRAK system will use the 1024 X 768 charts.

Landfall Analysis - Selecting this option forces the system to recognize when the storm is forecast to make landfall and make adjustments to the official forecast. Landfall is defined as the first hourly position over land that is followed by at least 4 more overland positions. CAUTION: Please be aware that when you use this feature you are changing the official forecast data. The assumption that a storm will maintain its intensity until landfall is not always valid. For more information, see Common Questions.

Estimate 48, 72, 96 and 120 hour forecast winds - Selecting this option forces the system to estimate the 34 and 64 knot wind field for the 48, 72 96 and 120 hour forecast position. A hierarchy of algorithms is used to do the estimate. **CAUTION: Please be aware that when you use this feature you are adding information to the official forecast data. Estimates are just a guess based on past patterns of wind fields and should not be relied on.**

Enable all system sounds - This option turns on/off the system sounds**.**

Enable Logging - This option "turns on" system logging. It reports on the status on incomplete automation options as well as start and ending times of sessions

Do not calculate strike probabilities - This option "turns off" the system calculation of strike probabilities. This may be required on 64 bit operating systems.

Estimate 25 knot wind radii - This option allow the system to estimate the wind speeds around the storm down to 25 knots rather than the 34 knot wind radii that the National Hurricane Center provides. This will be reflected in the wind pattern, wind field analysis and impact reports.

Spell Checker Dictionary - This option "turns on" and selects the language you would like to use for spell checking. The options are none, English and Spanish.

Display Map Navigation on Map - This option controls whether the user wants visible map navigation aids for panning a tracking chart map. This can be set based on user preference but is not enabled by default.

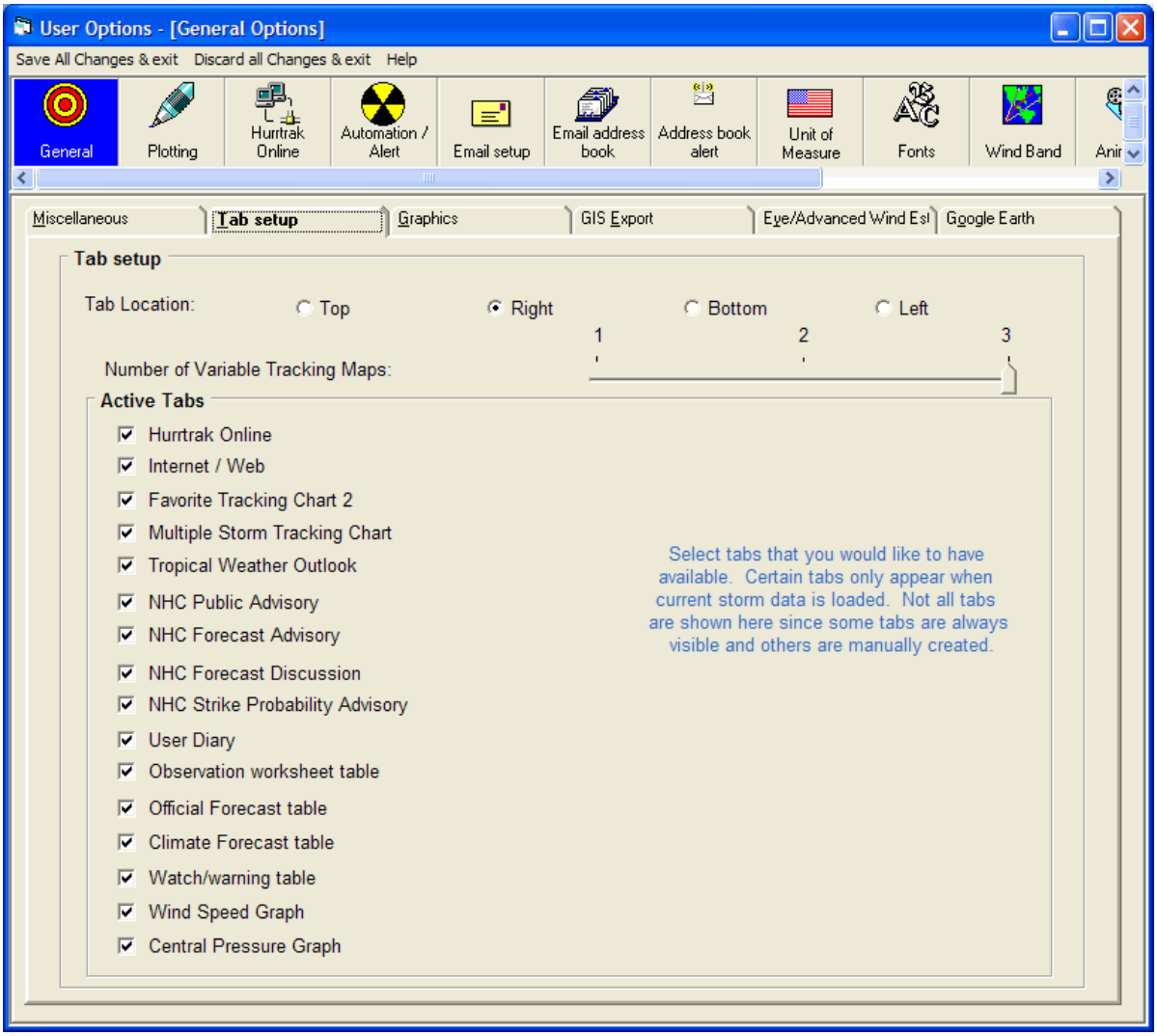
Map Delay - This option controls the delay in seconds that the system will use when plotting a new panned or zoomed map. Depending on your system's video capabilities, you may have to adjust this slightly upward to allow the system time to plot the land masses correctly.

Start Desktop Satellite on Windows Startup - This option "turns on" the Desktop Satellite program which will update the desktop background image with a current satellite image. We recommend that you set the windows display properties to CENTER the image.

3D Options:

3D Image Interactive Image Scrolling - This determines if the 3D surface graph will “redraw” every time the horizontal or vertical controls are changed. Unless you are running a very fast processor or have the resolution set very low, this option should remain unchecked. Selecting the OK command will cause the graph to redraw instead.

Resolution of 3D surface graph - This sets the resolution of the 3D surface graph. High values will cause very slow responses and more detail while low values will allows for faster response and less detail.



TAB Location - This option allows the user to define the location where the tab labels will appear.

Number of Variable Tracking Maps - This slide control allows the user to specify the maximum number of variable maps allowed. The valid range is 1 to 3.

Active Tabs - This area allows the user to specify which of the optional tabs they would like to activate/deactivate. By deactivating a tab, it will not be able to be viewed until activated again by the user. This is useful when a user never wants to see certain information shown on a particular tab. Otherwise we recommend that you keep most of these tabs active.

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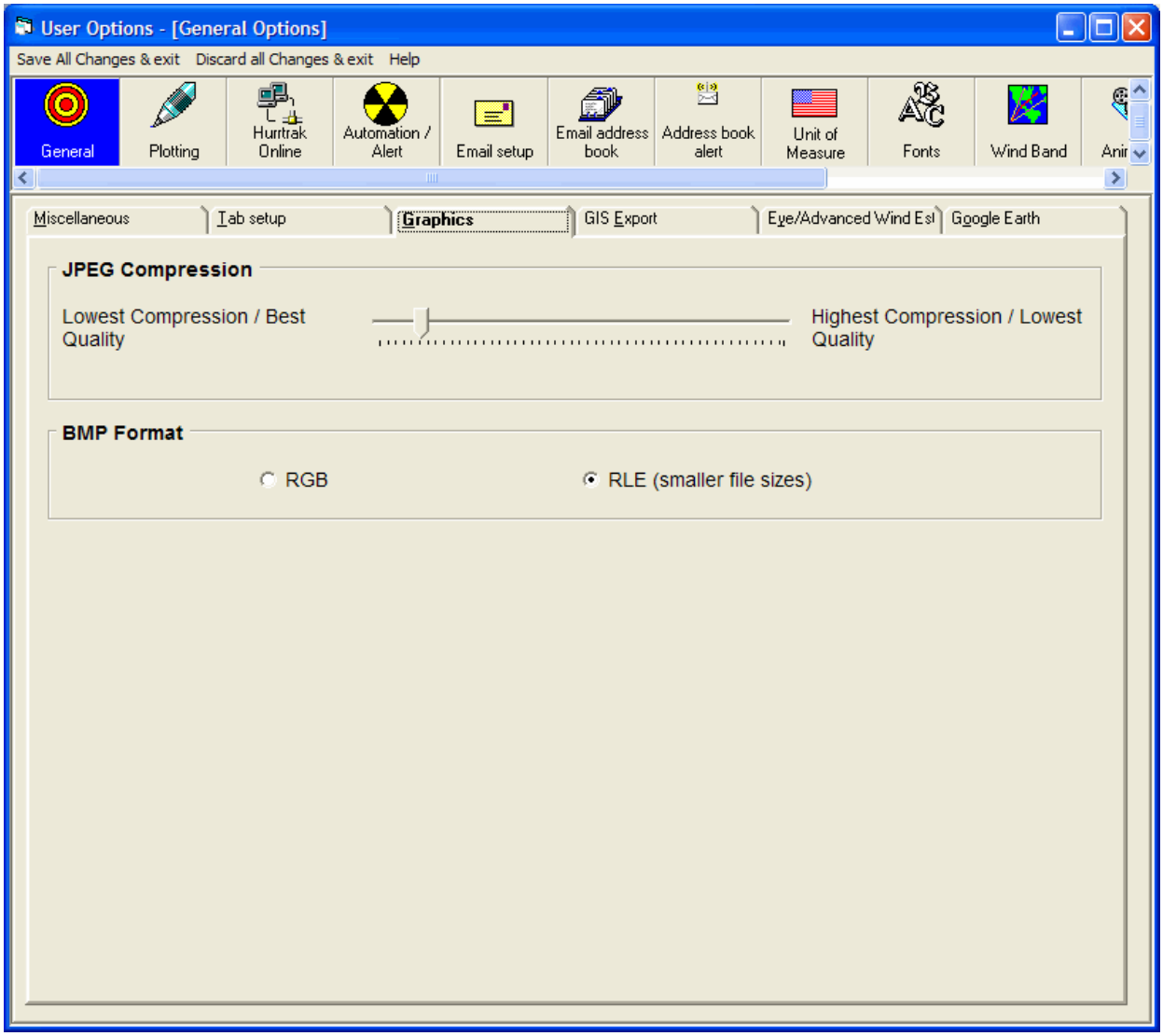
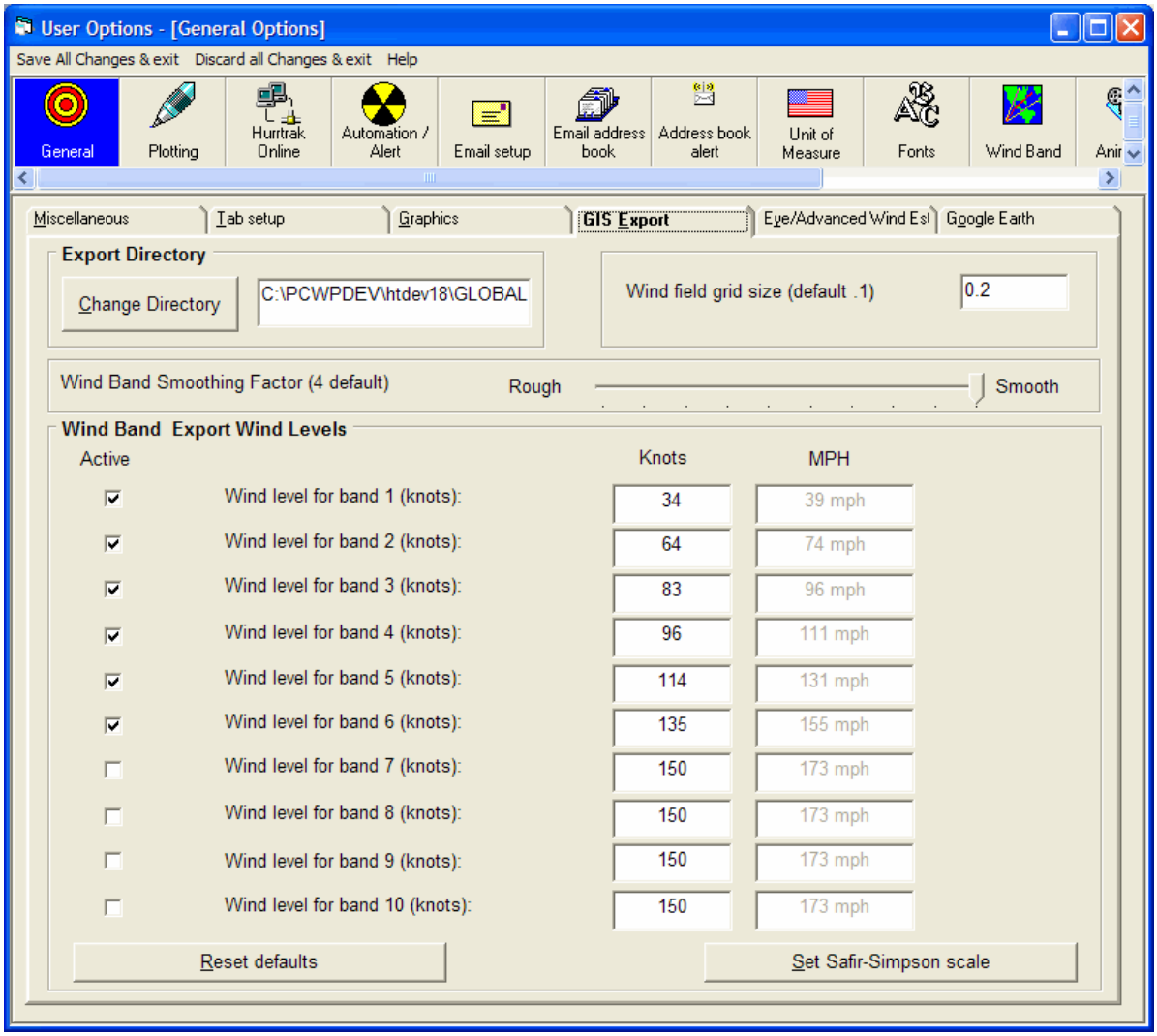


JPEG Compression - When images are saved in JPG format, the user can control the compression/quality factors used. The higher the compression, the lower the image quality and vice-versa. The JPEG format is best suited for compressing the size of high-color images. HURRTRAK images do not contain many colors so the JPEG format is not recommended. Instead use the RLE BMP format or GIF..

BMP Format - When images are saved in BMP format, the user can control whether to save as RGB or with RLE compression. Most applications accept RLE type bitmap files so this is recommended due to the much smaller file sizes.

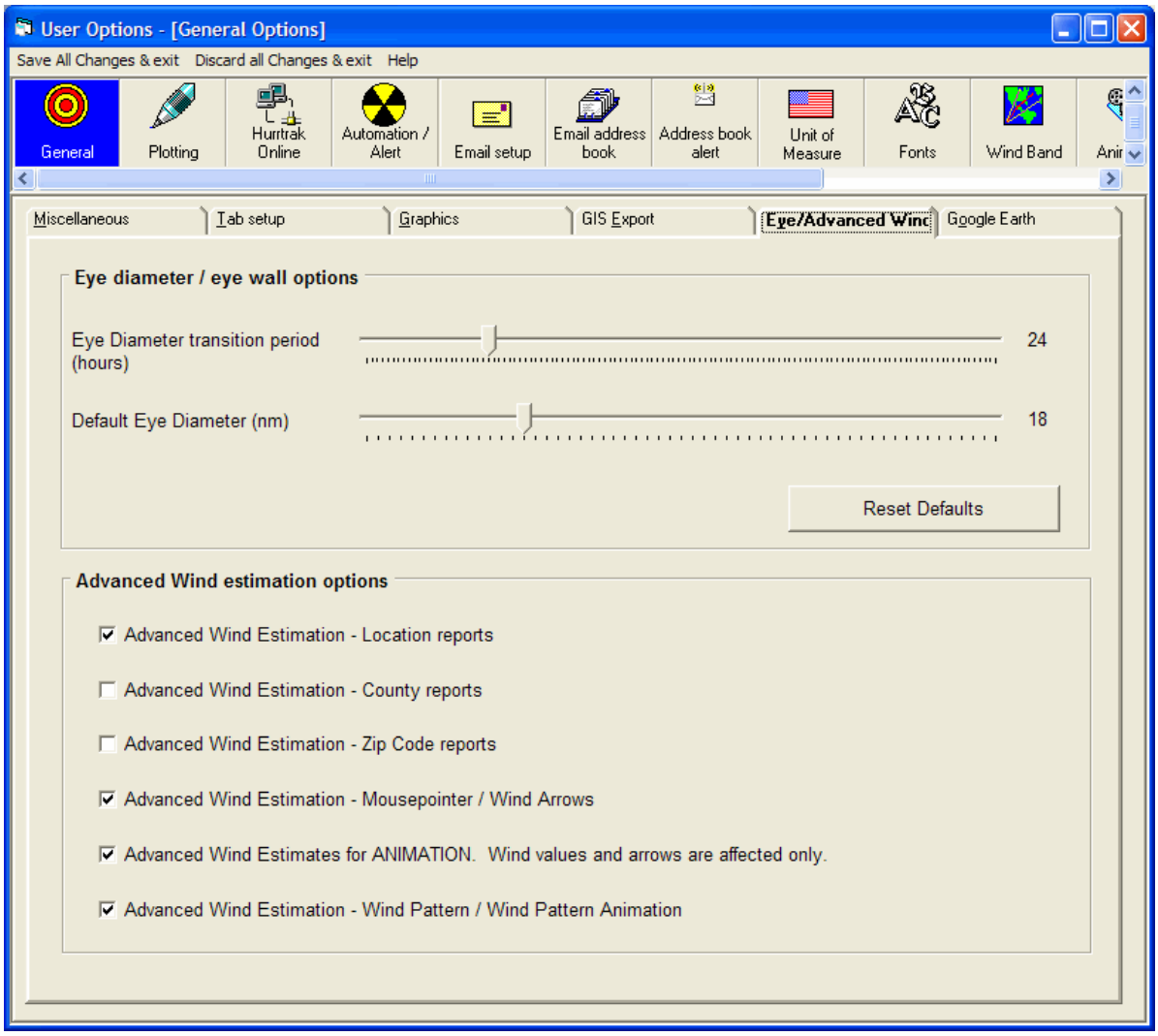


GIS Wind Band Export Directory - This option allows the user to identify the directory location to build the GIS wind band export files. If this is left blank, it will default to the applications temp directory.

Wind Field grid size - This value determines the density of the exported Wind Field Shape file. The default value of .1 will generate a point value at every .1 degree of latitude and longitude. This would result in 100 points per 1 degree square. Hurrtrak Advanced only.

Wind Band Smoothing Factor - This factor determines how much smoothing to apply to the exported wind band data and applies to both the text data export and Shape File export (Advanced). If you choose a smoothing factor that causes wind band lines to intersect, then this value should be reduced.

Export Wind Levels - This option allows the user to identify the 10 wind band levels used when creating the GIS wind band export files. It must be entered in knots (MPH are shown for convenience)



Eye Diameter Options: **These options allow the system to take into account storms with very small or very large eye diameters as they progress through the forecast period.**

Eye Diameter Transition Period - This option works with the default eye diameter value. It defines the number of hours, into the forecast period, that it will take for a storm's non-default eye size to transition to the default size. The system uses this information to perform forecast wind estimations.

Default Eye Diameter - This option defines the default, or normal, eye diameter size. It works with the prior "transition period" option.

Advanced Wind Estimation Options: **These options define how and where the system will use Advanced Wind Estimation.**

Advanced Wind Estimation (Locations) - This option activates the Advanced Wind Estimation for all Location and Map Select Location reports.

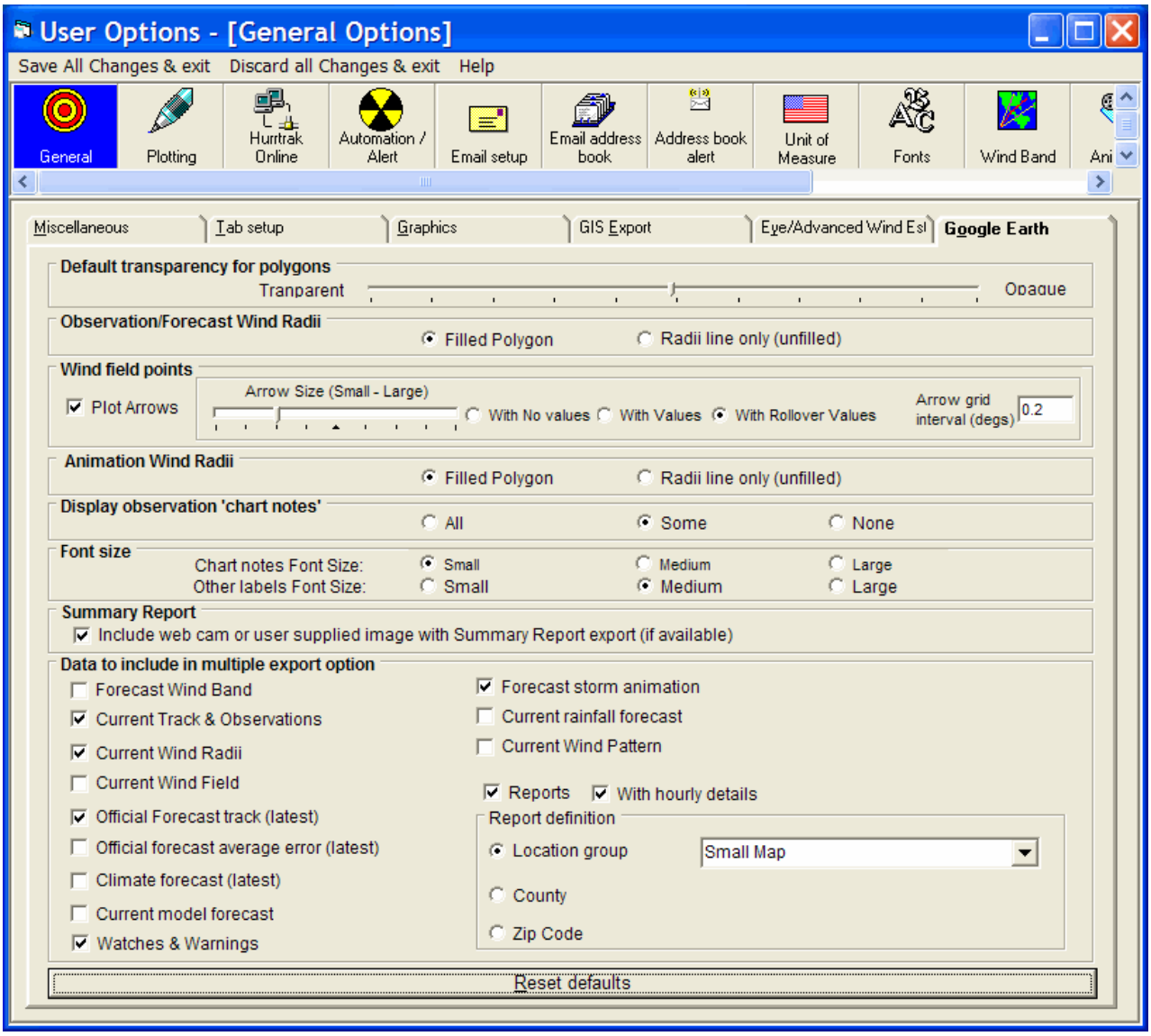
Advanced Wind Estimation (Counties) - This option activates the Advanced Wind Estimation for all counties. This should be used with great caution as county wide wind estimation may not be valid for many coastal counties.

Advanced Wind Estimation Zips Codes) - This option activates the Advanced Wind Estimation for all counties. This should be used with great care as zip code wide wind estimation may not be valid for many coastal zip codes.

Advanced Wind Estimation Mousepointer/Wind Arrows - This option activates Advanced Wind Estimation for the mousepointer/wind arrow and Wind Pattern displays.

Advanced Wind Estimation for animation - This option activates Advanced Wind Estimation for the Animation wind arrow displays.

Advanced Wind Estimation for Wind Pattern / Wind Pattern Animation - This option activates Advanced Wind Estimation for the Wind Pattern displays and Wind Pattern Animation



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Default transparency for polygons – This determines how transparent polygons will appear when exported to Google Earth (KML). Polygon data includes such data as wind radii and wind bands.

Observation/Forecast Wind Radii – This determines if exported wind radii appear as an outer ring only(unfilled) or as a filled area (filled polygon).

Wind Field Points – One of the export options is to export a grid of observed or forecast wind points across a storm. The user has the option of display wind barbs which represent the wind speed and direction and or the values at each grid point. You can also select to only have the wind speed value appear when you roll your mouse over the point. It may be best to experiment with this setting to determine what you prefer. Since performance may be somewhat impacted with plotting all of the values, the default is mouse activated values.

Animation Wind Radii - This determines if exported wind radii during animation will appear as an outer ring only(unfilled) or as a filled area (filled polygon).

Display observation 'chart notes' - This allows the user to control the amount, if any, of the chart notes to appear next to a storms observation points. ALL will obviously show all of them, SOME will show every other one and NONE is self explanatory. This does not apply to forecast points.

Chart Notes font size - This controls the default font size of the chart notes.

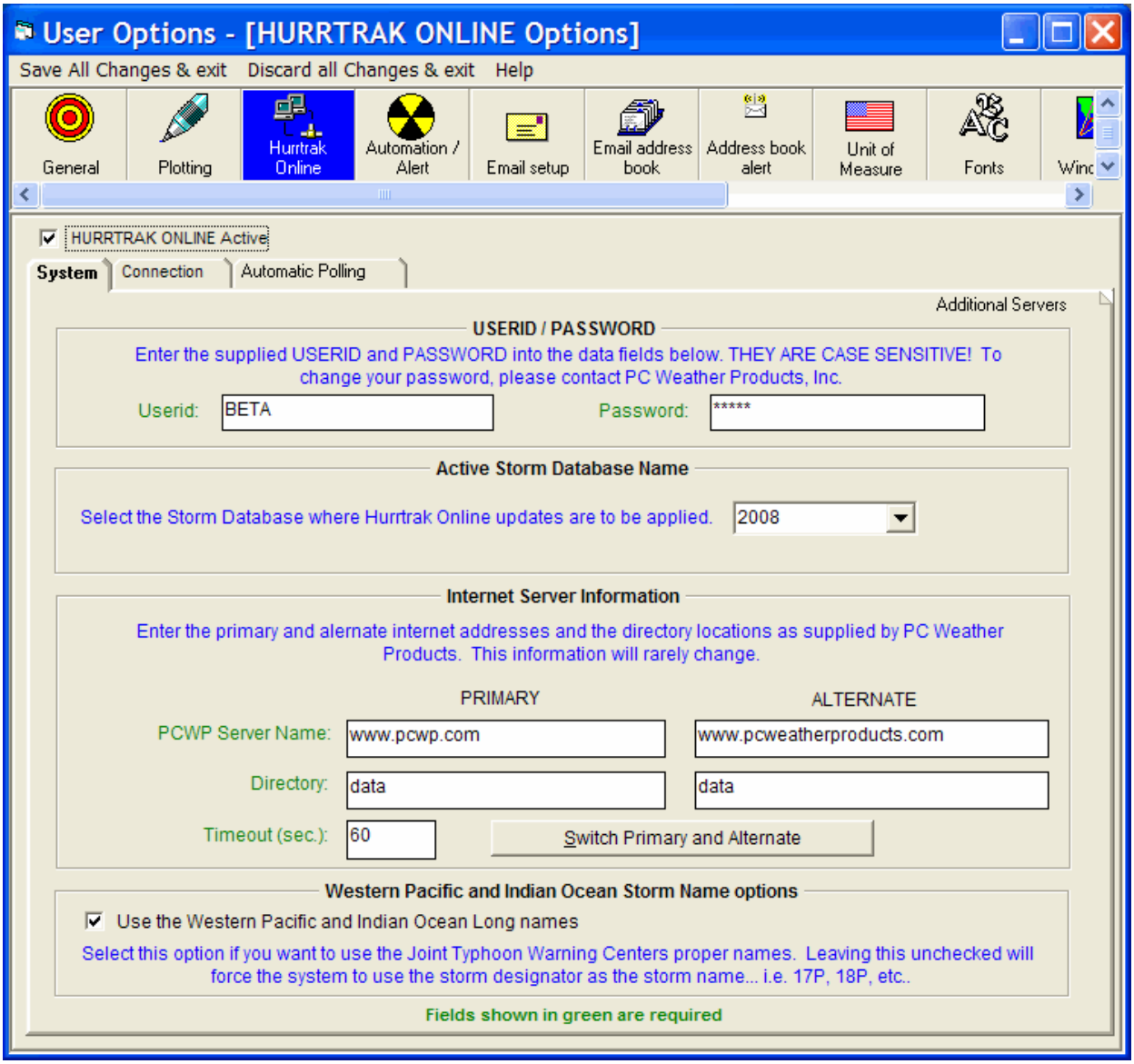
Other labels font size – This controls the font size of other labels displayed by Google Earth. They can sometimes be adjusted within the Goggle Earth interface.

Include web cam / local images - This option determines is either web cam or user supplied images are included when exporting summary impact report information to Google Earth. See page 313 for more information.

Data to include in multiple export option – This set of options has to do with the Google Earth "ALL Selected Outputs function". This feature allows multiple GE exports be created with a single action. The exports available through this function are described below. All checked options will be exported while unchecked ones will not be. We do not suggest you select all outputs unless truly necessary. The automatic export options include the following:

Forecast Wind Band – This will export the forecast wind band. Not suggested as part of multiple output as it may take several minutes to complete.
Current Storm Track & Observations
Current Wind Radii
Current Wind Field
Official Forecast Track (latest)
Official Forecast Average Error (latest)
Climate Forecast
Current model forecast
Watches & Warnings
Forecast Storm Animation
Current rainfall forecast (3 days)
Current Wind Pattern
Reports – This will create a summary report for a set of locations, all counties, all zip codes based on the selections chosen.

Hurrtrak Online Options



USERID/Password – This is where you enter your HURRTRAK ONLINE userid and password assigned by PC Weather Products.

Active Storm Database Name - This option allows the user to select the database which all current and manually downloaded data will be loaded into. It is recommended that this match the current year.

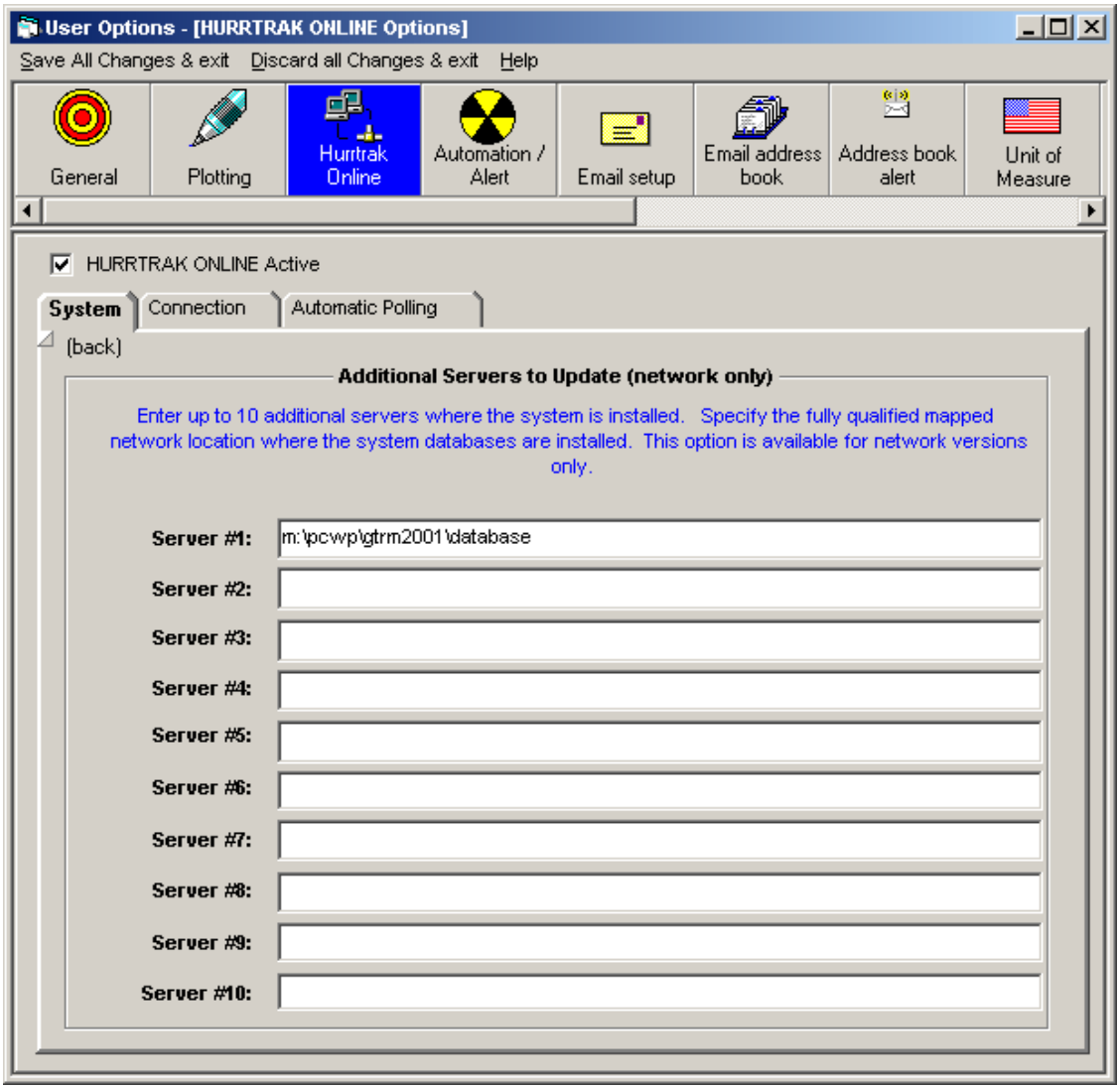
PCWP Server Name - Enter the primary and secondary internet server address supplied to you by PC Weather Products. This information will rarely change

Directory - Enter the primary and secondary internet server directory supplied to you by PC Weather Products. This information will rarely change.

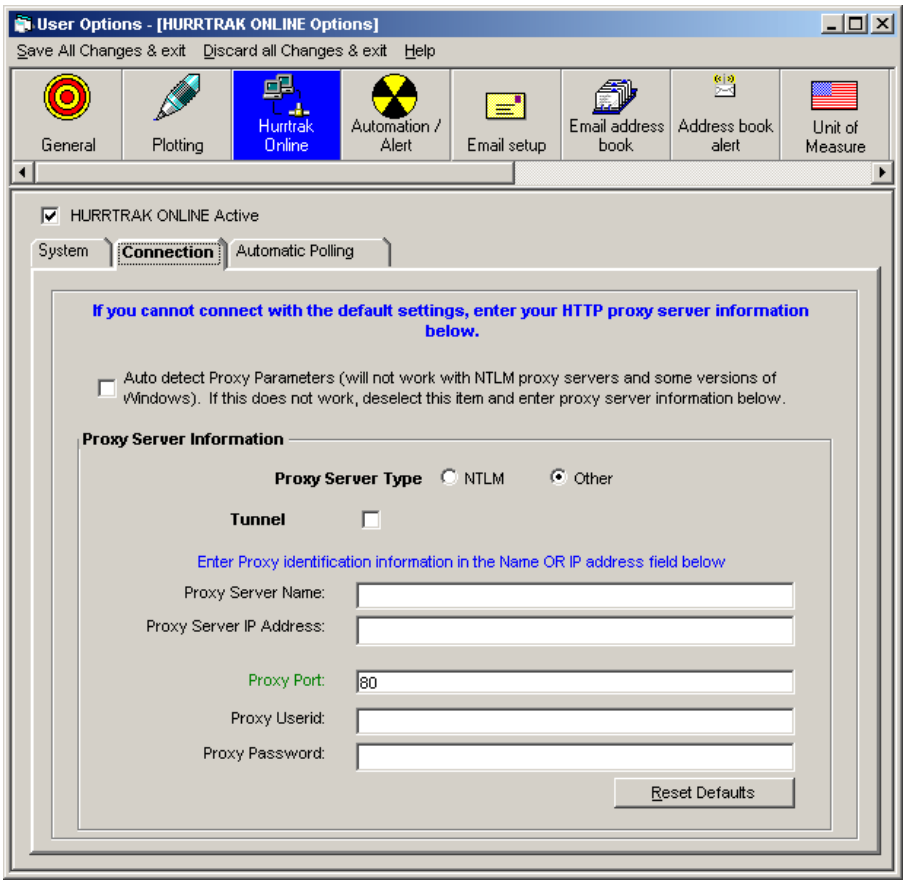
Timeout - This represents the maximum amount of time the system will wait for an online task to complete. Currently this parameter is ignored as all timeouts are set to 60 seconds. This may be changed in future versions.

Western Pacific & Indian Ocean Storm Name option – Selecting this option will force the system to use the long names assigned by the JTWC rather than the number/letter identifies.. i.e. Monica rather than 23P. This only applies to the Global Versions of the Hurrtrak Software.

Note regarding Primary and Secondary servers: If the system fails to successfully retrieve data from the primary server, it will AUTOMATICALLY switch to the alternate server. The user does not need to request this switch over.



Additional Servers - This option, which only applies for Network versions of the system, allows the user to setup up to 10 additional servers where HURRTRAK is installed. In this way, one Hurrtrak Online update session can update the databases on several servers.



Proxy Auto Detect – This option allows a very few Windows Systems to automatically detect it's proxy server settings. It is worth giving it a try and if it does not success, enter the specific proxy server information below.

Proxy Server Type - This option specifies whether your HTTP proxy server is an NTLM type or a different type. Check with you network administrator for this information.

Tunnel – Select this option if your proxy server requires SSL tunneling. In most cases this option should be left unchecked. Check with you network administrator for this information.

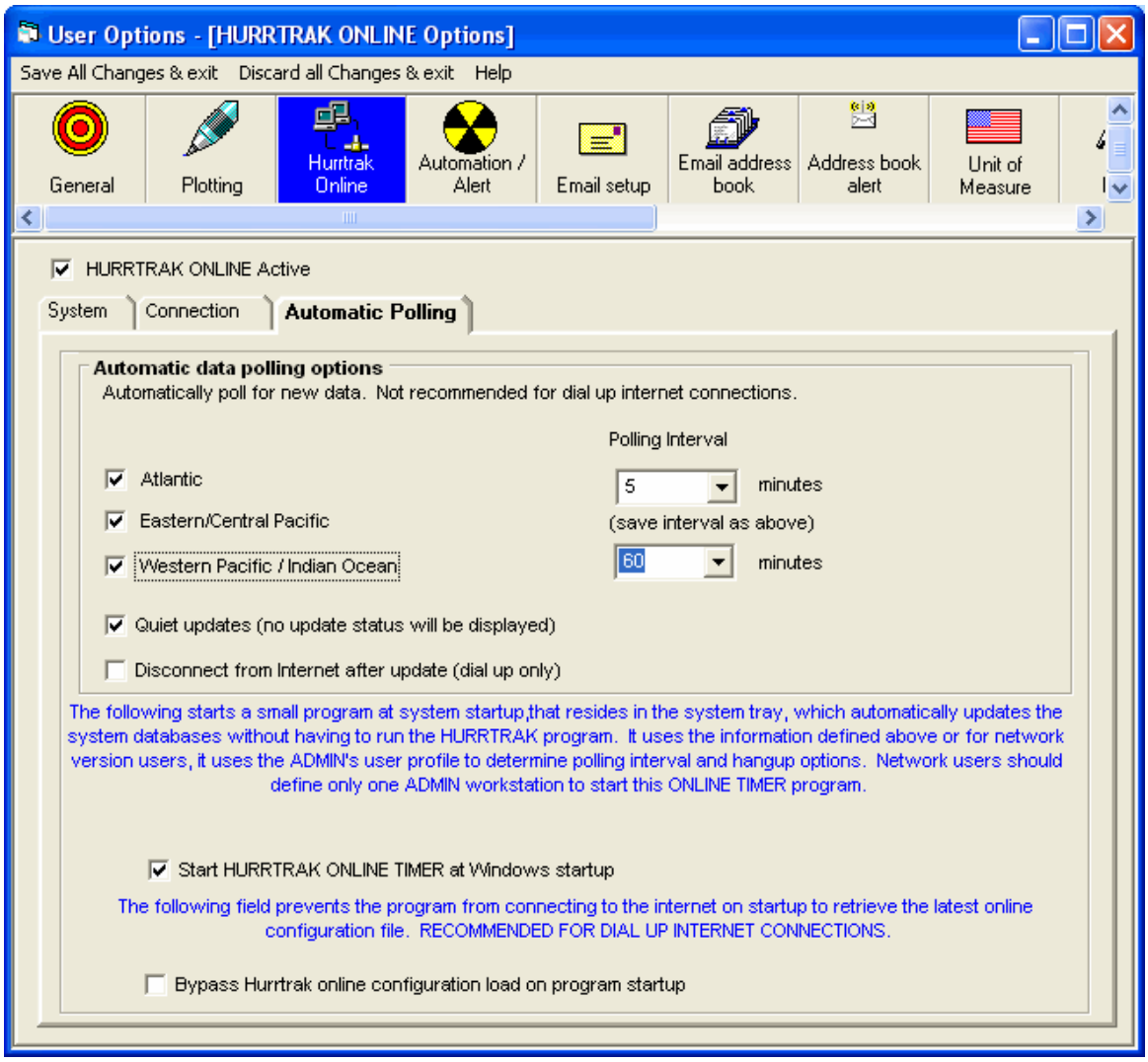
Proxy Server Name - This field contains the domain name of your HTTP proxy server. If this is entered you do not need to enter information into the proxy server IP address field. Check with you network administrator for this information

Proxy Server IP Address - This field contains the IP address of your HTTP proxy server. If this is entered then you do not need to enter information into the Proxy Server Name field. Check with you network administrator for this information.

Proxy Port - This field contains the port number for your HTTP proxy server. This defaults to the standard port of 80 although your port number may be different. Check with you network administrator for this information.

Proxy USERID - you have an authenticating proxy server. This field allows you to enter the userid required for access to the proxy server. Check with you network administrator for this information

Proxy Password - If you have an authenticating proxy server. This field allows you to enter the password required for access to the proxy server. Check with you network administrator for this information.



Automatically poll for new data - This data allows the user to select automatic polling for new data and also specify the polling internal. When this option is on, the system will attempt to retrieve new data when the system is first started and then at the specified interval. For dial-up type systems, you must define your connection in the Windows- Control Panel - Internet - Connection preferences. Global users have access to the data in the Pacific and Indian Oceans.

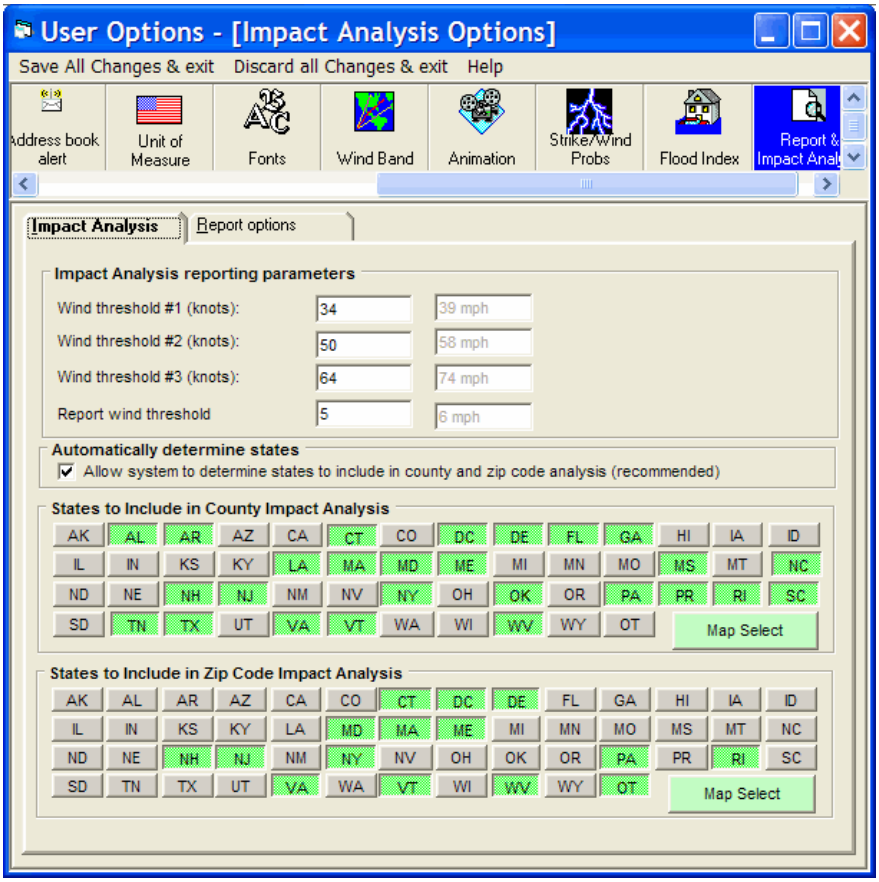
Quite Updates - This option, when checked, will prevent the system from showing the data update progress box. "New data" messages will continue to be displayed however.

Disconnect from Internet after update - This option will automatically disconnect your dial-up session after polling/retrieving any new data. This is only valid for Dial Up Networking Accounts. Do not set this if you have a direct connection to the internet or an error will occur.

Start HURRTRAK ONLINE TIMER at Windows Startup - When this option is checked, a special Hurrtrak Online update program is started when your windows system starts up. It will interact, via an Internet connection, to HURRTRAK ONLINE, keeping your hurricane database current. This allows you to keep your databases updated even though the main tracking program is not active.

Bypass Hurrtrak online configuration load on program startup - This field prevents the program from connecting to the internet on startup to retrieve the latest online configuration file. If you have a dial up connection and only want to connect when retrieving data, you should select this option.

Impact Analysis Options



Impact analysis report values:

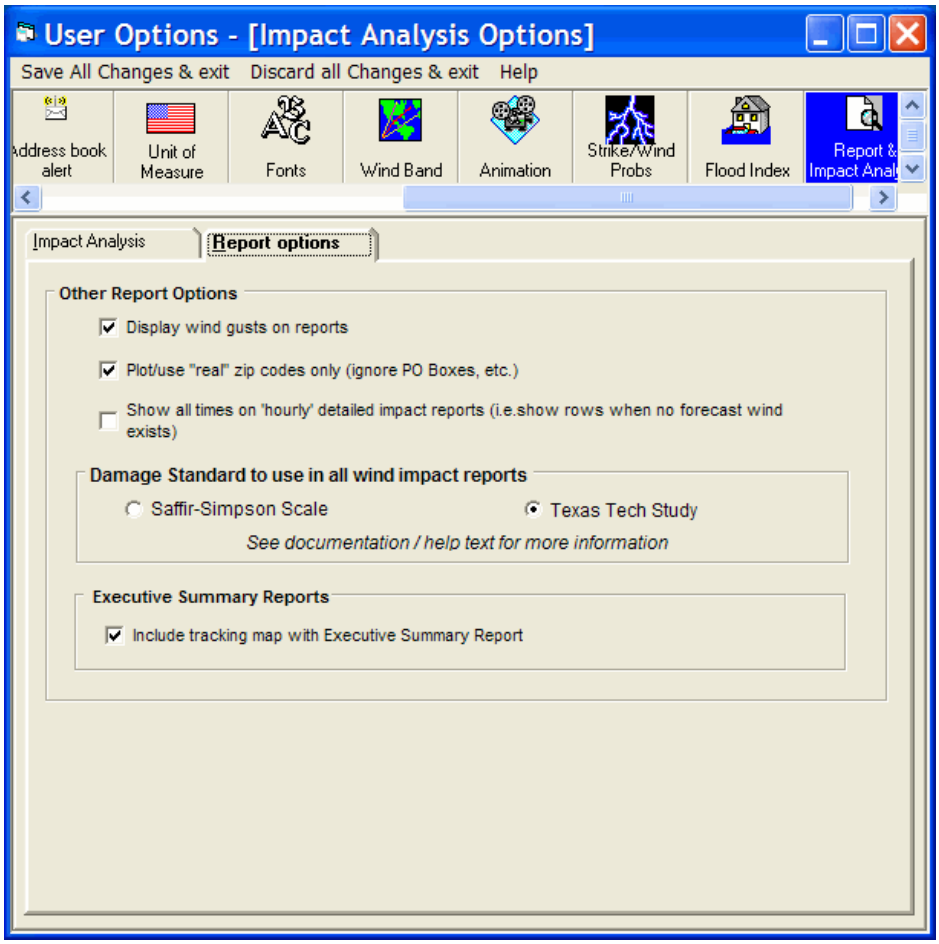
Wind threshold #1,2,3 (knots) - This option allows the user to set the wind ranges (knots) for the impact analysis report which is available after doing a county or zip code analysis report. The impact analysis report displays the total population and number of households that are forecast to be affected by certain levels of wind. See the county or zip code analysis report for more information.

Report wind threshold - This option allows the user to set the wind threshold (knots) at which they want to see summary information on the location analysis summary report. Locations that are not forecast to reach this level of wind will not appear on the summary report. If using the Advanced Wind Estimation capabilities of the system, it is recommended that this value be set a 5. In this way, locations that have maximum winds of less than 34 knots will still get reported. Setting this field to zero will force every location to appear in the summary wind analysis reports. It is not recommended that you do this for the county and zip code reports..

Automatically Determine States - Enabling this option allows the system to determine the affected states rather than the user having to determine this for each storm / report. Enabling this option is highly recommended.

States to include in County Impact Analysis - Use this option to specify which states you would like to include in the County Wind Profile Analysis report. If you have interest in only a few states then you can check only those states. This will improve the performance in generating the county wind report. You may also choose the MAP SELECT option which will allows the user to choose states graphically.

States to include in Zip Code Impact Analysis - Use this option to specify which states you would like to include in the Zip Code Wind Profile Analysis report. If you have interest in only a few states then you can check only those states. This will improve the performance in generating the zip code wind report. You may also choose the MAP SELECT option which will allows the user to choose states graphically.



Display Wind Gusts - Selecting this option allows the system to display both sustained and wind gusts in all location, county or zip code reports. This should be used with caution as the wind gusts estimated away from the immediate coastline will likely be over estimated. We recommend that this option only be "on" when you are using the Advanced Wind Estimation capabilities of RMPRO.

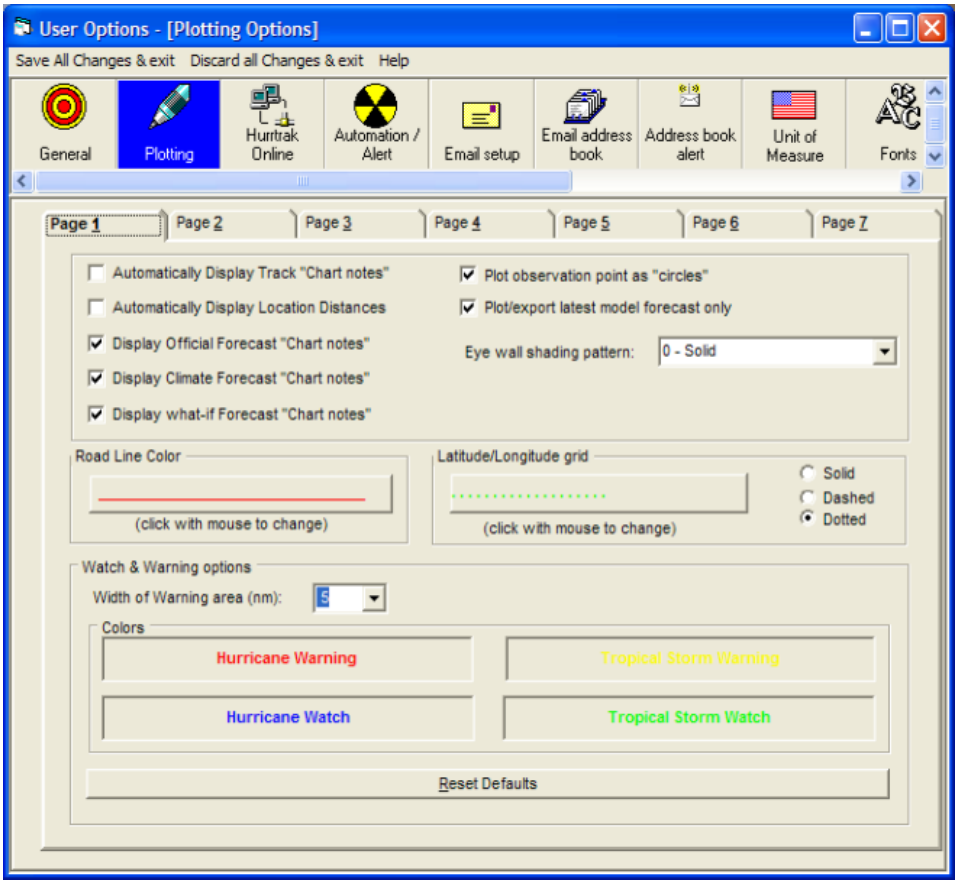
Plot/Use real zip codes only - This option determines if only populated zip codes will be reported in the zip code report. This will eliminate PO Boxes and corporate zip codes.

Show all times - This option determines if the detailed impact reports will include times when no forecast wind exists.

Damage Standard to use in wind impact reports – This option allows the user to select which damage scale they would like to see referenced on wind impact reports. See page 319 for more information on the damage comments.

Executive Summary Reports (Include tracking map) – This option will allow the user to include a tracking chart image with the executive summary report.

Plotting Options



Display Track "Chart Notes" - This indicator determines if the storm's chart notes will automatically be displayed after the track is drawn.

Display location distances - This option determines if location distances are automatically displayed after a storm track plot. If selected, the LARGE MAP location group will be used for maps >20 degrees of longitude wide and the SMALL MAP location group will be used for all of the smaller maps.

Display Official Forecast "Chart Notes" - This indicator determines if the storm's official forecast chart notes will automatically be displayed after the track is drawn.

Display Climate Forecast "Chart Notes" - This indicator determines if the storm's climatological forecast chart notes will automatically be displayed after the track is drawn.

Display "what if" Forecast "Chart Notes" - This indicator determines if the storm's "what it" chart notes will automatically be displayed after the track is drawn.

Plot observation points with "circles" - This indicator determines if the storm's observation points will be designated with a small circle

Plot/export latest model forecast only - This indicator controls whether the system will plot or export more than one of the same forecast model outputs. If checked only the latest forecast model will be shown. i.e. only the latest GFDL, not the last 2 or 3)

Eye wall shading pattern - This determines how the storm's eye wall will be depicted on tracking charts.

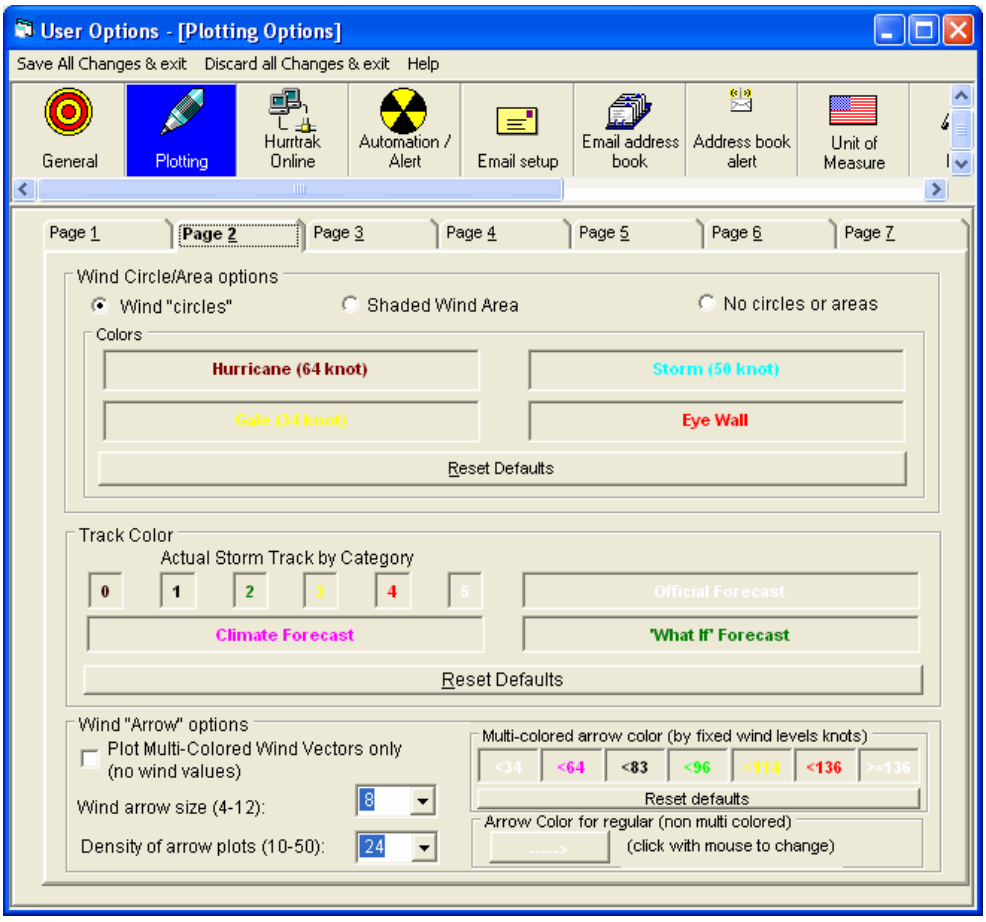
Road Line Color - This allows the user to set the color that the road lines are drawn.

Latitude / Longitude Grid - This controls the pattern and color of the latitude/longitude grid lines

Watch and Warning Options:

Width of Warning Area - This value determines how wide the watch and warning "ribbon" is drawn along the coast. It is expressed in nautical miles. The watch ribbon is 1/2 the width of this value.

Color - This option allows the user to modify the colors of the Hurricane and Tropical Storm Watch and Warning Areas.



Wind Circle/Area Options:

Circle/Shaded Area Option - This option allows the user to change/set the way that the storm wind areas are displayed. If "wind circle" is selected, then the entire storm track along with its latest position is shown, with the 34, 50 and 64 knot wind boundaries displayed. If "wind area" is selected then only the storm's latest position is shown with the 34, 50 and 64 knot wind areas displayed as solid shaded areas. If none is selected, then only the center point is displayed.. with no wind areas depicted.

Colors - Sets the colors for the eye wall and 35, 50 and 64 knot wind “circles”.

Track Colors:

Set Color - Sets the color of the storm track by category of storm, the official forecast, the climatological forecast and what if forecast.

Reset Defaults - Resets the track colors to the shipped defaults.

Wind Arrows:

Plot Multi-colored wind vectors – This option allows the user to display a pattern of wind vector that represent the storm’s wind circulation. The color and size of the arrows are determined by the wind speed at each vector location. It is recommended that the arrow density is increased when using this option. See APPENDIX PP. Multi-Colored wind vector display on page 297 for more information.

Multi-colored arrow color – This option allows the user to control the multi-colored wind vector colors. The value cannot be changed and are set to the Saffir-Simpson scale. **Wind arrow size** – Sets the size of the wind arrows

Density of arrow plots - Controls the density of the arrow plots when the “display wind field” is selected.

Set Color - Sets the color of the wind arrows.

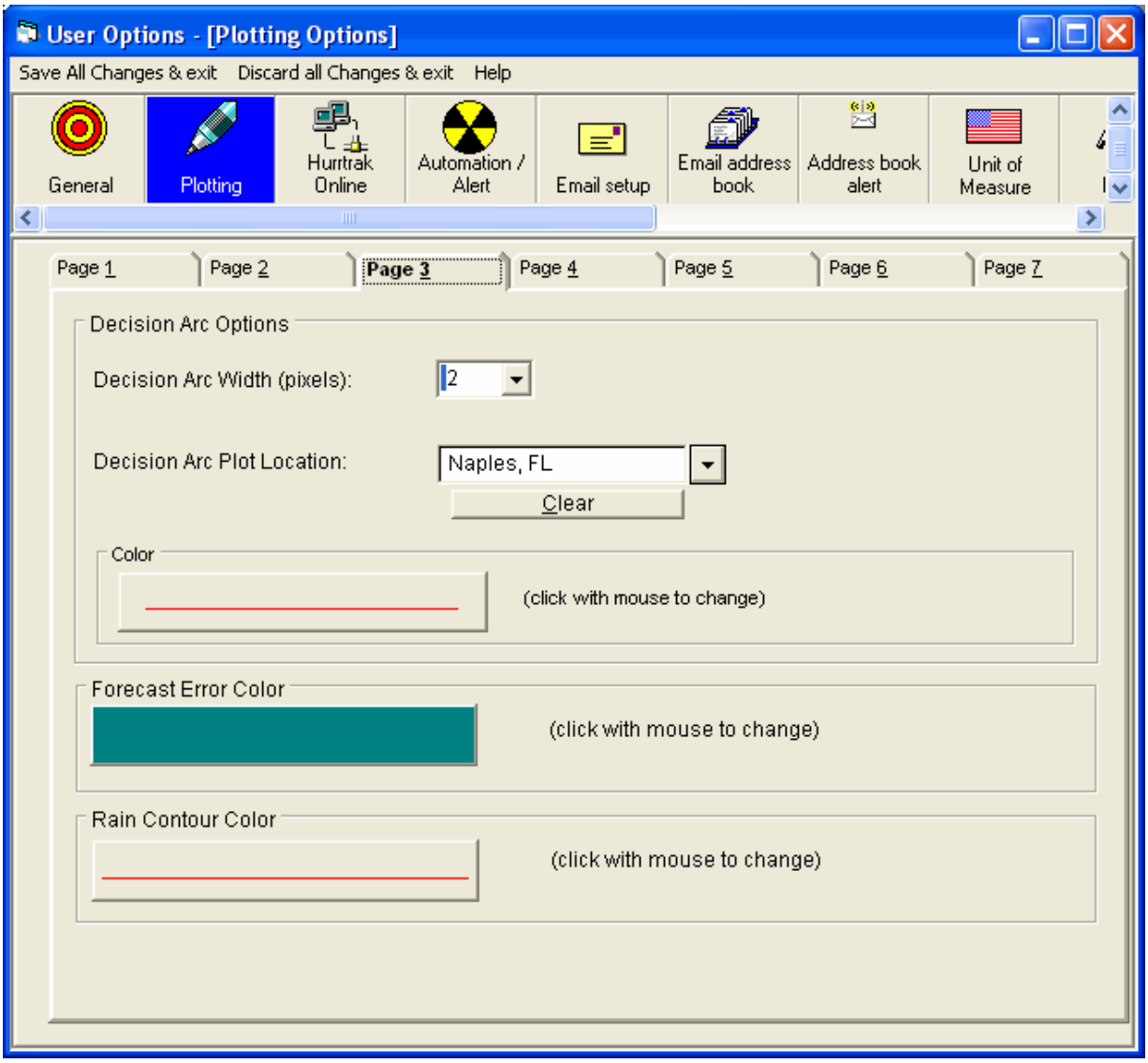


Figure 12

Decision Arc Options:

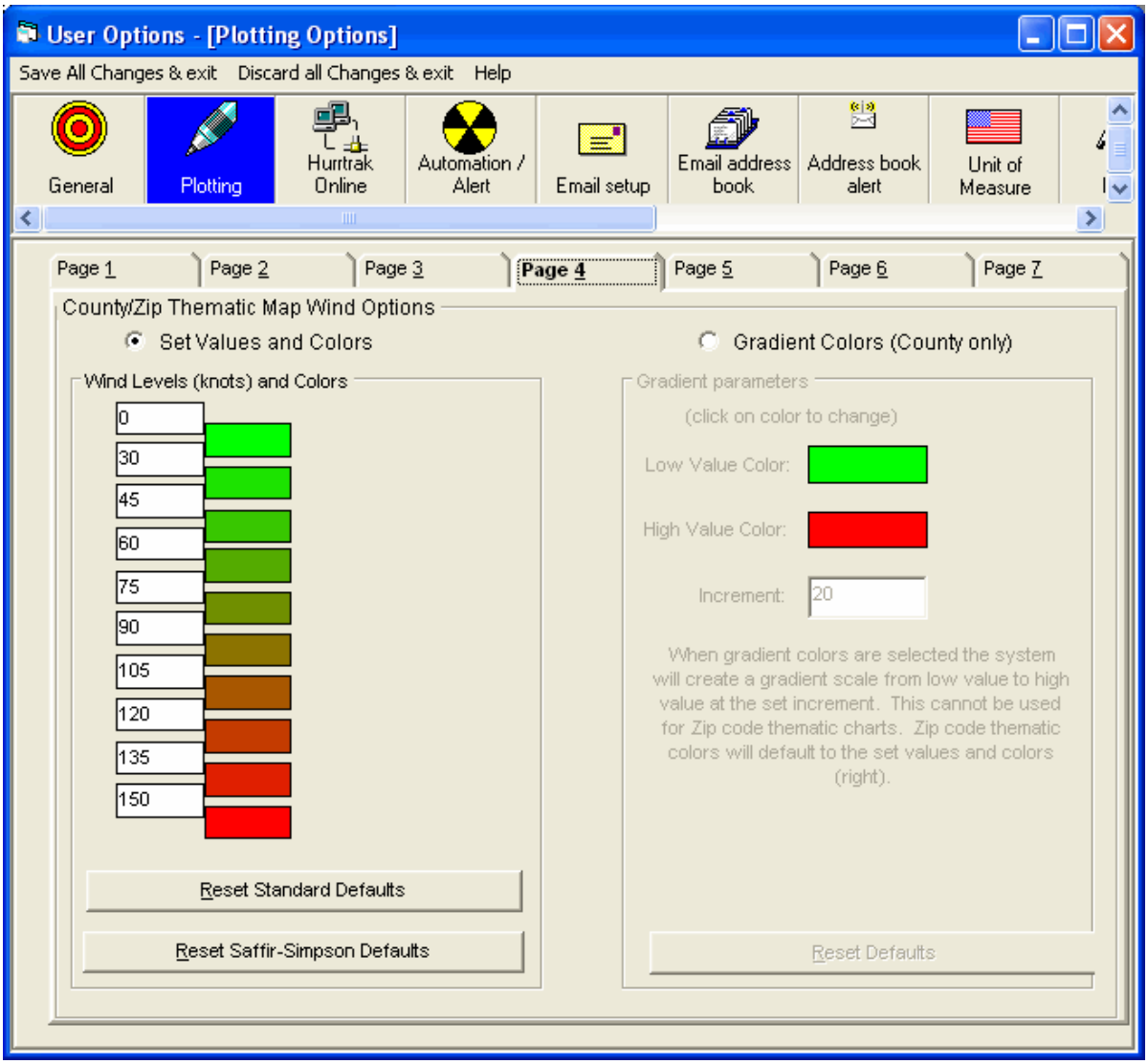
Decision Arc Width - This option allows the user to specify the width, in pixels, of the decision arc line.

Decision Arc Plot Location - This is the location that you have designated as the one to use when drawing decision arcs. You MUST have an action point defined for a location before it will appear in this list. For a complete discussion of decision arcs and decision support see page 249.

Decision Arc Color - This option allows the user to specify the color of the official forecast error.

Forecast Error Color - This option allows the user to specify the color of the official forecast error.

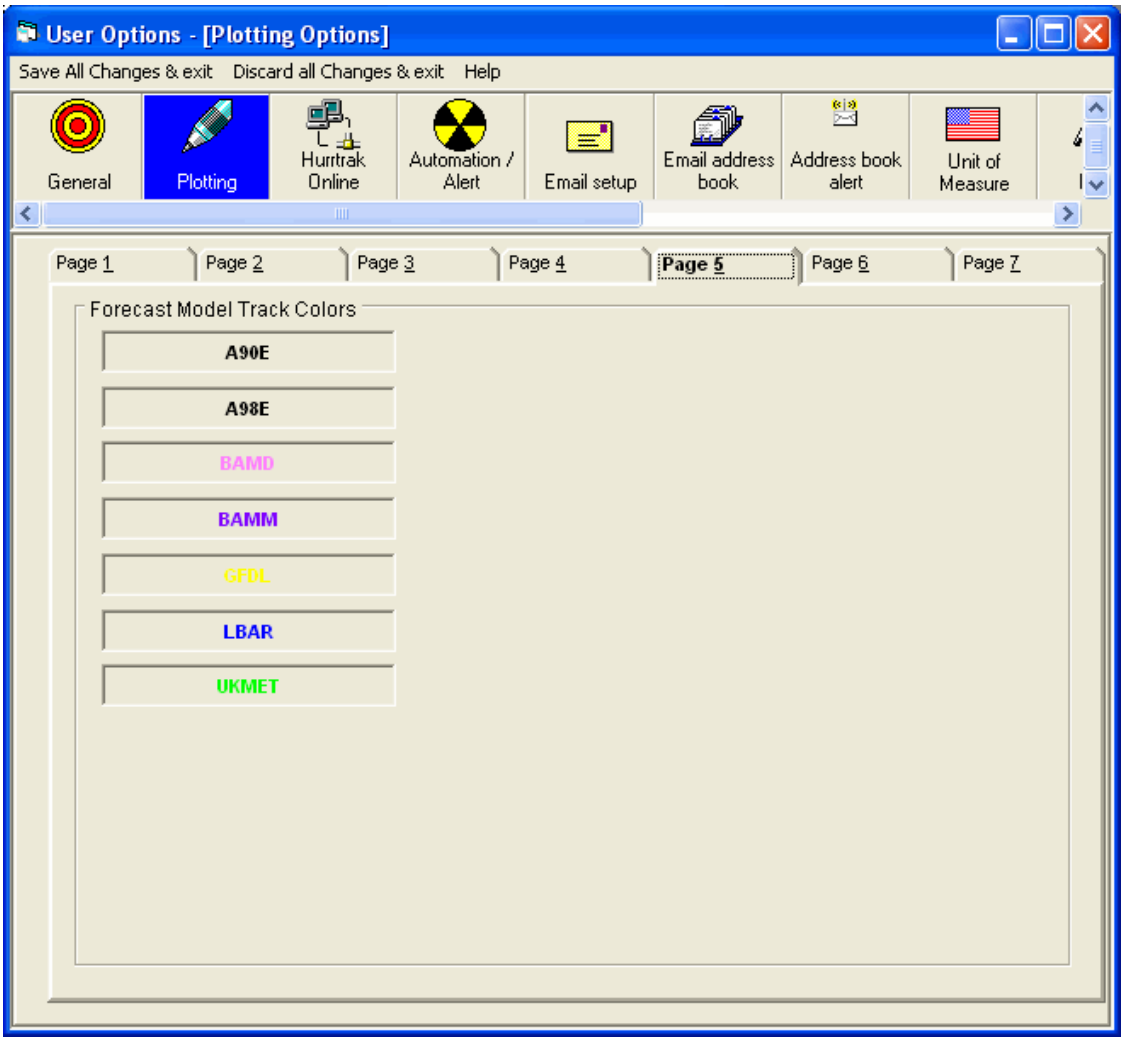
Rain Contour Color - This option allows the user to specify the color of the rain contours used for the analysis type of forecast rainfall display.



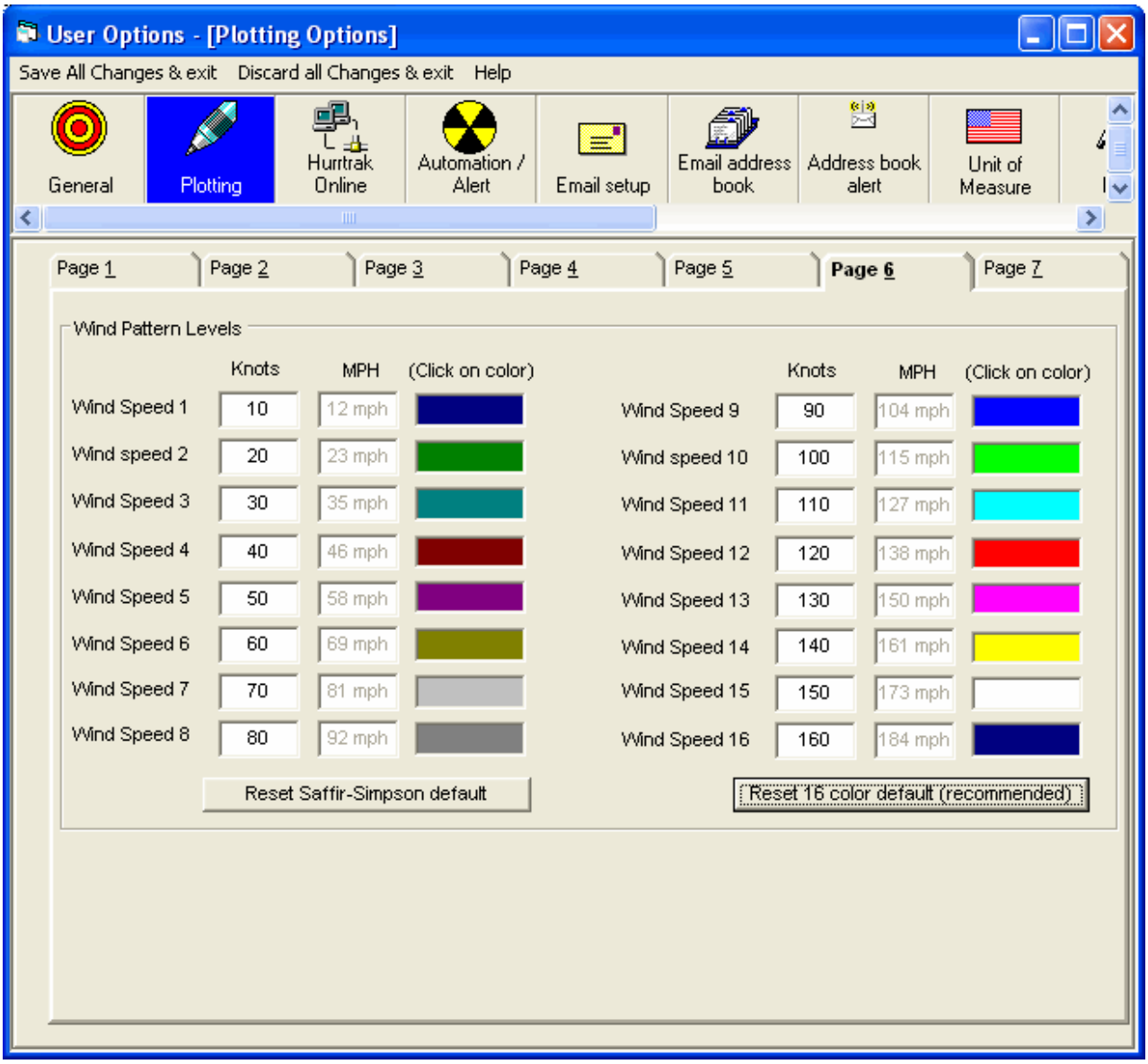
County Thematic Map Wind Options:

Set Values and Colors (left) - This option allows the user to define the specific colors used when plotting the maximum wind values on a county or zip code thematic map. This function is available from the County or Zip Wind Profile / Analysis report. The standard default wind/colors are a gradient from 0 to 150 knots and from green to red while the Saffir-Simpson default wind/colors are from 34 to 135 knots and also from green to red. When this option is active, the defined gradient colors are ignored.

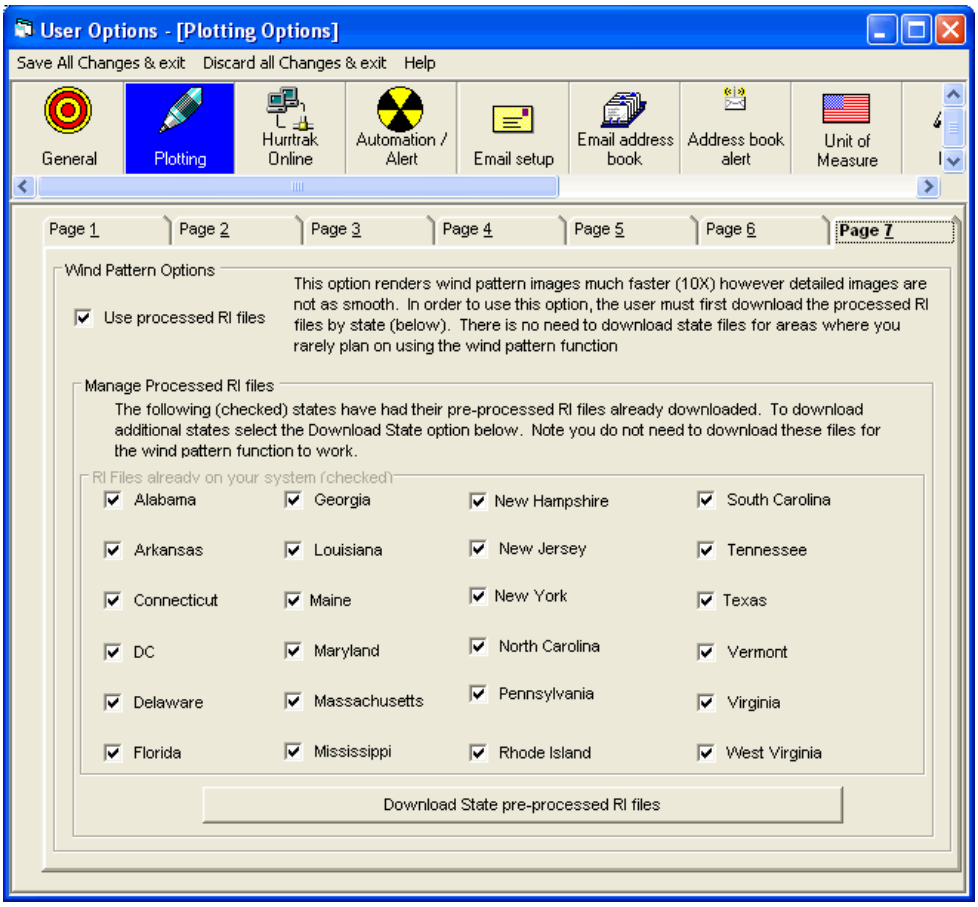
Gradient Colors (right) - This option allows the user to define a gradient of colors used when plotting the maximum wind values on a county thematic map. This function is available from the County Wind Profile / Analysis report. The user can select the low color and the high color as well as the wind range used for each color. When this option is active, the set values and colors defined are ignored.



This option allows you to change the colors of the forecast model tracks. To do so, simply left click on the model name.



This option allows the user to control the wind speed level and colors of the Wind Pattern Image. To change the wind values, simply enter valid values in the wind speed data fields. To change the color scheme, click on the color box. The 2 command buttons allow the user to easily setup levels/colors to match the Saffir-Simpson Scale or the 16 color default.



The rendering of the wind pattern display when using Advanced Wind Estimation (AWE) is very time consuming as each location's roughness index is calculated as determined by the wind direction. Run times of 20 minutes or more, depending on screen size, are not uncommon.

To rectify this problem, we have created Pre-Processed RI (roughness index) files that will allow the rendering logic to bypass this lengthy roughness index calculation. This reduces the run-times from 20 minutes down to less than 1 minute.

Unfortunately, these processed RI files are very large as all coastal states are represented by over 1 GB of data files. Rather than attempt to install or download all of these RI files (by state), the solution we have devised to allow the user to download RI files only for states that they will typically use the Wind Pattern feature.

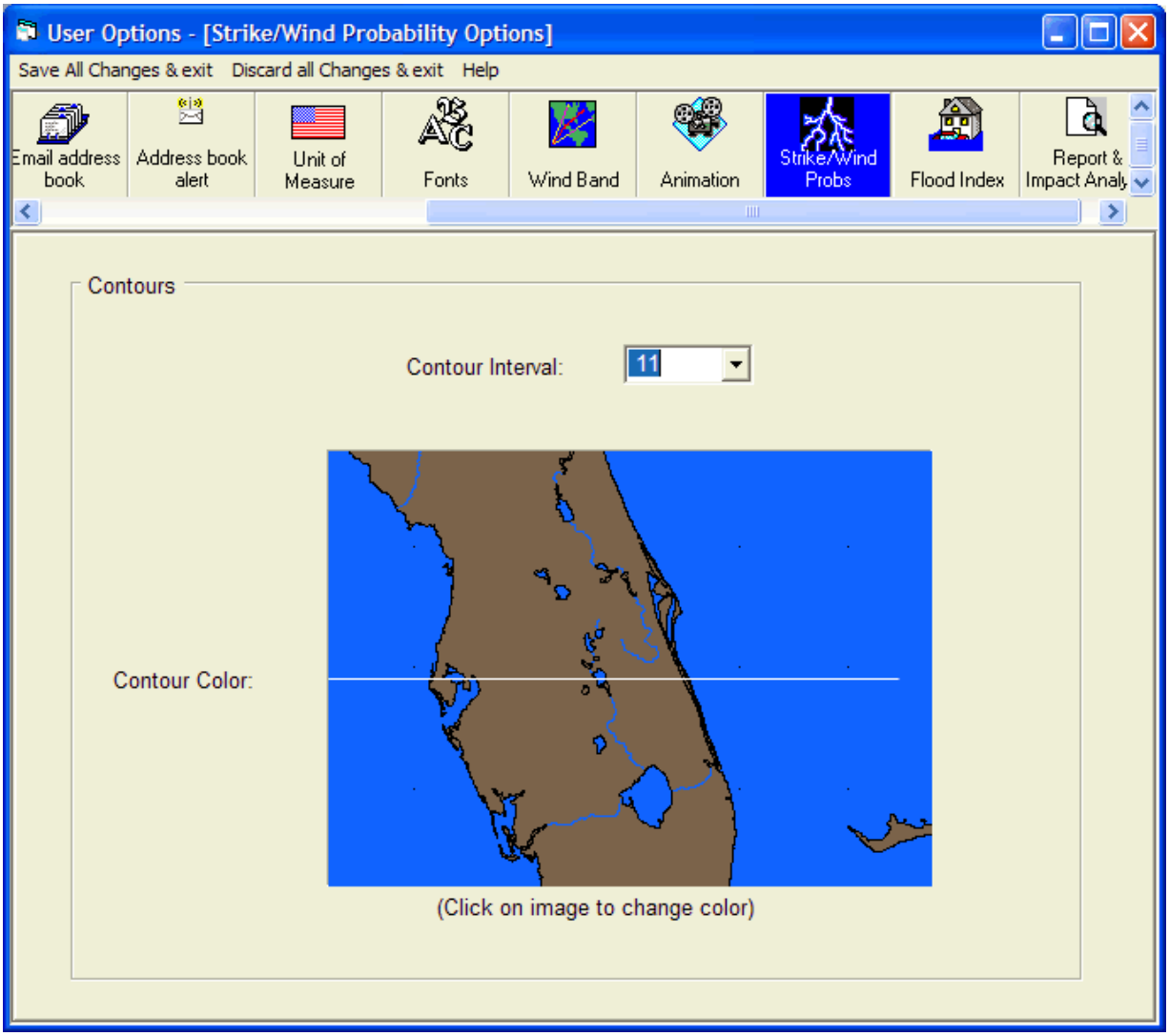
There are only 2 options available on this screen.

Use processed RI files - This option allows the user to turn on and off the option of using these processing RI files. The only advantage to not checking this option is that the resultant display is slightly smoother when allowing the system to calculate RI "on the fly".

Download State Pre-Processed RI files – This selection opens an Internet Explorer (or whatever your default Internet Brower is) web page. You can download state files from this web page. Make sure you follow the directions exactly… particularly the message that indicates where (folder location) to save the file. Repeat this option for each state being downloaded.

The list of states, with check boxes, indicates which states have already been downloaded.

Strike/Wind Probability Options

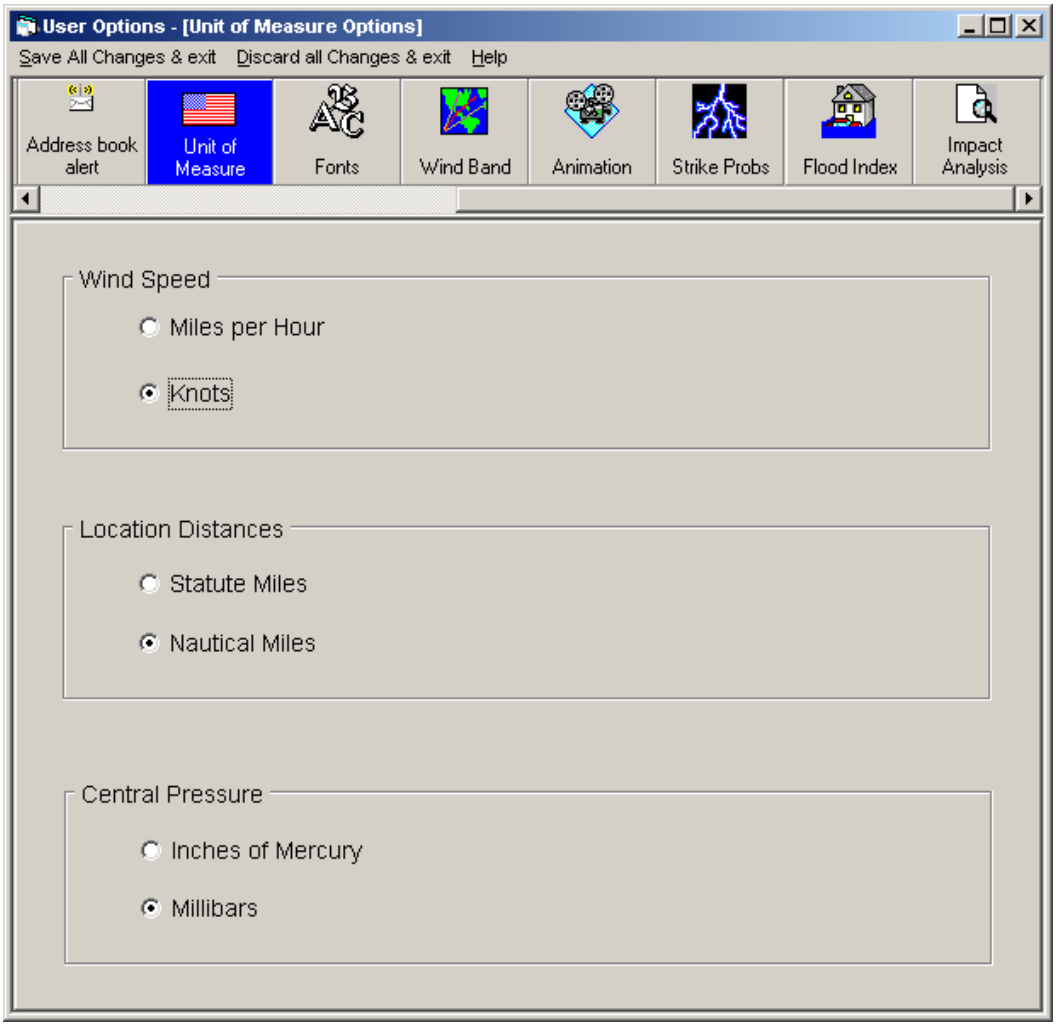


Contours:

Contour Interval - The interval at which the probability contours are analyzed (i.e. a value of 20 will plot strike probability contours at 20, 40 60 and 80 percent levels.

Set Color - This sets the color of the contours

Unit of Measure Options

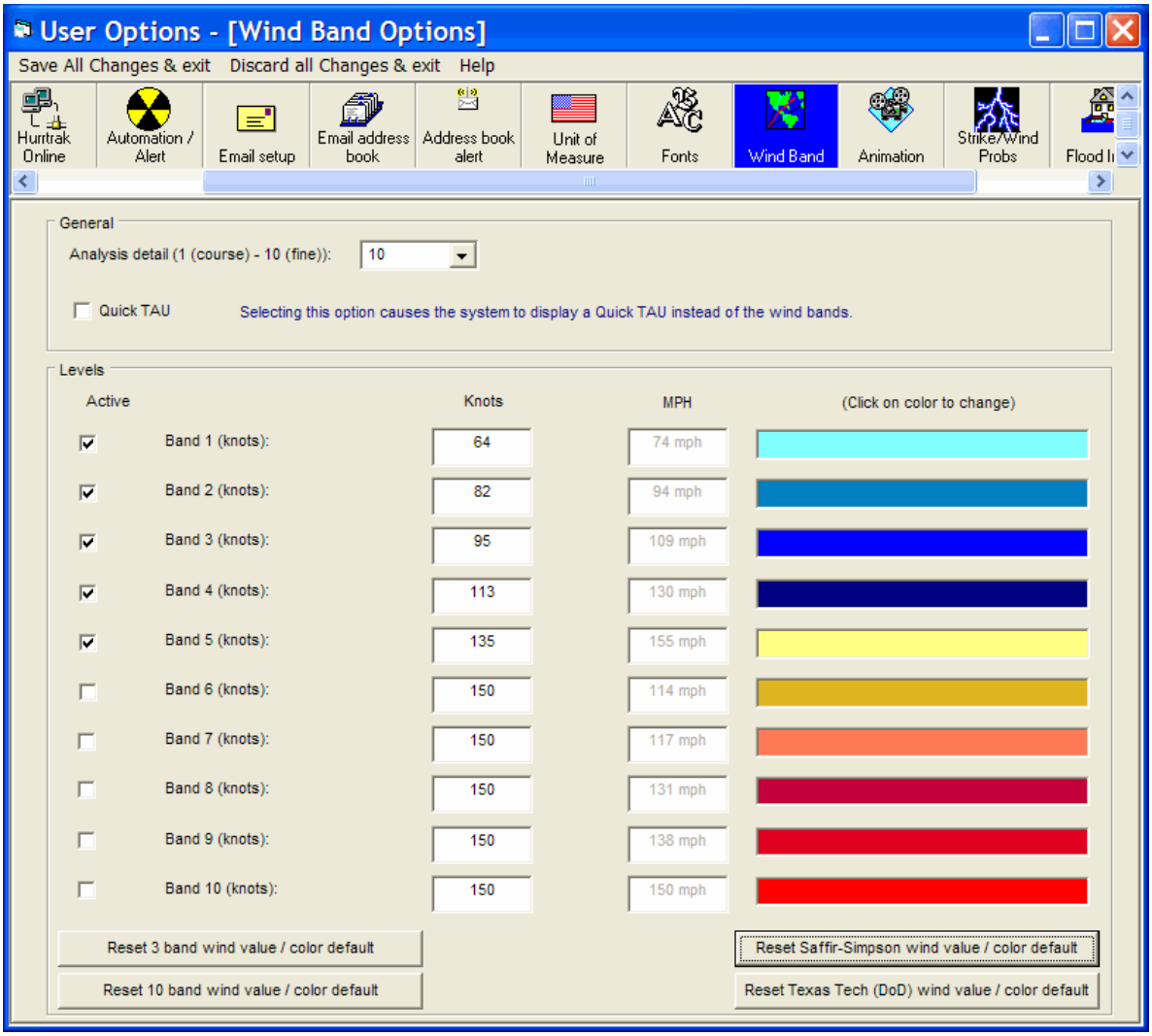


Wind Speed - Sets the unit of measure for wind speed at MPH or Knots. Other than the official forecast function and certain wind preferences, the system will then display all wind information in this unit of measure.

Locations Distances: - Sets the unit of measure for location distances at either nautical miles or statute miles. Storm motion speed also uses this unit of measure.

Central Pressure - Sets the unit of measure for pressure to millibars or inches of mercury. The system will display pressure in these units. Data entry of pressure remains in MB.

Wind Band Options



Analysis detail - This determines the level of detail to use while analyzing. A 10 value is 10 times more detailed than a value of 1 and also takes 10 times longer to analyze.

Quick TAU – This option causes the system to display a "quick TAU" plot instead of the wind bands. It indicates the observed and forecasted areas of 34, 50 and 64 knot winds.

Active – Activates / deactivates this wind band for plotting

Wind level values - Wind level #1-10 - Sets the wind value for the wind band levels.

Set Color - Sets the color of the 1-10 levels of wind band values.

Reset 3 band value/color defaults - Resets the wind band values to the shipped 3 values.
Reset 10 band value/color defaults - Resets the wind band values to the shipped 10 values
Reset Saffir-Simpson scale – Set the values and colors to the Saffir Simpson scale
Reset Texas Tech scale – Set the values and colors to the Texas Tech damage scale

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HELP OPTIONS

Contents - Displays general help

Search for.. Displays Keyword Search

FAQ - Displays Q&A information about the system

Obtaining technical support - Displays information on where to find technical support

Software License Agreement - Displays the software license agreement

Display System Resources - Displays pop-up windows that show the values of some key system resources.

About - Displays information about the version of the system you are running.

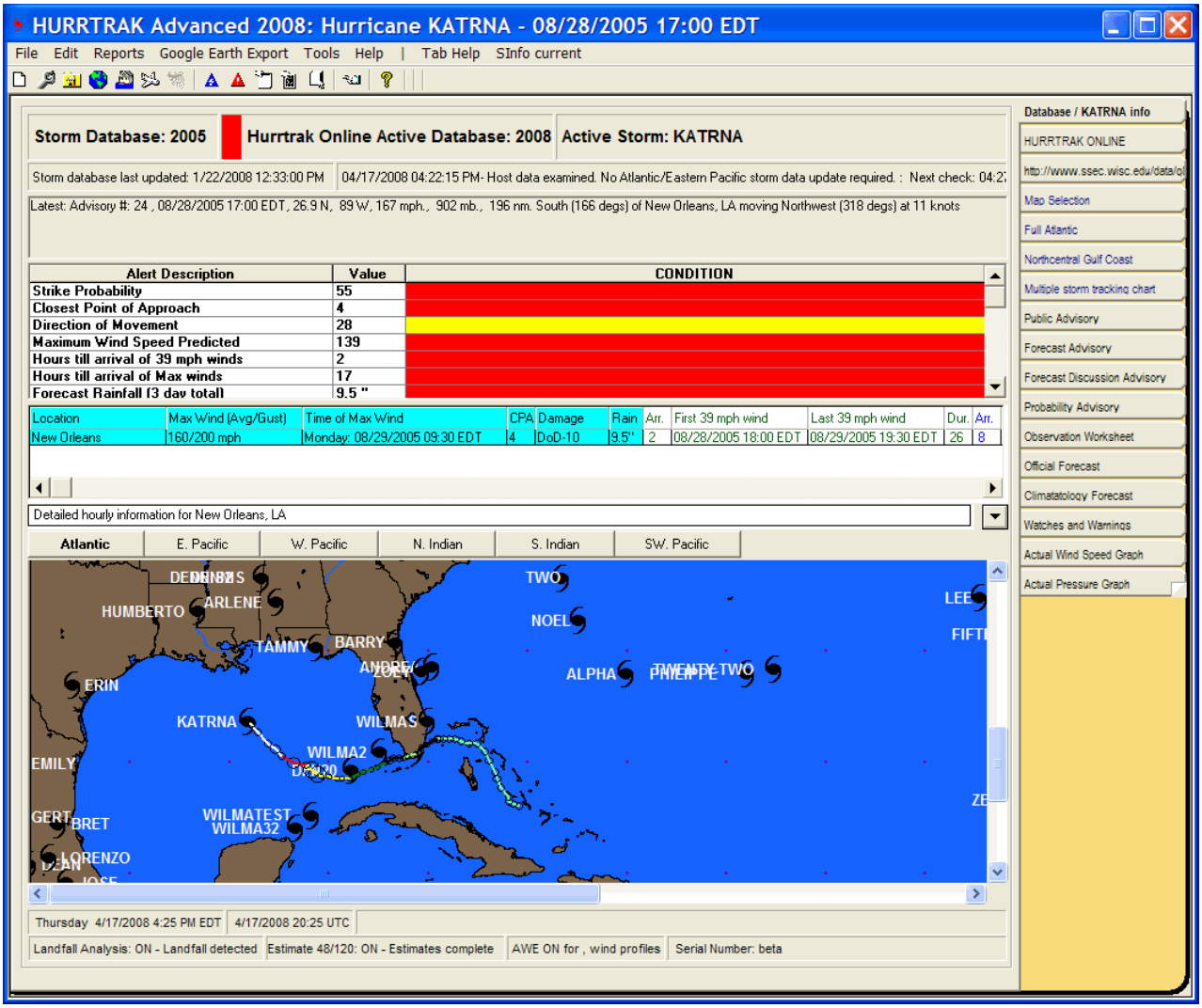
INFORMATION TABS

The HURRTRAK system information is presented using a "tab style" interface. This allows the user to easily and quickly create and view information. The tabs available on the system are:

General Information Tab
HURRTRAK ONLINE Tab
Internet Tab
Tracking Chart Select Tab
Variable Tracking Chart
Fixed/Favorite Tracking Chart
Wind Band Analysis
Strike/Wind Probability Analysis
Forecast Rainfall Analysis
Forecast Rainfall Thematic
Animation
Forecast Position
3D Wind Surface
Latest Tropical Weather Outlook
Public Advisory
Forecast Advisory
Forecast Discussion
Wind Probabilities
User Comments (Diary)
Observation Worksheet Table
Official Forecast Table
Climate Forecast Table
Watch and Warning Table
Wind Speed Graph
Central Pressure Graph
Location Summary Report
County Summary Report
Zip Code Summary Report
Detailed Location/County/Zip Hourly Report
County/Zip Impact Analysis Report
Strike/Wind Probability Report
Detailed Location/County/Zip Wind Graph
Detailed Location/County/Zip Flood Index Graph
County Wind Thematic

And will be examined individually below

General Information Tab



Description: This tab provides general system information. It shows the current database, the current Active Hurrtrak Online Database, open storm (if any), Dates/times of last database updates, base location impact information, base location alert conditions, general system configuration items and a graphic which represents all of the storms in the current database. To load a storm, double click on the icon next to the storm name.

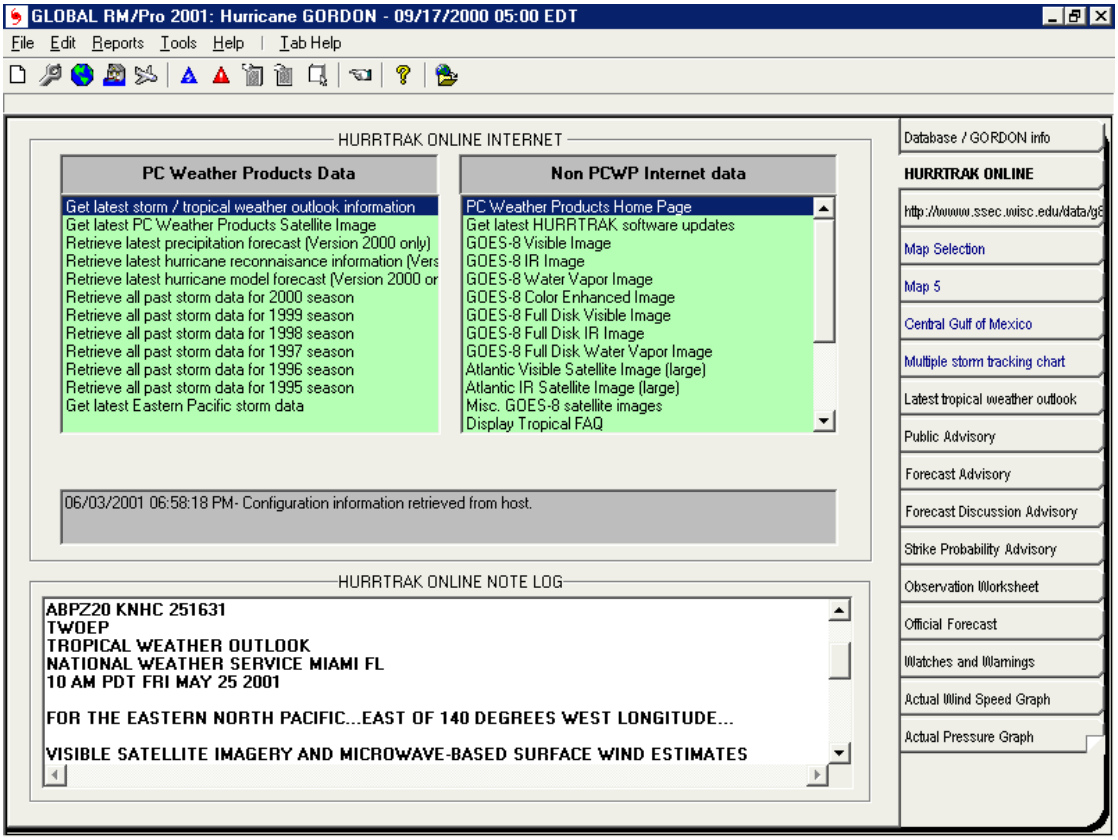
Tab Created by: N/A (always present)

Tab Closed Allowed: No

Functions Available:

- Standard system menu functions
- Mouse double click on a storm icon to “open” it.
- Select an observation for post storm analysis by passing icon over it and then right-click / post storm analysis. Loaded storm only.
- Delete a storm by passing mouse over storm ICON and then right-click / Delete Storm

HURRTRAK ONLINE Tab



Description: This tab allows the user to manually retrieve information via the HURRTRAK ONLINE service. The user can select from a PCWP data list (Hurricane info) or a 'Non PCWP list" which contains links to Internet sites. Global users now have automatic access to data from around the world.

Tab Created by: Always present unless deselected via user preferences general options.

Tab Closed Allowed: No

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Get Latest Data - Retrieves the latest Atlantic Tropical

Other:

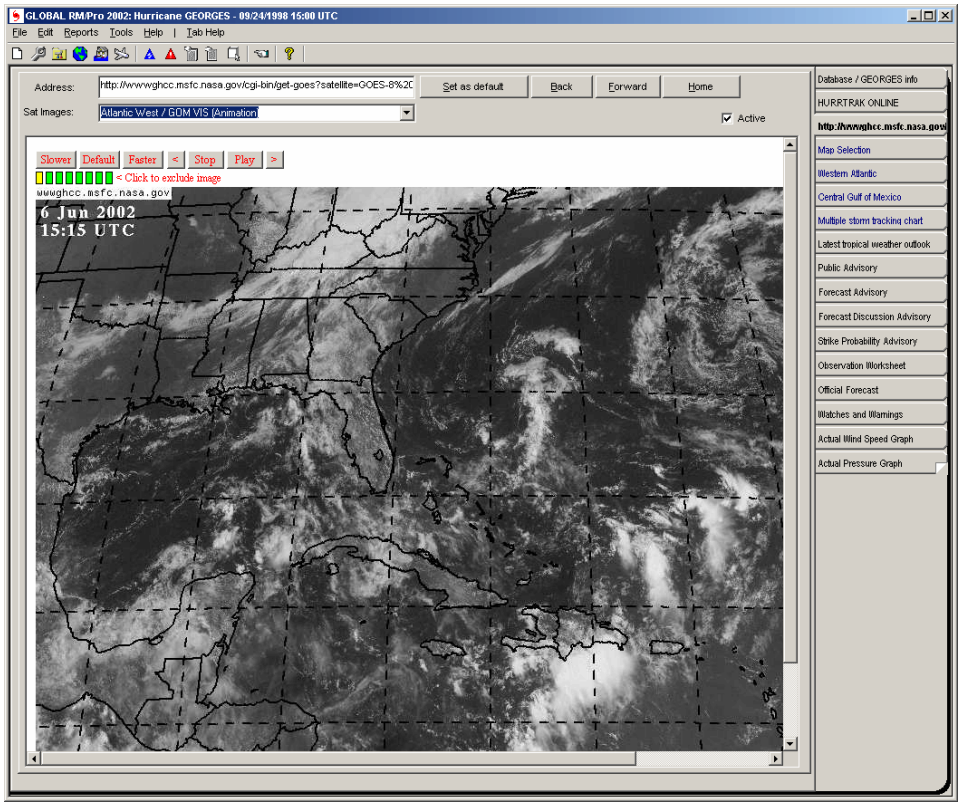
PCWP Data retrieve (dblclick left list) - Retrieves data from the PCWP Server

Non PCWP Data retrieve (dblclick right list) - Opens your browser and goes to Internet link

Retry configuration - If Internet link fails, this allows the user to manually force the system to retry to retrieve the Hurrtrak Online Configuration Data.

TIPS: Be sure to setup your HURRTRAK online options before downloading.

INTERNET Tab



Description: This tab allows the user to display an Internet web page. Typical uses include a link to your favorite satellite image, hurricane site, etc. This is not meant to be a full service web browser but rather a simple way to show Internet information within the HURRTRAK system without having to start a separate browser. The sat images drop down lists primarily satellite image internet links which are provided via the HURRTRAK Online service.

Tab Created by: Always present unless deselected via general options

Tab Closed Allowed: No

Functions Available:

Menu/Toolbar:

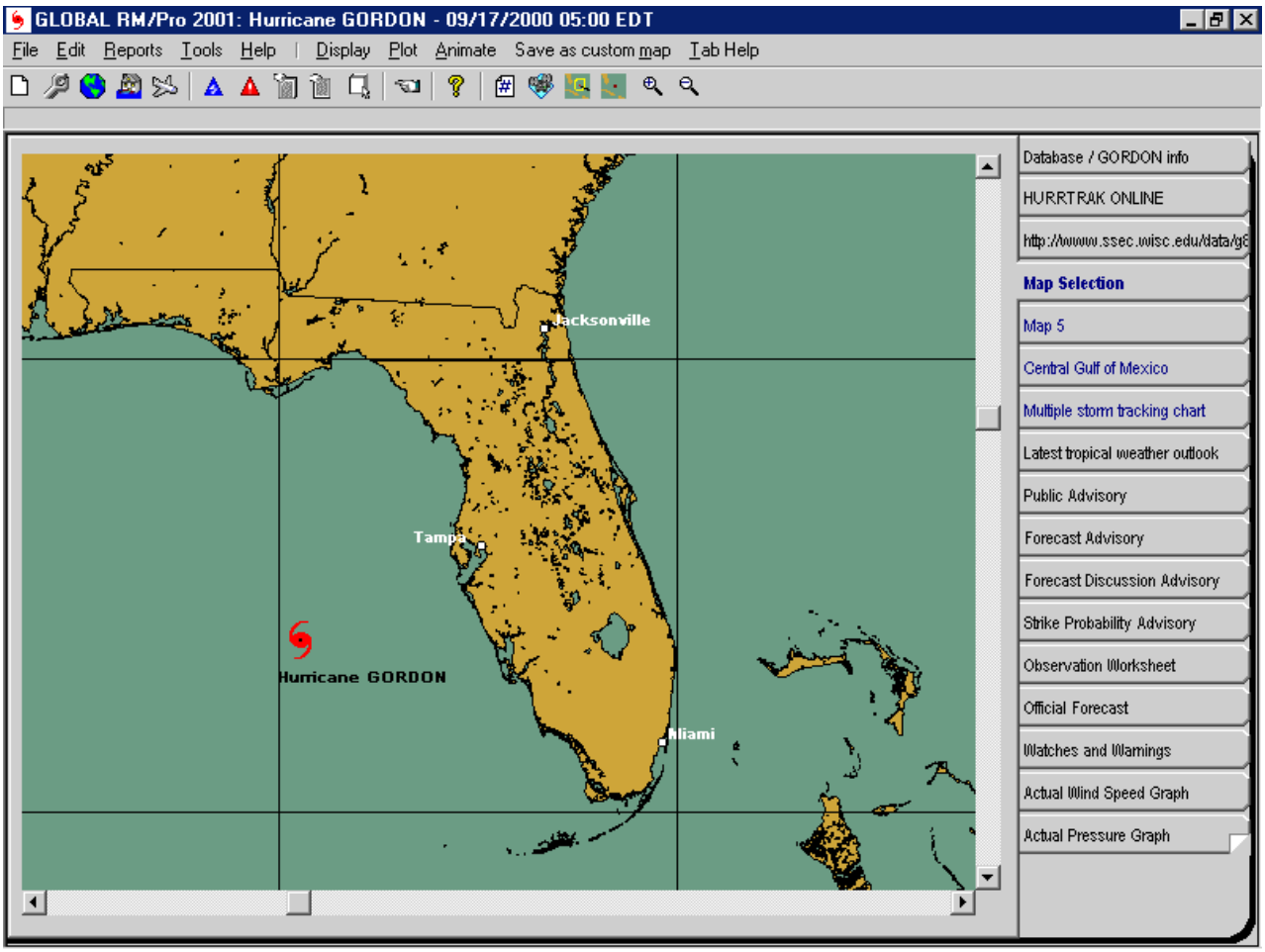
Standard System Menu Functions

Other:

Set as home - Sets the current URL displayed as the default location shown when the system is started. This does not affect your regular browsers home location.
Back – Goes back 1 page
Forward – Goes forward 1 page
Home - goes to default home page.
Refresh – refreshes current page. Page will update automatically every 15 minutes.
Active option - this option allows the user to turn off the web browser feature.

Tip: Copy and paste you favorite web address from your web browser into the address field. Check out the Satellite Image drop down list for a list of our favorite satellite images.

Map Selection Tab



Description: This tab displays a detailed map of the systems tracking area. It is used in all pan and zoom mapping options. In additional you can manipulate this map and then select plotting functions you would like to plot on this map. See APPENDIX J: Legacy Pan and Zoom mapping on page 276.

Tab Created by: Always present when storm loaded

Tab Closed Allowed: No

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Display:

Overlay Control Center – This is an advanced function which allows the user to display various GIS overlays on a tracking map. This is described in much more detail on page 328.

Counties - Displays the county boundaries on the current map. This must be done on this tab if you would like to display the counties when performing other mapping functions on the variable maps.

Strike Probabilities- Plots the forecast strike probabilities using the current map on a separate tab.

Wind Probabilities- Plots the forecast wind probabilities using the current map on a separate tab.
Forecast Rainfall Analysis - Plot the forecast rainfall analysis using the current map on a separate tab.
Forecast Rainfall Thematic - Plots the forecast rainfall by showing a color coded county thematic map. This appears in a separate tab.
Wind Pattern – Plots the wind pattern graphic using the current map and current storm wind field onto a separate tracking type tab. See APPENDIX QA: Advanced Wind Estimation Considerations on page 303 for more information on the Wind Pattern image.
Wind Bands (Forecast / Actual) - Plots the forecast or actual wind band analysis using the current map on a separate tab.
SLOSH / Storm Surge for this area – Opens up the SLOSH display program and loads data for the area selected on the map. You must be at an appropriate zoom level to select this option.

Plot:

Tracking Chart with plot- Plots the storm's current track and position, with wind areas depicted, using the current map on a separate tracking chart tab.
Tracking Chart with no plot - Displays the current map with only a hurricane symbol depicting the storm's latest position. This is shown on a separate tab.
Forecast Position - Using the current map, this options display a storm's forecast position on a separate tracking chart tab.

Animate (Actual / Forecast) - Using the current map, this option animates the storm's actual and/or forecast track depicting the standard wind areas. The animation appears on a separate tab.

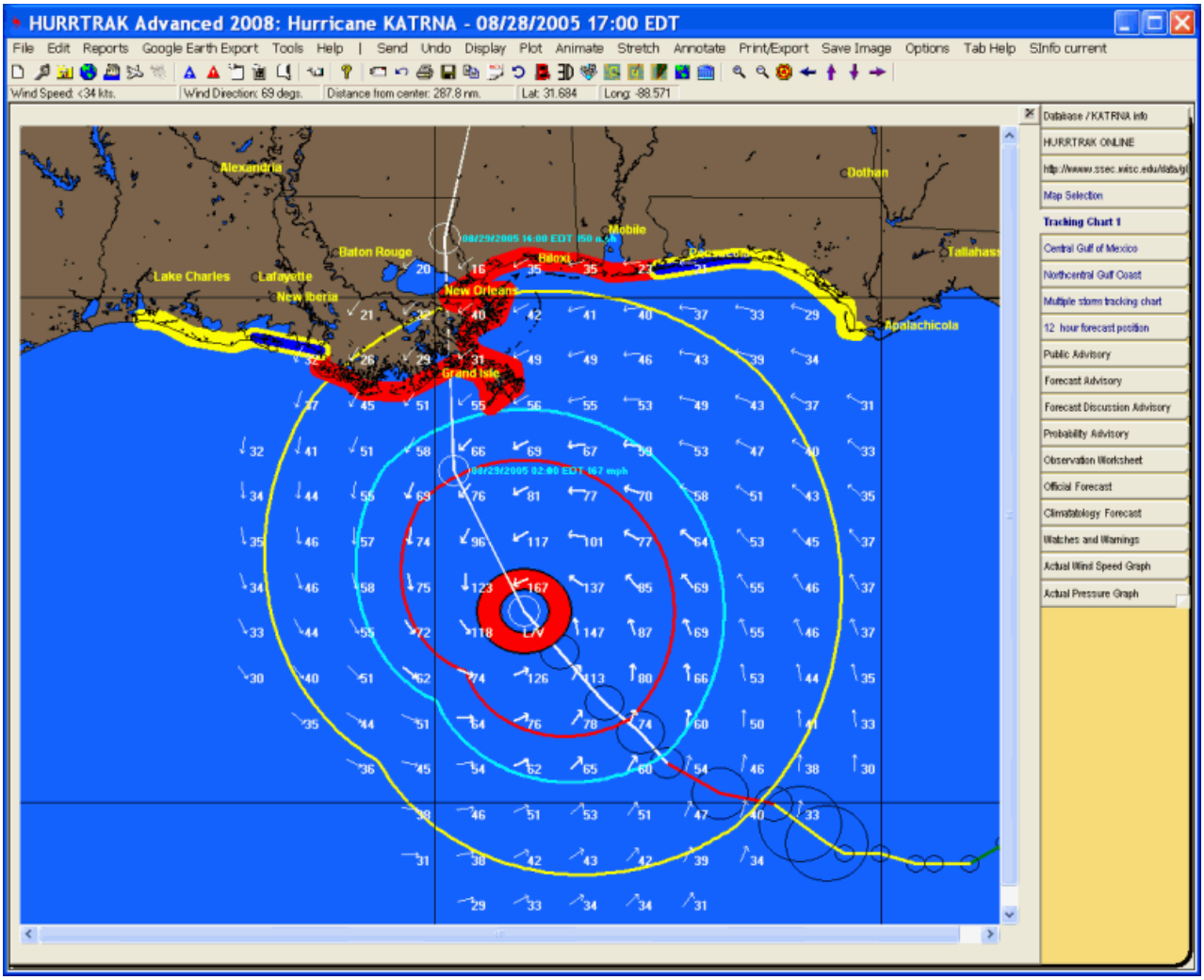
Save as custom map - This option allows the user to save the current map image as a custom "favorite" tracking map. This is an alternative to creating a custom map via the Custom Map Maker function.

Zoom in/out (tool bar icons) - This option allows the user to magnify or reduce the current map image

Tips:
Zoom in by doing a mouse <left click> and drag outlining the desired area
A mouse <right click> will present several map positioning options.
A mouse <left click> and drag while holding the shift key will display a distance vector.
A <Ctrl> <left click> and drag will reposition the map area.

MISC:
The image on this tab is automatically used when using the Pan and Zoom options from a tracking chart.

“Variable Tracking Chart”/Map Selection Tab



Description: This tab displays the map selected from the map selection tab or when a map is re-plotted due to pan and zoom.. Many storm tracking and analysis functions are available from here. Up to three of the variable tracking chart tabs are available. There maps are dynamic and are not part of the system's permanent (fixed/favorite) tracking chart selection.

Tab Created by: Selecting a tracking option from the Map Selection tab.

Tab Close Allowed: Yes

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab’s image via email image as shown on page 178.

Undo - Removes that last change to the tracking chart image

Display - For a complete list of display options see page 179.

Plot - For a complete list of Plot options see page 182.

Animate - Animates the storm’s actual and or forecast motion on a separate tab.

Stretch - Fills the entire screen with the current tab’s image. No functions can be performed while in stretch mode

Annotate – Allows the user to place text on the current image.
Print/Export – Allows the user to print the current image in color, gray scale or B&W.. or send the image to Google Earth. See page 287 for more information on the Google Earth interface.
Save Image – Saves the image to the clipboard or file (color or B&W).
Options – Allows the user to show mousepointer data and turn the status bar on/off.

TOOLBAR Options Available:

Plus Sign - This option zooms in and re-plots the map.

Minus Sign - This option zooms out and re-plots the map.

Bullseye - This option centers the map on the storm at the current zoom level.

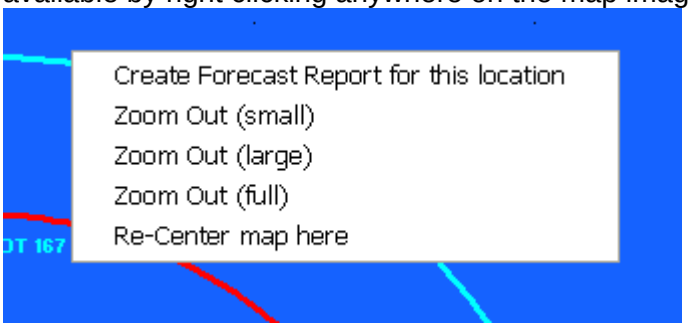
Left Arrow - This option pans the map to the west and re-plots the map.

Up Arrow - This option pans the map to the north and re-plots the map.

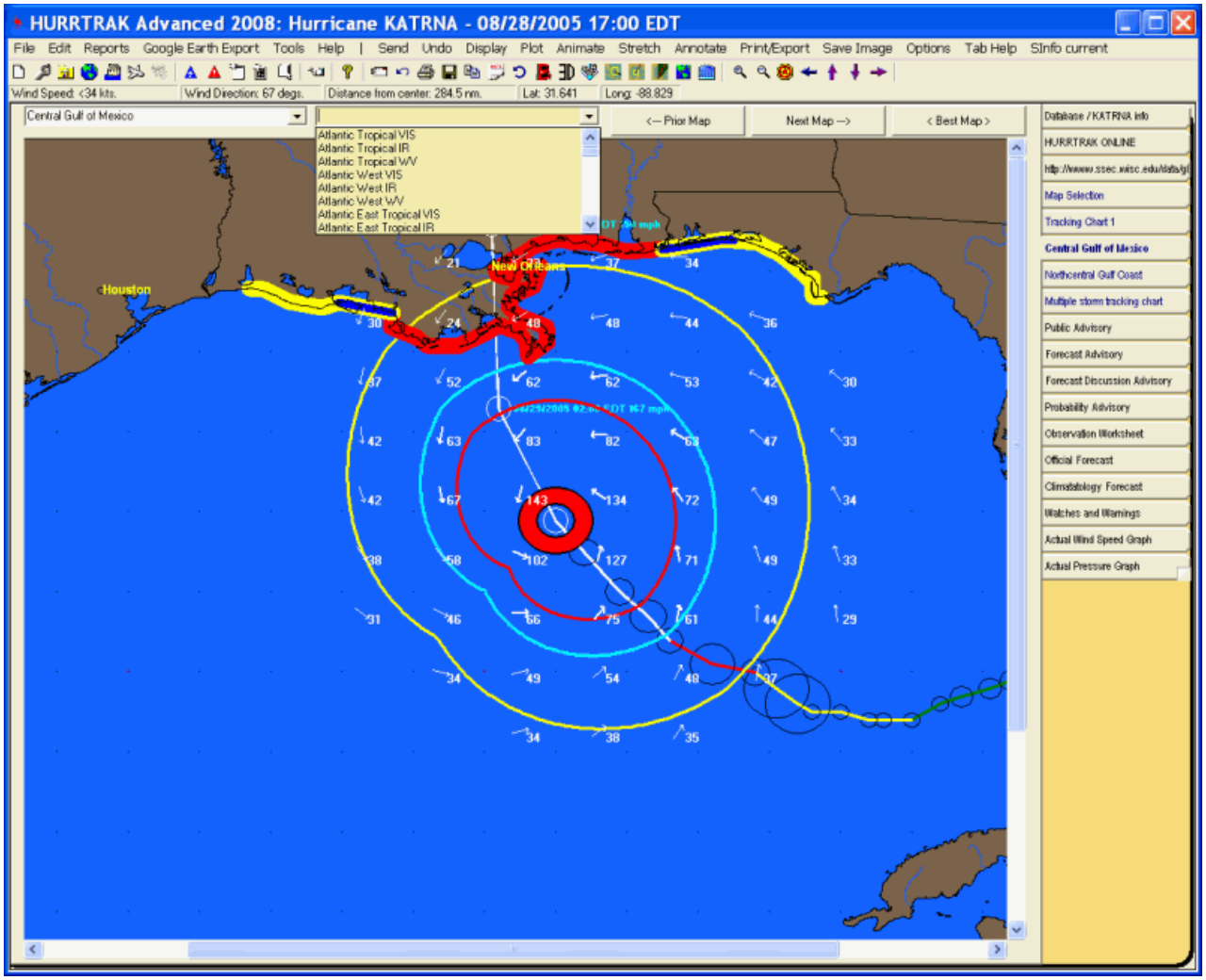
Down Arrow - This option pans the map to the south and re-plots the map.

Right Arrow - This option pans the map to the east and re-plots the map.

Miscellaneous:
The user can zoom in by rubber banding an area on the screen. Other pan and zoom options are available by right clicking anywhere on the map image.



Fixed/Favorite Tracking Chart Tab



Description: This tab displays one of the many fixed area system tracking charts. These include any custom maps created by the user. There are 3 "favorite" tracking chart tabs available to the system.. one of which is a "multiple storm" tracking chart. Many storm tracking and analysis functions are available from here including the ability to plot a track on a satellite or Radar image.

Tab Created by: Always there, when storm is loaded unless specified otherwise by User General Options.

Tab Close Allowed: No

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's image via email image as shown on page 178.

Undo - Removes that last change to the tracking chart image

Display - For a complete list of display options see page 179.

Plot - For a complete list of Plot options see page 182.

Animate - Animates the storm's actual and or forecast motion on a separate tab.

Stretch - Fills the entire screen with the current tab's image. No functions can be performed while in stretch mode

Annotate – Allows the user to place text on the current image.

Print/Export – Allows the user to print the current image in color, gray scale or B&W.. or send the image to Google Earth. See page 287 for more information on the Google Earth interface.

Save Image – Saves the image to the clipboard or file (color or B&W).

Options – Allows the user to show mousepointer data and turn the status bar on/off.

TOOLBAR Options Available:

Plus Sign - This option zooms in and re-plots the map.

Minus Sign - This option zooms out and re-plots the map.

Bullseye - This option centers the map on the storm at the current zoom level.

Left Arrow - This option pans the map to the west and re-plots the map.

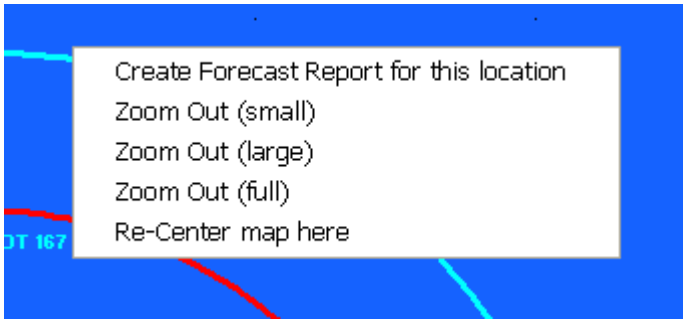
Up Arrow - This option pans the map to the north and re-plots the map.

Down Arrow - This option pans the map to the south and re-plots the map.

Right Arrow - This option pans the map to the east and re-plots the map.

Miscellaneous:

The user can zoom in by rubber banding an area on the screen. Other pan and zoom options are available by right clicking anywhere on the map image.



Other:

If you **right click anywhere** on the tracking map, near the forecast path, you have the option to create an impact report for that location.

Map list - This dropdown list displays all of the "fixed" tracking charts. The user can select the map they would like to display.

Satellite/Radar list – This dropdown list (yellow) displays all of the satellite, sea surface temperature (SST) and Radar images that are available for overlaying storm tracks on top of. This list is maintained by PC Weather Products and requires a HURRTRAK Online subscription to make active. Upon selection, the image is loaded from a 3rd party internet source and then storm tracks may be plotted on top of it. Note.. Any plots that flood an areas.. such as a forecast track error or wind band analysis will overlay the image behind it. It is suggested that you do not use these type functions. See example in APPENDIX J: .

Next Map - This option will display the next (sequential) fixed area map

Prior Map - This option will display the prior fixed area map.

Best Map - This option selects the smallest scale map that has the storm's latest position on it.

Tips:

Using the Next or Prior Map command buttons after being on the BEST map, will display the first map in the sequence (full area map).

The map dropdown list is the fastest way to get to a specific desired tracking chart.

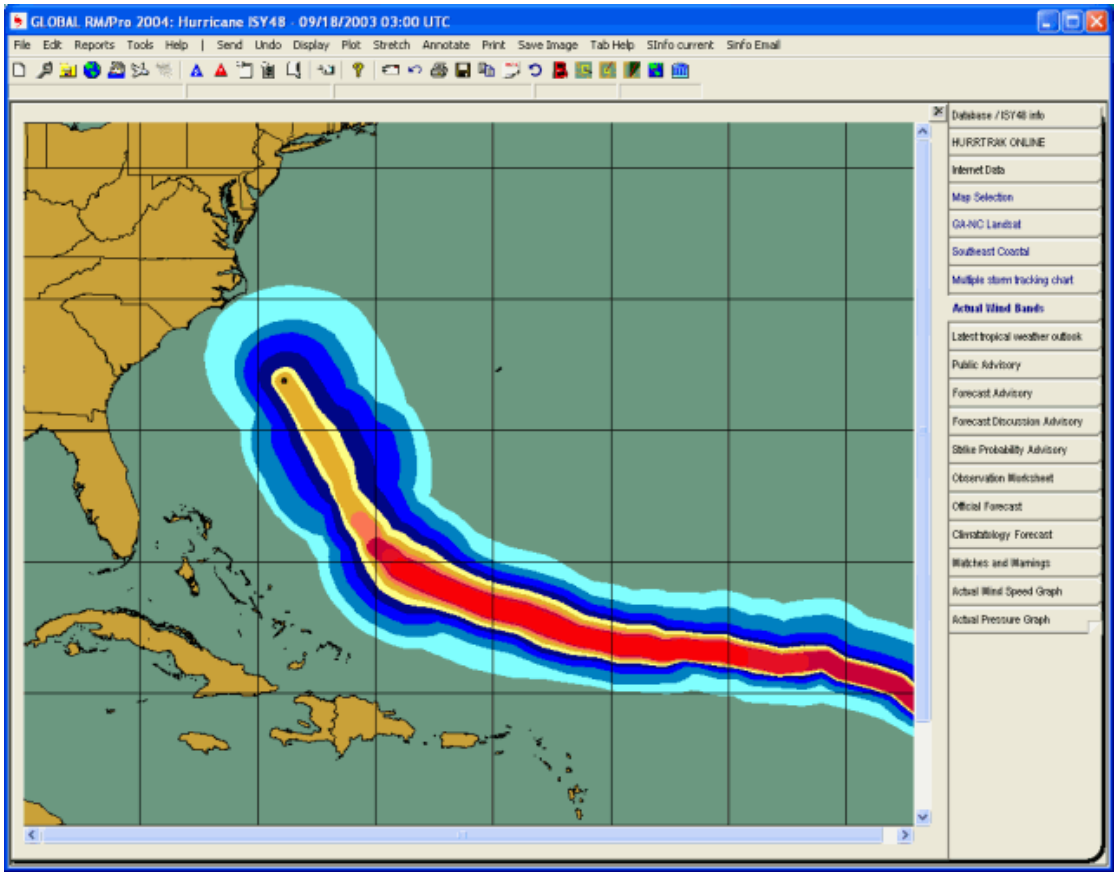
You can specify how many favorite tracking charts you would like to have available in the user general options.

The multiple storm tracking chart tab is special in that it is NOT refreshed when a new storm or database is loaded. This allows the user to plot more than one storm track on it.

The satellite/Radar image drop down list is maintained via HURRTRAK Online and may change during the hurricane season. The images are downloaded from 3rd party internet sites which are generally very reliable.. but occasionally they may not be available.

You cannot add your favorite satellite image to the list of tracking chart satellite images. If you have a good source for satellite images and the images are in a Mercator map projection, please contact us.

Wind Band Analysis Tab



Description: This tab displays the actual and/or forecast wind band analysis information for the current loaded storm. Additional storm tracking and analysis functions are available from here.

Tab Created by: Map Select Tab, Variable Track Chart Tab, Favorite Tracking Chart Tab

Tab Close Allowed: Yes

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's image via email image as shown on page 178.

Undo - Removes that last change to the tracking chart image

Display - For a complete list of wind band display options see page 183

Plot - For a complete list of Plot options see page 182.

Stretch - Fills the entire screen with the current tab's image. No functions can be performed while in stretch mode

Annotate – Allows the user to place text on the current image.

Print/Export – Allows the user to print the current image in color, gray scale or B&W.. or send the image to Google Earth. See page 287 for more information on the Google Earth interface.

Save Image – Saves the image to the clipboard or file (color or B&W).

TOOLBAR Options Available:

Plus Sign - This option zooms in and re-plots the map.

Minus Sign - This option zooms out and re-plots the map.

Bullseye - This option centers the map on the storm at the current zoom level.

Left Arrow - This option pans the map to the west and re-plots the map.

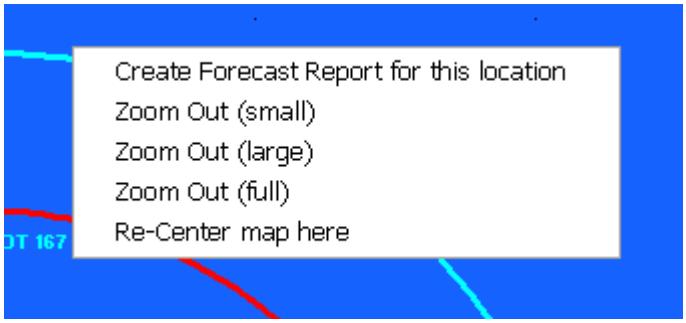
Up Arrow - This option pans the map to the north and re-plots the map.

Down Arrow - This option pans the map to the south and re-plots the map.

Right Arrow - This option pans the map to the east and re-plots the map.

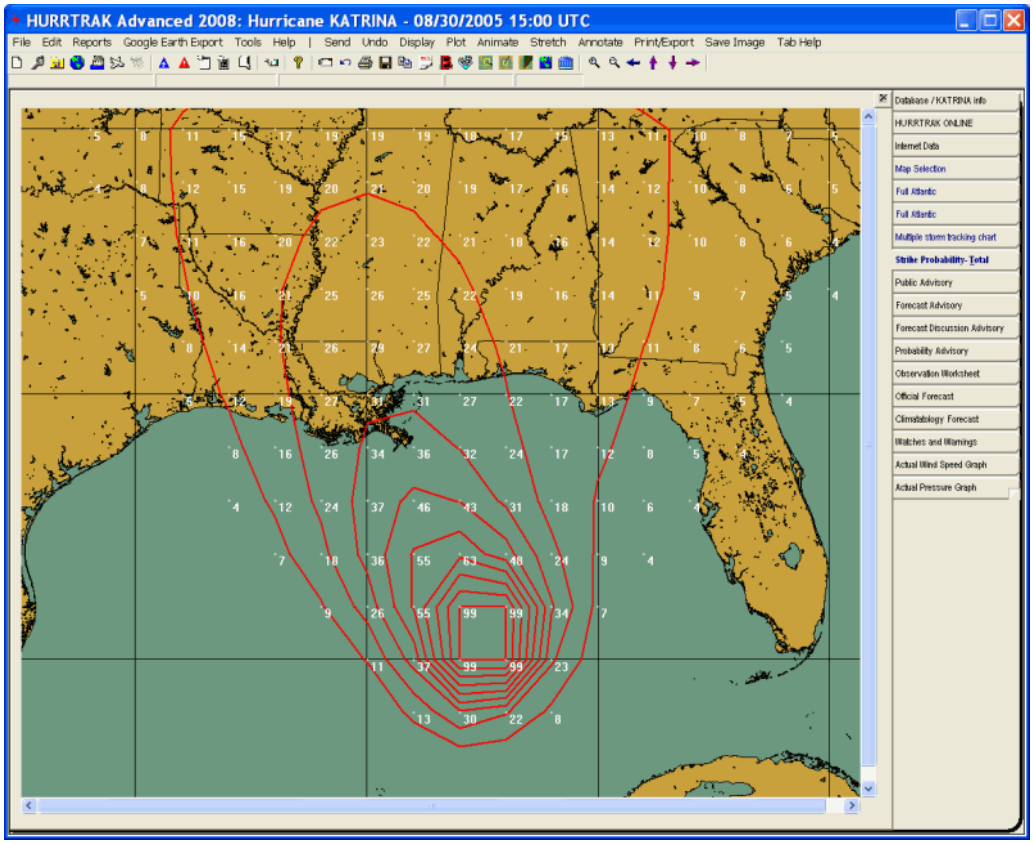
Miscellaneous:

The user can zoom in by rubber banding an area on the screen. Other pan and zoom options are available by right clicking anywhere on the map image.



Tips: You can specify the wind band wind levels in the Wind Band Options

Strike/Wind Probability Analysis Tab



Description: This tab displays 2 types of probabilities. It graphically displays either the total, next 24 hours, 24-36 hour period, 36-48 hour period or 48-72 hour period strike probabilities OR the total 34 knot, 50 knot or 64 knot wind probabilities… on a tracking chart. The values are contoured as set in the Strike/Wind Probabilities Option. Additional storm tracking and analysis functions are available from here.

Tab Created by: Map Select Tab, Variable Track Chart Tab, Favorite Tracking Chart Tab

Tab Close Allowed: Yes

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's image via email image as shown on page 178.

Undo - Removes that last change to the tracking chart image

Display - For a complete list of wind band display options see page 185.

Plot - For a complete list of Plot options see page 186.

Stretch - Fills the entire screen with the current tab's image. No functions can be performed while in stretch mode

Annotate – Allows the user to place text on the current image.

Print/Export – Allows the user to print the current image in color, gray scale or B&W.. or send the image to Google Earth. See page 287 for more information on the Google Earth interface.

Save Image – Saves the image to the clipboard or file (color or B&W).

TOOLBAR Options Available:

Plus Sign - This option zooms in and re-plots the map.

Minus Sign - This option zooms out and re-plots the map.

Bullseye - This option centers the map on the storm at the current zoom level.

Left Arrow - This option pans the map to the west and re-plots the map.

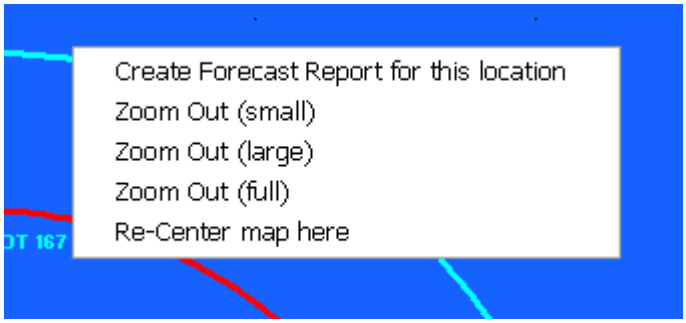
Up Arrow - This option pans the map to the north and re-plots the map.

Down Arrow - This option pans the map to the south and re-plots the map.

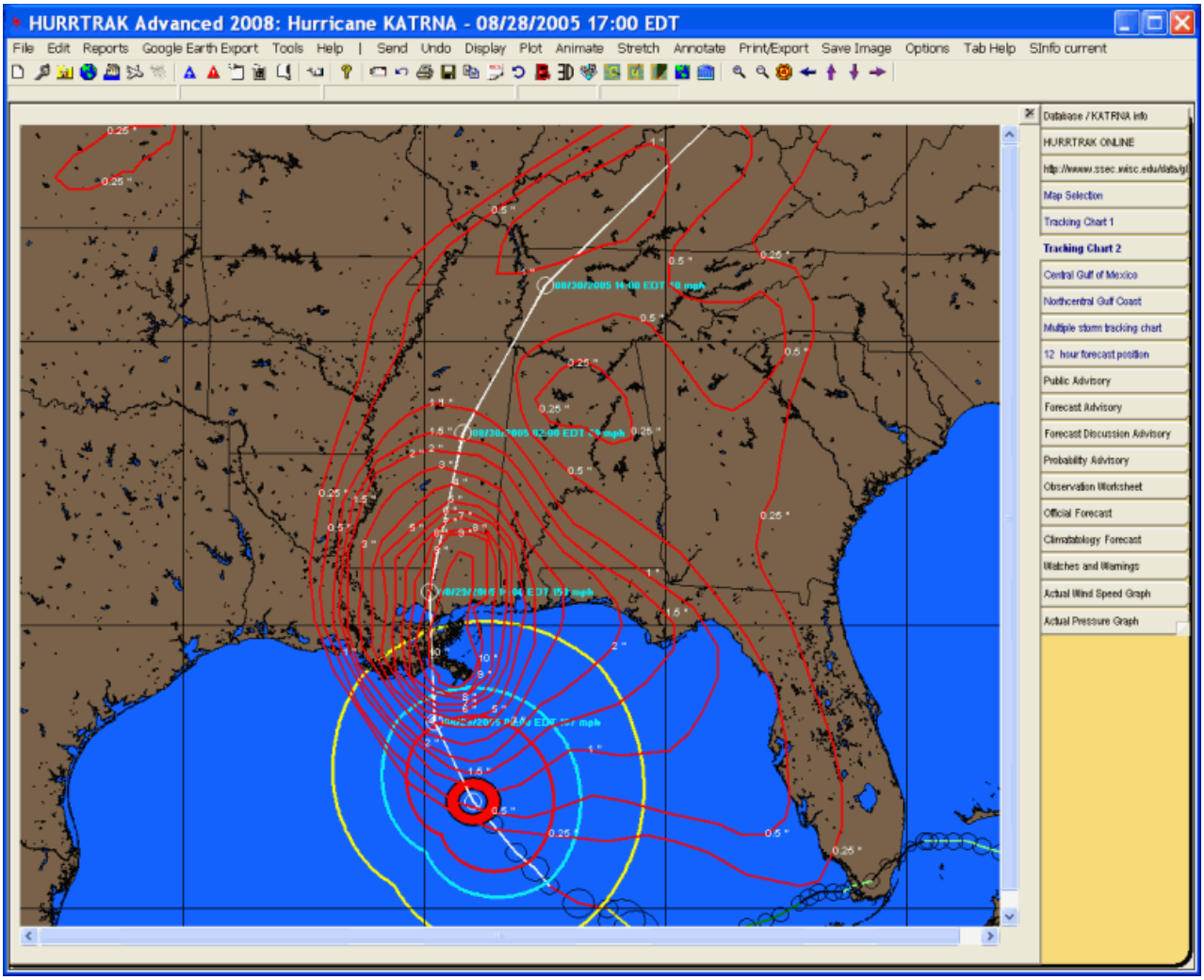
Right Arrow - This option pans the map to the east and re-plots the map.

Miscellaneous:

The user can zoom in by rubber banding an area on the screen. Other pan and zoom options are available by right clicking anywhere on the map image.



Forecast Rainfall Analysis Tab



Description: This tab displays the National Weather Service's official 24 hour rainfall forecast for the next 3 days. Additional tracking and analysis functions are available from here.

Tab Created by: Map Select Tab, Variable Track Chart Tab, Favorite Tracking Chart Tab

Tab Close Allowed: Yes

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's image via email image as shown on page 178.

Undo - Removes that last change to the tracking chart image

Display - For a complete list of wind band display options see page 187.

Plot - For a complete list of Plot options see page 182.

Stretch - Fills the entire screen with the current tab's image. No functions can be performed while in stretch mode

Annotate – Allows the user to place text on the current image.

Print/Export – Allows the user to print the current image in color, gray scale or B&W.. or send the image to Google Earth. See page 287 for more information on the Google Earth interface.

Save Image – Saves the image to the clipboard or file (color or B&W).

TOOLBAR Options Available:

Plus Sign - This option zooms in and re-plots the map.

Minus Sign - This option zooms out and re-plots the map.

Bullseye - This option centers the map on the storm at the current zoom level.

Left Arrow - This option pans the map to the west and re-plots the map.

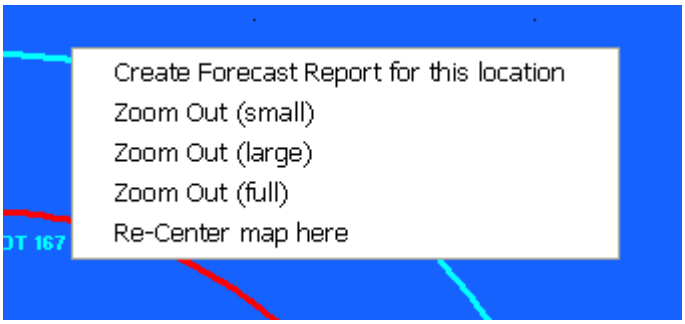
Up Arrow - This option pans the map to the north and re-plots the map.

Down Arrow - This option pans the map to the south and re-plots the map.

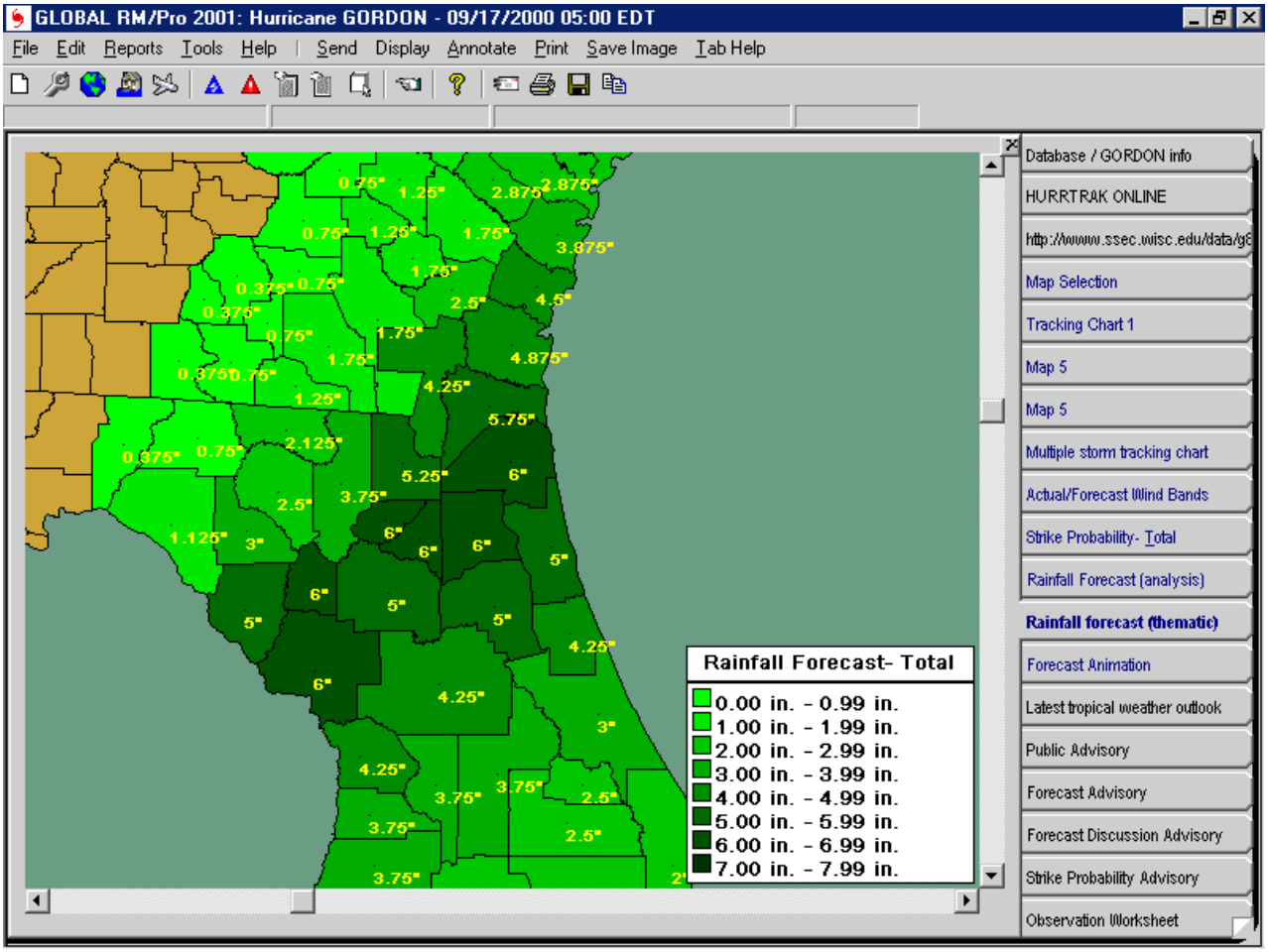
Right Arrow - This option pans the map to the east and re-plots the map.

Miscellaneous:

The user can zoom in by rubber banding an area on the screen. Other pan and zoom options are available by right clicking anywhere on the map image.



Forecast Rainfall Thematic Tab



Description: This tab displays the National Weather Service's official 24 or 72 hour rainfall forecast for the next 3 days in a county thematic fashion. Additional tracking and analysis functions are available from here.

Tab Created by: Map Select Tab, Variable Track Chart Tab, Favorite Tracking Chart Tab

Tab Close Allowed: Yes

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's image via email image as shown on page 178.

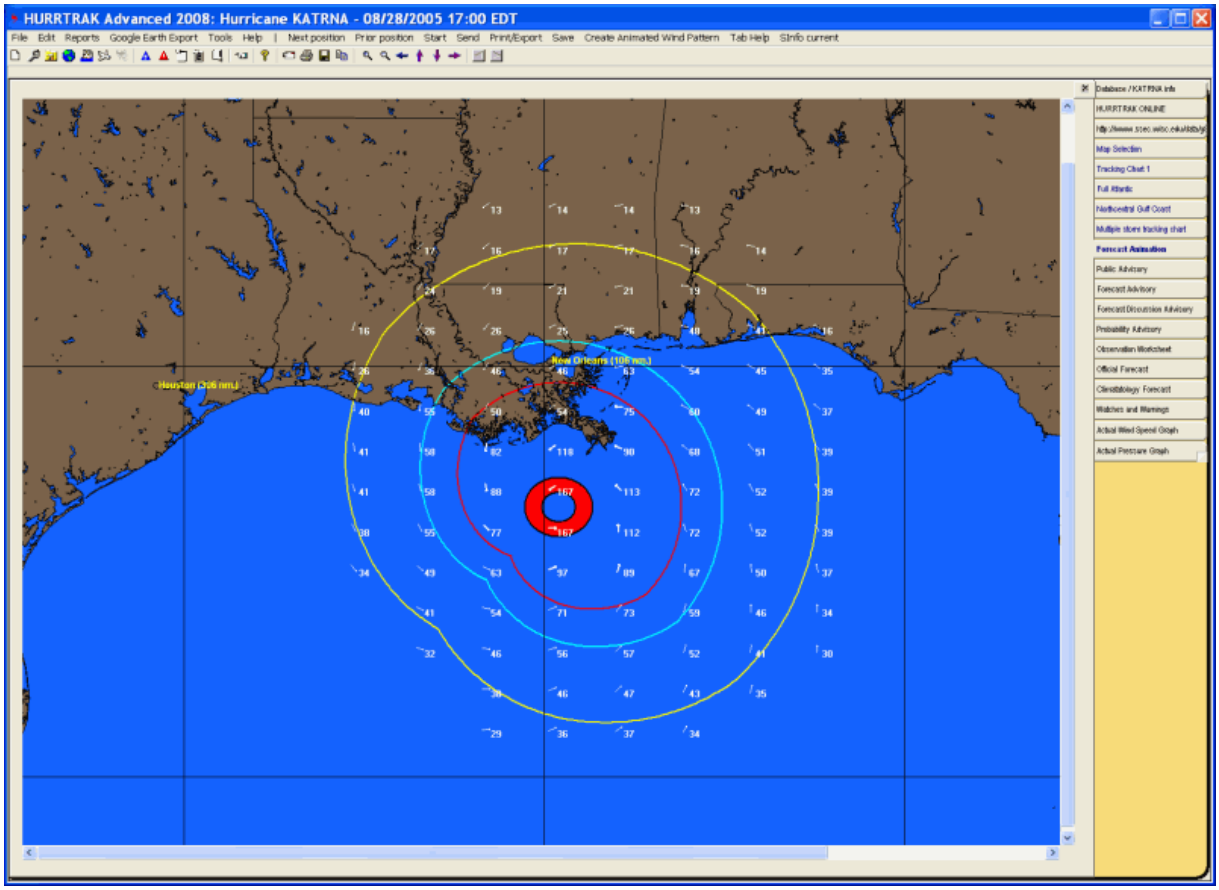
Display - For a complete list of wind band display options see page 189.

Annotate – Allows the user to place text on the current image.

Print/Export – Allows the user to print the current image in color, gray scale or B&W.. or send the image to Google Earth. See page 287 for more information on the Google Earth interface.

Save Image – Saves the image to the clipboard or image file (color or B&W).

Animation Tab



Description: This tab displays an animation of the storm's motion either as wind radii OR as a wind pattern. Additional tracking and analysis functions are available from here.

Tab Created by: Map Select Tab, Variable Track Chart Tab, Favorite Tracking Chart Tab, and Animation Tab (when selecting Create Wind Pattern Animation)

Tab Close Allowed: Yes

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Next Position - When in single step mode, this moves the storm forward 1 hour.

Prior Position - When in single step mode, this moves the storm backward 1 hour.

Start/Stop - When in single pass or continuous loop mode this option will stop or start the animation.

Send - Sends current tab's image or animation sequence via email as shown on page 178. Animation file characteristics are controlled by the User Preferences – Email setup option.

Print/Export – Allows the user to print the current image in color, gray scale or B&W.. or send the image to Google Earth. See page 286 for more information on the Google Earth interface.

Save Image – Saves the image or animation sequence to a file (color or B&W) or saves the image to the clipboard.

- **Create Animated Wind Pattern** – This option will stop the current animation and build/display a Wind Pattern Animation sequence. This can be a very time consuming process and no new animations can be started. If you are going to use this function it is imperative that you download the processed RI files. You can find our more about the Processed RI files on the topic of Plotting Options on page 115.

  Stop Processing – This option is only available when a Wind Pattern Animation is being built (first loop). It will stop the current operation and display the wind pattern animation that has been built so far. You cannot resume the wind pattern animation build after it has been stopped.

TOOLBAR Options Available:

Plus Sign - This option zooms in and re-plots the animation

Minus Sign - This option zooms out and re-plots the animation.

Left Arrow - This option pans the map to the west and re-plots the animation

Up Arrow - This option pans the map to the north and re-plots the animation

Down Arrow - This option pans the map to the south and re-plots the animation

Right Arrow - This option pans the map to the east and re-plots the animation

Left Diamond - When animating, this option slows the animation down. If in single frame mode, this option moves to the prior position.

Right Diamond - When animating, this option increases the speed of the animation. If in single frame mode, this option moves to the next position.

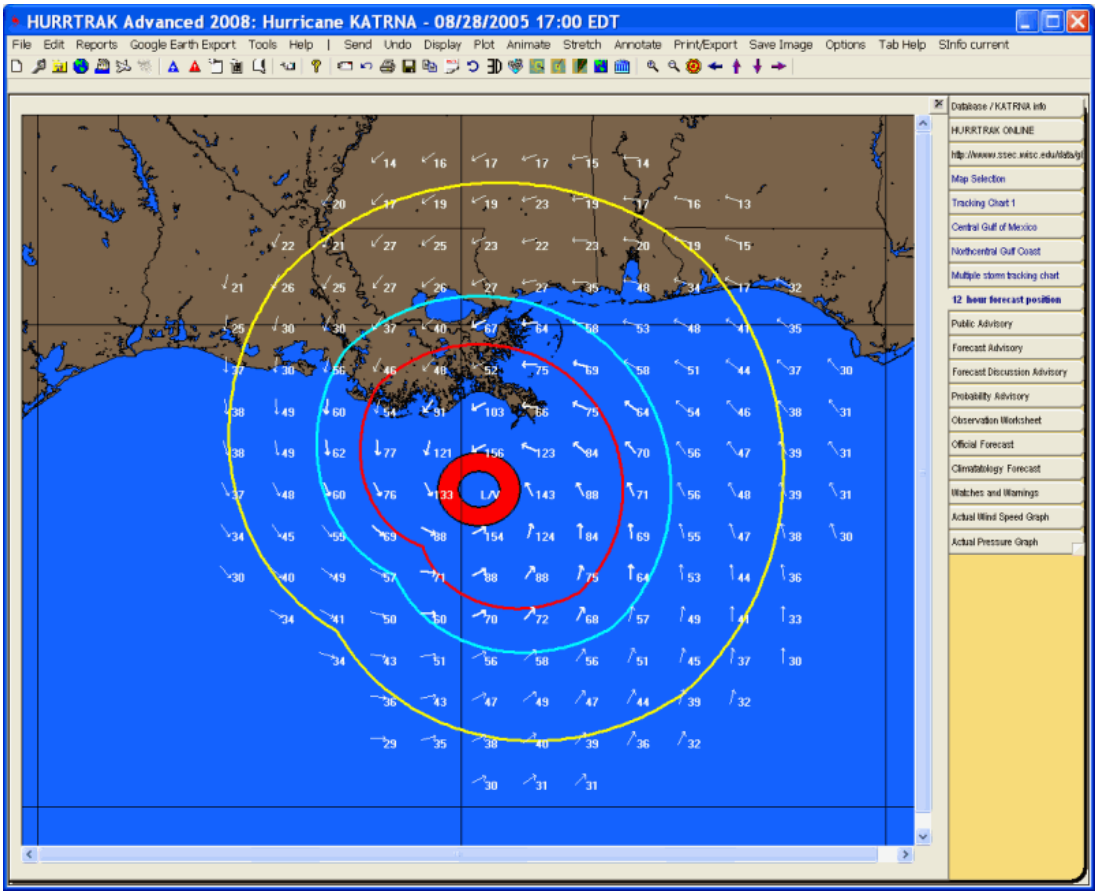
Miscellaneous:

The user can zoom in by rubber banding an area on the screen or selecting one of the zoom out or pan options. You need to stop the animation before performing any of these actions.

Tips:

- The first loop of either the wind radii animation or the wind pattern animation builds the animation frame file.. After the first loop, the animation speed is based on the settings in your user preferences (animation options). The first loop of the wind pattern animation may take a very long time.
- There is a complete set of animation options which are set in user preferences - animation options.
- Selecting the animate option presents the user with the option of animating on the current chart or a refreshed chart (one with just the base geographical map). Selecting the option to animate using the current chart as the animation chart allows the user to first plot desired "background" items such as forecast tracks, range rings, etc and have those appear during the animation.
- Animation files can be very large. For smaller file sizes do not animate on Satellite, Radar or Landsat images.
- If you want to save an animation, be sure to select that option as otherwise they are deleted when you are done viewing them. This is especially important to keep in mind when creating wind pattern animations due to the amount of time it takes to create.

Forecast Position Tab



Description: This tab displays the 1 to 120 hour forecast position of a storm.

Tab Created by: Selecting the plot forecast position option from Tracking Chart Select Tab.

Tab Close Allowed: Yes

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's image via email image as shown on page 178.

Undo - Removes that last change to the tracking chart image

Display - For a complete list of display options see page 179.

Plot - For a complete list of Plot options see page 182.

Animate - Animates the storm's actual and or forecast motion on a separate tab.

Stretch - Fills the entire screen with the current tab's image. No functions can be performed while in stretch mode

Annotate – Allows the user to place text on the current image.

Print/Export – Allows the user to print the current image in color, gray scale or B&W.. or send the image to Google Earth. See page 287 for more information on the Google Earth interface.

Save Image – Saves the image to the clipboard or file (color or B&W).

Options – Allows the user to show mousepointer data and turn the status bar on/off.

TOOLBAR Options Available:

Plus Sign - This option zooms in and re-plots the map.

Minus Sign - This option zooms out and re-plots the map.

Bullseye - This option centers the map on the storm at the current zoom level.

Left Arrow - This option pans the map to the west and re-plots the map.

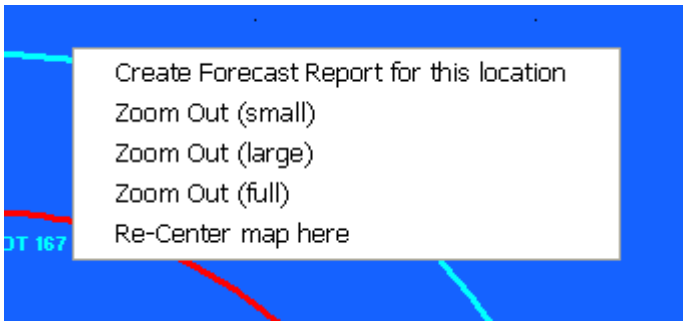
Up Arrow - This option pans the map to the north and re-plots the map.

Down Arrow - This option pans the map to the south and re-plots the map.

Right Arrow - This option pans the map to the east and re-plots the map.

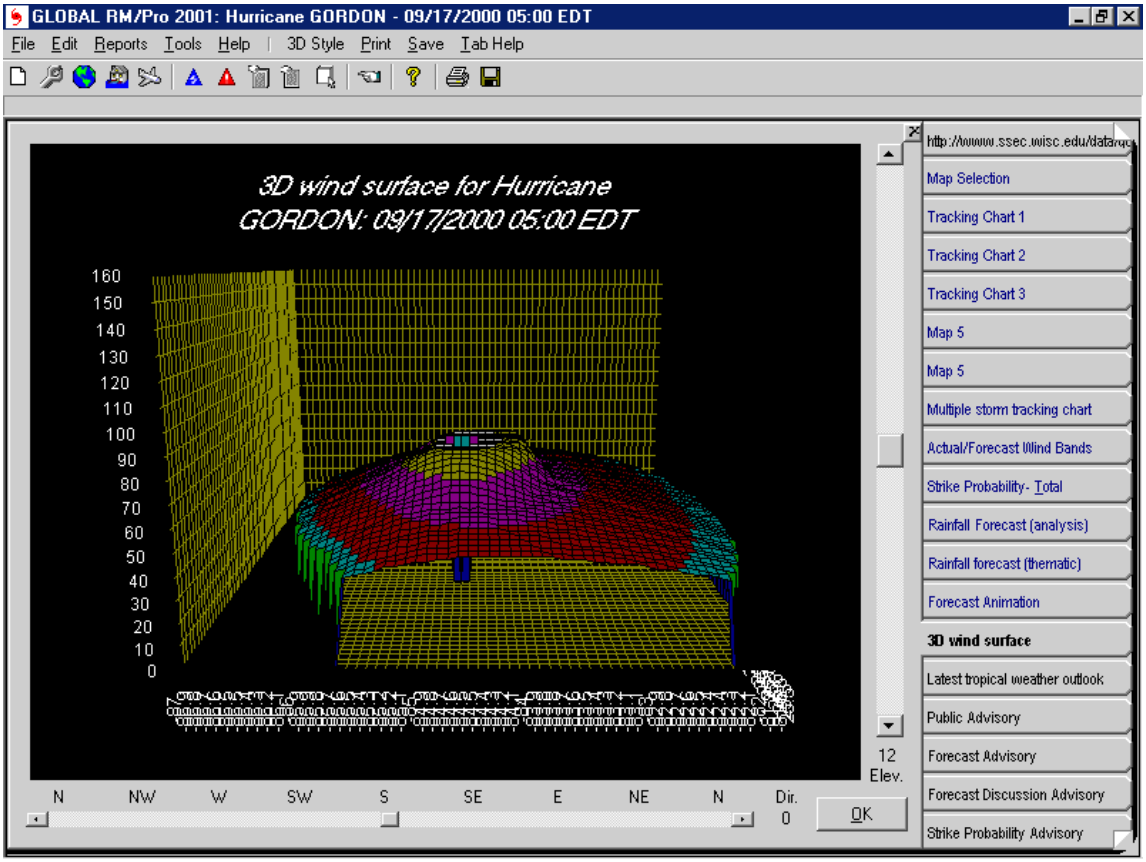
Miscellaneous:

The user can zoom in by rubber banding an area on the screen. Other pan and zoom options are available by right clicking anywhere on the map image.



Tips: Selecting "all possible times" when selecting this option will present you with a list of hourly forecast times.

Wind Surface Tab



Description: This tab displays a 3D wind surface image of the current storm. The 3D wind surface lets the user visualize the wind structure of the storm in a 3 dimensional manner. You can "move around" the storm by moving the horizontal sliding scale. The default "view" is from the South (180). You can also move "up and down" by moving the vertical sliding scale. The default elevation is 0. There are several controls that set in the General Options which determine how this function operates. One which determines the density or level of detail of the graph and the other sets how the image is to be updated (with the movement of the sliding scale or by pressing the OK button.

Tab Created by: Variable tracking chart Tab, Favorite Tracking Chart Tab

Tab Close Allowed: Yes

Functions Available:
Menu/Toolbar:

Standard System Menu Functions

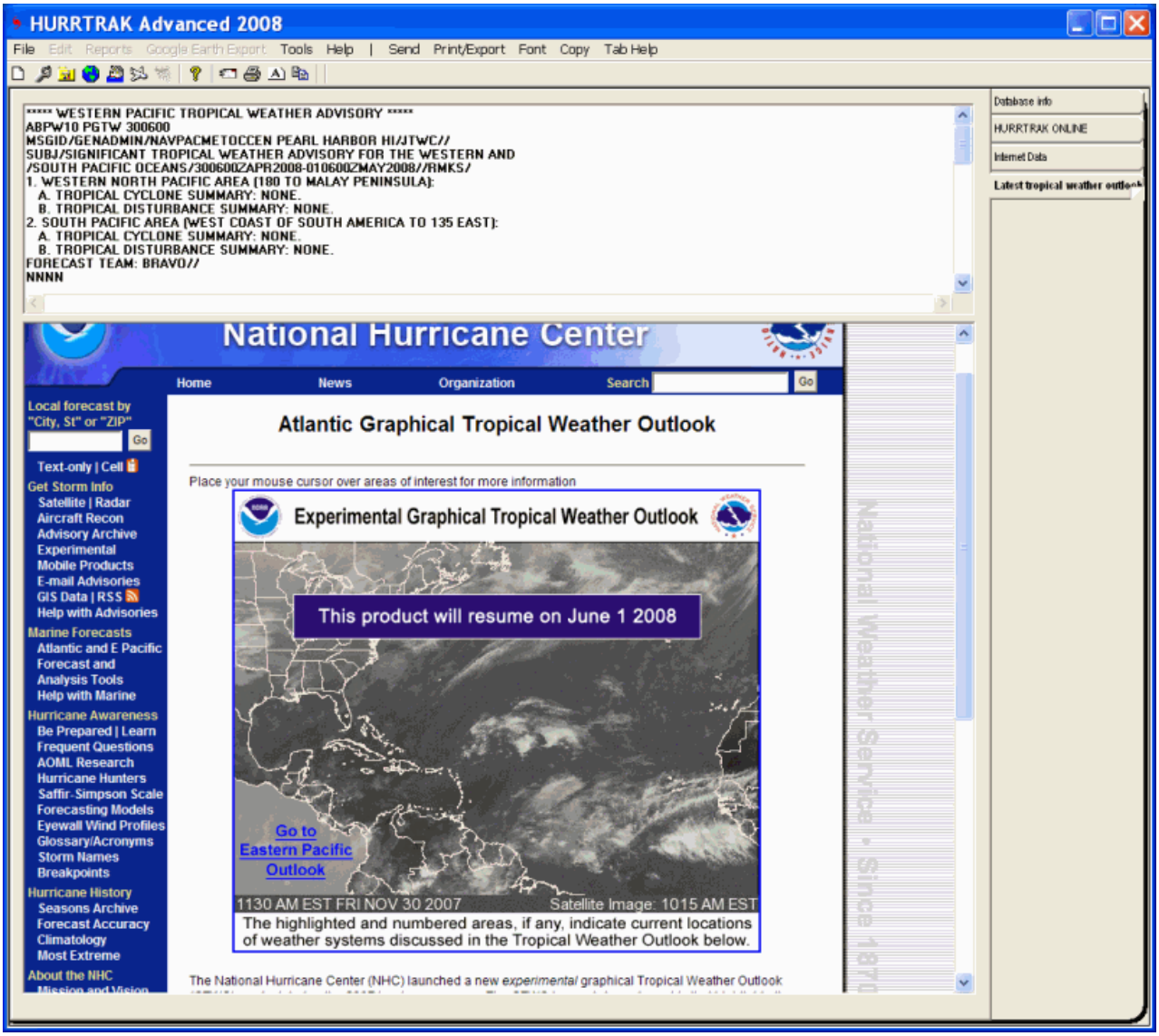
3D Style - Allows the user to change the 3D surface graph to a 3D "tape" analysis or back to the default surface analysis.

Print - Prints a black/white image of the graph to the windows printer.

Save Image - Saves the image to a BMP file (bitmapped).

TIPS: To create a useful image, select a chart where the storm wind field fills most of the area when choosing this function.

Tropical Weather Outlook Tab



Description: This tab displays the latest tropical weather outlook. If a global system, this tab will show the tropical weather outlooks for all of the tropical basins. In addition to the text, it will also show the new Graphical TWO product.

Tab Created by: Visible if the latest tropical weather outlook is no more than 30 days old unless deselected in General Options.

Tab Close Allowed: No

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's contents via email image as shown on page 178.

Print:

Print Preview - Previews the printed output on your screen

Direct to Printer - Prints the output directly to the designated printer

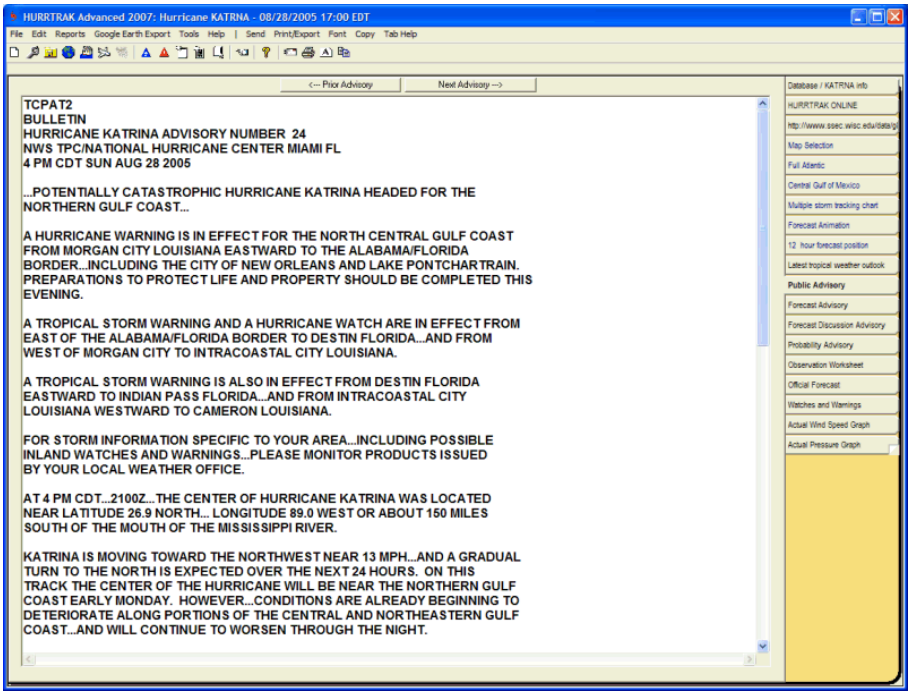
Export to HTML – Exports the output in an HTML format.

Export to PDF – Exports the output to a PDF format

Font - This allows the user to set the screen / printer font type and size. Only matching screen and printer fonts are available. If you want to print out the data in portrait mode and it does not fix across 1 page, you may need to temporarily reduce the font size before printing.

Copy - This option copies the contents of the data form being displayed to the windows clipboard. You can then paste the copied information into another application, etc.

Public Advisory Tab



Description: This tab displays the latest National Hurricane Center Public Advisory for the current loaded storm.

Tab Created by: This tab is visible if the public advisory is present and is no more than 6 hours old.

Tab Close Allowed: No, however this tab can be deselected in General Options so that it would never appear.

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's content via email image as shown on page 178.

Print:

Print Preview - Previews the printed output on your screen

Direct to Printer - Prints the output directly to the designated printer

Export to HTML – Exports the output in an HTML format.

Export to PDF – Exports the output to a PDF format

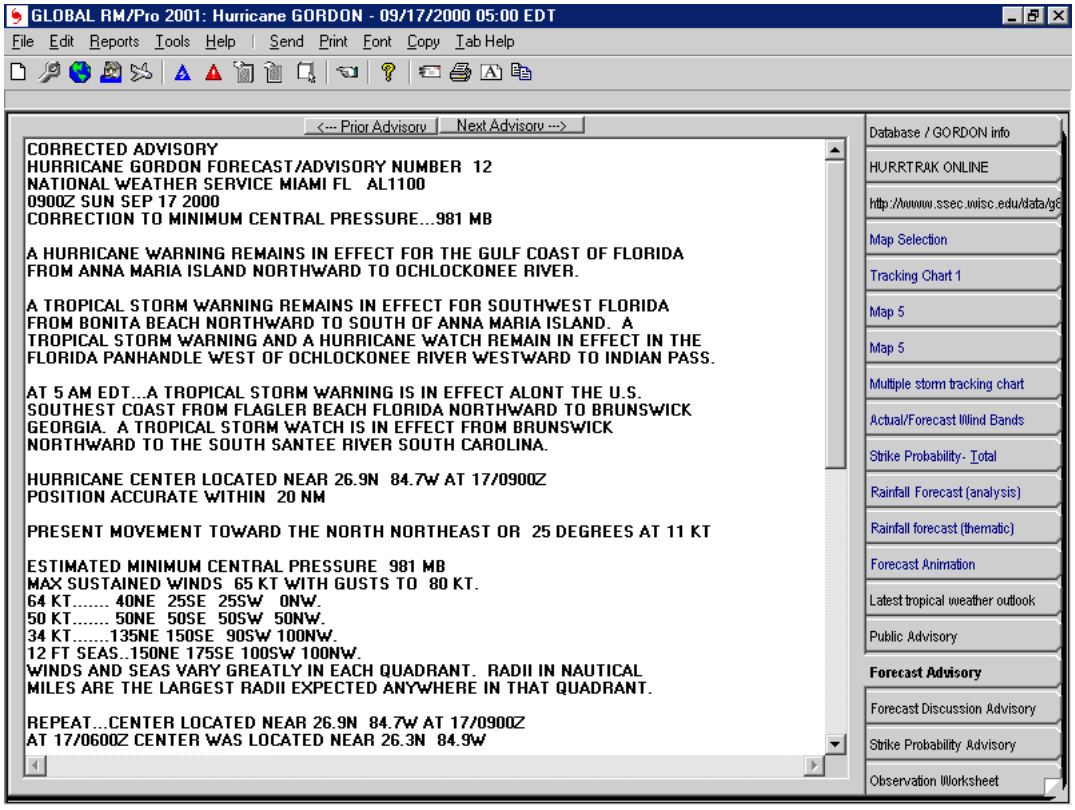
Font - This allows the user to set the screen / printer font type and size. Only matching screen and printer fonts are available. If you want to print out the data in portrait mode and it does not fix across 1 page, you may need to temporarily reduce the font size before printing.

Copy - This option copies the contents of the data form being displayed to the windows clipboard. You can then paste the copied information into another application, etc.

Tips:

- You can view the earlier advisories by selecting the prior and next advisory buttons.
- When you are viewing an earlier advisory, the background color changes to a manila color

Forecast Advisory Tab



Description: This tab displays the latest National Hurricane Center Forecast Advisory for the current loaded storm.

Tab Created by: This tab is visible if the advisory is present and is no more than 6 hours old.

Tab Close Allowed: No, however this tab can be deselected in General Options.

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's contents via email image as shown on page 178.

Print:

Print Preview - Previews the printed output on your screen

Direct to Printer - Prints the output directly to the designated printer

Export to HTML – Exports the output in an HTML format.

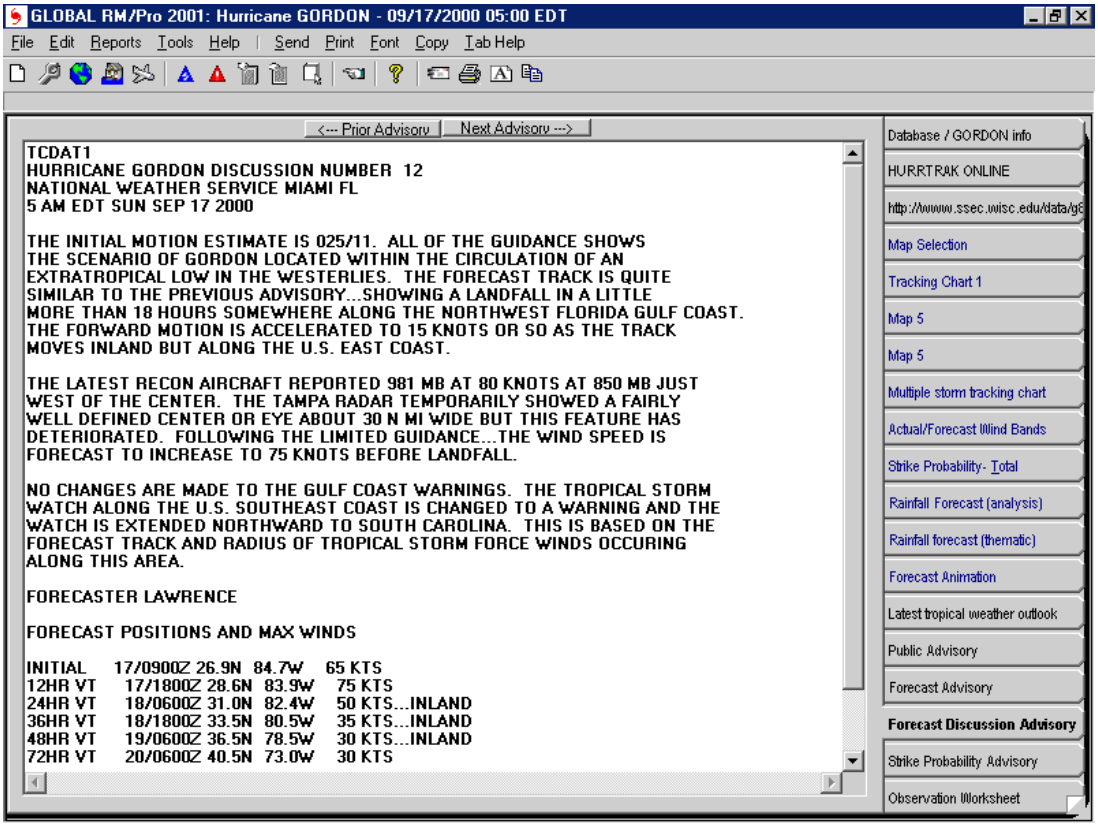
Export to PDF – Exports the output to a PDF format

Font - This allows the user to set the screen / printer font type and size. Only matching screen and printer fonts are available. If you want to print out the data in portrait mode and it does not fix across 1 page, you may need to temporarily reduce the font size before printing.

Copy - This option copies the contents of the data form being displayed to the windows clipboard. You can then paste the copied information into another application, etc.

Tips: You can view the earlier advisories by selecting the prior and next advisory buttons. When you are viewing an earlier advisory, the background color changes to a manila color

Forecast Discussion Tab



Description: This tab displays the latest National Hurricane Center Forecast Discussion for the current loaded storm.

Tab Created by: This tab is visible if the advisory is present and is no more than 6 hours old.

Tab Close Allowed: No, however this tab can be deselected in General Options.

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's contents via email image as shown on page 178.

Print:

Print Preview - Previews the printed output on your screen

Direct to Printer - Prints the output directly to the designated printer

Export to HTML – Exports the output in an HTML format.

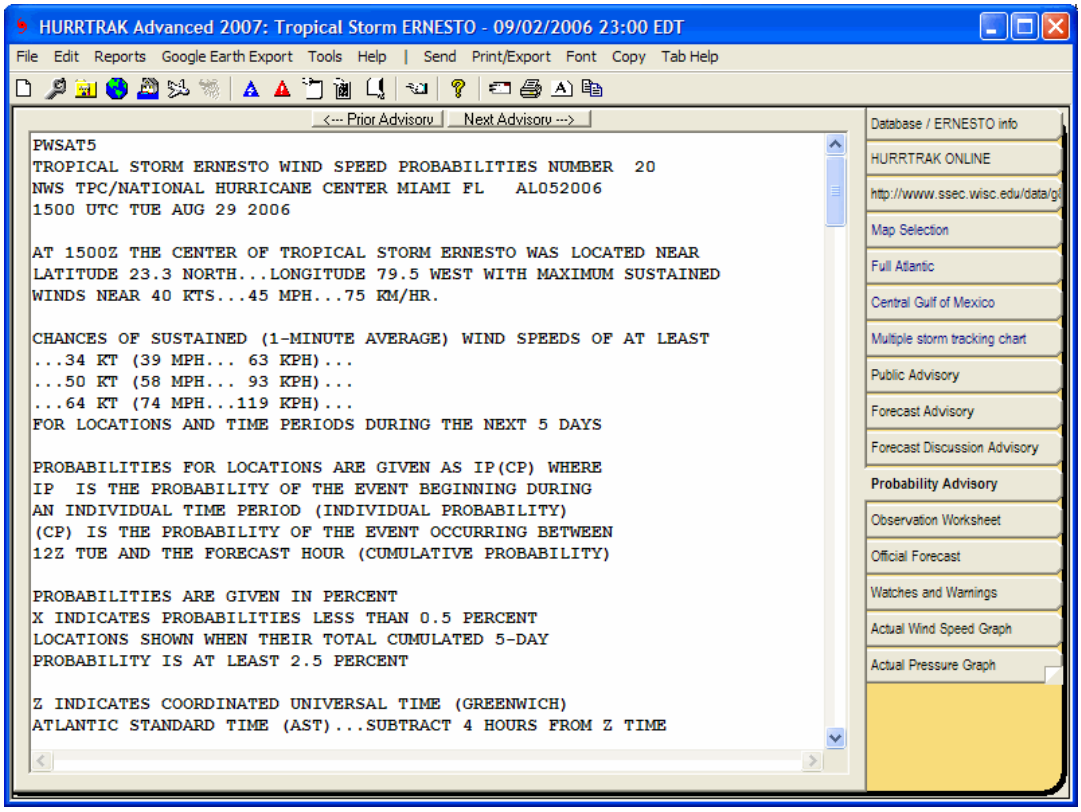
Export to PDF – Exports the output to a PDF format

Font - This allows the user to set the screen / printer font type and size. Only matching screen and printer fonts are available. If you want to print out the data in portrait mode and it does not fix across 1 page, you may need to temporarily reduce the font size before printing.

Copy - This option copies the contents of the data form being displayed to the windows clipboard. You can then paste the copied information into another application, etc.

Tips: You can view the earlier advisories by selecting the prior and next advisory buttons. When you are viewing an earlier advisory, the background color changes to a manila color

Probability Advisory Tab



Description: This tab displays the latest National Hurricane Center Wind Probability Advisory for the current loaded storm

Tab Created by: This tab is visible if the advisory is present and is no more than 6 hours old.

Tab Close Allowed: No, however this tab can be deselected in General Options.

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's contents via email image as shown on page 178.

Print:

Print Preview - Previews the printed output on your screen

Direct to Printer - Prints the output directly to the designated printer

Export to HTML – Exports the output in an HTML format.

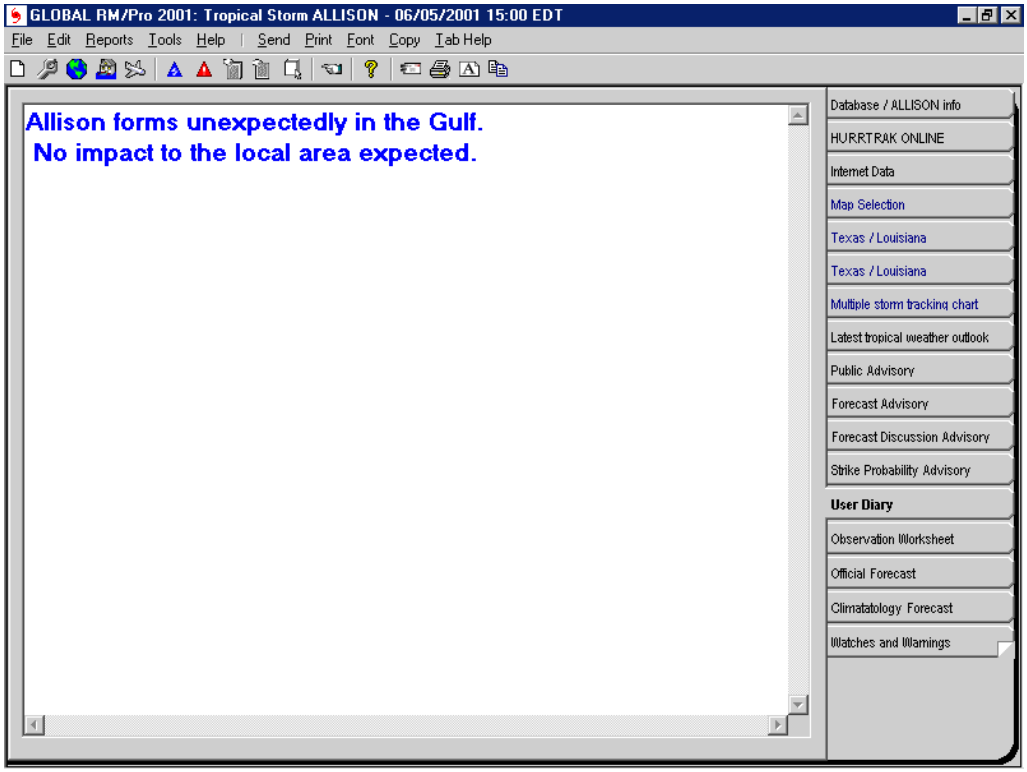
Export to PDF – Exports the output to a PDF format

Font - This allows the user to set the screen / printer font type and size. Only matching screen and printer fonts are available. If you want to print out the data in portrait mode and it does not fix across 1 page, you may need to temporarily reduce the font size before printing.

Copy - This option copies the contents of the data form being displayed to the windows clipboard. You can then paste the copied information into another application, etc.

Tips: You can view the earlier advisories by selecting the prior and next advisory buttons. When you are viewing an earlier advisory, the background color changes to a manila color

User Comments (Diary) Tab



Description: This tab displays user comments for the current advisory for the current storm.

Tab Created by: This tab is visible if user comments have been entered for the current advisory.

Tab Close Allowed: No, however this tab can be deselected in General Options.

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's contents via email image as shown on page 178.

Print:

Print Preview - Previews the printed output on your screen

Direct to Printer - Prints the output directly to the designated printer

Export to HTML – Exports the output in an HTML format.

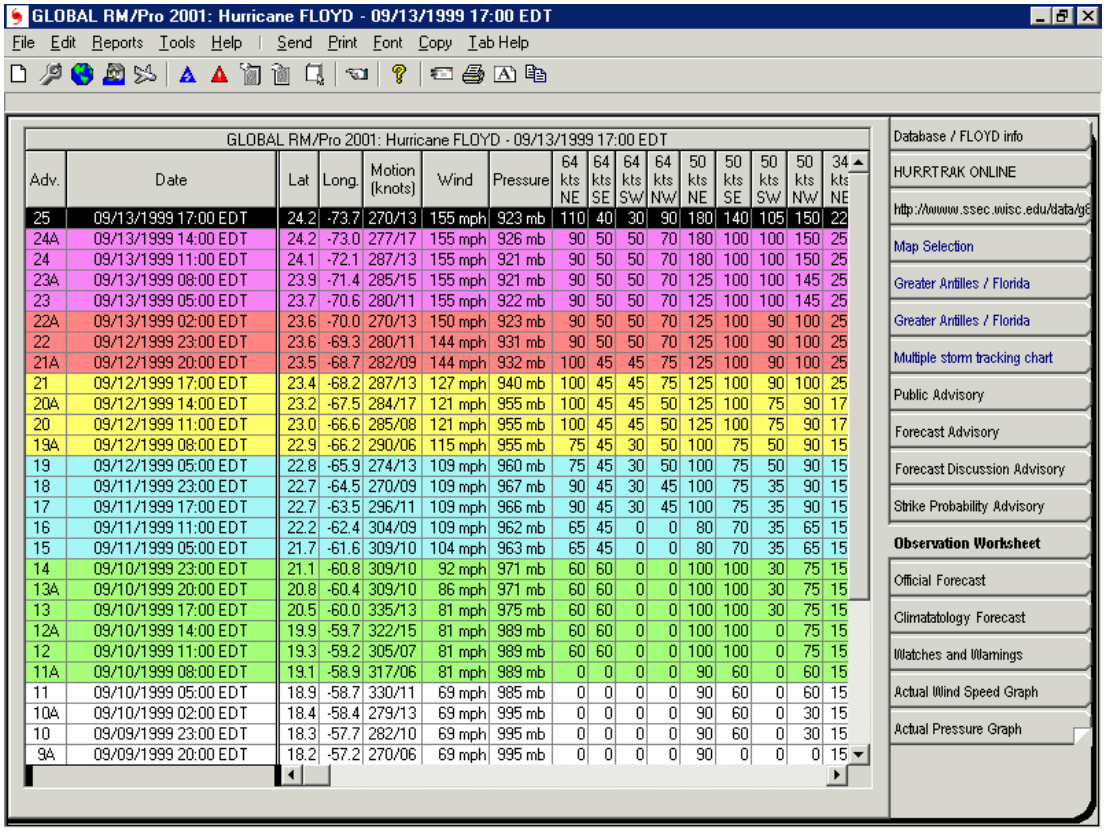
Export to PDF – Exports the output to a PDF format

Font - This allows the user to set the screen / printer font type and size. Only matching screen and printer fonts are available. If you want to print out the data in portrait mode and it does not fix across 1 page, you may need to temporarily reduce the font size before printing.

Copy - This option copies the contents of the data form being displayed to the windows clipboard. You can then paste the copied information into another application, etc.

Tips: User comments are included under the graphic in the summary report

Observation Worksheet Table Tab



Description: This tab displays the observations for the current loaded storm.

Tab Created by: This tab is visible if a storm is loaded.

Tab Close Allowed: No, however this tab can be deselected in General Options.

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's contents via email image as shown on page 178.

Print:

Print Preview - Previews the printed output on your screen

Direct to Printer - Prints the output directly to the designated printer

Export to HTML – Exports the output in an HTML format

Export to PDF – Exports the output to a PDF format

Export to Text – Exports the output to a comma delimited file.

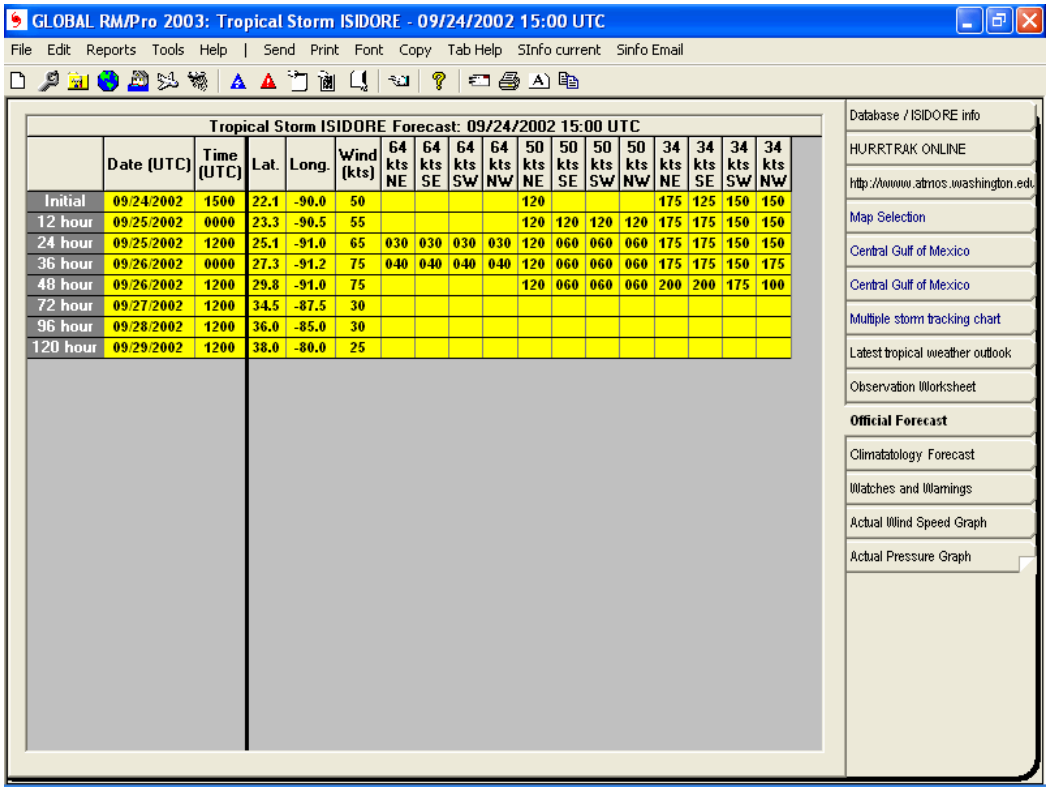
Export to EXCEL – Exports the output and opens it in EXCEL format

Font - This allows the user to set the screen / printer font type and size. Only matching screen and printer fonts are available. If you want to print out the data in portrait mode and it does not fix across 1 page, you may need to temporarily reduce the font size before printing.

Copy - This option copies the contents of the data form being displayed to the windows clipboard. You can then paste the copied information into another application, etc.

Tips: The observation rows are color coded based on wind speed.

Official Forecast Table Tab



	Date (UTC)	Time (UTC)	Lat.	Long.	Wind (kts)	64 kts NE	64 kts SE	64 kts SW	64 kts NW	50 kts NE	50 kts SE	50 kts SW	50 kts NW	34 kts NE	34 kts SE	34 kts SW	34 kts NW
Initial	09/24/2002	1500	22.1	-90.0	50					120				175	125	150	150
12 hour	09/25/2002	0000	23.3	-90.5	55					120	120	120	120	175	175	150	150
24 hour	09/25/2002	1200	25.1	-91.0	65	030	030	030	030	120	060	060	060	175	175	150	150
36 hour	09/26/2002	0000	27.3	-91.2	75	040	040	040	040	120	060	060	060	175	175	150	175
48 hour	09/26/2002	1200	29.8	-91.0	75					120	060	060	060	200	200	175	100
72 hour	09/27/2002	1200	34.5	-87.5	30												
96 hour	09/28/2002	1200	36.0	-85.0	30												
120 hour	09/29/2002	1200	38.0	-80.0	25												

Description: This tab displays the latest official forecast for the current loaded storm.

Tab Created by: This tab is visible if the forecast information is no more than 6 hours old.

Tab Close Allowed: No, however this tab can be deselected in General Options

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's contents via email image as shown on page 178.

Print:

Print Preview - Previews the printed output on your screen

Direct to Printer - Prints the output directly to the designated printer

Export to HTML – Exports the output in an HTML format

Export to EXCEL – Exports the output and opens it in EXCEL format

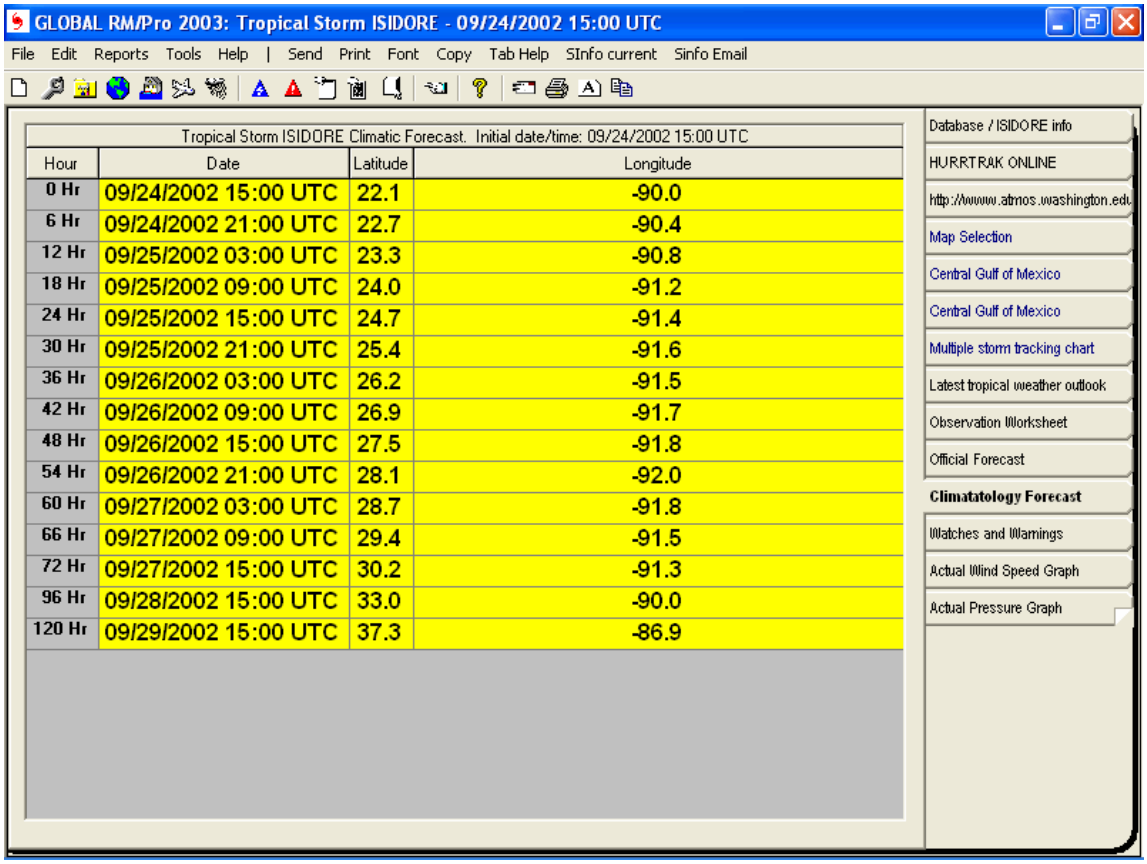
Export to Text – Exports the output to a comma delimited file.

Export to PDF – Exports the output to a PDF format

Font - This allows the user to set the screen / printer font type and size. Only matching screen and printer fonts are available. If you want to print out the data in portrait mode and it does not fix across 1 page, you may need to temporarily reduce the font size before printing.

Copy - This option copies the contents of the data form being displayed to the windows clipboard. You can then paste the copied information into another application, etc.

Climate Forecast Table Tab



Description: This tab displays the latest climate forecast for the current loaded storm.

Tab Created by: This tab is visible if the forecast information is no more than 6 hours old.

Tab Close Allowed: No, however this tab can be deselected in General Options

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's contents via email image as shown on page 178.

Print:

Print Preview - Previews the printed output on your screen

Direct to Printer - Prints the output directly to the designated printer

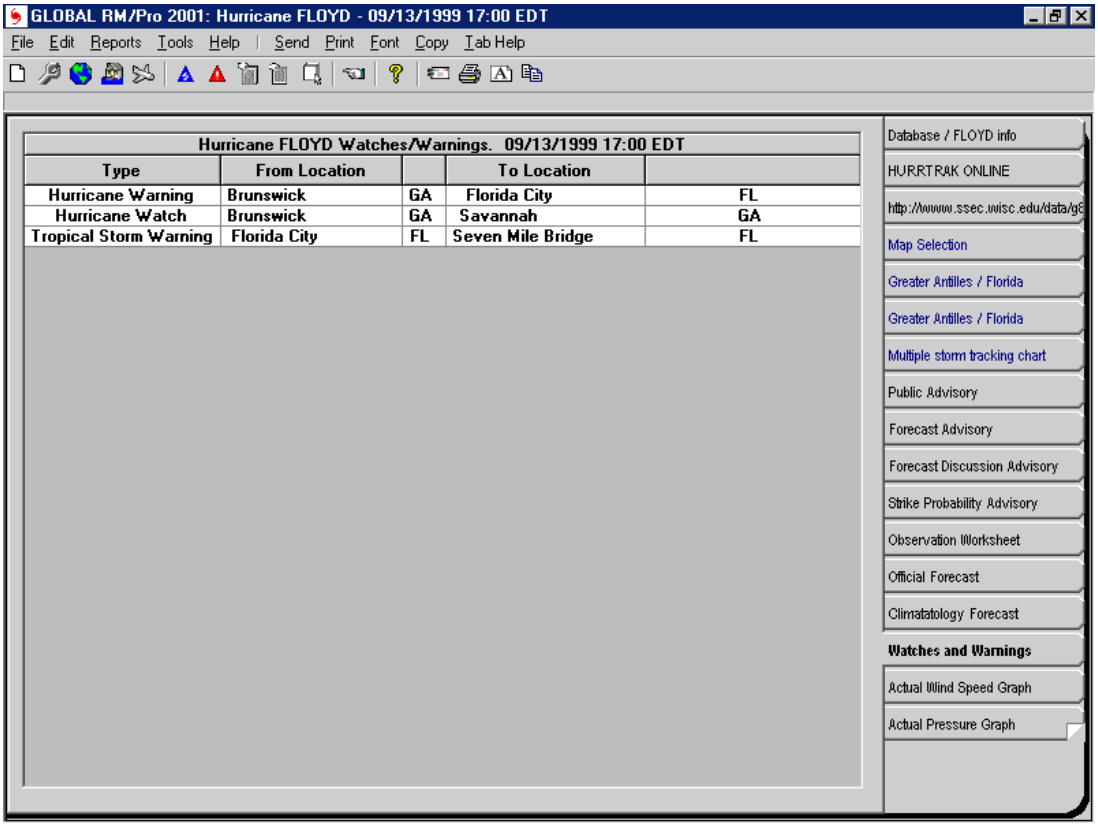
Export to HTML – Exports the output in an HTML format

Export to PDF – Exports the output to a PDF format

Font - This allows the user to set the screen / printer font type and size. Only matching screen and printer fonts are available. If you want to print out the data in portrait mode and it does not fix across 1 page, you may need to temporarily reduce the font size before printing.

Copy - This option copies the contents of the data form being displayed to the windows clipboard. You can then paste the copied information into another application, etc.

Watch and Warning Table Tab



Description: This tab displays the latest watch and warning data for the current loaded storm.

Tab Created by: This tab is visible if the data is no more than 6 hours old.

Tab Close Allowed: No, however this tab can be deselected in General Options

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's contents via email image as shown on page 178.

Print:

Print Preview - Previews the printed output on your screen

Direct to Printer - Prints the output directly to the designated printer

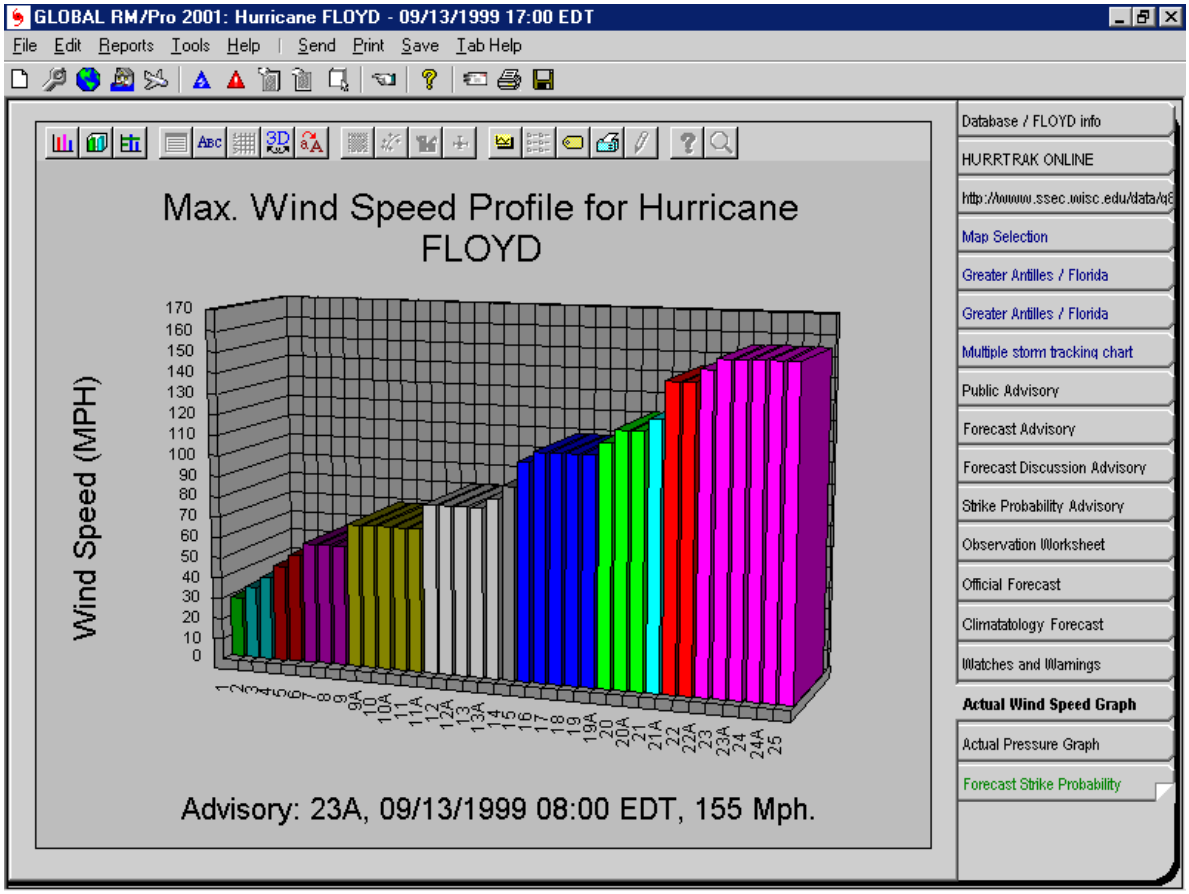
Export to HTML – Exports the output in an HTML format.

Export to PDF – Exports the output to a PDF format

Font - This allows the user to set the screen / printer font type and size. Only matching screen and printer fonts are available. If you want to print out the data in portrait mode and it does not fix across 1 page, you may need to temporarily reduce the font size before printing.

Copy - This option copies the contents of the data form being displayed to the windows clipboard. You can then paste the copied information into another application, etc.

Wind Speed Graph Tab



Description: This tab displays the selected storm's maximum wind speed graph. The unit of measure, MPH or Knots, is based on the UOM options for wind speed.

Tab Created by: This tab is visible if there is more than one storm observation

Tab Close Allowed: No, however this tab can be deselected in General Options.

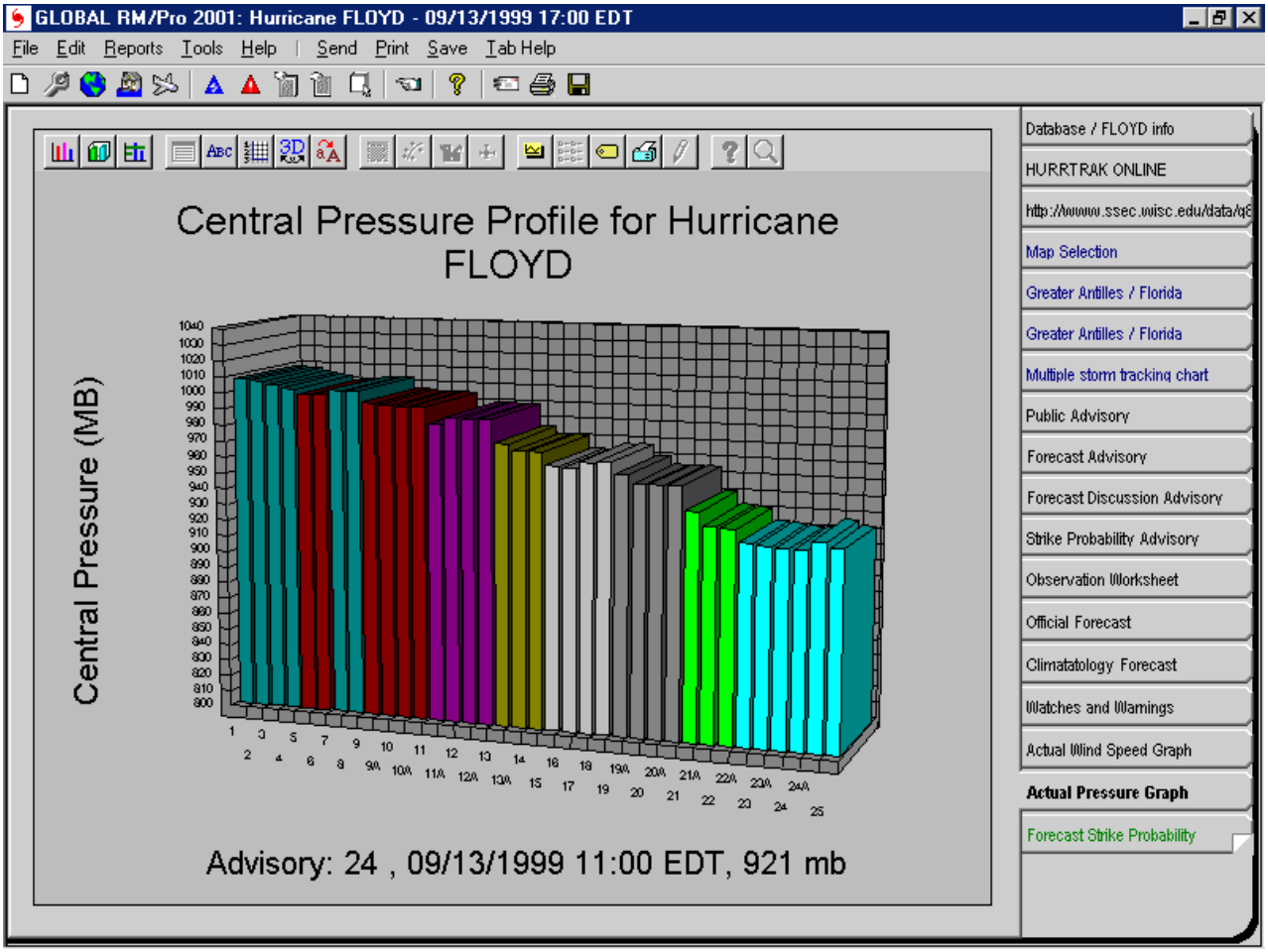
Functions Available:
Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's image via email image as shown on page 178.
Print - Prints a black/white image of the graph to the windows printer.
Save Image - Saves the image to a BMP file (bitmapped).

TIPS: Pointing and clicking on an observation point will display the date, time and wind data for that point under the graph.

Central Pressure Graph Tab



Description: This tab displays the selected storm's observed central pressure graph. . Each bar represents an observation point. The unit of measure, millibars or inches, is based on the UOM option for pressure.

Tab Created by: This tab is visible if there is more than one storm observation

Tab Close Allowed: No, however this tab can be deselected in General Options.

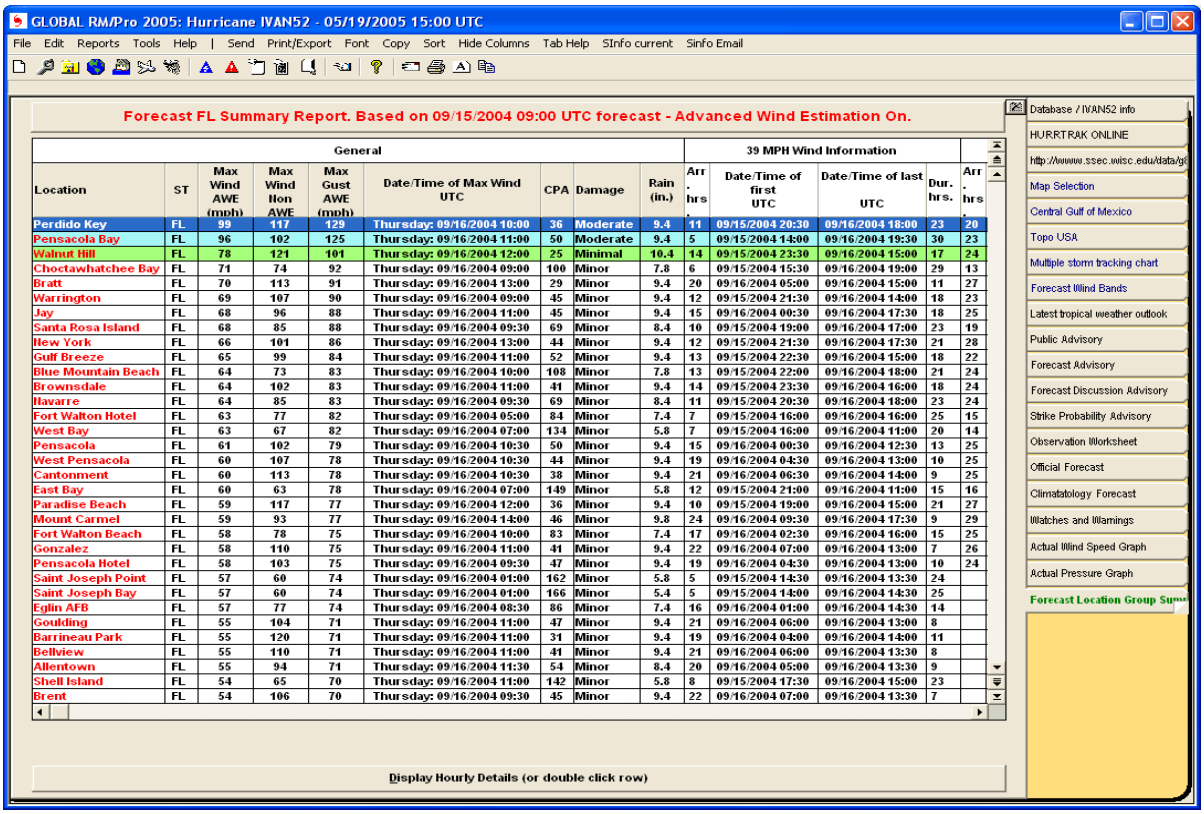
Functions Available:
Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's image via email image as shown on page 178.
Print - Prints a black/white image of the graph to the windows printer.
Save Image - Saves the image to a BMP file (bitmapped).

TIPS: Pointing and clicking on an observation point will display the date, time and wind data for that point under the graph.

Location Group Summary Impact Report Tab



General									39 MPH Wind Information				
Location	ST	Max Wind AWE (mph)	Max Wind Non AWE	Max Gust AWE (mph)	Date/Time of Max Wind UTC	CPA	Damage	Rain (in.)	Arr. hrs.	Date/Time of first UTC	Date/Time of last UTC	Dur. hrs.	Arr. hrs.
Perdido Key	FL	99	117	129	Thursday: 09/16/2004 10:00	36	Moderate	9.4	11	09/15/2004 20:30	09/16/2004 18:00	23	20
Pensacola Bay	FL	96	102	125	Thursday: 09/16/2004 11:00	50	Moderate	9.4	5	09/15/2004 14:00	09/16/2004 19:30	30	23
Walnut Hill	FL	78	121	101	Thursday: 09/16/2004 12:00	25	Minimal	10.4	14	09/15/2004 23:30	09/16/2004 15:00	17	24
Choctawhatchee Bay	FL	71	74	92	Thursday: 09/16/2004 09:00	100	Minor	7.8	6	09/15/2004 15:30	09/16/2004 19:00	29	13
Bratt	FL	70	113	91	Thursday: 09/16/2004 13:00	29	Minor	9.4	20	09/16/2004 05:00	09/16/2004 15:00	11	27
Warrington	FL	69	107	90	Thursday: 09/16/2004 09:00	45	Minor	9.4	12	09/15/2004 21:30	09/16/2004 14:00	18	23
Jay	FL	68	96	88	Thursday: 09/16/2004 11:00	45	Minor	9.4	15	09/16/2004 00:30	09/16/2004 17:30	18	25
Santa Rosa Island	FL	68	85	88	Thursday: 09/16/2004 09:30	69	Minor	8.4	10	09/15/2004 19:00	09/16/2004 17:00	23	19
New York	FL	66	101	86	Thursday: 09/16/2004 13:00	44	Minor	9.4	12	09/15/2004 21:30	09/16/2004 17:30	21	28
Gulf Breeze	FL	65	99	84	Thursday: 09/16/2004 11:00	52	Minor	9.4	13	09/15/2004 22:30	09/16/2004 15:00	18	22
Blue Mountain Beach	FL	64	73	83	Thursday: 09/16/2004 10:00	108	Minor	7.8	13	09/15/2004 22:00	09/16/2004 18:00	21	24
Brownsdale	FL	64	102	83	Thursday: 09/16/2004 11:00	41	Minor	9.4	14	09/15/2004 23:30	09/16/2004 16:00	18	24
Navarre	FL	64	85	83	Thursday: 09/16/2004 09:30	69	Minor	8.4	11	09/15/2004 20:30	09/16/2004 18:00	23	24
Fort Walton Hotel	FL	63	77	82	Thursday: 09/16/2004 05:00	84	Minor	7.4	7	09/15/2004 16:00	09/16/2004 16:00	25	15
West Bay	FL	63	67	82	Thursday: 09/16/2004 07:00	134	Minor	5.8	7	09/15/2004 16:00	09/16/2004 11:00	20	14
Pensacola	FL	61	102	79	Thursday: 09/16/2004 10:30	50	Minor	9.4	15	09/16/2004 00:30	09/16/2004 12:30	13	25
West Pensacola	FL	60	107	78	Thursday: 09/16/2004 10:30	44	Minor	9.4	19	09/16/2004 04:30	09/16/2004 13:00	10	25
Cantonment	FL	60	113	78	Thursday: 09/16/2004 10:30	38	Minor	9.4	21	09/16/2004 06:30	09/16/2004 14:00	9	25
East Bay	FL	60	63	78	Thursday: 09/16/2004 07:00	149	Minor	5.8	12	09/15/2004 21:00	09/16/2004 11:00	15	16
Paradise Beach	FL	59	117	77	Thursday: 09/16/2004 12:00	36	Minor	9.4	10	09/15/2004 19:00	09/16/2004 15:00	21	27
Mount Carmel	FL	59	93	77	Thursday: 09/16/2004 14:00	46	Minor	9.8	24	09/16/2004 09:30	09/16/2004 17:30	9	29
Fort Walton Beach	FL	58	78	75	Thursday: 09/16/2004 10:00	83	Minor	7.4	17	09/16/2004 02:30	09/16/2004 16:00	15	25
Gonzalez	FL	58	110	75	Thursday: 09/16/2004 11:00	41	Minor	9.4	22	09/16/2004 07:00	09/16/2004 13:00	7	26
Pensacola Hotel	FL	58	103	75	Thursday: 09/16/2004 09:30	47	Minor	9.4	19	09/16/2004 04:30	09/16/2004 13:00	10	24
Saint Joseph Point	FL	57	60	74	Thursday: 09/16/2004 01:00	162	Minor	5.8	5	09/15/2004 14:30	09/16/2004 13:30	24	
Saint Joseph Bay	FL	57	60	74	Thursday: 09/16/2004 01:00	166	Minor	5.4	5	09/15/2004 14:00	09/16/2004 14:30	25	
Eglin AFB	FL	57	77	74	Thursday: 09/16/2004 08:30	86	Minor	7.4	16	09/16/2004 01:00	09/16/2004 14:30	14	
Goulding	FL	55	104	71	Thursday: 09/16/2004 11:00	47	Minor	9.4	21	09/16/2004 06:00	09/16/2004 13:00	8	
Barrineau Park	FL	55	120	71	Thursday: 09/16/2004 11:00	31	Minor	9.4	19	09/16/2004 04:00	09/16/2004 14:00	11	
Bellview	FL	55	110	71	Thursday: 09/16/2004 11:00	41	Minor	9.4	21	09/16/2004 06:00	09/16/2004 13:30	8	
Allentown	FL	55	94	71	Thursday: 09/16/2004 11:30	54	Minor	8.4	20	09/16/2004 05:00	09/16/2004 13:30	9	
Shell Island	FL	54	65	70	Thursday: 09/16/2004 11:00	142	Minor	5.8	8	09/15/2004 17:30	09/16/2004 15:00	23	
Brent	FL	54	106	70	Thursday: 09/16/2004 09:30	45	Minor	9.4	22	09/16/2004 07:00	09/16/2004 13:30	7	

Description: This tab displays the forecast or actual impact summary report for the specified location group. It is generated by examining every location in the group and determining the forecast wind impact to that location. The report shows the location name, state, maximum sustained wind speed expected, maximum wind gusts, day/date/time of max sustained wind, closest point of approach (CPA), damage estimate, forecast 3 day rainfall, and the arrival time, first time, last time and duration of 34, 50 and 64 knot winds. See National Hurricane Center wind radii considerations on page 291 for more information on the limitations of forecast wind radii. Locations that have been analyzed using Advanced Wind Estimation are indicated by their location name in red and in the title of the report as well as including an additional column showing the maximum non-AWE wind. See Advanced Wind Estimation in the appendix for more information

Tab Created by: Selecting menu item Reports - Location Wind Profile (Forecast or Actual)

Tab Close Allowed: Yes

Functions Available:
Menu/Toolbar:

Standard System Menu Functions

Send - Sends the report via Email either as an HTML or PDF attachment or imbedded text as shown on page 178.

Print

Print Preview - Previews the printed output on your screen

Direct to Printer - Prints the output directly to the designated printer

Export to HTML – Exports the output in an HTML format

Export to PDF – Exports the output in PDF format

Export to Text – Exports the output to a comma delimited file.
Export to EXCEL – Exports the output and opens it in EXCEL format
Export to SHAPE file – Exports the report to a point SHAPE file format. The user will be prompted to enter the file name to save.
Export report data to Google Earth – Exports the report to a point type KML file and then opens Google Earth to view this data.
Export report data to Google Earth with hourly details – Exports the report data with hourly details to a point type KML file and then opens Google Earth to view this data.
Print/Export "Executive Style Report" – The option will either Print, Export to HTML or save as a PDF a report which has been reformatted in a non-tabular fashion See page 165 for an example of this report.

Copy - Copies the contents of the report to the windows clipboard.
Font - Allows the user to modify the text font properties for this report.
Sort - Allows the user to sort on any column.
Hide Columns - Allows the user to selectively hide certain columns

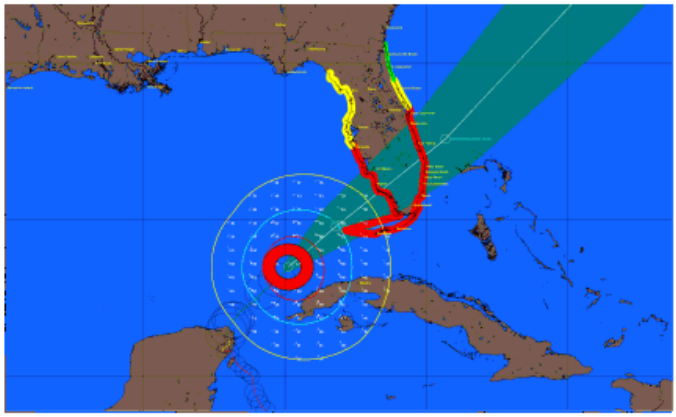
Other:

Display Hourly Details - This is selected by double-clicking on a location (row) or highlighting a row and selecting the "display hourly details" button. The locations hourly detail information will then be displayed on the detailed location hourly report tab as shown on page 170.

Tips: The location report rows are color coded based on the maximum wind speed.

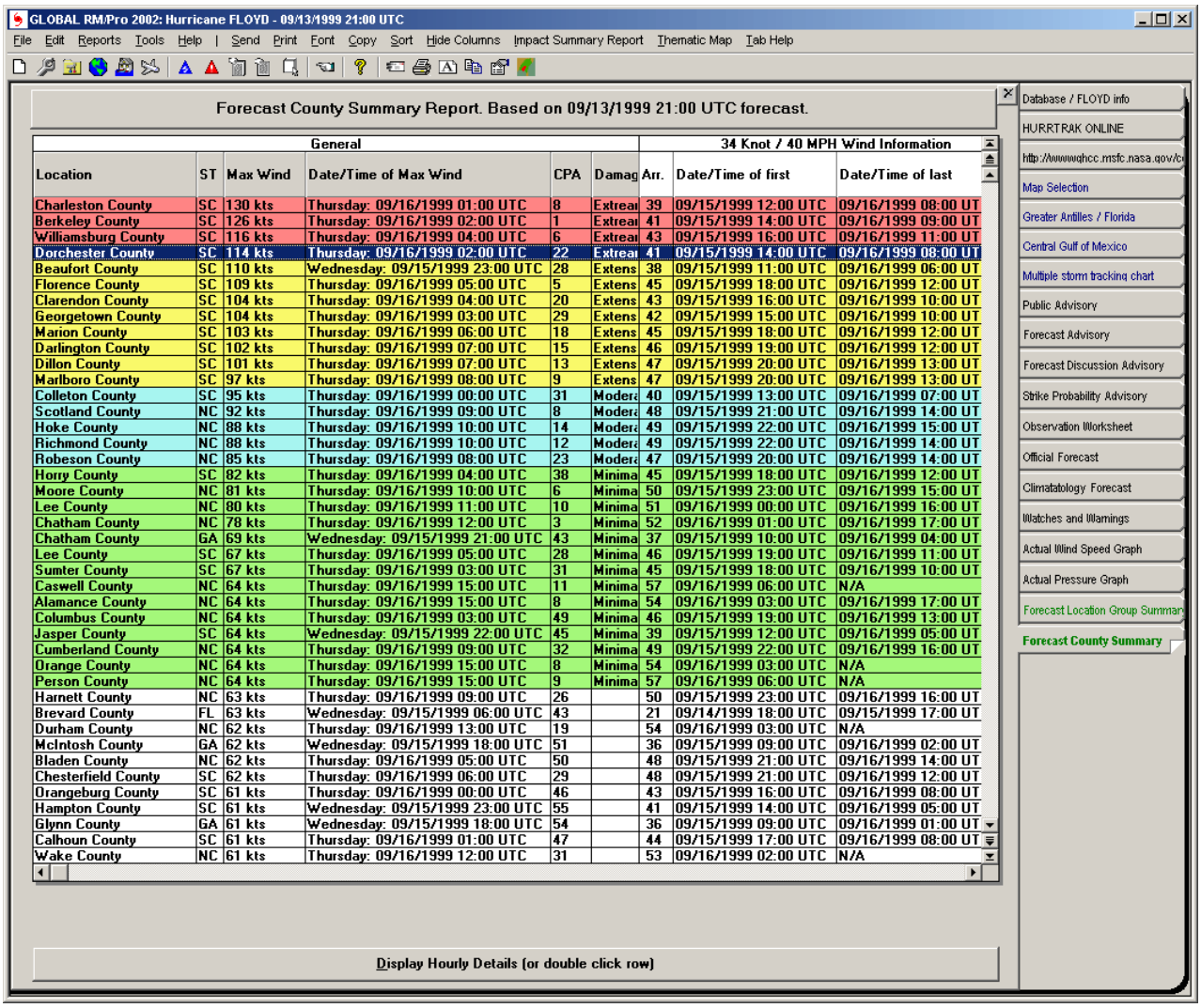
Sample "Executive Style" Impact Report

This report is generated from the Print/Export option while viewing a location, county or zip code summary report. It can be emailed, printed, saved as a PDF or exported to HTML.



Hurricane WILMA2 Summary Update	Sunday 10/23/2005 05:00 PM Advisory 34
Current NHC Forecast Predictions	
Maximum Sustained Winds / storm Category:	**90 KNOTS / Category 2**
Forward motion:	**13 mph towards the Northeast**
Hurricane Force winds extend from the center:	**86 miles**
Tropical Storm winds extend from the center:	**230 miles**
Minimum Pressure:	**959 MB**
Storm Position:	**23.5N, 84.9W**
Estimated Coastal Strike County/Parish:	**Collier, Florida**
Pahokee, FL	
Estimated Time of First Tropical Storm force winds:	Monday 10/24/2005 05:30 AM
Duration of Tropical Storm force winds:	11 hours
Estimated speed of Maximum Sustained winds:	63 KNOTS
Estimated speed of Maximum Wind Gusts:	82 KNOTS
Estimated time of maximum winds:	Monday 10/24/2005 10:30 AM
Duration of Hurricane Force Winds:	N/A
Estimated closest point of approach:	12 miles
Forecast Rainfall (3 day total):	4.3 inches
Fort Pierce, FL	
Estimated Time of First Tropical Storm force winds:	Monday 10/24/2005 08:30 AM
Duration of Tropical Storm force winds:	6 hours
Estimated speed of Maximum Sustained winds:	57 KNOTS
Estimated speed of Maximum Wind Gusts:	75 KNOTS
Estimated time of maximum winds:	Monday 10/24/2005 11:30 AM
Duration of Hurricane Force Winds:	N/A
Estimated closest point of approach:	31 miles
Forecast Rainfall (3 day total):	3.8 inches
Naples, FL	
Estimated Time of First Tropical Storm force winds:	Monday 10/24/2005 04:30 AM
Duration of Tropical Storm force winds:	7 hours
Estimated speed of Maximum Sustained winds:	51 KNOTS
Estimated speed of Maximum Wind Gusts:	66 KNOTS
Estimated time of maximum winds:	Monday 10/24/2005 07:00 AM
Duration of Hurricane Force Winds:	N/A

County Summary Report Tab



Description: This tab displays the forecast or actual impact summary report for the counties specified in Impact Analysis Option. This report is generated by examining every county location and determining the wind impact to that location. The report shows the county name, state, maximum wind speed expected, day/date/time of maximum sustained winds / gusts, closest point of approach (CPA) and the arrival time, first time, last time and duration of 34, 50 and 64 knot winds. See National Hurricane Center wind radii considerations for more information on the limitations of forecast wind radii. If advanced wind estimation is on, it will be indicated in the report header.

Tab Created by: Selecting menu item Reports - County Wind Profile Analysis (Forecast or Actual)

Tab Close Allowed: Yes

Functions Available:
Menu/Toolbar:

Standard System Menu Functions

Send - Sends the report via Email either as an HTML attachment or imbedded text as shown on page 178.

Print

Print Preview - Previews the printed output on your screen
Direct to Printer - Prints the output directly to the designated printer
Export to HTML – Exports the output in an HTML format
Export to PDF – Exports the output in PDF format
Export to Text – Exports the output to a comma delimited file.
Export to EXCEL – Exports the output and opens it in EXCEL format
Export to SHAPE file – Exports the report to a point SHAPE file format. The user will be prompted to enter the file name to save.
Export to Google Earth – Exports the report to a point type KML file and then opens Google Earth to view this data.
Export report data to Google Earth with hourly details – Exports the report data with hourly details to a point type KML file and then opens Google Earth to view this data.
Print/Export "Executive Style Report" – The option will either Print, Export to HTML or save as a PDF a report which has been reformatted in a non-tabular fashion. See page 165 for an example of this report.

Copy - Copies the contents of the report to the windows clipboard.

Font - Allows the user to modify the text font properties for this report.
Sort - Allows the user to sort on any column.
Hide Columns - Allows the user to selectively hide certain columns
Impact Summary – See page 172.
Thematic Map – See page 177.

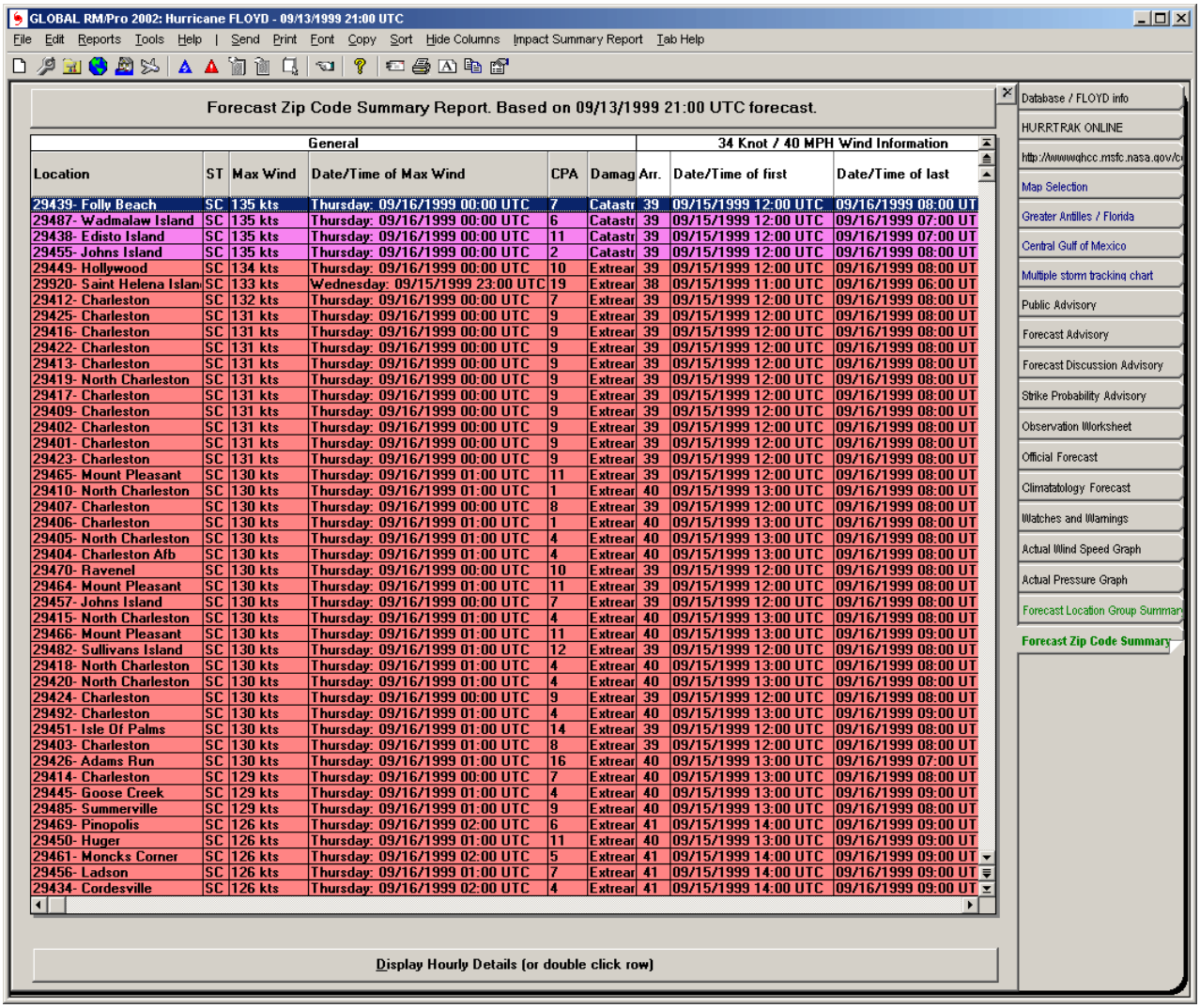
Other:

Display Hourly Details - This is selected by double-clicking on a location (row) or highlighting a row and selecting the "display hourly details" button. The locations hourly detail information will then be displayed on the detailed location hourly report as shown on page 170.

Tips:

The location report rows are color coded based on the maximum wind speed
The counties that are examined are determined by the settings in Impact Analysis Options

Zip Code Summary Report Tab



Description: This tab displays the forecast or actual impact summary report for the zip codes specified in Impact Analysis Option. This report is generated by examining every zip code and determining the wind impact to that area. The report shows the zip code, city name, state, maximum wind speed expected, day/date/time of maximum sustained winds / gusts, closest point of approach (CPA) and the arrival time, first time, last time and duration of 34, 50 and 64 knot winds. See NHC wind radii considerations for more information on the limitations of forecast wind radii. The zip codes that are examined are determined by the settings in Impact Analysis Options. If advanced wind estimation (AWE) is on, it will be indicated in the report header.

Tab Created by: Selecting menu item Reports - Zip Code Wind Profile Analysis (Forecast or Actual)

Tab Close Allowed: Yes

Functions Available:
Menu/Toolbar:
Standard System Menu Functions

Send - Sends the report via Email either as an HTML attachment or imbedded text as shown on page 178.

Print

Print Preview - Previews the printed output on your screen

Direct to Printer - Prints the output directly to the designated printer

Export to HTML – Exports the output in an HTML format

Export to PDF – Exports the output in PDF format

Export to Text – Exports the output to a comma delimited file.

Export to EXCEL – Exports the output and opens it in EXCEL format

Export to SHAPE file – Exports the report to a point SHAPE file format. The user will be prompted to enter the file name to save.

Export to Google Earth – Exports the report to a point type KML file and then opens Google Earth to view this data.

Export report data to Google Earth with hourly details – Exports the report data with hourly details to a point type KML file and then opens Google Earth to view this data.

Print/Export "Executive Style Report" – The option will either Print, Export to HTML or save as a PDF a report which has been reformatted in a non-tabular fashion. See page 165 for an example of this report.

Copy - Copies the contents of the report to the windows clipboard.

Font - Allows the user to modify the text font properties for this report.

Sort - Allows the user to sort on any column.

Hide Columns - Allows the user to selectively hide certain columns

Impact Summary – See page 172.

Other:

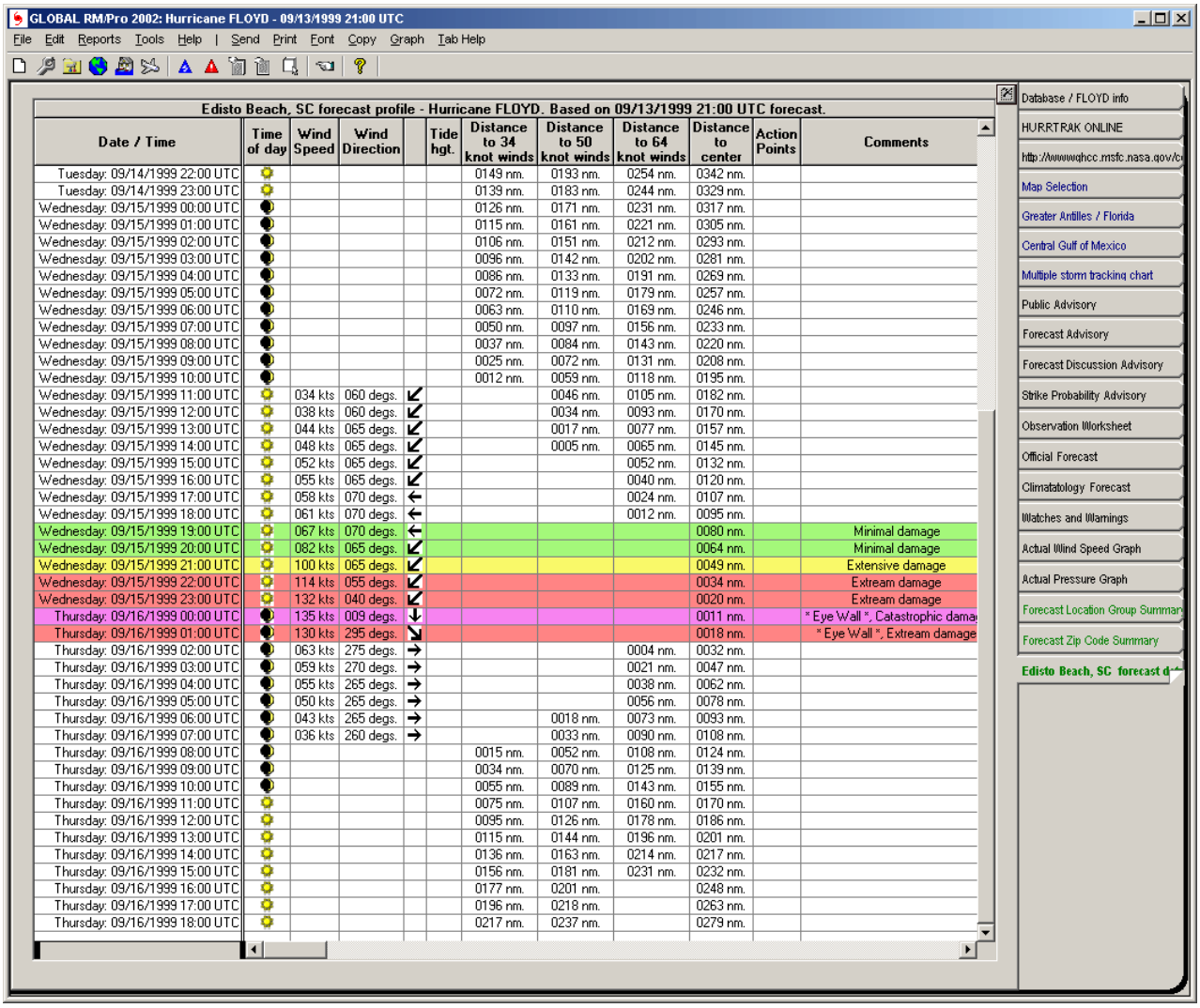
Display Hourly Details - This is selected by double-clicking on a location (row) or highlighting a row and selecting the "display hourly details" button. The locations hourly detail information will then be displayed on the detailed location hourly report as shown on page 170.

Tips:

The location report rows are color coded based on the maximum wind speed

The zip codes that are examined are determined by the settings in Impact Analysis Options.

Detailed Location/County/Zip Hourly Report Tab



Date / Time	Time of day	Wind Speed	Wind Direction		Tide hgt.	Distance to 34 knot winds	Distance to 50 knot winds	Distance to 64 knot winds	Distance to center	Action Points	Comments
Tuesday: 09/14/1999 22:00 UTC						0149 nm.	0193 nm.	0254 nm.	0342 nm.		
Tuesday: 09/14/1999 23:00 UTC						0139 nm.	0183 nm.	0244 nm.	0329 nm.		
Wednesday: 09/15/1999 00:00 UTC						0126 nm.	0171 nm.	0231 nm.	0317 nm.		
Wednesday: 09/15/1999 01:00 UTC						0115 nm.	0161 nm.	0221 nm.	0305 nm.		
Wednesday: 09/15/1999 02:00 UTC						0106 nm.	0151 nm.	0212 nm.	0293 nm.		
Wednesday: 09/15/1999 03:00 UTC						0096 nm.	0142 nm.	0202 nm.	0281 nm.		
Wednesday: 09/15/1999 04:00 UTC						0086 nm.	0133 nm.	0191 nm.	0269 nm.		
Wednesday: 09/15/1999 05:00 UTC						0072 nm.	0119 nm.	0179 nm.	0257 nm.		
Wednesday: 09/15/1999 06:00 UTC						0063 nm.	0110 nm.	0169 nm.	0246 nm.		
Wednesday: 09/15/1999 07:00 UTC						0050 nm.	0097 nm.	0156 nm.	0233 nm.		
Wednesday: 09/15/1999 08:00 UTC						0037 nm.	0084 nm.	0143 nm.	0220 nm.		
Wednesday: 09/15/1999 09:00 UTC						0025 nm.	0072 nm.	0131 nm.	0208 nm.		
Wednesday: 09/15/1999 10:00 UTC						0012 nm.	0059 nm.	0118 nm.	0195 nm.		
Wednesday: 09/15/1999 11:00 UTC		034 kts	060 degs.	↙			0046 nm.	0105 nm.	0182 nm.		
Wednesday: 09/15/1999 12:00 UTC		038 kts	060 degs.	↙			0034 nm.	0093 nm.	0170 nm.		
Wednesday: 09/15/1999 13:00 UTC		044 kts	065 degs.	↙			0017 nm.	0077 nm.	0157 nm.		
Wednesday: 09/15/1999 14:00 UTC		048 kts	065 degs.	↙			0005 nm.	0065 nm.	0145 nm.		
Wednesday: 09/15/1999 15:00 UTC		052 kts	065 degs.	↙				0052 nm.	0132 nm.		
Wednesday: 09/15/1999 16:00 UTC		055 kts	065 degs.	↙				0040 nm.	0120 nm.		
Wednesday: 09/15/1999 17:00 UTC		058 kts	070 degs.	←				0024 nm.	0107 nm.		
Wednesday: 09/15/1999 18:00 UTC		061 kts	070 degs.	←				0012 nm.	0095 nm.		
Wednesday: 09/15/1999 19:00 UTC		067 kts	070 degs.	←					0080 nm.		Minimal damage
Wednesday: 09/15/1999 20:00 UTC		082 kts	065 degs.	↙					0064 nm.		Minimal damage
Wednesday: 09/15/1999 21:00 UTC		100 kts	065 degs.	↙					0049 nm.		Extensive damage
Wednesday: 09/15/1999 22:00 UTC		114 kts	055 degs.	↙					0034 nm.		Extream damage
Wednesday: 09/15/1999 23:00 UTC		132 kts	040 degs.	↙					0020 nm.		Extream damage
Thursday: 09/16/1999 00:00 UTC		135 kts	009 degs.	↓					0011 nm.		* Eye Wall *, Catastrophic dama
Thursday: 09/16/1999 01:00 UTC		130 kts	295 degs.	↘					0018 nm.		* Eye Wall *, Extream damage
Thursday: 09/16/1999 02:00 UTC		063 kts	275 degs.	→				0004 nm.	0032 nm.		
Thursday: 09/16/1999 03:00 UTC		059 kts	270 degs.	→				0021 nm.	0047 nm.		
Thursday: 09/16/1999 04:00 UTC		055 kts	265 degs.	→				0038 nm.	0062 nm.		
Thursday: 09/16/1999 05:00 UTC		050 kts	265 degs.	→				0056 nm.	0078 nm.		
Thursday: 09/16/1999 06:00 UTC		043 kts	265 degs.	→			0018 nm.	0073 nm.	0093 nm.		
Thursday: 09/16/1999 07:00 UTC		036 kts	260 degs.	→			0033 nm.	0090 nm.	0108 nm.		
Thursday: 09/16/1999 08:00 UTC						0015 nm.	0052 nm.	0108 nm.	0124 nm.		
Thursday: 09/16/1999 09:00 UTC						0034 nm.	0070 nm.	0125 nm.	0139 nm.		
Thursday: 09/16/1999 10:00 UTC						0055 nm.	0089 nm.	0143 nm.	0155 nm.		
Thursday: 09/16/1999 11:00 UTC						0075 nm.	0107 nm.	0160 nm.	0170 nm.		
Thursday: 09/16/1999 12:00 UTC						0095 nm.	0126 nm.	0178 nm.	0186 nm.		
Thursday: 09/16/1999 13:00 UTC						0115 nm.	0144 nm.	0196 nm.	0201 nm.		
Thursday: 09/16/1999 14:00 UTC						0136 nm.	0163 nm.	0214 nm.	0217 nm.		
Thursday: 09/16/1999 15:00 UTC						0156 nm.	0181 nm.	0231 nm.	0232 nm.		
Thursday: 09/16/1999 16:00 UTC						0177 nm.	0201 nm.		0248 nm.		
Thursday: 09/16/1999 17:00 UTC						0196 nm.	0218 nm.		0263 nm.		
Thursday: 09/16/1999 18:00 UTC						0217 nm.	0237 nm.		0279 nm.		

Description: This tab displays half-hourly detail report for locations, counties and zip codes. When a location, *county* or zip code is selected, the system examines the actual storm characteristics for every hour of the storm's life making a determination of how this location was affected at each hour. The result is a report indicating the sustained wind speed/gusts and wind direction conditions for this location throughout the period along with any other pertinent information such as astronomical tide height, cross wind values, distance from 34, 50, 64 knot wind areas and distance from center. The last column indicates whether the location was affected by the eye and/or eye wall. In addition, if the cross wind flow angle has been set for this location, the cross wind component is included. If advanced wind estimation (AWE) is on, it will be indicated in the report header.

Tab Created by: Selecting Display Hourly Details from the Location Group, County or Zip Code summary report.

Tab Close Allowed: Yes

Functions Available:
Menu/Toolbar:

Standard System Menu Functions

Send - Sends the report via Email either as an HTML attachment or imbedded text as shown on page 178.

Print

Print Preview - Previews the printed output on your screen

Direct to Printer - Prints the output directly to the designated printer

Export to HTML – Exports the output in an HTML format

Export to PDF – Exports the output in PDF format

Export to Text – Exports the output to a comma delimited file.

Export to EXCEL – Exports the output and opens it in EXCEL format

Copy - Copies the contents of the report to the windows clipboard.

Font - Allows the user to modify the text font properties for this report.

Graph

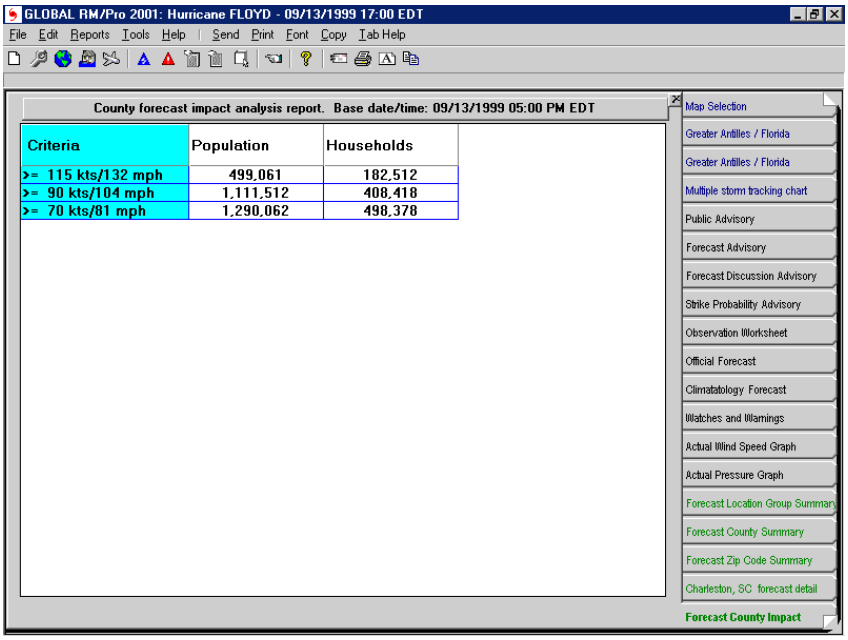
Graph Wind Profile – Displays a wind speed graph for the analyzed location (see page 174).

Graph Flood Profile (1 or 3 hour total) – Displays a flood index graph for the analyzed location. See page 176.

Tips:

- The report rows are color coded based on the wind speed for that time.
- Damage estimates are located in the comments column (last)

County/Zip Impact Analysis Report Tab



Description: This report is generated by examining every county's or zip code's forecast maximum wind speed and tallies the total population and number of households (county only) that are expected to be affected by a user defined level of wind. The wind thresholds used in this report are set in the Impact Analysis Option. In addition to population and households(county only), this report will also total the optional user defined fields. Up to 10 user defined fields can be established (3 in EM/Pro) within the System Setup program.

Tab Created by: Selecting Impact Analysis from the County or Zip Code Summary Reports.

Tab Close Allowed: Yes

Functions Available:
Menu/Toolbar:

Standard System Menu Functions

Send - Sends the report via Email either as an HTML attachment or imbedded text as shown on page 178.

Print

Print Preview - Previews the printed output on your screen

Direct to Printer - Prints the output directly to the designated printer

Export to HTML – Exports the output in an HTML format

Export to PDF – Exports the output in PDF format

Export to Text – Exports the output to a comma delimited file.

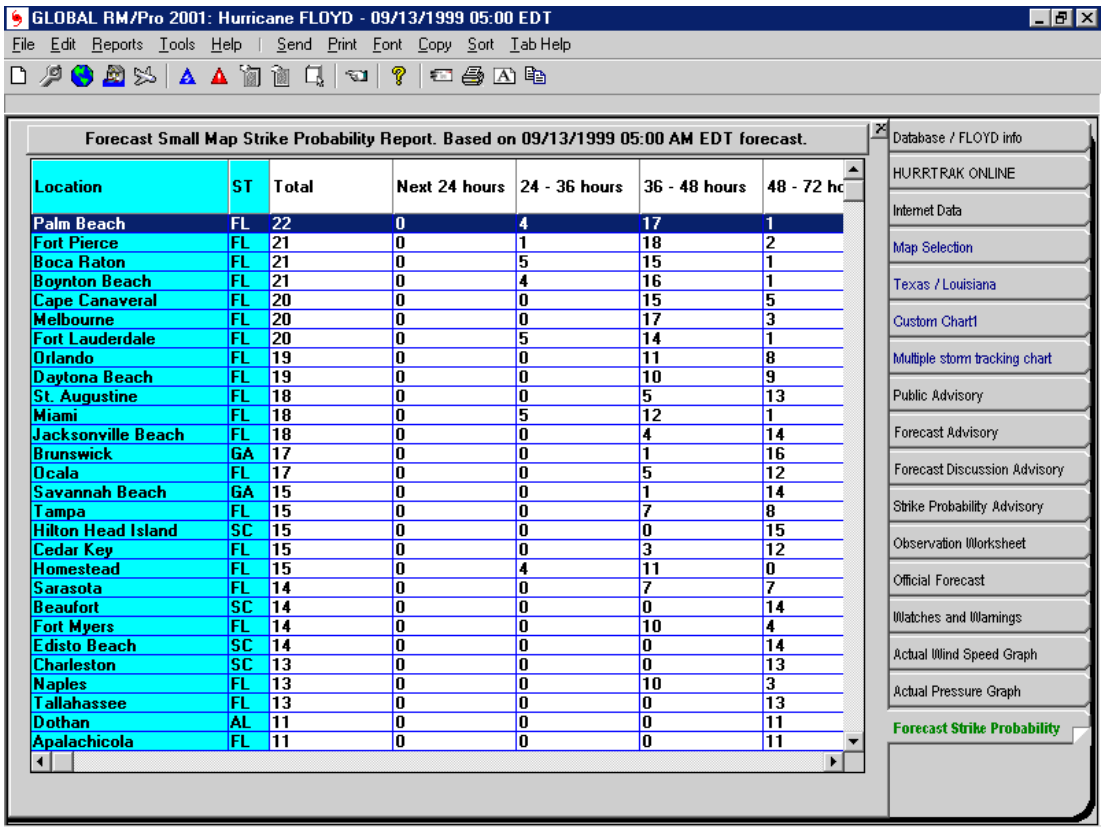
Export to EXCEL – Exports the output and opens it in EXCEL format

Copy - Copies the contents of the report to the windows clipboard.

Font - Allows the user to modify the text font properties for this report.

Tips: The wind thresholds used in this report are set in the Impact Analysis Option.

Strike Probability Report Tab



Description: This tab displays a report showing each location and its total, next 24 hours, 24-36 hour period, 36-48 hour period and 48-72 hour period strike probabilities.

Tab Created by: Selecting menu item Reports - Location Strike Probabilities

Tab Close Allowed: Yes

Functions Available:
Menu/Toolbar:

Standard System Menu Functions

Send - Sends the report via Email either as an HTML attachment or imbedded text as shown on page 178.

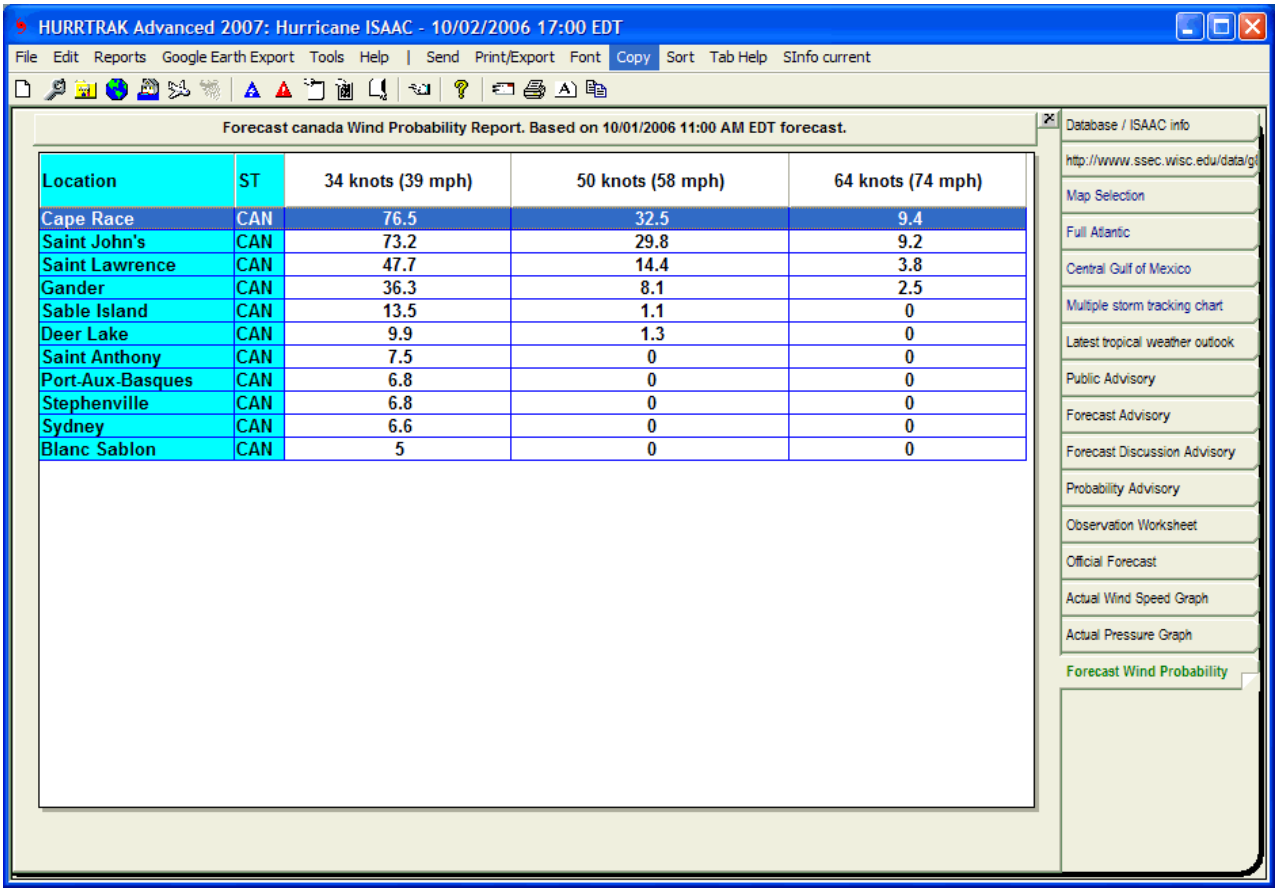
Print

Print Preview - Previews the printed output on your screen
Direct to Printer - Prints the output directly to the designated printer
Export to HTML – Exports the output in an HTML format
Export to PDF – Exports the output in PDF format
Export to Text – Exports the output to a comma delimited file.
Export to EXCEL – Exports the output and opens it in EXCEL format

Copy - Copies the contents of the report to the windows clipboard.
Font - Allows the user to modify the text font properties for this report.
Sort – Allows the user to sort on any column.

Tips: The strike probability values should be “close” to the one published by the NHC.

Wind Probability Report Tab



Description: This tab displays a report showing each location and its total 34 knot, 50 knot and 64 knot wind probabilities.

Tab Created by: Selecting menu item Reports - Location Strike Probabilities

Tab Close Allowed: Yes

Functions Available:
Menu/Toolbar:

Standard System Menu Functions

Send - Sends the report via Email either as an HTML attachment or imbedded text as shown on page 178.

Print

Print Preview - Previews the printed output on your screen

Direct to Printer - Prints the output directly to the designated printer

Export to HTML – Exports the output in an HTML format

Export to PDF – Exports the output in PDF format

Export to Text – Exports the output to a comma delimited file.

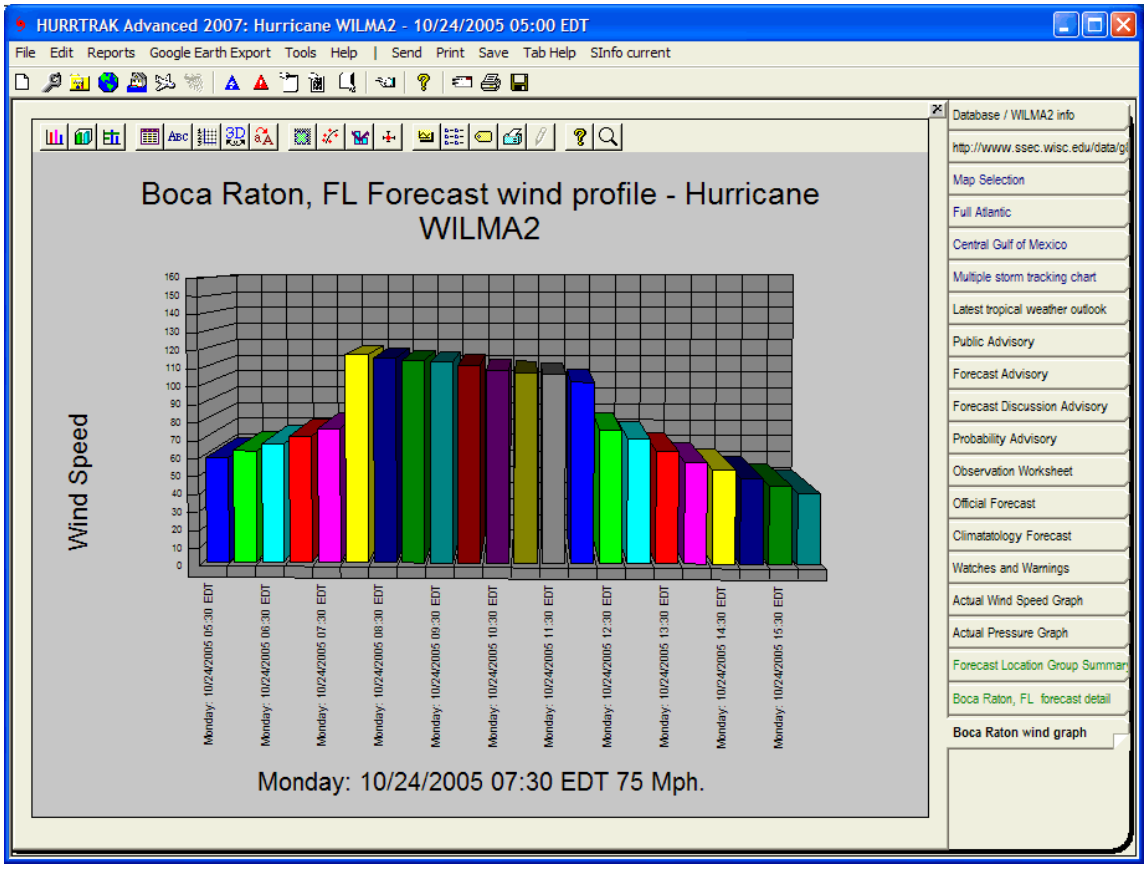
Export to EXCEL – Exports the output and opens it in EXCEL format

Copy - Copies the contents of the report to the windows clipboard.

Font - Allows the user to modify the text font properties for this report.

Sort – Allows the user to sort on any column.

Detailed Location/County/Zip Wind Graph Tab



Description: This tab graphically display the wind speed profile for the analyzed location when performing a location analysis. Wind speeds are not calculated until the location falls within the area of gale force winds. This is indicated by the sharp increase and decrease in winds on both sides of the curve

Tab Created by: Selecting Graph - Wind Profile from the Location/County/Zip Detail report tab.

Tab Close Allowed: Yes

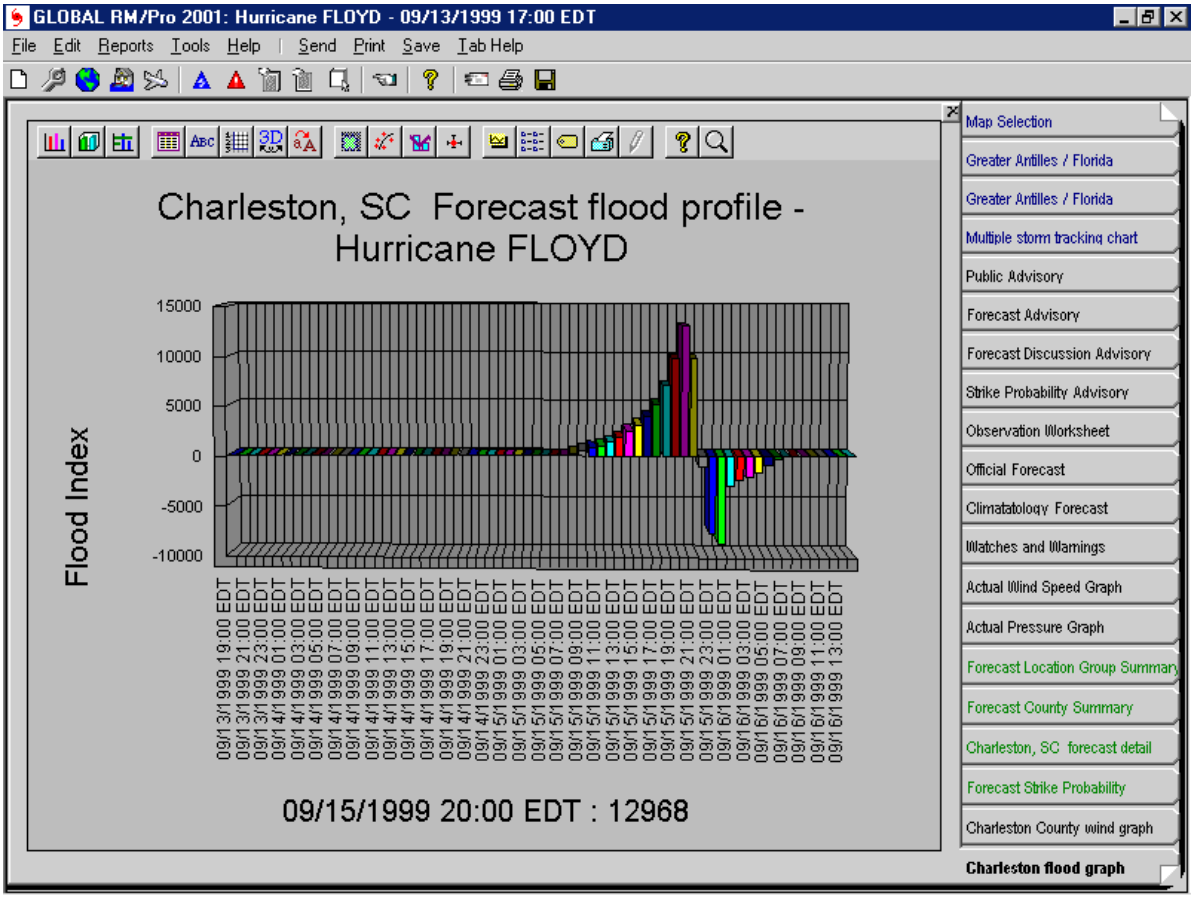
Functions Available:
Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's image via email image as shown on page 178.
Print - Prints a black/white image of the graph to the windows printer.
Save Image - Saves the image to a BMP file (bitmapped).

TIPS: Pointing and clicking on an observation point will display the date, time and wind data for that point under the graph.

Detailed Location/County/Zip Flood Index Graph Tab



Description: This tab graphically display the flood index profile for the analyzed location when performing a location analysis (provided that location has had it's onshore wind flow angle defined). The flood index is not calculated until the location falls within the area of gale force winds. If 1 hour is selected than this represents the flood index for that hour while if 3 hour is selected, then the value represents a 3 hour cumulative total.

Tab Created by: Selecting Graph - Flood Profile from the Location/County/Zip Detail report tab.

Tab Close Allowed: Yes

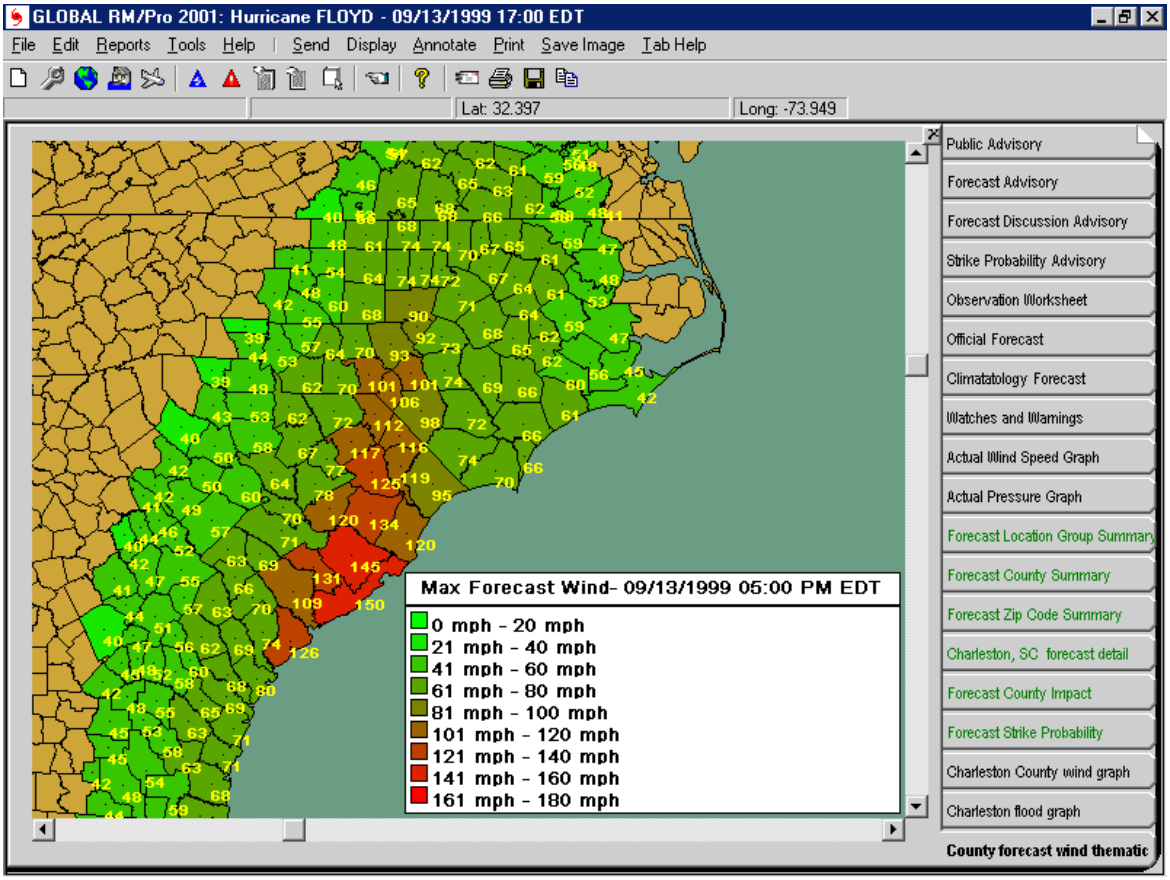
Functions Available:
Menu/Toolbar:

Standard System Menu Functions
Send - Sends current tab's image via email image as shown on page 178.
Print - Prints a black/white image of the graph to the windows printer.
Save Image - Saves the image to a BMP file (bitmapped).

Tips:

- Pointing and clicking on an observation point will display the date, time and wind data for that point under the graph.
- Flood index calculations are not possible unless the location's flood direction has been identified in system setup - location maintenance.

County/Zip Wind Thematic Tab



Description: This tab depicts the forecast or actual wind speeds in a county or zip code thematic type format. The colors used are controlled within the plotting options.

Tab Created by: Selecting the Thematic Map option from the County or Zip Code Summary Report tab.

Tab Close Allowed: Yes

Functions Available:

Menu/Toolbar:

Standard System Menu Functions

Send - Sends current tab's image via email image as shown on page 178.

Display - For a complete list of wind band display options see page 189.

Annotate – Allows the user to place text on the current image.

Print/Export – Allows the user to print the current image in color, gray scale or B&W.. or send the image to Google Earth. See page 287 for more information on the Google Earth interface.

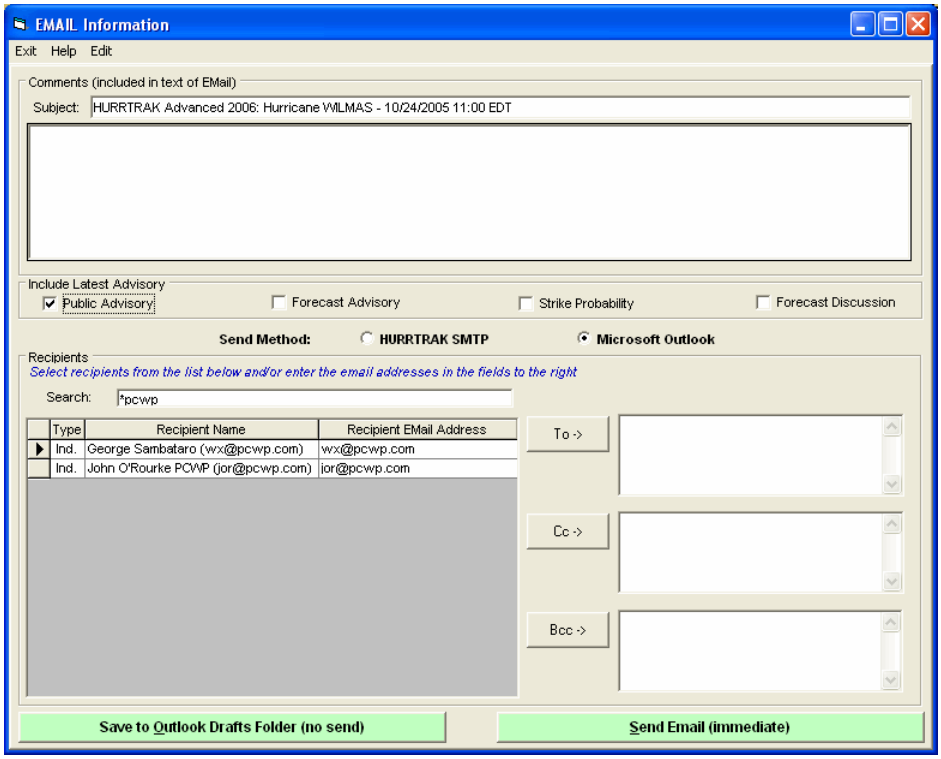
Save Image – Saves the image to the clipboard, pdf or image file (color or B&W).

Tip: You can pan and zoom this map image

Miscellaneous Options in support of Tab Functions

The functions are described below are utilized by the Information Tab Functions.

Send Email



This option allows the user to send graphics and/or text to a user or group of users. This screen is displayed when a user makes a send request when viewing a graphic (tracking chart) or text report data. See APPENDIX D: Email setup and capabilities on page 258 for more information on Email capabilities.

The data fields are:

Subject - The information you would like to appear in the subject line of the email note. It defaults to the current storm name but can be overwritten.

Comments - The text portion of the email note.

Include Latest Advisories - The user may choose to attach the latest National Hurricane Center Public Advisory, Forecast Advisory, Forecast Discussion or Strike probability.

Recipients - Select the users or group of users that you would like to send, CC or BC the email to.

Commands available:

Exit - Exits without sending

Save – Saves Email to the MS Outlook "drafts" folder. This allows the user to later edit the email before sending. This is only available when choosing the MS Outlook option.

Send - Sends Email to the designated recipients. When the email is being sent, a confirmation window is displayed in the lower right of the users screen display.

Tracking Chart Display Options

DISPLAY:

Locations - Displays all of the locations in the selected location group. The text properties used for displaying the location names is set in font options.

Locations and distances from center - Displays the distance of a location from the center of the storm. The unit of measure used for distance as well as the font size and color of locations is set in the unit of measure options.

Location points only - Displays a set of locations with only points (no names).

Counties (fixed maps only) - Displays the county lines for the US coastal states. County lines are always set to black and cannot be reset. Note: With the variable maps, the county lines must be selected from the tracking chart select tab before selecting a tracking option.

County Names - Displays all of the county names for the counties visible on the current chart. The text properties used for printing the county names is set in font options

Roadways - Displays the significant roadways for the US coastal states. This may take several seconds. The color of the roadways can be set in plotting options.

Latitude/ Longitude - Displays latitude and longitude grid along the sides and top of the tracking chart. The text properties of these values are set in font options.

Chart Notes - Displays storm observation information (Date, time, wind, pressure) next to the observation points. If the points are close together, some chart notes will not plot to prevent overwriting. The text properties of chart notes are set in font options. See APPENDIX OO. Interactive Chart Notes on page 292 for more information on an alternative method of displaying chart notes.

Wind Field - Displays a pattern of wind arrows that indicate the likely wind speed and direction at that point. You may also "force" a wind arrow plot by clicking the left mouse button while over a point on the chart. Wind field arrows are only shown for areas that fall within the radius of 34, 50 and 64 knot winds. The size, density, color of the arrows as well as the text properties of the wind value are set in Options.

Wind Pattern – The wind pattern, different than the wind field, is a continuous color shaded image that better represents the estimated wind speed across a region. When using AWE, the wind pattern shows the effects of surface friction on the wind speeds around a tropical cyclone. See APPENDIX QA: Advanced Wind Estimation Considerations on page 303 for more information on the Wind Pattern image.

Watch and Warning Areas - If available, this displays the areas of hurricane and tropical storm watches and warnings. The width of the warning color is twice as wide as the width of the watch color. The color and size of these areas are set in plotting options

Decision Arc - When this option is selected a popup input area is displayed which allows the user to select the action point and override the current storm's forecasted speed and intensity before displaying the decision arc. For more information on this topic see Decision Support Capabilities

Range Rings - This option displays range rings (circles of equal distance) centered at the base location or storm center as defined in general options. The color of the circle is determined by the color of the decision arc.

Wind Bands - This option displays the observed and/or forecast coverage of the areas of 3 wind fields. The system defaults to 34 knot, 50 knot and 64 knot wind bands however it can be modified in the wind band options.

Strike Probability Analysis - Displays, on a separate chart (but using the same map), a grid of strike probability values as well as a contour analysis of the strike probabilities. The text properties used to display the values, as well as the color and density of the contour analysis is set in strike probability options. You can choose to display the total strike probability analysis or the next 24 hours only, or the period from 24-36 hours only, 36-48 hours only, 48-72 hours only.

Strike Probabilities Location Values - Displays strike probabilities for a location group on the tracking chart being viewed. The text properties used for displaying these values can be set in font options.

Wind Probability Analysis - Displays, on a separate chart (but using the same map), a grid of wind probability values as well as a contour analysis of the probabilities. The text properties used to display the values, as well as the color and density of the contour analysis is set in strike probability options. You can choose to display the 34, 50 or 64 knot total wind probabilities.

Wind Probabilities Location Values - Displays wind probabilities for a location group on the tracking chart being viewed. The text properties used for displaying these values can be set in font options.

3D Wind Surface - Using the current tracking chart as the x-y graphing area, this option display a 3 dimensional wind surface graph. The density of the graph is set in general options.

Flood Index - Displays the flood index on the current tracking chart. The sub options are:
Current - Displays the flood index for the current (as indicated on tracking chart) observation. This analysis should only be done when the storm is currently affecting an area.
Forecast - Displays the flood index for either the next 1, 2 or 3 hours or the maximum forecast flood index for a 1 2 or 3 hour period. This analysis should only be done when a storm is forecast to affect an area.
Actual - Displays the maximum "observed" flood index for a 1,2 or 3 hour cumulative period. This analysis should only be done when the storm has already affected an area.
The text properties used to display the values, as well as the color and width of the flood analysis is set in flood index options. For more information on this topic see page 269.

Forecast Rainfall Analysis - This option displays the latest rainfall forecast in a graphical manner. The option is only active if the system has recently downloaded rainfall forecast information from the HURRTRAK ONLINE system. For more information on this see HURRTRAK Rainfall Forecast capabilities on page 284.

Forecast Rainfall Thematic - This option displays the latest rainfall forecast in a county thematic manner. The option is only active if the system has recently downloaded rainfall forecast information from the HURRTRAK ONLINE system.

Wind Pattern Legend - Display the wind / color legend for the Wind Pattern Display image.

Watch and Warning Legend - Displays the legend for the NHC watch and warning areas indicating the type of watch and warning and the color used to depict it.

Flood Legend - Displays the color coded flood index legend.

Track Color Legend - Displays the color coded track legend.

Chart Plot options

PLOT:

Track - Replots the current storm's track with wind field circles. The wind field circle color is set in plotting options.

"What If" Forecast - Displays the projected "What if" track. This option can only be selected if the "what if" has been enabled in the Setup What If Scenario Option. The color of the track is set in plotting options. For a complete discussion of this and other items, see Decision Support Capabilities.

Official Forecast - Displays the storm's selected forecast track. The color of the track is set in plotting options.

Official Forecast Average Error - Displays the storm's selected forecast track along with the area of average forecast error. For the Atlantic the NHC publishes yearly their average error for the 12, 24, 36, 48, 72, 96 and 120 hours verification times. These values can be adjusted in the System Setup component of the system. The color of the area can be set in plotting options.

Official Forecast Average Error Only - Displays only the storm's selected forecast average forecast error. For the Atlantic the NHC publishes yearly their average error for the 12, 24, 36, 48, 72, 96 and 120 hours verification times. These values can be adjusted in the System Setup component of the system. The color of the area can be set in plotting options.

Hurricane Model Forecast - Displays the storm's selected hurricane model forecast track. Selecting **"latest"** forces the system to calculate the forecast before displaying it. This is a much more convenient method then having to first use the Edit - Climatology Forecast function. The color of the track is set in plotting options. For more information on model forecast see hurricane forecast models on page 286.

Climatology Forecast - Displays the storm's selected climatological forecast track. The color of the forecast track is set in plotting options.

Past Storm track(s) - Allows the user to select and plot any past storm(s) from the history database.

Wind Band Display Options

DISPLAY:

Locations - Displays all of the locations in the selected location group. The text properties used for displaying the location names is set in font options.

Locations and distances from center - Displays the distance of a location from the center of the storm. The unit of measure used for distance as well as the font size and color of locations is set in the unit of measure options.

Location points only - Displays a set of locations with only points (no names).

Counties (fixed maps only) - Displays the county lines for the US coastal states. County lines are always set to black and cannot be reset. Note: With the variable maps, the county lines must be selected from the tracking chart select tab before selecting a tracking option.

County Names - Displays all of the county names for the counties visible on the current chart. The text properties used for printing the county names is set in font options

Roadways (fixed maps only) - Displays the significant roadways for the US coastal states. This may take several seconds. The color of the roadways can be set in plotting options.

Latitude/ Longitude - Displays latitude and longitude grid along the sides and top of the tracking chart. The text properties of these values are set in font options.

Chart Notes - Displays storm observation information (Date, time, wind, pressure) next to the observation points. If the points are close together, some chart notes will not plot to prevent overwriting. The text properties of chart notes are set in font options. See APPENDIX OO. Interactive Chart Notes on page 292 for more information on an alternative method of displaying chart notes.

Wind Field - Displays a pattern of wind arrows that indicate the likely wind speed and direction at that point. You may also "force" a wind arrow plot by clicking the left mouse button while over a point on the chart. Wind field arrows are only shown for areas that fall within the radius of 34, 50 and 64 knot winds. The size, density, color of the arrows as well as the text properties of the wind value are set in Options.

Watch and Warning Areas - If available, this displays the areas of hurricane and tropical storm watches and warnings. The width of the warning color is twice as wide as the width of the watch color. The color and size of these areas are set in plotting options

Decision Arc - When this option is selected a popup input area is displayed which allows the user to select the action point and override the current storm's forecasted speed and intensity before displaying the decision arc. For more information on this topic see Decision Support Capabilities

Range Rings - This option displays range rings (circles of equal distance) centered at the base location or storm location as defined in general options. The color of the circle is determined by the color of the decision arc.

Strike Probability Analysis - Displays, on a separate chart (but using the same map), a grid of strike probability values as well as a contour analysis of the strike probabilities. The text properties used to display the values, as well as the color and density of the contour analysis is set in strike probability options. You can choose to display the total strike

probability analysis or the next 24 hours only, or the period from 24-36 hours only, 36-48 hours only, 48-72 hours only.

Strike Probabilities Location Values - Displays strike probabilities for a location group on the tracking chart being viewed. The text properties used for displaying these values can be set in font options.

Wind Probability Analysis - Displays, on a separate chart (but using the same map), a grid of wind probability values as well as a contour analysis of the probabilities. The text properties used to display the values, as well as the color and density of the contour analysis is set in strike probability options. You can choose to display the 34, 50 or 64 knot total wind probabilities.

Wind Probabilities Location Values - Displays wind probabilities for a location group on the tracking chart being viewed. The text properties used for displaying these values can be set in font options.

Flood Index - Displays the flood index on the current tracking chart. The sub options are:
Current - Displays the flood index for the current (as indicated on tracking chart) observation. This analysis should only be done when the storm is currently affecting an area.
Forecast - Displays the flood index for either the next 1, 2 or 3 hours or the maximum forecast flood index for a 1 2 or 3 hour period. This analysis should only be done when a storm is forecast to affect an area.
Actual - Displays the maximum "observed" flood index for a 1,2 or 3 hour cumulative period. This analysis should only be done when the storm has already affected an area.
The text properties used to display the values, as well as the color and width of the flood analysis is set in flood index options. For more information on this topic see page 269.

Wind Band Legend - Displays the wind level and color legend for the wind pattern display image.

Wind Band Legend - Displays a legend showing the wind speeds analyzed and associated plot colors. The colors and wind speeds are set in wind band options. Does not apply with a QUICK TAU plot.

Sea Height Legend - Displays a legend showing the likely sea heights and associated plot colors. This only applies over open ocean/sea areas. Does not apply with a QUICK TAU plot.

Watch and Warning Legend - Displays the legend for the NHC watch and warning areas indicating the type of watch and warning and the color used to depict it.

Flood Legend - Displays the color coded flood index legend.

Track Color Legend - Displays the color coded track legend.

Strike/Wind Probability Tab Display Options

DISPLAY:

Locations - Displays all of the locations in the selected location group. The text properties used for displaying the location names is set in font options.

Locations and distances from center - Displays the distance of a location from the center of the storm. The unit of measure used for distance as well as the font size and color of locations is set in the unit of measure options.

Location points only - Displays a set of locations with only points (no names).

Counties (fixed maps only) - Displays the county lines for the US coastal states. County lines are always set to black and cannot be reset. Note: With the variable maps, the county lines must be selected from the tracking chart select tab before selecting a tracking option.

County Names - Displays all of the county names for the counties visible on the current chart. The text properties used for printing the county names is set in font options

Roadways (fixed maps only) - Displays the significant roadways for the US coastal states. This may take several seconds. The color of the roadways can be set in plotting options.

Latitude/ Longitude - Displays latitude and longitude grid along the sides and top of the tracking chart. The text properties of these values are set in font options.

Chart Notes - Displays storm observation information (Date, time, wind, pressure) next to the observation points. If the points are close together, some chart notes will not plot to prevent overwriting. The text properties of chart notes are set in font options. See APPENDIX OO. Interactive Chart Notes on page 292 for more information on an alternative method of displaying chart notes.

Watch and Warning Areas - If available, this displays the areas of hurricane and tropical storm watches and warnings. The width of the warning color is twice as wide as the width of the watch color. The color and size of these areas are set in plotting options

Decision Arc - When this option is selected a popup input area is displayed which allows the user to select the action point and override the current storm's forecasted speed and intensity before displaying the decision arc. For more information on this topic see Decision Support Capabilities

Range Rings - This option displays range rings (circles of equal distance) centered at the base location or storm center as defined in general options. The color of the circle is determined by the color of the decision arc.

Strike/Wind Probabilities Location Values - Displays probabilities for a location group on the tracking chart being viewed. The text properties used for displaying these values can be set in font options.

Watch and Warning Legend - Displays the legend for the NHC watch and warning areas indicating the type of watch and warning and the color used to depict it.

Track Color Legend - Displays the color coded track legend.

Strike/Wind Probability Tab Plot Options

PLOT:

Replot Probabilities - This option replots the strike or wind probability contours and values

Track - Replots the current storm's track with wind field circles. The wind field circle color is set in plotting options.

"What If" Forecast - Displays the projected "What if" track. This option can only be selected if the "what if" has been enabled in the Setup What If Scenario Option. The color of the track is set in plotting options. For a complete discussion of this and other items, see Decision Support Capabilities.

Official Forecast - Displays the storm's selected forecast track. The color of the track is set in plotting options.

Official Forecast Average Error - Displays the storm's selected forecast track along with the area of average forecast error. For the Atlantic the NHC publishes yearly their average error for the 12, 24, 36, 48, 72, 96 and 120 hours verification times. These values can be adjusted in the System Setup component of the system. The color of the area can be set in plotting options.

Official Forecast Average Error Only - Displays only the storm's selected forecast average forecast error. For the Atlantic the NHC publishes yearly their average error for the 12, 24, 36, 48, 72, 96 and 120 hours verification times. These values can be adjusted in the System Setup component of the system. The color of the area can be set in plotting options.

Hurricane Model Forecast - Displays the storm's selected hurricane model forecast track. The color of the track is set in plotting options. For more information on model forecast see hurricane forecast models on page 286.

Climatology Forecast - Displays the storm's selected climatological forecast track. The color of the forecast track is set in plotting options.

Past Storm track(s) - Allows the user to select and plot any past storm(s) from the history database.

Forecast Rainfall Analysis Display Options

DISPLAY:

Locations - Displays all of the locations in the selected location group. The text properties used for displaying the location names is set in font options.

Locations and distances from center - Displays the distance of a location from the center of the storm. The unit of measure used for distance as well as the font size and color of locations is set in the unit of measure options.

Location points only - Displays a set of locations with only points (no names).

Counties (fixed maps only) - Displays the county lines for the US coastal states. County lines are always set to black and cannot be reset. Note: With the variable maps, the county lines must be selected from the tracking chart select tab before selecting a tracking option.

County Names - Displays all of the county names for the counties visible on the current chart. The text properties used for printing the county names is set in font options

Roadways - Displays the significant roadways for the US coastal states. This may take several seconds. The color of the roadways can be set in plotting options.

Latitude/ Longitude - Displays latitude and longitude grid along the sides and top of the tracking chart. The text properties of these values are set in font options.

Chart Notes - Displays storm observation information (Date, time, wind, pressure) next to the observation points. If the points are close together, some chart notes will not plot to prevent overwriting. The text properties of chart notes are set in font options. See APPENDIX OO. Interactive Chart Notes on page 292 for more information on an alternative method of displaying chart notes.

Wind Field - Displays a pattern of wind arrows that indicate the likely wind speed and direction at that point. You may also "force" a wind arrow plot by clicking the left mouse button while over a point on the chart. Wind field arrows are only shown for areas that fall within the radius of 34, 50 and 64 knot winds. The size, density, color of the arrows as well as the text properties of the wind value are set in Options.

Watch and Warning Areas - If available, this displays the areas of hurricane and tropical storm watches and warnings. The width of the warning color is twice as wide as the width of the watch color. The color and size of these areas are set in plotting options

Wind Bands - This option displays the observed and/or forecast coverage of the areas of 3 wind fields. The system defaults to 34 knot, 50 knot and 64 knot wind bands however it can be modified in the wind band options.

Strike Probability Analysis - Displays, on a separate chart (but using the same map), a grid of strike probability values as well as a contour analysis of the strike probabilities. The text properties used to display the values, as well as the color and density of the contour analysis is set in strike probability options. You can choose to display the total strike probability analysis or the next 24 hours only, or the period from 24-36 hours only, 36-48 hours only, 48-72 hours only.

Strike Probabilities Location Values - Displays strike probabilities for a location group on the tracking chart being viewed. The text properties used for displaying these values can be set in font options.

Wind Probability Analysis - Displays, on a separate chart (but using the same map), a grid of wind probability values as well as a contour analysis of the probabilities. The text properties used to display the values, as well as the color and density of the contour analysis is set in strike probability options. You can choose to display the 34, 50 or 64 knot total wind probabilities.

Wind Probabilities Location Values - Displays wind probabilities for a location group on the tracking chart being viewed. The text properties used for displaying these values can be set in font options.

Forecast Rainfall Thematic - This option displays the latest rainfall forecast in a county thematic manner. The option is only active if the system has recently downloaded rainfall forecast information from the HURRTRAK ONLINE system.

Watch and Warning Legend - Displays the legend for the NHC watch and warning areas indicating the type of watch and warning and the color used to depict it.

Flood Legend - Displays the color coded flood index legend.

Track Color Legend - Displays the color coded track legend.

Thematic Tab Display Options

DISPLAY:

County Names - Plots the names of all of the counties on the map.

County Values - Plots the wind or rainfall values for all of the counties on the map.

County names and values - Plots both the county name and the wind or rainfall values for all of the counties on the map.

Clear - Clears the names and values from the map

Decision Arc Pop-up Input Example

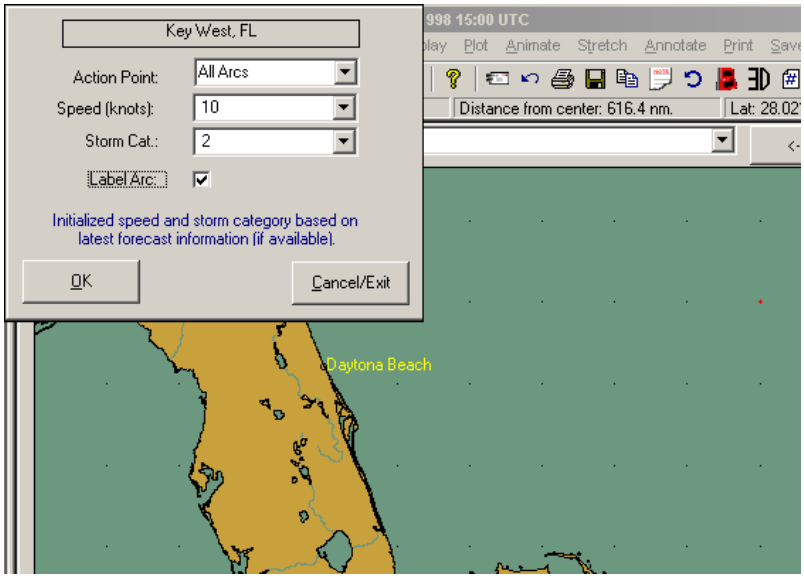


Figure 13

At this point, the user can select the action point and override the storm's forecast speed and intensity. When OK is selected the decision arc is plotted. Look at the next image to see an example of a decision arc.

Decision Arc Example

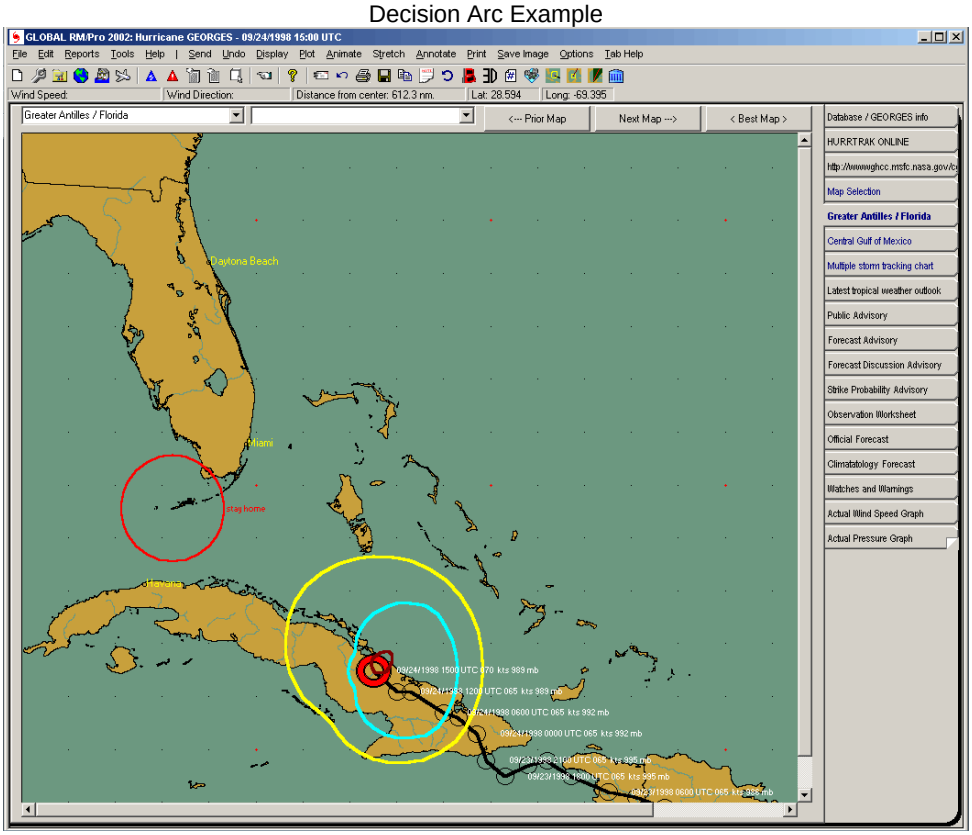


Figure 14

This chart displays the decision arc based on the information provided in the decision arc input screen. For more information on this topic, see page 249.

Annotate Chart

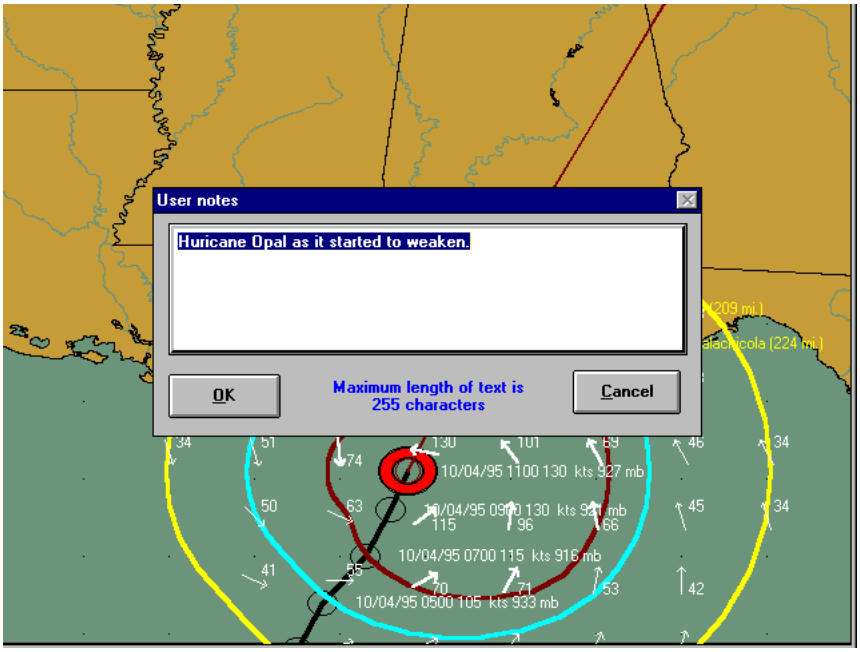
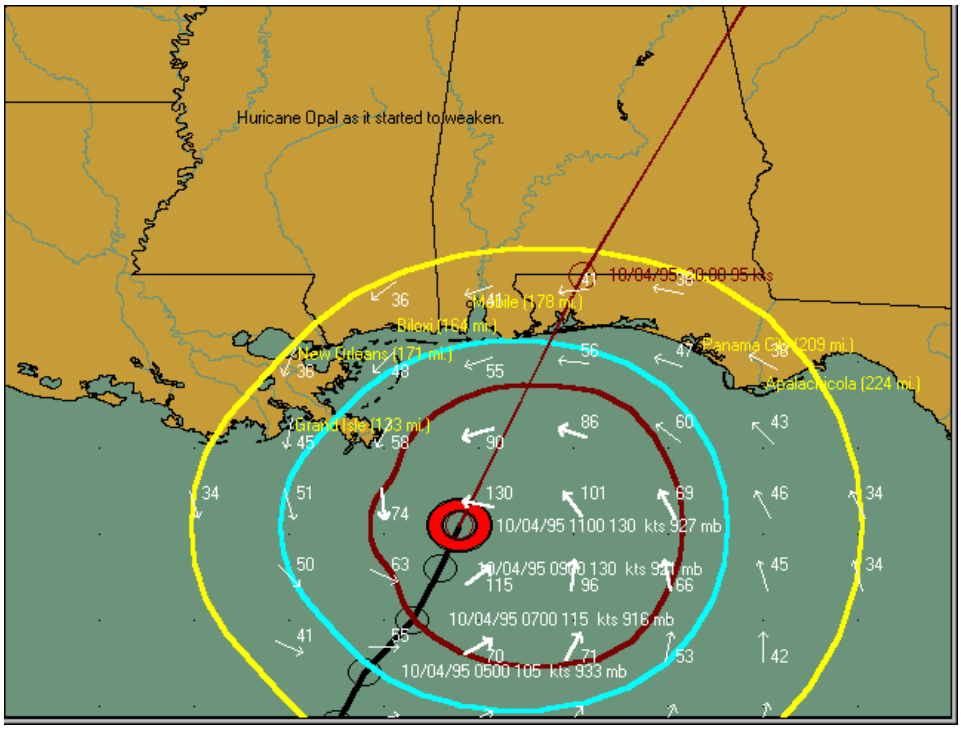


Figure 15

This option allows the user to add comments, etc. directly onto the tracking chart image. When Annotate is selected, any time the mouse button is pressed the user notes entry screen, shown above, is displayed. The text that is entered will appear at the position where the mouse button was pressed. The size, color and other font properties used for the user notes is set in user preferences. Selecting End Annotate will return the mouse button function to its original function.

The next image is an example of an annotated chart.



Print/Export Options (Graphics)

Color - Prints the current image in color

Gray Scale - Prints the current in pre-determined gray scale.

Fax - Prints the current image after automatically modifying the image to “line art" as shown blelow. All colors are changed to black while the Ocean and Land areas are set to white. (Not available for H*Wind, Wind Band and Thematic Maps).

Export to Google Earth - Exports the displayed image to Google-Earth.

Sample Fax Print Image

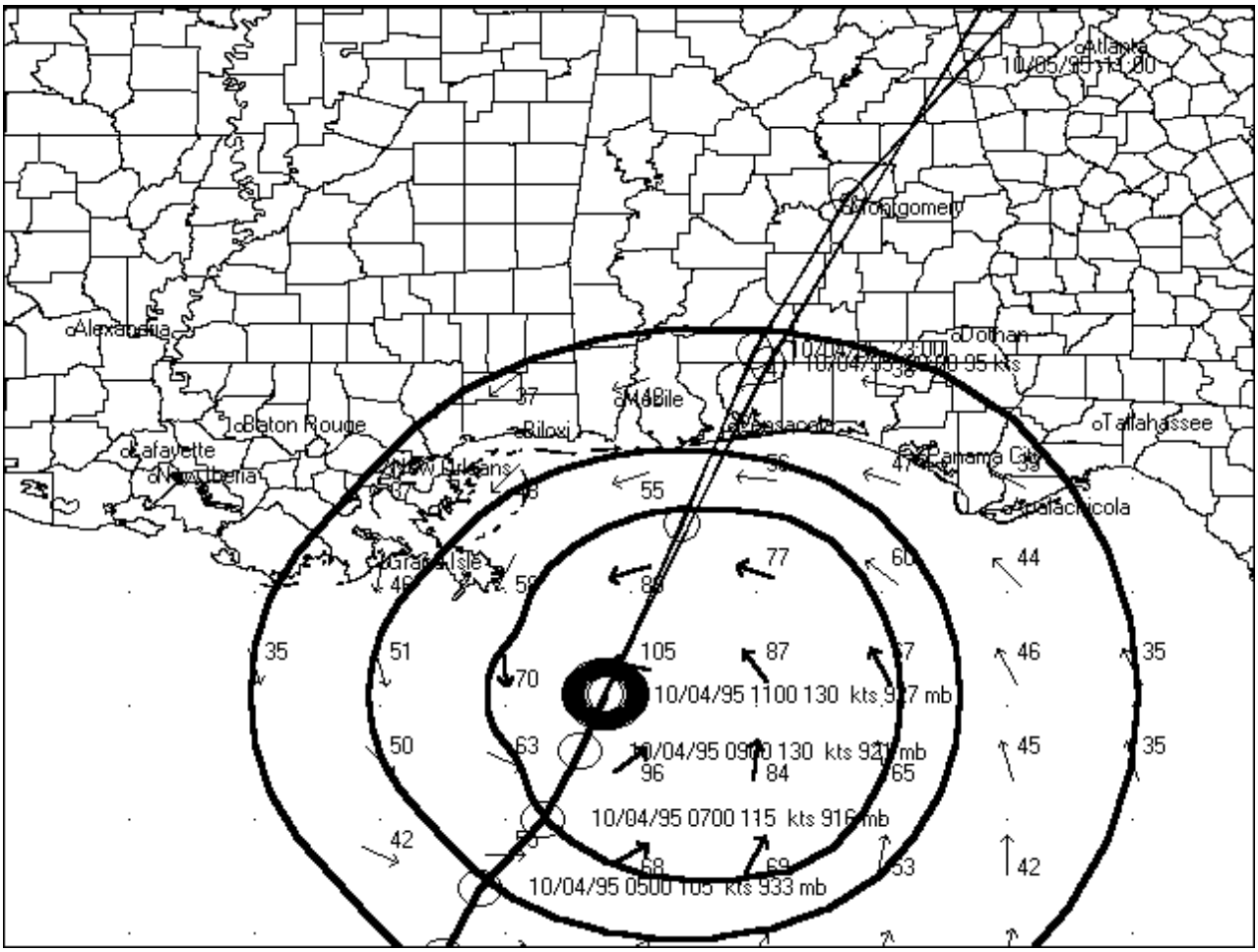
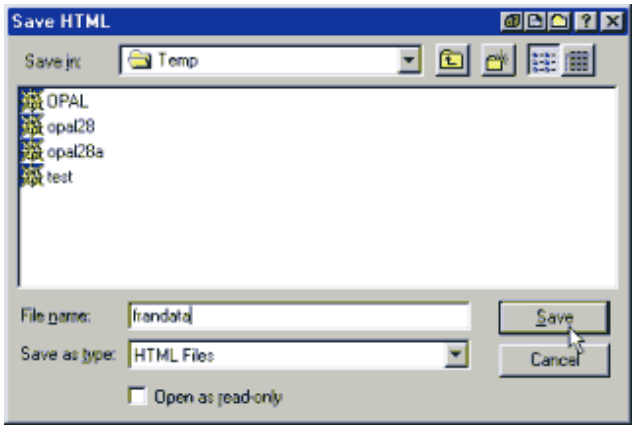


Figure 16

Print/Export Options (Reports/Text)

The report print option has several capabilities.

Print Preview - Previews the printed output on your screen. After which the user can review or print the output.
Direct to Printer - Prints the output directly to the designated printer
Export to HTML - This option allows the user to export certain text reports and data to an HTML format.. When this option is selected a file dialog box is displayed requesting the name of the HTML file the user would like to create.



Special HTML Considerations: The size of the HTML files created can be very large. Avoid creating HTML for lengthy reports and mainly use this on smaller reports and text data.

Special License Agreement Considerations: Although we provide the ability to create "internet ready" HTML, the standard software license agreement still prohibits the use of any of the system's output on the internet without prior approval of PC Weather Products, Inc. The output may be used however on internal Intranet sites since that stays within the provisions of the license agreement.

Export to PDF file - This option allows the user to export certain text reports and data to an Adobe Acrobat PDF format. PDF files have become a standard in sharing reports as they maintain their intended formatting when viewed by the recipient. When this option is selected a file dialog box is displayed requesting the name of the HTML file the user would like to create.

Export to Text Delimited - This option allows the user to export certain text reports and data to a comma delimited format.. This data file will then easily import into many database and spreadsheet applications. When this option is selected a file dialog box is displayed requesting the name of the file the user would like to create.
Special Export Considerations: The first line of the exported data file contains the field names of the subsequent data. Some applications will accept this first line of data as the name of the database field.

Export to EXCEL - This option allows the user to export certain text reports and data to Microsoft EXCEL for further analysis. EXCEL ™ must be installed on the user's system for this to work.

Export to GOOGLE EARTH - For summary impact reports only. This exports the contents of the summary report to a Google Earth "native" KML file. This allows the user to view the report information on the GE interface.

Print/Export "Executive style report" – For summary impact reports only. This option will either Print, Export to HTML or save as a PDF a report which has been reformatted in a non-tabular fashion. See the Appendix for an example of this report.

Save Image Options

Copy to Clipboard - Copies the current image to the windows clipboard for pasting into most graphics applications.

Save to File - Saves the current image to a GIF, BMP, PCX, TIF or JPG file. Most all windows graphics and word processing applications accept BMP files.

Save fax image to File - Saves the current image to a GIF, BMP, PCX, TIF, or JPG file after automatically modifying the image to "line art". All colors are changed to black while the Ocean and Land areas are set to white.

Save to PDF File - Saves the current image to an Adobe Acrobat PDF format. PDF files have become a standard in sharing reports as they maintain their intended formatting when viewed by the recipient.

Save to Animated GIF - (Animation only) - If saving an animation, this option saves the current animation to an animated GIF file. Animated GIF's can be viewed with Internet Explorer as well as some other software.

Chart Display "options"

MousePointer - While viewing a tracking chart, the user can display cursor positional information by selecting any (or all) of the following items.
Show Wind Value - Displays the likely wind speed values at that location
Show Distance to Center - Displays the distance to the center of the storm from that location.
Show Latitude - Displays the latitude of the cursor position
Show Longitude - Display the longitude of the cursor position

The unit of measure for the MousePointer data is not shown but is defined in user options

.

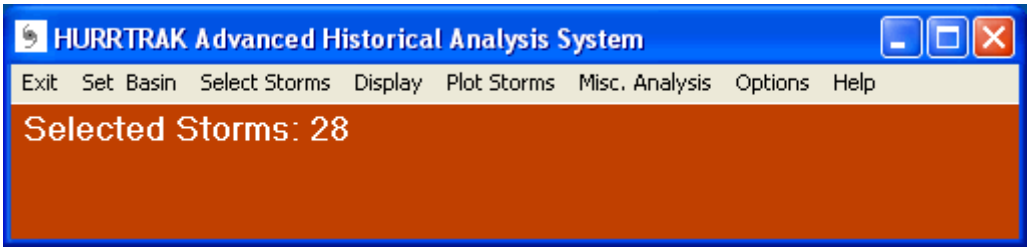
Status bar - This option allows the user to switch the status bar from cursor positional data to general storm information data.

HURRTRAK ONLINE

HURRTRAK ONLINE is an online service that is available from PC Weather Products, Inc.. Via an Internet connection, it automatically retrieves the latest National Hurricane Center Atlantic Storm information from our servers and loads it to your computer, updating all of the HURRTRAK databases.

The Internet connection is established by properly defining the characteristics of your Internet connection in HURRTRAK Online Options (see page 108). Here you setup your userid and password, define proxy servers and setup any automatic update parameters. You may also manually select the data you would like to retrieve by selecting the HURRTRAK ONLINE TAB (see page 129). The Internet connection includes not only the latest storm data but also wind probability, hurricane recon, forecast model and rainfall forecast data.

Hurricane/Tropical Cyclone Historical Analysis System



The Historical Analysis System allows you to analyze past storm information from 1851 to the present. The system operates by the user first selecting a storm or group of storms and then taking actions on that group (i.e. Plot, display data, etc.) The amount of data available depends on which tropical basin is being analyzed.

The menu selections include:

Exit - Exits the program

Set Basin

Select

Display

Plot Storms

Misc. Analysis

Options: Plot with thin lines. This option forces the system to plot historical tracks with fine (thin) lines rather than the normal thicker lines. This is useful when plotting a large number of tracks.

Help - Displays help text

Set Basin

This pull down, **only available in the Global Tracking Systems**, allows the user to select the tropical basin they wish to analyze.

1- Atlantic
2- Eastern Pacific
3- Western Pacific
4- Northern Indian
5- Southern Indian
6- Southwest Pacific

Selection Methods

HURRHIST has several methods for selection a storm or group of storms. They are:

- Select Storms by Location (set distance)
- Select Storms by Location (variable distance)
- Select Storms by Name
- Select Storms by Year
- Select Storms by Strength

Let's examine each selection method.

Select Storm by Location (set distance)

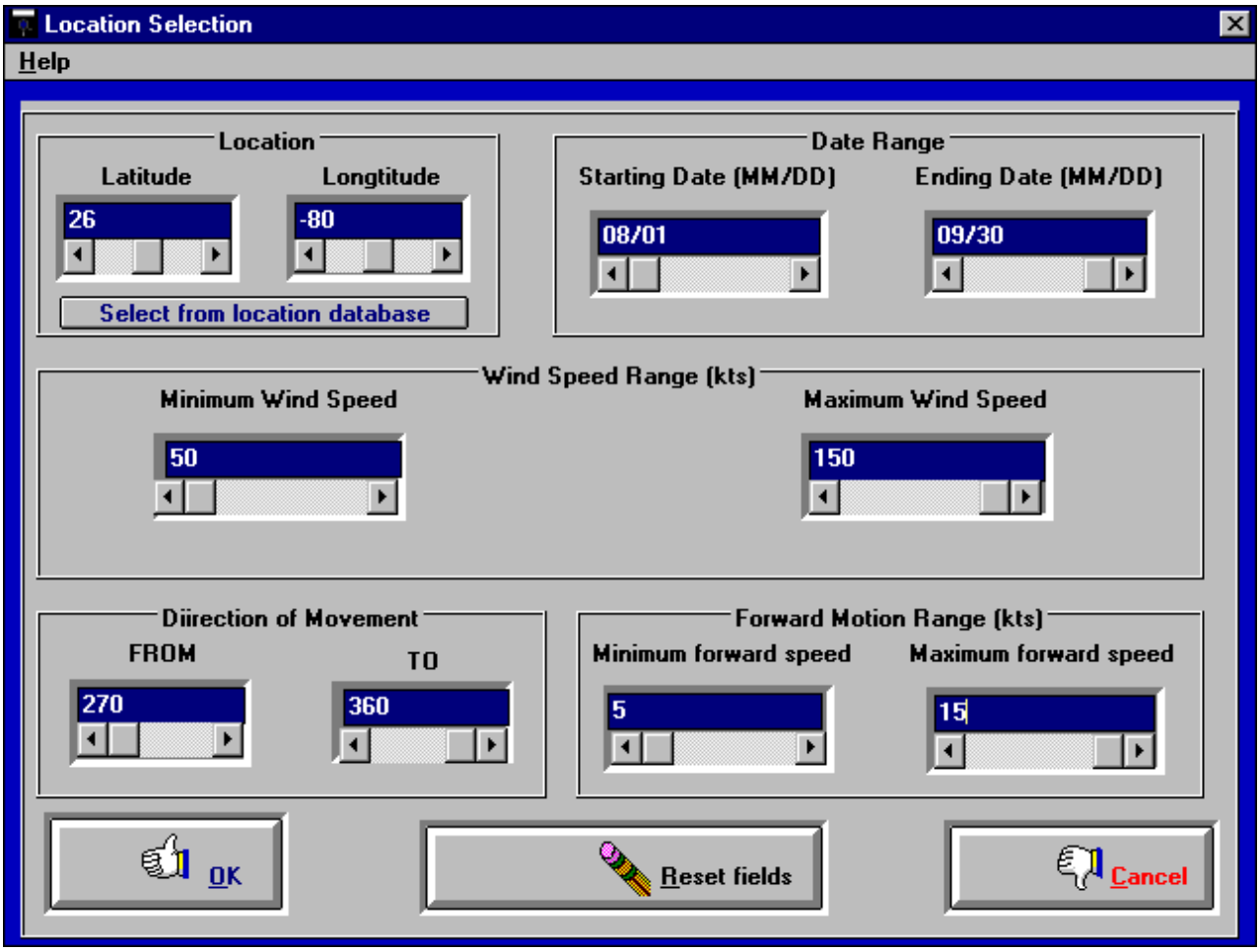


Figure 17

By far the most complex selection method, selecting a group of storms by location allows the user to do a very detailed analysis of how an area historically has been affected by storms and also do some real time comparison to a current storm situation. For example, you can see how many storms have passed within 60 miles of the nearest whole latitude / longitude point that had winds greater than 74 mph. Or if there is a current storm moving through the Lesser Antilles, you can do an analysis showing all of the past storms that are "similar" in characteristics as this one.

The following fields are required:

Latitude - The latitude of the location you wish to analyze. Be sure to enter this in degrees and tenths of a degree, not degrees and minutes. Northern latitudes are positive. You may use the “select from location database” function to have the system automatically find a location’s latitude & longitude.

Longitude - The longitude of the location you wish to analyze. Again, this should be entered in degrees and tenths of a degree. Western Longitudes, like the Americas, are negative while Eastern longitudes are positive. You may use the “select from location database” function to have the system automatically find a location’s latitude & longitude.

The following optional data fields are initially set to their widest ranges. If you wish to "narrow" the number of storms selected you may modify their values. They include:

Starting Date - The beginning date of the date range you wish to select.

Ending Date - The ending date of the date range you wish to select.

Minimum Wind Speed - The low end of the wind speed range. The unit of measure (UOM) used is determined by the user preferences as set in the tracking portion of the system .
Maximum Wind Speed - The high end of the wind speed range. The UOM used is determined by the user preferences as set in the tracking portion of the system.

Direction of movement - FROM - This represents the from azimuth value

Direction of movement - TO - This represents the to azimuth value.

Direction of Movement - The prior two fields define the direction of storm movement. The values are based off of a compass azimuth system where North is 0 or 360 degrees, East is 090, South is 180 and West is 270 degrees.

The direction of movement is defined from the FROM value clockwise to the TO value.

This is best explained with examples:

To select only storms that were moving to the NW, you would enter FROM - 270, TO - 360. See Figure 18.

To select only storms that were moving to the North, you would enter FROM - 315. TO - 045.

To select only storms that were moving to the West, you would enter FROM - 225, TO - 315.

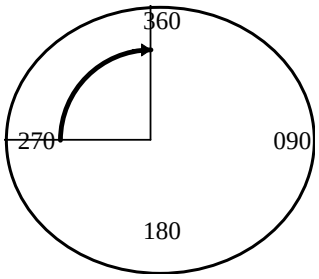


Figure 18

All of these examples allow for a 90 degree wide range. In other words, for the East example, we will select all storms that were moving from the NE (045) to ones that were moving from the SE (135). If you want to narrow this range even further, you may do so. I.E. If you want storm that were coming from nearly due East, the FROM could be 080 and the TO could be 100 degrees.

This area is a little complicated, so it may be best to try different values and see the results.

Forward motion minimum forward speed - The low end of the range of storm forward motion speed. The unit of measure (KTS or MPH) is determined by the user preferences in the tracking part of the system.

Forward motion maximum forward speed - The high end of the range of storm forward motion speed. The unit of measure (KTS or MPH) is determined by the user preferences in the tracking part of the system.

An example of the following query is shown on page 198.
Select all the storms that passed within 60 miles of 26 north latitude and 80 degrees west longitude, that occurred between August 1 and September 30, that had peak winds between 50 and 150 kts and were moving from the southeast at 5 - 15 knots.

Select Storm by Location (variable distance) - RM/Pro only

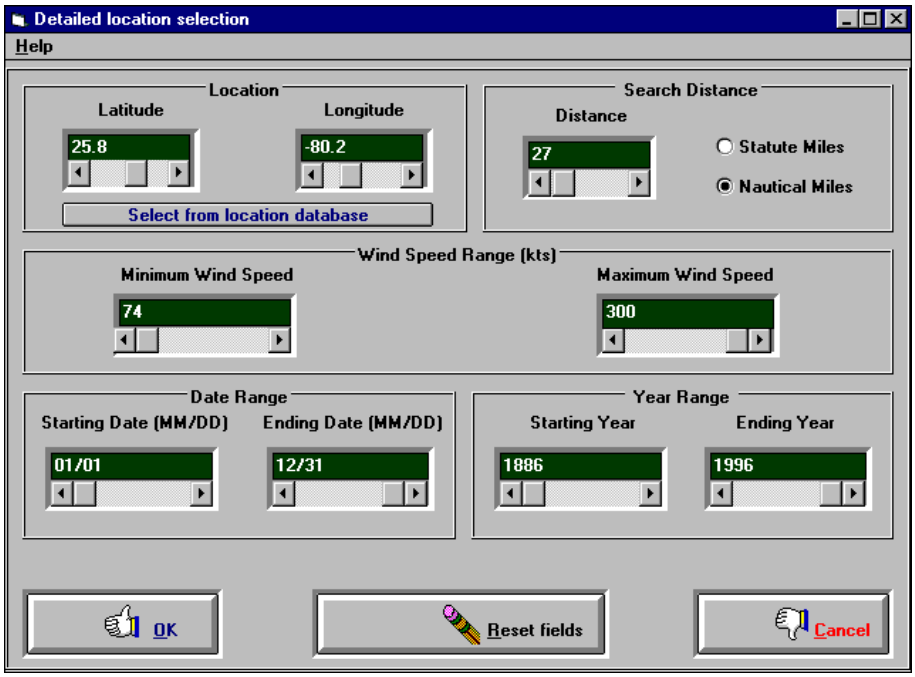


Figure 19

This selection method allows the user to select storm by a variable distance from a location. For example, you can see how many storms have passed within 27 miles of Miami, FL had winds greater than 74 MPH.

The following fields are required:

Latitude - The latitude of the location you wish to analyze. Be sure to enter this in degrees and tenths of a degree, not degrees and minutes. Northern latitudes are positive. You may use the "select from location database" function to have the system automatically find a locations latitude & longitude.

Longitude - The longitude of the location you wish to analyze. Again, this should be entered in degrees and tenths of a degree. Western Longitudes, like the Americas, are negative while Eastern longitudes are positive. You may use the "select from location database" function to have the system automatically find a locations latitude & longitude.

Search Distance - The distance you would like to use in the query.

The following optional data fields are initially set to their widest ranges. If you wish to "narrow" the number of storms selected you may modify their values. They include:

Minimum Wind Speed - The low end of the wind speed range. The unit of measure (UOM) used is determined by the user options as set in the tracking portion of the system .

Maximum Wind Speed - The high end of the wind speed range. The UOM used is determined by the user options as set in the tracking portion of the system.

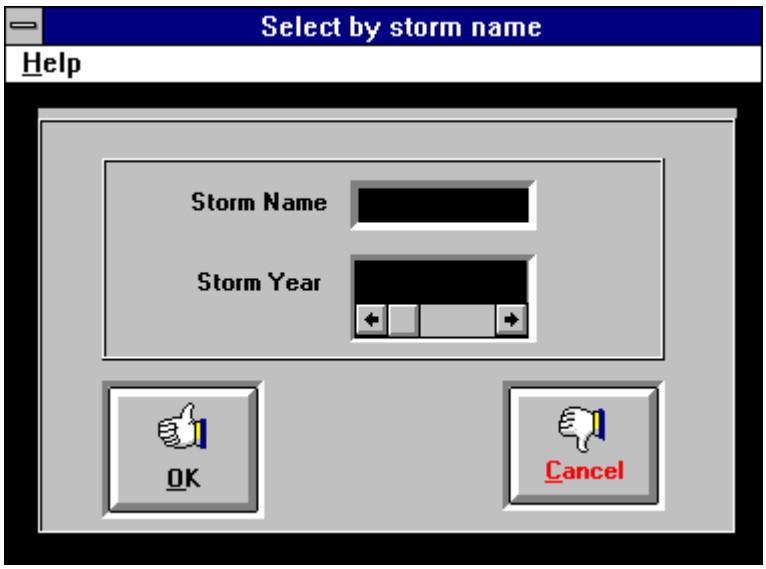
Starting Date - The beginning date of the date range you wish to select.

Ending Date - The ending date of the date range you wish to select.

Starting Year - The beginning year of the date range you wish to select.

Ending Year - The ending year of the date range you wish to select.

Select by Storm Name



This option allows you to select storms by name.

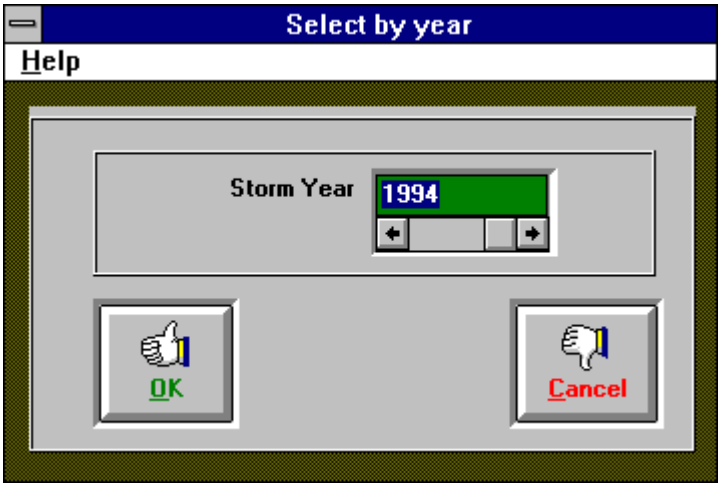
Required field:

Storm Name - The name of the storm you would like to select.

Optional field:

Storm Year - The year of the storm you would like to select. If this field is empty than all of the storms with the desired name will be selected.

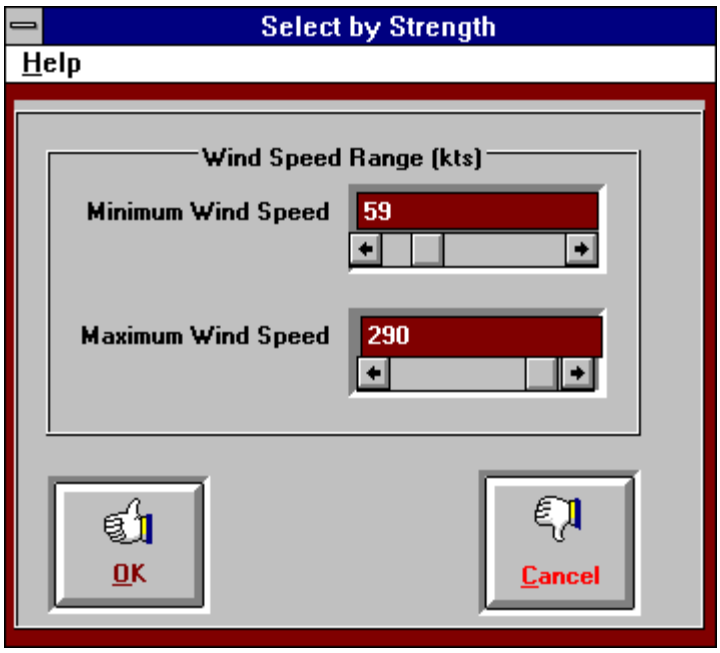
Select by Year



This option allows you to select all the storms for a particular year.

Storm Year - Year desired

Select by Strength



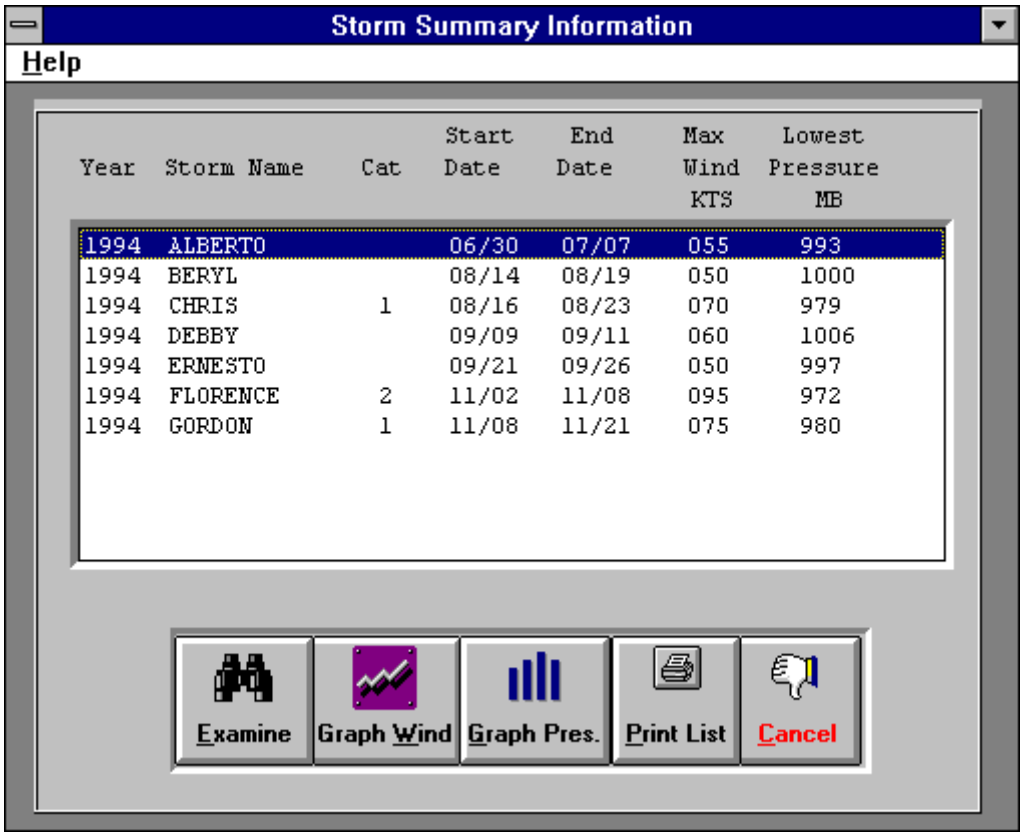
This option allows you to select storms by their maximum wind strength. The unit of wind speed (KTS or MPH) is determined by the user preferences in the tracking part of the system.

Minimum Wind Speed - The low end of the wind speed range.

Maximum Wind Speed - The high end of the wind speed range.

Display Storms

After a group of storms have been selected the display option will show the storm summary information. This is done automatically after the initial selection.



This screen displays general information about all of the storms selected. Year, Storm Name, Category, Start Date, End Date, Max Wind Speed, Lowest pressure. The Unit of measure used for the wind speed and pressure is set in the User Preferences in the main tracking portion of the system.

The options available from here include:

Examine

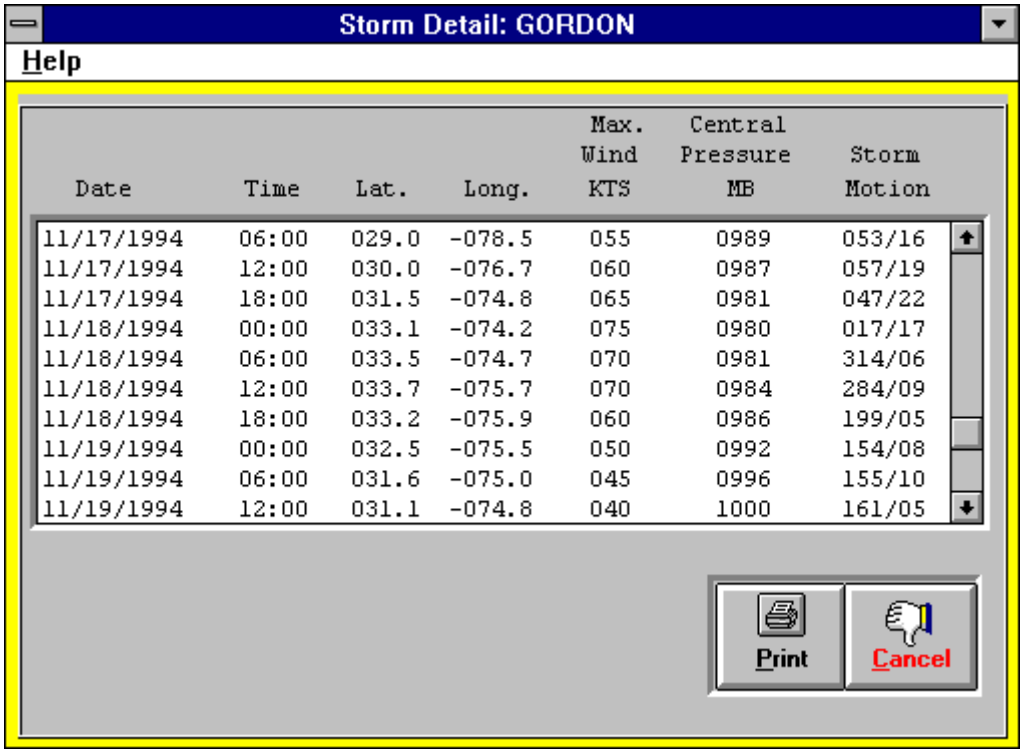
Graph Wind

Graph Pressure

Print List - Prints the list of storms out to your printer

Cancel - Closes this window

Examine



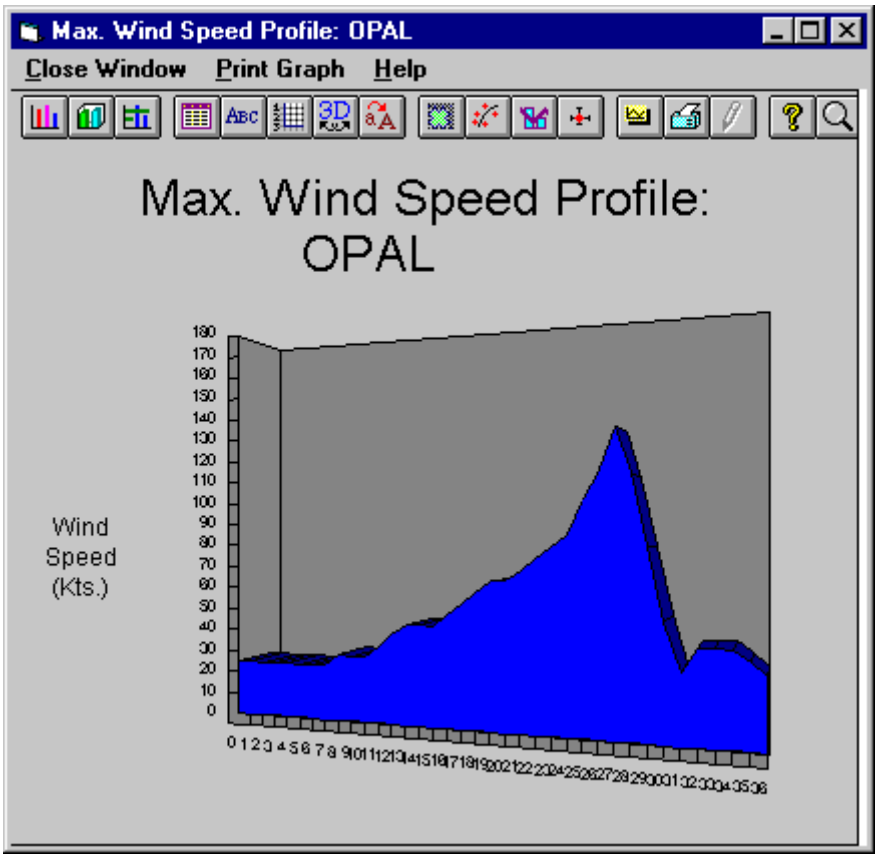
This option displays each observation point for the selected storm. Typically there are 4 observations per day that include the date, time, position (latitude, Longitude), maximum wind speed, central pressure and forward motion of the storm.

Options from this window are:

Print - Print all the storm observations.

Cancel - Close this window.

Graph Wind



This window displays the selected storms max. wind speed profile. Max and Min wind speed is indicated by the horizontal dashed lines. The unit of measure, MPH or KNOTS, is determined by the user options set in the tracking portion of the system.

Options available from this window:

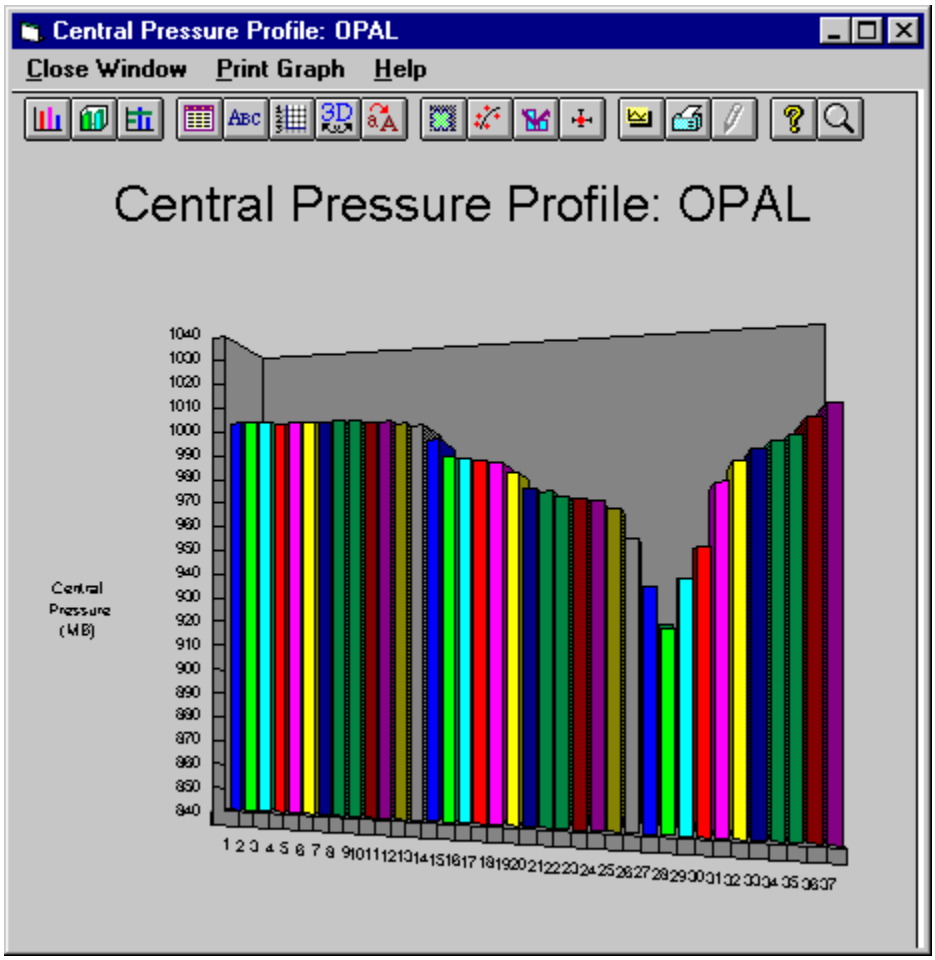
Close Window - Closes the window

Print Graph - Prints the graph in black and white. Note: The size of the printed output is dependent on the size of the displayed window. I.E. A larger window results in a larger print area

Help - Displays this help text.

There are a set of graphing option available from the top portion of the chart which changes the characteristics of the graph. Experiment with these to determine the graph that suits your needs best.

Pressure Graph



This window displays the selected storms central pressure graph. Each bar represents an observation point. The unit of measure, millibars or inches of mercury, is based on the user options set in the tracking portion of the system.

Options available from this window:

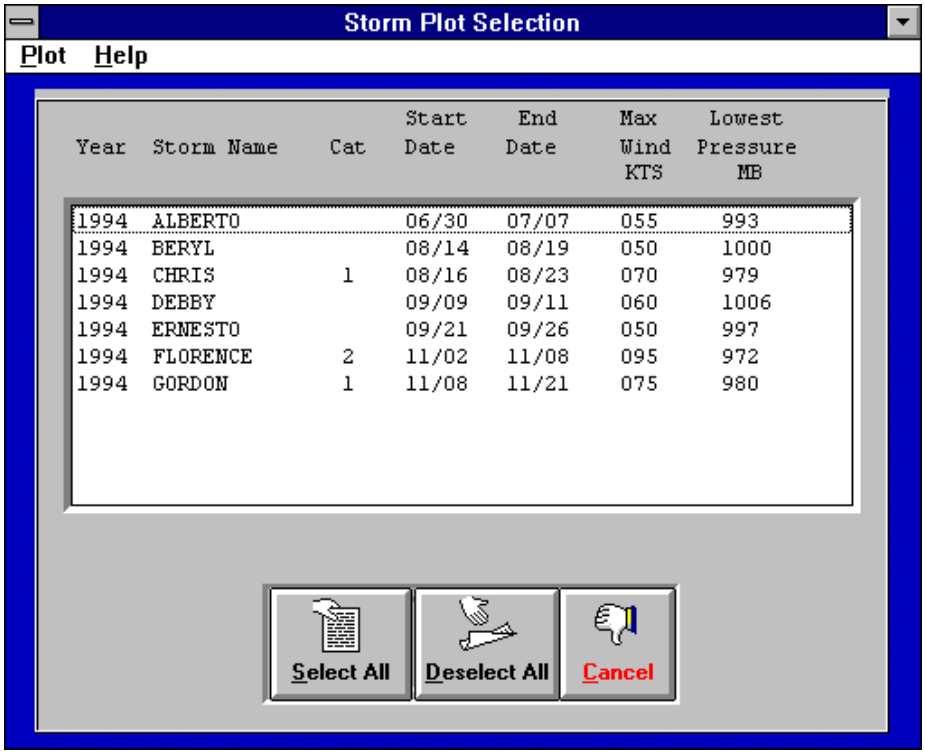
Close Window - Closes the window

Print Graph - Prints the graph in black and white. Note: The size of the printed output is dependent on the size of the displayed window. I.E. A larger window results in a larger print area

Help - Displays this help text.

There are a set of graphing option available from the top portion of the chart which changes the characteristics of the graph. Experiment with these to determine the graph that suits your needs best.

PLOT (Storm Plot Selection)



This screen displays general information about all of the storms selected. Year, Storm Name, Category, Start Date, End Date, Max Wind Speed, Lowest pressure. The Unit of measure used for the wind speed and pressure is set in the User Preferences in the main tracking portion of the system. **Multiple storms can be selected for plotting from this window.**

Commands available from this window include:

Select ALL - Selects all of the storms in list

Deselect All - Deselects all of the storms in the list.

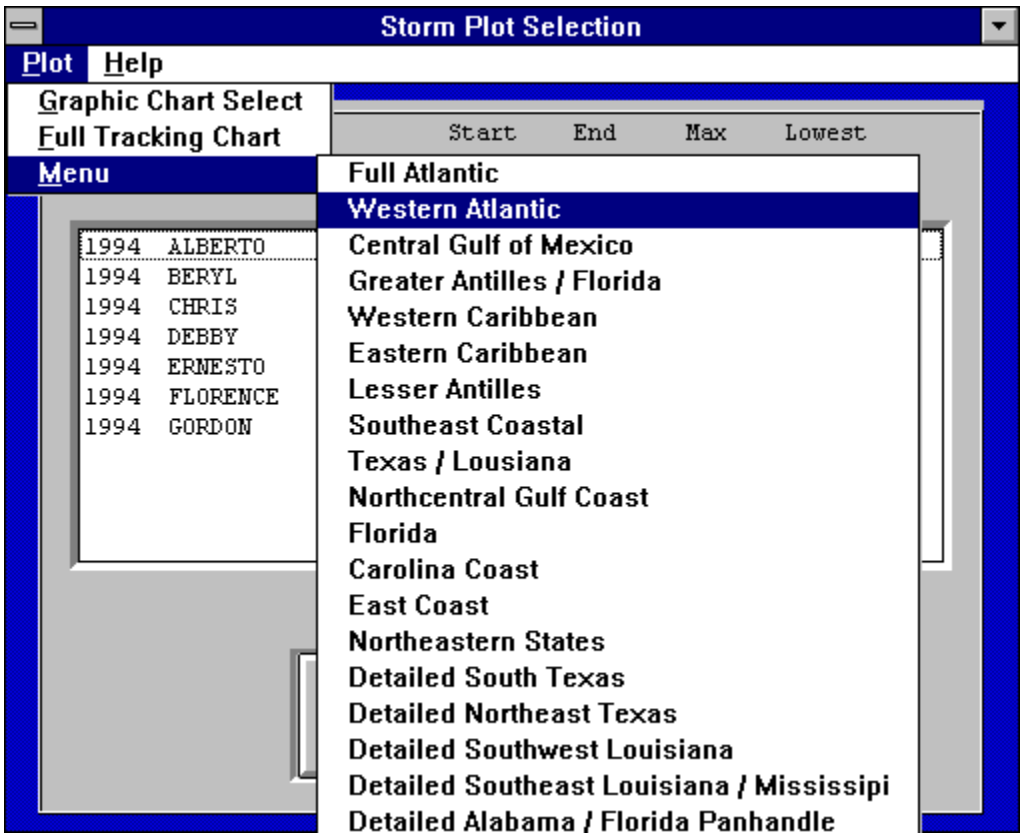
Mouse Select - Storms may be selected or deselected individually by clicking with the left mouse button on the list entry.

Once one or more storms have been selected, the user may plot the storm tracks by picking one of the menu PLOT option.

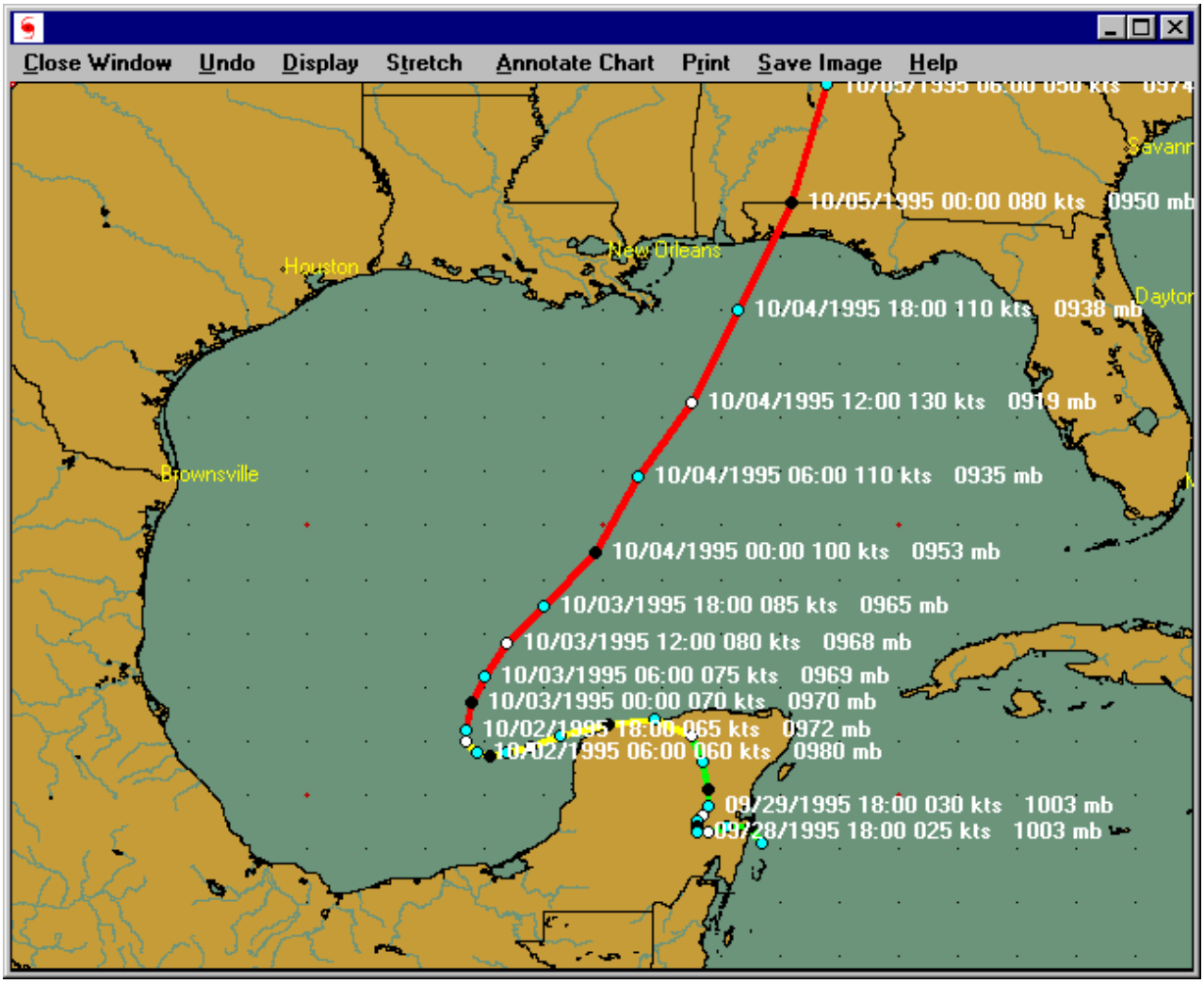
Graphic Select - This option places a large scale tracking chart in a window on the screen. The user can select the tracking chart they want to view by moving the cursor over the black "rectangles" that represent all of the available tracking charts. When the desired rectangle is highlighted, clicking the left mouse causes this chart to be selected. The red circle indicates the latest position of the current storm.

Full Chart - This option displays the largest available tracking chart for this tropical basin

Menu - This allows the user to select from the entire list of available tracking charts.



When a tracking chart has been selected, it is displayed with all of the selected hurricane tracking charts displayed. Lets take a look at the options available to the user when displaying these charts.



While viewing storm plots on a tracking chart, there are several menu options available. They include:

Close Window - Closes this window

DISPLAY:

Display Locations - Displays all of the locations for the selected location group.

Display Counties - Displays the county lines for the US Eastern and Gulf states.

Display Roadways - Displays the significant roadways for the US East and Gulf coastal states. This may take several seconds.

Display Latitude/ Longitude values - Displays latitude and longitude labels along the sides and top of the tracking chart

Display Chart Notes - Displays storm observation information next to the observation points. If the points are close together, some chart notes will not plot to prevent overwriting.

Display Track Color Legend – Displays the color coded storm track legend..

Stretch - Displays the tracking chart in "full screen" mode. No operations can be done while in this mode as it is only for viewing. Clicking the mouse button will return you from stretch mode.

Annotate Chart - Allows the user to add his/her notes to the tracking chart being displayed. After selecting this option, you select the point you wish to add comments by pressing the right mouse button on the screen and then entering the text desired. When done click on "end annotate" on the menu bar.

Print/Export:

Auto - Prints the current image allowing the system to determine which print mode. I.E. If you have a color printer, it will print the image in color.

Force Color - Prints the current image in color. If you have a B/W printer, your print driver will convert the colors to gray scale.

Force B/W - Prints the current image in gray scale B/W regardless of your printer type. Controls for contrast and brightness are shown and then can be adjusted before printing.

FAX Print - Prints the current image after first converting the colors to B/W. Land and water areas are white and all remaining features are black. This image is suitable for faxing

Export to Google Earth – exports Image to Google Earth.

Save Image:

Copy to Clipboard - Copies the current image to the windows clipboard for pasting into most graphics applications.

Save to File - Saves the current image to a BMP, PCX, TIF or JPG file. Most all windows graphics and word processing applications accept BMP files.

Save fax image to File - Saves the current image to a BMP, PCX, TIF, or JPG file after automatically modifying the image to "line art". All colors are changed to black while the Ocean and Land areas are set to white.

Help -Displays this help screen

Miscellaneous Analysis

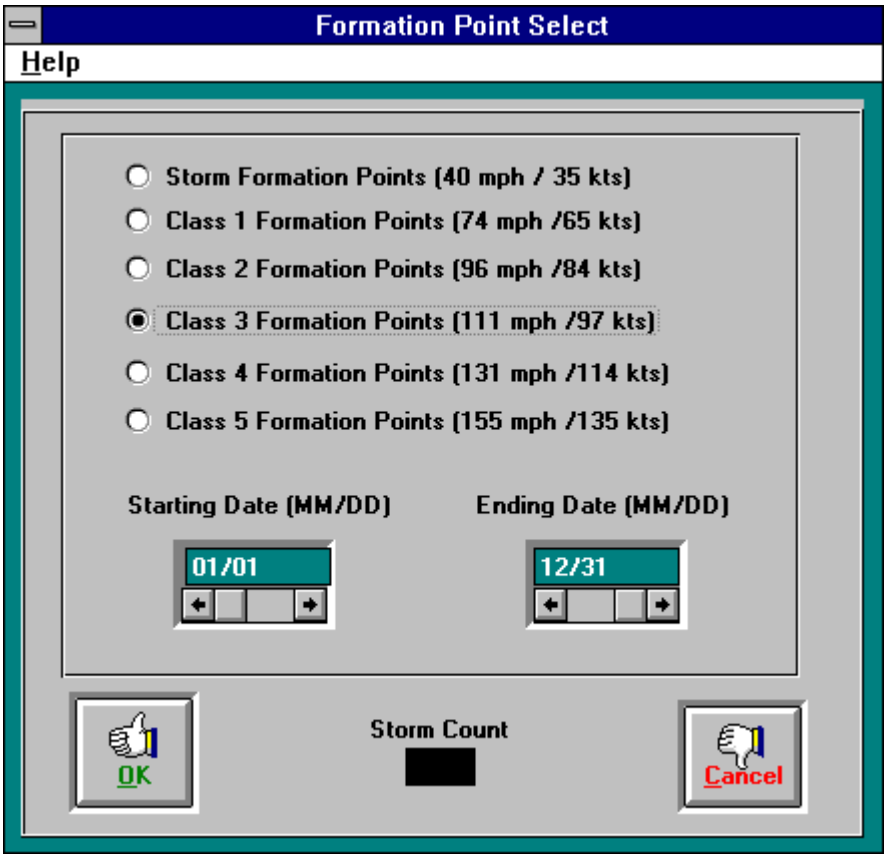
This Menu option allows the user to do the following additional analysis.

Formation Point

Location Analysis

Formation Point Selection

This option allows the user to select a group of storms based on intensity and date range and then display their formation points on the large tracking chart. If the user selects "Storm Formation Points", all of the storm's formation points will be displayed. If one of the "Class" (Storm classification 1 - 5) options are selected, then what will be displayed is the point when those storms first attained that class. Entering information into the following date fields can optionally narrow the selection:

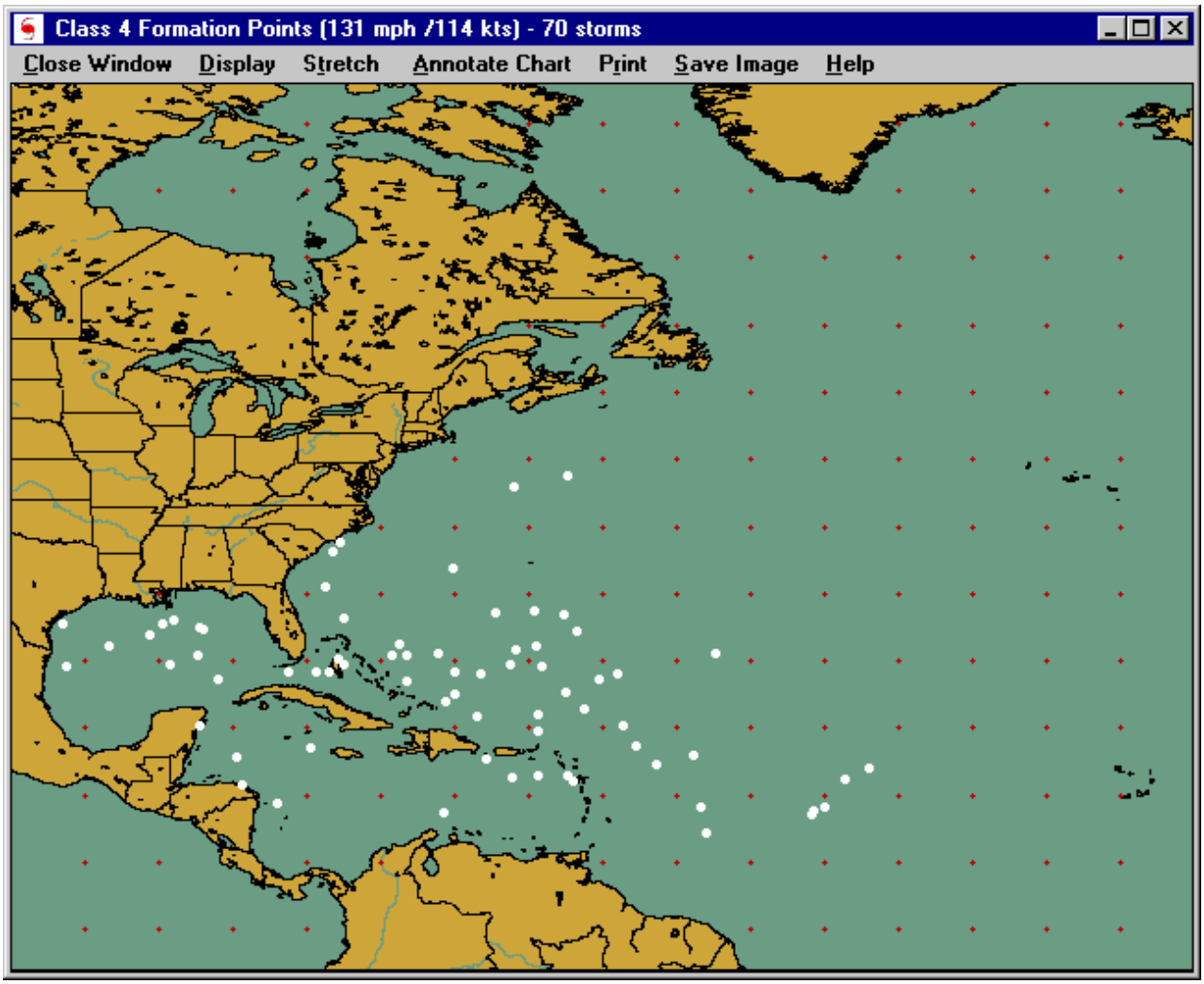


Start Date - The starting date range of the selection criteria, Month/Day.

Ending Date - The ending date range of the date selection criteria, Month/Day.

For example to display all the locations where class 4 hurricanes attained that level between August 1st and September 30th, you would select "Class 4 Formation Points" and enter 08/01 in the starting date field and 09/30 in the ending date field. The results of this query are shown on the next page.

Formation points chart



This window displays the results of the formation point select query. It shows a white circle for every storm that attained the level as specified in the selection.

Options available include:

Close Window - Closes this window

DISPLAY:

Display Locations - Displays the locations in the selected location group.

Display Latitude/ Longitude values - Displays latitude and longitude labels along the sides and top of the tracking chart

Stretch - Displays the tracking chart in "full screen" mode. No operations can be done while in this mode as it is only for viewing. Clicking the mouse button will return you from stretch mode.

Annotate Chart - Allows the user to add his/her notes to the tracking chart being displayed. After selecting this option, you select the point you wish to add comments by pressing the right mouse button on the screen and then entering the text desired. When done click on "end annotate" on the menu bar.

Print:

Auto - Prints the current image allowing the system to determine which print mode. I.E. If you have a color printer, it will print the image in color.

Force Color - Prints the current image in color. If you have a B/W printer, your print driver will convert the colors to gray scale.

Force B/W - Prints the current image in gray scale B/W regardless of your printer type. Controls for contrast and brightness are shown and then can be adjusted before printing.

FAX Print - Prints the current image after first converting the colors to B/W. Land and water areas are white and all remaining features are black. This image is suitable for faxing

Export to Google Earth – exports Image to Google Earth.

Save Image:

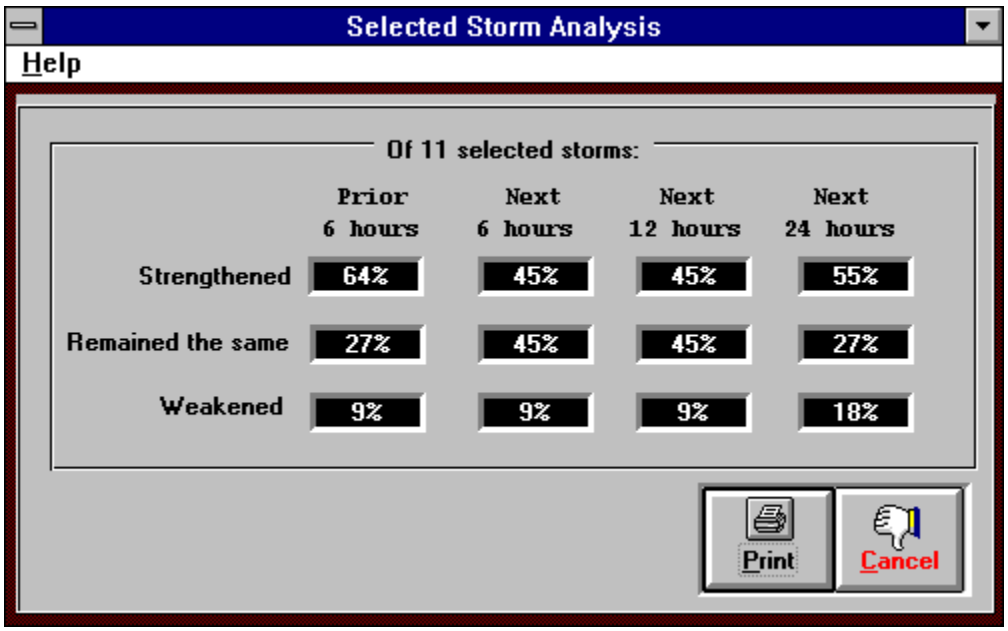
Copy to Clipboard - Copies the current image to the windows clipboard for pasting into most graphics applications.

Save to File - Saves the current image to a BMP, PCX, TIF or JPG file. Most all windows graphics and word processing applications accept BMP files.

Save fax image to File - Saves the current image to a BMP, PCX, TIF, or JPG file after automatically modifying the image to "line art". All colors are changed to black while the Ocean and Land areas are set to white.

Help - Displays this help screen

Location Historical Analysis



This option is only active when a group of storms have been selected via the "select storms by location" method. It displays the storm group trend information indicating what percent strengthened, weakened and remained the same for the prior 6 hours, next 6, 12 and 24 hours. This is useful when using the system to compare the historical data to a current storm situation.

Options available from here include:

PRINT - Print the current information

Cancel - Close this window

SLOSHView - SLOSH & Inundation Analyzer

SLOSHVIEW Tutorial

SLOSHView is a module in the HURRTRAK system which gives the user great flexibility in viewing the SLOSH MOM and MEOW storm surge data.

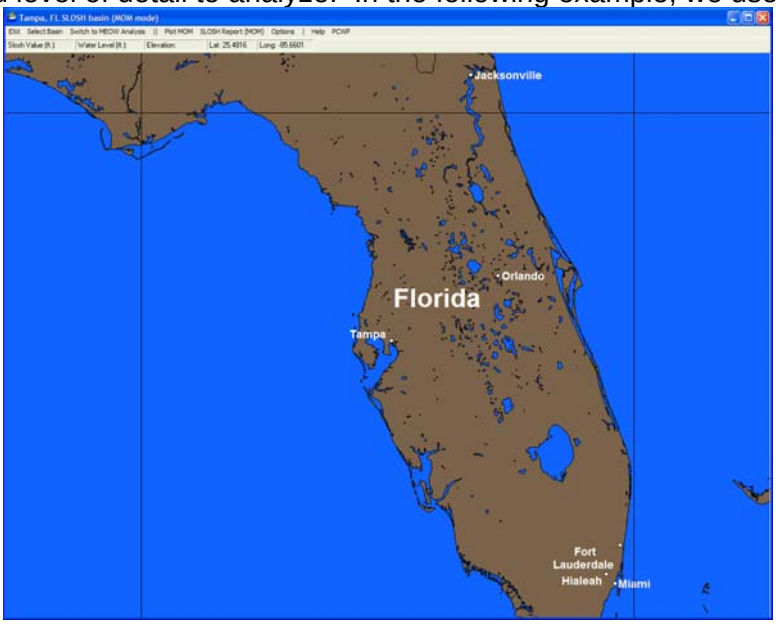
In addition to displaying the "raw" SLOSH values, the system will also calculate and graphically display the inundation analysis... which is the potential water level above ground, as well as generate a SLOSH report indicating potential flood levels for specific locations. All of this is done on user-selectable maps that can be drawn down to the street level. The mapping database also includes landmarks, such as cities, railroads, airports, pipelines, power lines, and more. For information on Inundation Analysis, see on page 273.

There are three key databases installed in order to do the SLOSHView Inundation Analysis:

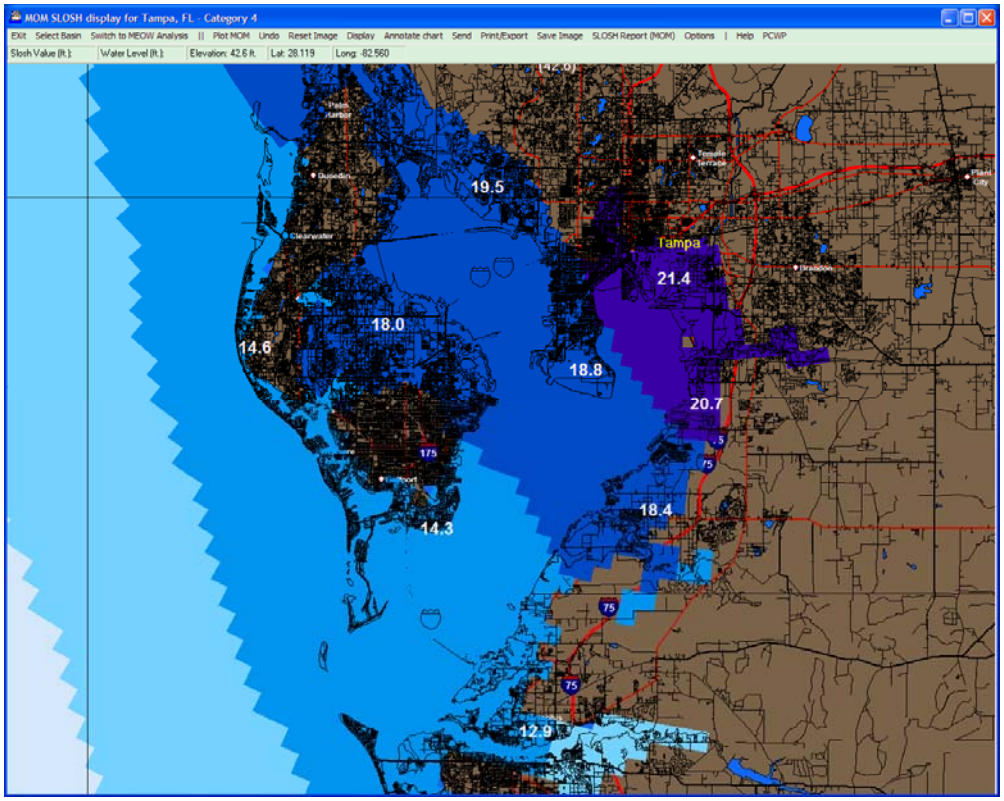
1. **NWS SLOSH Basin Analysis** - This data is provided courtesy of the National Weather Service. Will Shaffer of the NWS has been very helpful. For more information on SLOSH and how it is derived, see page 270.
2. **USGS Digital Elevation Model database** - This data was procured from the USGS and contains elevation information for all coastal areas on a 1 arc second grid. This equates to a data point about every 100 ' or so.
3. **US mapping Information** - This database was procured from a 3rd party vendor. It contains detailed road atlas mapping information (street level).

By combining the detailed mapping with the SLOSH and elevation data, the SLOSHView program allows the user to depict potential storm surge flooding areas on very detailed maps. See an example below.

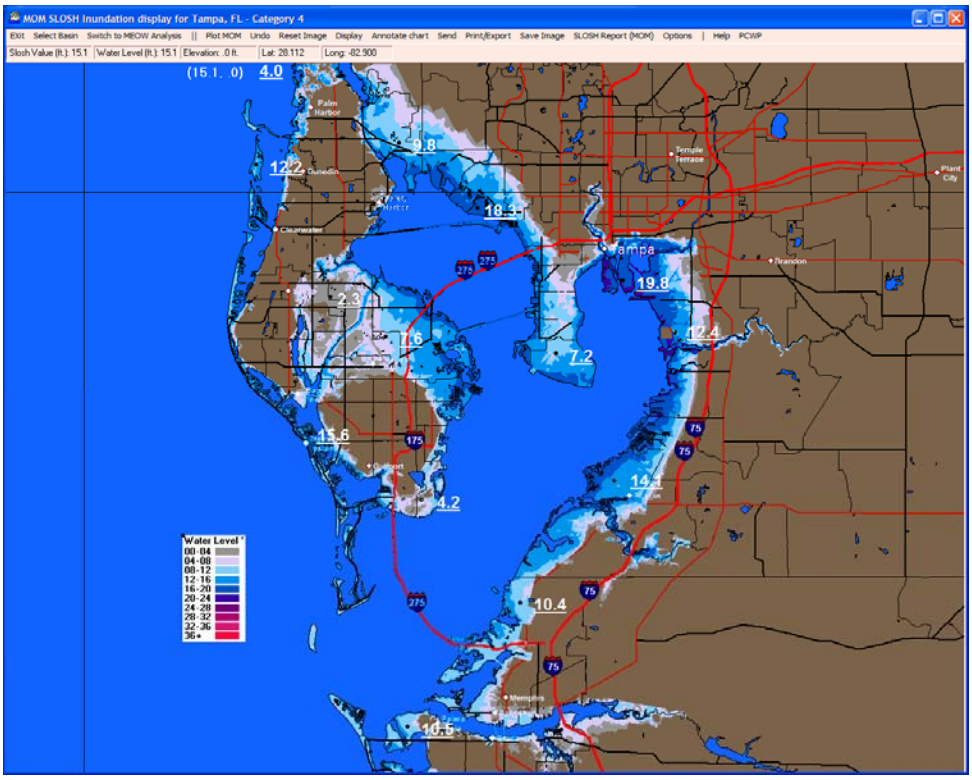
When starting the SLOSH View Module, the SLOSH basin analyzed when the program last closed is presented (the initial default location is Miami, FL). At this point, the user may "zoom" down to the desired level of detail to analyze. In the following example, we used Tampa, FL.



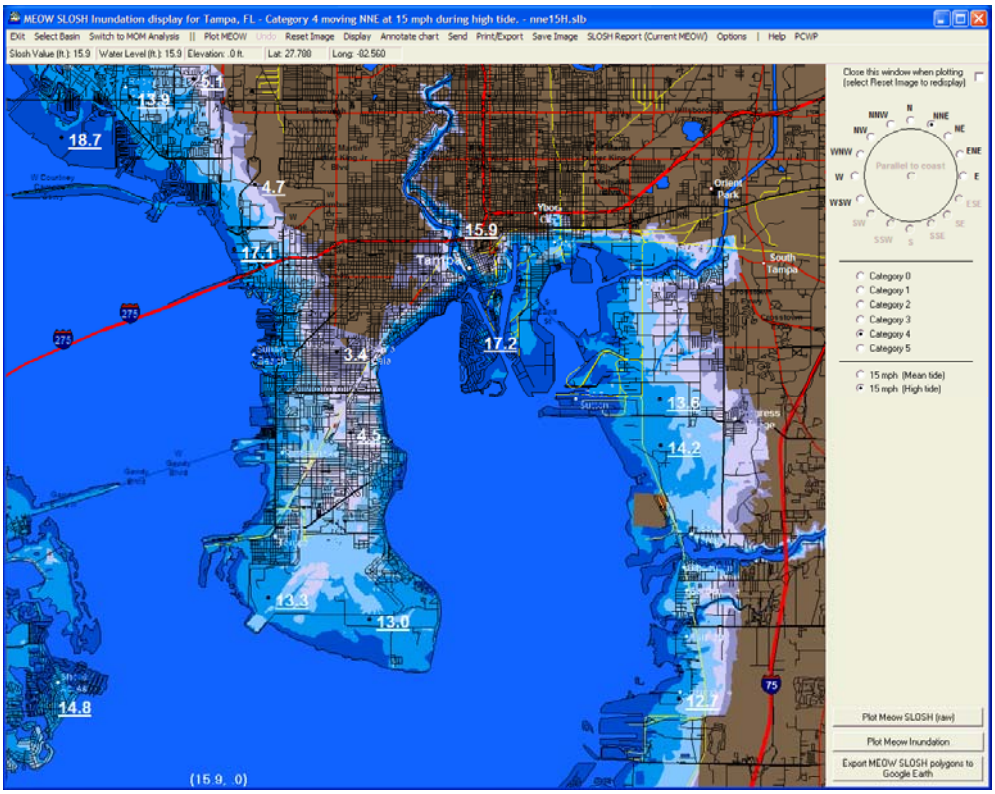
When the user selects the area of Tampa Bay, they do a MOM SLOSH analysis which shows the raw SLOSH values.



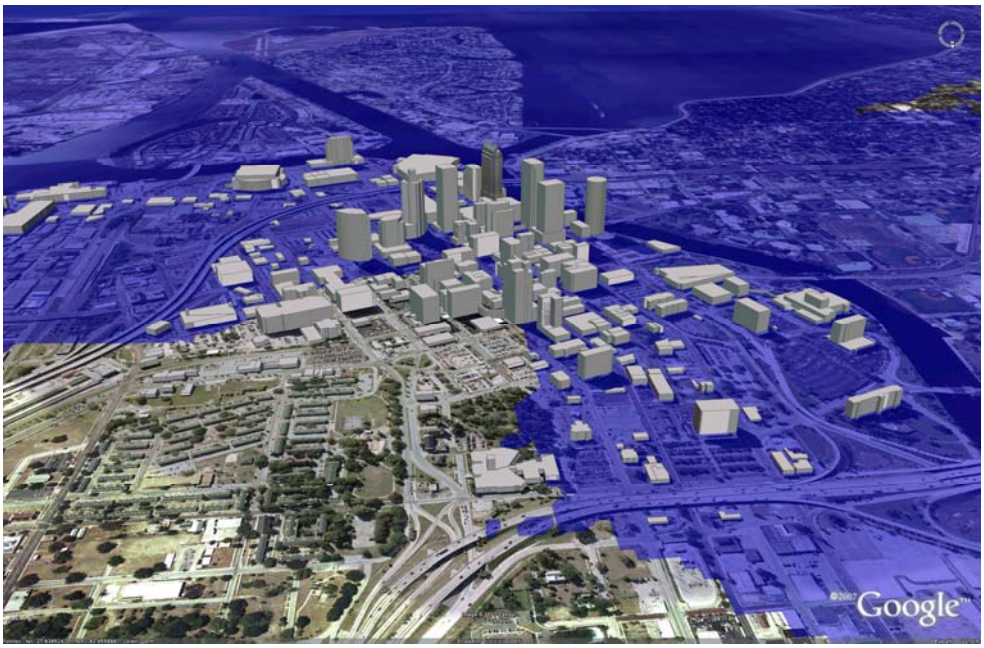
Or, they may do a MOM inundation analysis for the same area which takes into account the land elevation.



The user zooms down some more to the City of Tampa and now does a MEOW inundation analysis for a Cat 4 storm moving NNE at 15 MPH during high tide.

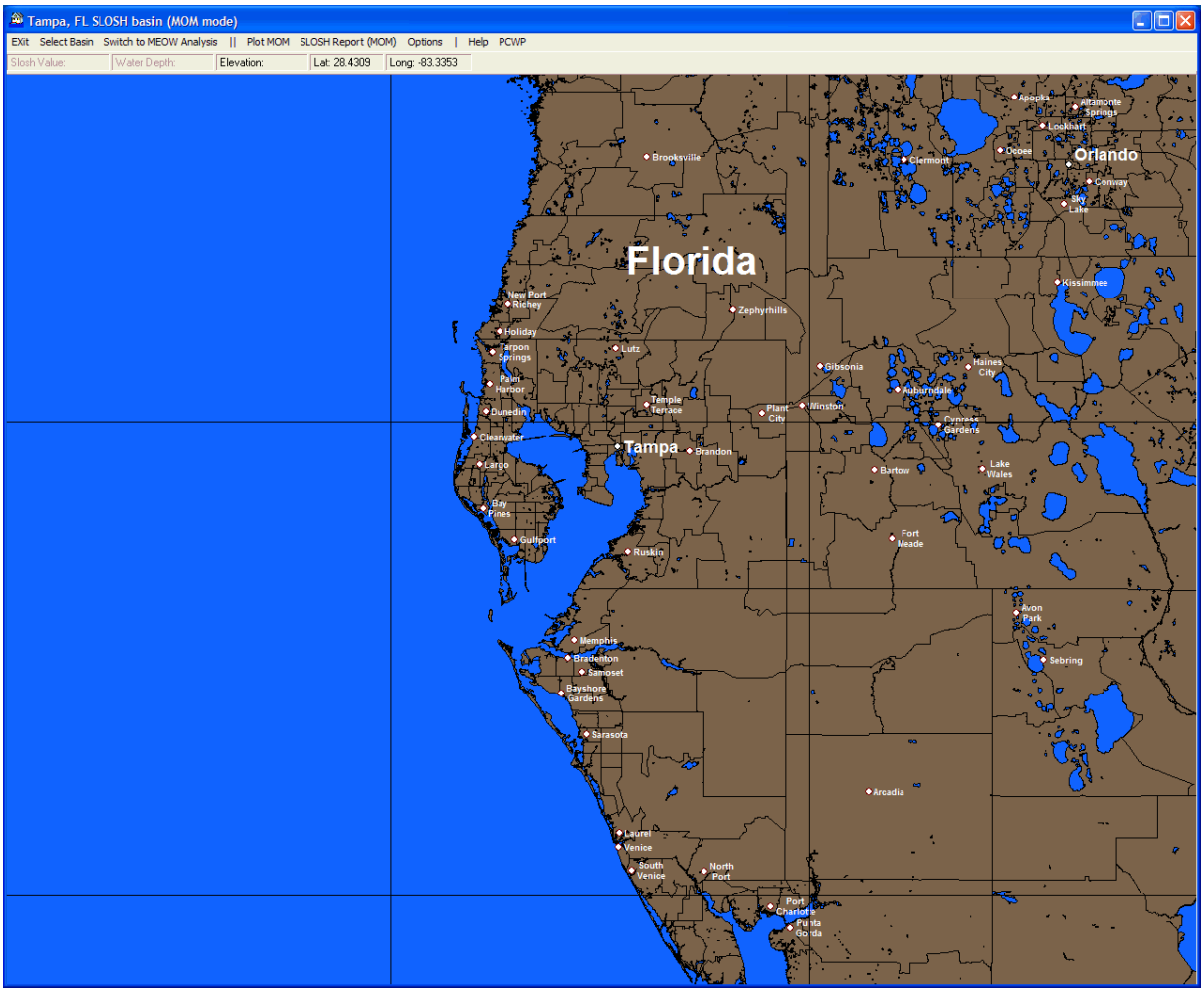


Finally, the user exports the Cat 4 MEOW polygons to Google Earth to view the data in 3D using the GE interface.



Obviously, a certain amount of care must be taken when zooming down to very small (street level) maps. The SLOSH analysis and USGS data is not exact enough to narrow flooding areas down to individual streets.

SLOSHView Main Chart Select Display (MOM Mode)



When starting the SLOSHView Module, the program starts in SLOSH MOM mode and the SLOSH basin analyzed, when the program last closed, is presented (the initial default location is Miami, FL). You may use the left mouse button to zoom into the area of interest (use the right button to zoom out). When the desired map area is displayed, there are several menu options available. They include:

Exit - Exits the SLOSHView program

Select Basin – This option allows the user to select the SLOSH basin to examine. All of the available SLOSH basins are displayed, as well as the option to select the closest one to the currently displayed geographical area.

Switch to MEOW Analysis – This option allows the user to switch from MOM mode into MEOW mode.

Plot MOM

SLOSH (Raw) - Plots the raw SLOSH polygons for a certain category of storm without taking into account land elevation.

SLOSH (Inundation) – Plots the SLOSH inundation level (above ground level) for a certain category of storm, taking into account the elevation of the land

Export SLOSH polygons to Google Earth – Exports the raw SLOSH polygons to GE with associated slosh level data. This allows the user to view SLOSH information with Google Earth's terrain feature.

SLOSH Report (MOM) - Allows the user to generate MOM inundation reports for a location group.

Options

Font - Displays the font control screen, as shown on page 98.

SLOSH - Displays the SLOSH options screen, as shown on page **Error! Bookmark not defined.**.

Optimize for Google Earth – This option only applies to the export of graphics to GE. It removes all streets and labels, so that they do not interfere with the GE layers.

Mousepointer:

Show Picture Icon - Displays an icon of "flooding" home which changes appearance as the inundation value changes.

Show SLOSH value - Displays the "raw" SLOSH value for that location for the last basin analyzed.

Show Inundation value - If the Digital Elevation Model (DEM) data was installed, this will display the inundation value for that location.

Show Elevation value - If the Digital Elevation Model (DEM) data was installed, this will display the elevation in feet of the cursor position. The DEM data only covers the Atlantic and Gulf Coast of the US, PR and the USVI.

Show Latitude value - Displays the latitude of the cursor position.

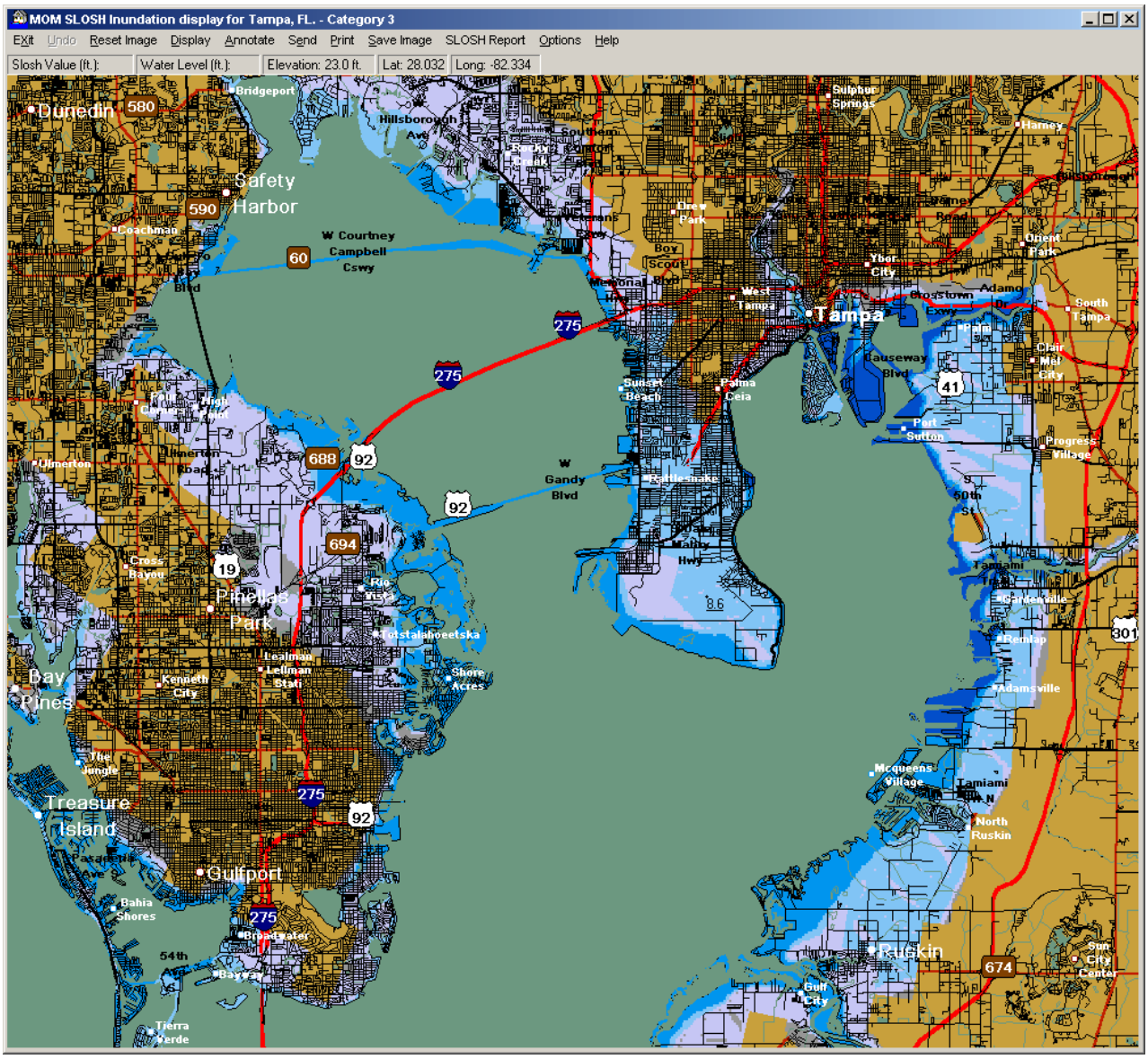
Show Longitude value - Displays the longitude of the cursor position.

Help - Displays help.

An additional set of options is available by right mouse clicking any area of the map image. See page Error! Bookmark not defined. **for more information.**

Street Atlas data is only available for the US Gulf and East Coastal States as well as PR and the USVI

SLOSHView Data Display (MOM Mode)



While viewing SLOSH plots on a chart, there are several menu options available. They include:

Exit - Exits system.

Select Basin – This option allows the user to select a different SLOSH basin. All of the available SLOSH basins are displayed, as well as the option to select the closest one to the currently displayed geographical area.

Switch to MEOW Analysis – This option allows the user to switch from MOM mode into MEOW mode.

Plot MOM

SLOSH (Raw) - Plots the raw SLOSH polygons for a certain category of storm without taking into account land elevation.

SLOSH (Inundation) – Plots the SLOSH inundation level (above ground level) for a certain category of storm, taking into account the elevation of the land

Export SLOSH polygons to Google Earth – Exports the raw SLOSH polygons to GE with associated slosh level data. This allows the user to view SLOSH information with Google Earth's terrain feature.

Undo - Removes last or all changes.

Reset Image - This option resets the image and returns the user to the chart selection mode.

Display

MOM Legend - Displays the color-coded SLOSH legend. The colors corresponding to SLOSH values are set in SLOSH Options.

Locations - Displays all of the locations in the selected location group. The text properties used for displaying the location names are set in Font Options.

County Names - Displays the county names for the US coastal states

Annotate - This option allows the user to add comments, etc. directly onto the tracking chart image. When Annotate is selected, whenever the mouse button is pressed, the user notes entry screen, shown above, is displayed. The text that is entered will appear at the position where the mouse button was pressed. The size, color, and other font properties used for the user notes are set in Font Options. Selecting End Annotate will return the mouse button function to its original function.

Send - Allows user to send image or PDF file via Email, as shown on page 178.

Print/Export - Allows the user to print or export the image using the print options shown on page 192.

Save Image - Allows the user to save the image using the options, as shown on page 194.

SLOSH REPORT (MOM) – Allows the user to generate inundation reports for a SLOSH location group.

Options:

Font - Displays the font control screen, as shown on page 98.

SLOSH - Displays the SLOSH options screen, as shown on page **Error! Bookmark not defined.**.

Optimize for Google Earth – This option only applies to the export of graphics to GE. It removes all streets and labels, so that they do not interfere with the GE layers.

Mousepointer:

Show Picture Icon - Displays an icon of "flooding" home which changes appearance as the inundation value changes.

Show SLOSH value - Displays the "raw" SLOSH value for that location for the last basin analyzed.

Show Inundation value - If the Digital Elevation Model (DEM) data was installed, this will display the inundation value for that location.

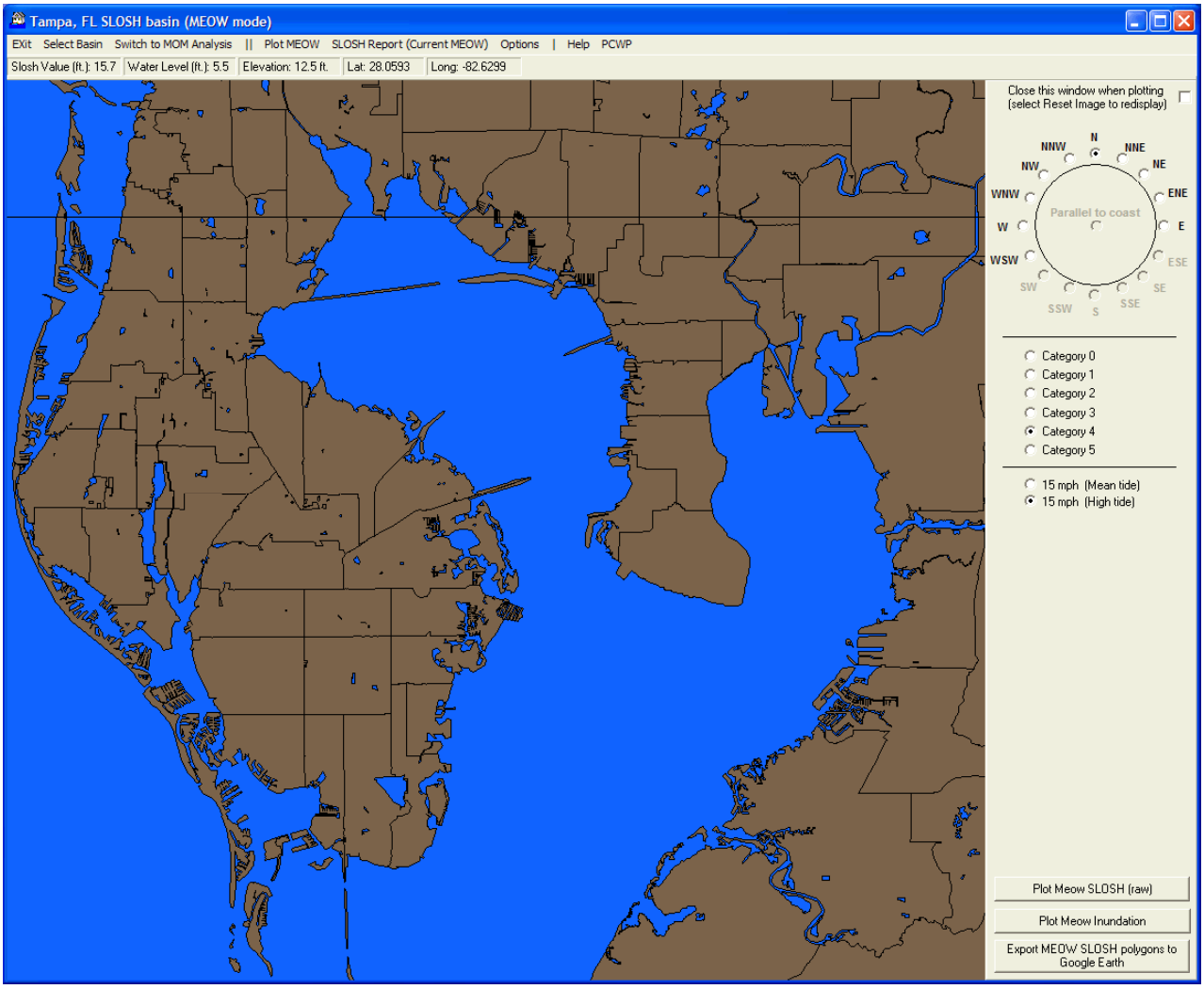
Show Elevation value - If the Digital Elevation Model (DEM) data was installed, this will display the elevation in feet of the cursor position. The DEM data only covers the Atlantic and Gulf Coast of the US, PR and the USVI.

Show Latitude value - Displays the latitude of the cursor position.

Show Longitude value - Displays the longitude of the cursor position.

Help - Displays help.

SLOSHView Main Chart Select Display (MEOW Mode)



While switching to **SLOSH MEOM mode**, the options available are a little different because the user has to specify the storm motion and strength, so the system can display the correct MEOW. You may use the left mouse button to zoom into the area of interest (use the right button to zoom out). When the desired map area is displayed, there are several menu options available. They include:

Exit - Exits the SLOSHView program.

Select Basin – This option allows the user to select the SLOSH basin to examine. All of the available SLOSH basins are displayed, as well as the option to select the closest one to the currently displayed geographical area.

Switch to MOM Analysis – This option allows the user to switch from MEOW mode into MOM mode.

Plot MEOW

SLOSH (Raw) - Plots the raw SLOSH MEOW polygons for a certain category of storm, without taking into account land elevation.

SLOSH (Inundation) – Plots the SLOSH MEOW inundation level (above ground level) for a certain category of storm, taking into account the elevation of the land.

Export SLOSH polygons to Google Earth – Exports the raw SLOSH MEOW polygons to GE with associated slosh level data. This allows the user to view SLOSH information with Google Earth's terrain feature.

SLOSH Report (Current MEOW) - Allows the user to generate MEOW inundation reports for a location group. It will only report on locations that are in the current selected basin.

Options

Font - Displays the font control screen, as shown on page 98.

SLOSH - Displays the SLOSH options screen, as shown on page **Error! Bookmark not defined.**.

Optimize for Google Earth – This option only applies to the export of graphics to GE. It removes all streets and labels so that they do not interfere with the GE layers.

Mousepointer:

Show Picture Icon - Displays an icon of "flooding" home which changes appearance as the inundation value changes.

Show SLOSH value - Displays the "raw" SLOSH value for that location for the last basin analyzed.

Show Inundation value - If the Digital Elevation Model (DEM) data was installed, this will display the inundation value for that location.

Show Elevation value - If the Digital Elevation Model (DEM) data was installed, this will display the elevation in feet of the cursor position. The DEM data only covers the Atlantic and Gulf Coast of the US, PR and the USVI.

Show Latitude value - Displays the latitude of the cursor position.

Show Longitude value - Displays the longitude of the cursor position.

Help - Displays help.

In MEOW mode, an additional set of options is shown on the right side of the screen. They include:

Storm Motion Compass – Select the direction in which the storm situation being analyzed is moving. i.e. A storm moving towards the NNE should have NNE selected.

Storm Category – Select the category of the storm situation being analyzed.

Storm Speed/Tide – Select the storm's forward motion and tide (if available).

Command buttons available:

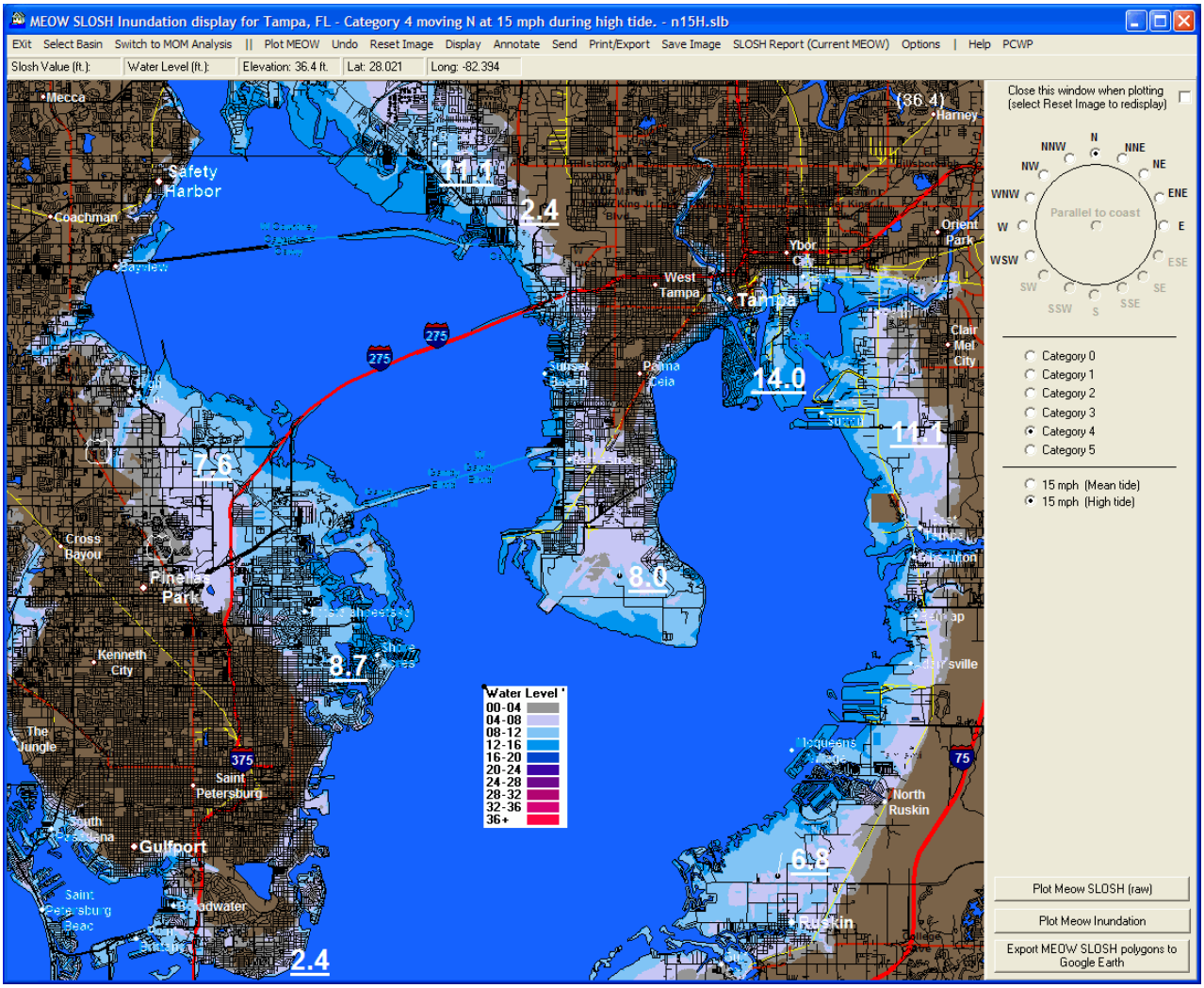
Plot MEOW SLOSH (raw) – This matches the Plot MEOW menu command and is put on the right side panel for convenience.

Plot MEOW Inundation – This matches the Plot MEOW menu command and is put on the right side panel for convenience.

Export MEOW SLOSH Polygons to Google Earth - This matches the Plot MEOW menu command and is put on the right side panel for convenience.

Finally, by checking the "Close this Window" option in the upper right hand portion of the panel, the right side panel will be hidden when doing the analysis. Selecting RESET Image will unhide the panel, so that the user can select different analysis options.

SLOSHView Data Display (MEOW mode)



While viewing SLOSH MEOW plots on a chart, there are several menu options available. They include:

Exit - Exits system.

Select Basin – This option allows the user to select a different SLOSH basin. All of the available SLOSH basins are displayed, as well as the option to select the closest one to the currently displayed geographical area.

Switch to MEOW Analysis – This option allows the user to switch from MEOW mode into MOM mode.

Plot MEOW

SLOSH (Raw) - Plots the raw SLOSH MEOW polygons for a certain category of storm, without taking into account land elevation.

SLOSH (Inundation) – Plots the SLOSH MEOW inundation level (above ground level) for a certain category of storm, taking into account the elevation of the land.

Export SLOSH polygons to Google Earth – Exports the raw SLOSH MEOW polygons to GE with associated slosh level data. This allows the user to view SLOSH information with Google Earth's terrain feature.

Undo – Removes the last or all changes.

Reset Image - This option resets the image and returns the user to the chart selection mode.

Display

MEOW Legend - Displays the color-coded SLOSH legend. The colors corresponding to SLOSH values are set in SLOSH Options.

Locations - Displays all of the locations in the selected location group. The text properties used for displaying the location names are set in Font Options.

County Names - Displays the county names for the US coastal states.

Annotate - This option allows the user to add comments, etc. directly onto the tracking chart image. When Annotate is selected, any time the mouse button is pressed, the user notes entry screen, shown above, is displayed. The text that is entered will appear at the position where the mouse button was pressed. The size, color and other font properties used for the user notes are set in Font Options. Selecting End Annotate will return the mouse button function to its original function.

Send - Allows user to send image or PDF file via Email, as shown on page 178.

Print/Export - Allows the user to print or export the image using the print options shown on page 192.

Save Image - Allows the user to save the image, using the options as shown on page 194.

SLOSH Report (Current MEOW) - Allows the user to generate MEOW inundation reports for a location group. It will only report on locations that are in the current selected basin.

Options:

Font - Displays the font control screen, as shown on page 98.

SLOSH - Displays the SLOSH options screen, as shown on page **Error! Bookmark not defined.**.

Optimize for Google Earth – This option only applies to the export of graphics to GE. It removes all streets and labels, so that they do not interfere with the GE layers.

Mousepointer:

Show Picture Icon - Displays an icon of "flooding" home, which changes appearance as the inundation value changes.

Show SLOSH value - Displays the "raw" SLOSH value for that location for the last basin analyzed.

Show Inundation value - If the Digital Elevation Model (DEM) data was installed, this will display the inundation value for that location.

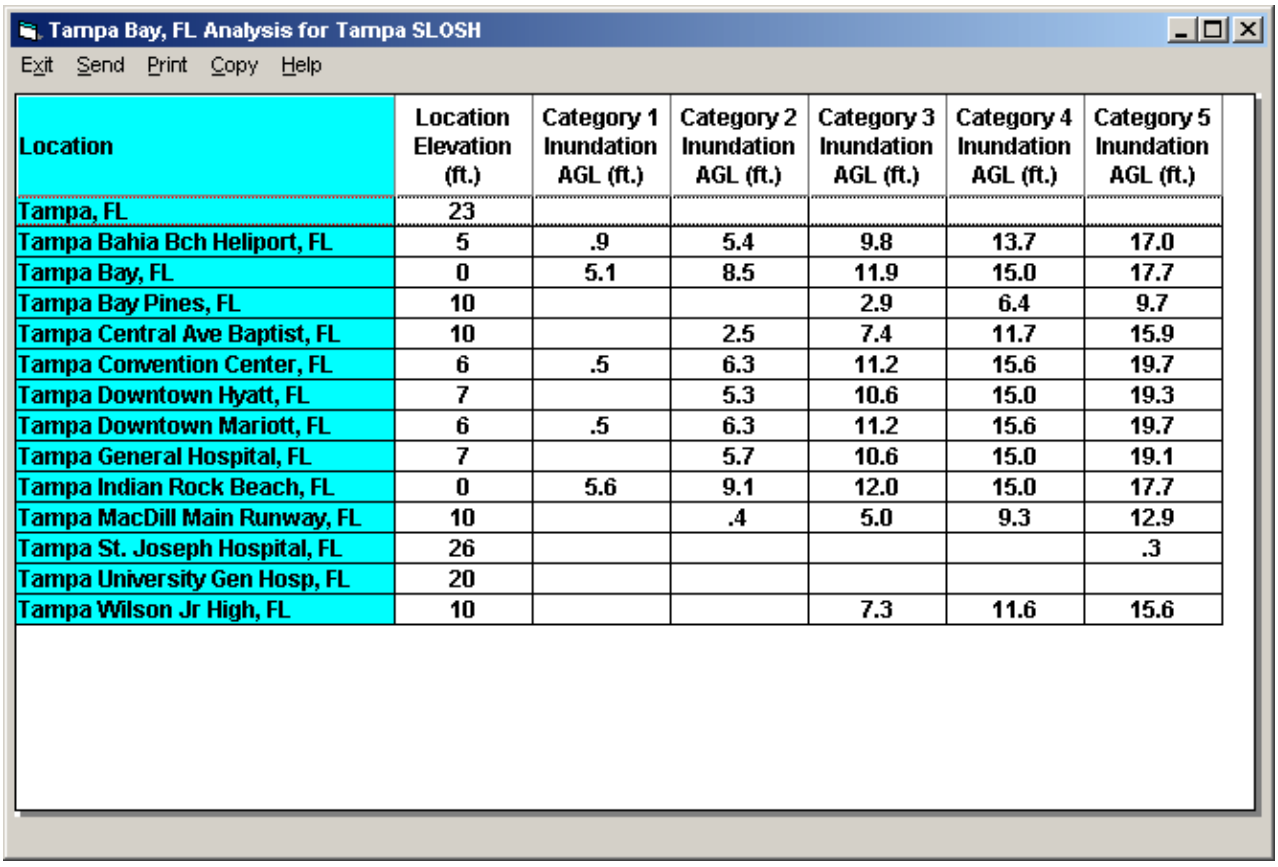
Show Elevation value - If the Digital Elevation Model (DEM) data was installed, this will display the elevation in feet of the cursor position. The DEM data only covers the Atlantic and Gulf Coast of the US, PR and the USVI.

Show Latitude value - Displays the latitude of the cursor position.

Show Longitude value - Displays the longitude of the cursor position.

Help - Displays help.

SLOSH REPORT



Location	Location Elevation (ft.)	Category 1 Inundation AGL (ft.)	Category 2 Inundation AGL (ft.)	Category 3 Inundation AGL (ft.)	Category 4 Inundation AGL (ft.)	Category 5 Inundation AGL (ft.)
Tampa, FL	23					
Tampa Bahia Bch Heliport, FL	5	.9	5.4	9.8	13.7	17.0
Tampa Bay, FL	0	5.1	8.5	11.9	15.0	17.7
Tampa Bay Pines, FL	10			2.9	6.4	9.7
Tampa Central Ave Baptist, FL	10		2.5	7.4	11.7	15.9
Tampa Convention Center, FL	6	.5	6.3	11.2	15.6	19.7
Tampa Downtown Hyatt, FL	7		5.3	10.6	15.0	19.3
Tampa Downtown Mariott, FL	6	.5	6.3	11.2	15.6	19.7
Tampa General Hospital, FL	7		5.7	10.6	15.0	19.1
Tampa Indian Rock Beach, FL	0	5.6	9.1	12.0	15.0	17.7
Tampa MacDill Main Runway, FL	10		.4	5.0	9.3	12.9
Tampa St. Joseph Hospital, FL	26					.3
Tampa University Gen Hosp, FL	20					
Tampa Wilson Jr High, FL	10			7.3	11.6	15.6

The SLOSH REPORT show the potential inundation levels (ft ASL) for specific locations. It can be run in both MOM and MEOW mode. The only difference is that, while in MEOW mode, the report will only include locations "within" the currently selected basin's area. The report above is an example of a report for some location in the Tampa Bay area.

In order to create a Slosh Report, the user must do one of the following:.

1 From System Setup, location maintenance, define a SLOSH location group associating it to a SLOSH basin. See page 28.
2 Associate specific locations to this location group. See page 29.
3 If desired, specify the elevation for the locations added to the location group. See page 19.
4 From SloshView, select Slosh Report.

OR

From SloshView, select SLOSH report for any location group. Make sure that the location in this group has been accurately defined for location and elevation.

In MOM mode, locations without designated SLOSH basins will be assigned one by the system based on distance (i.e. the system will pick the closest one). Caution must be exercised when viewing the results of this data, as the SLOSH analysis errors increase as the locations distance from the SLOSH basin "center" increases.

Slosh / Inundation Options

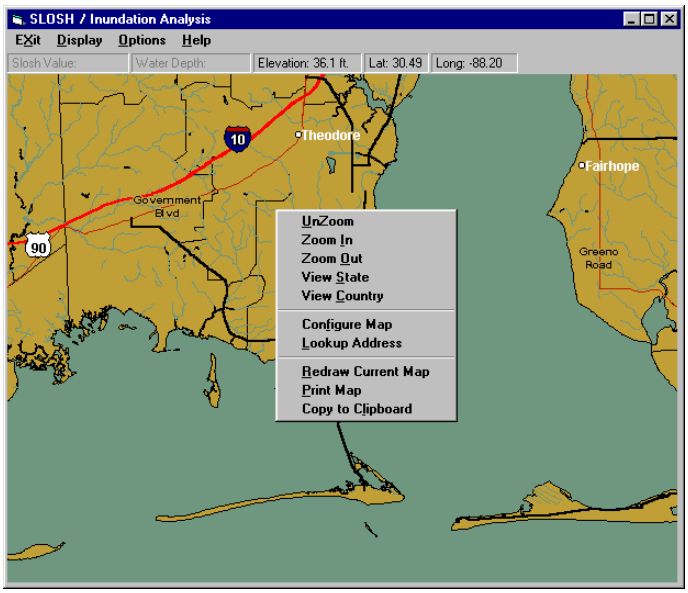
SLOSH Plot type - This allows the user to control the look of the SLOSH analysis. The 3 options are solid, web, and pattern. Experiment with each type with varying sized maps to determine which one you prefer, but we suggest solid.

Inundation Plot type - This allows the user to control the look of the SLOSH Inundation analysis. The 2 options are solid and pattern. Experiment with each type with varying sized maps to determine which one you prefer, but we suggest solid

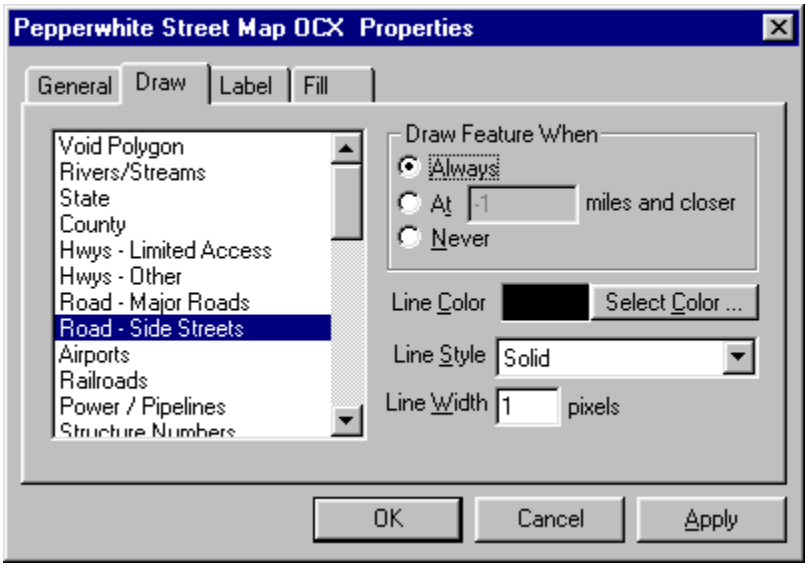
MOM/MEOW plotting levels and colors - This allows the user to control the SLOSH values and associated colors used when doing a SLOSH analysis (regular or inundation). The values are in feet and any color can be selected.

Right Click Commands

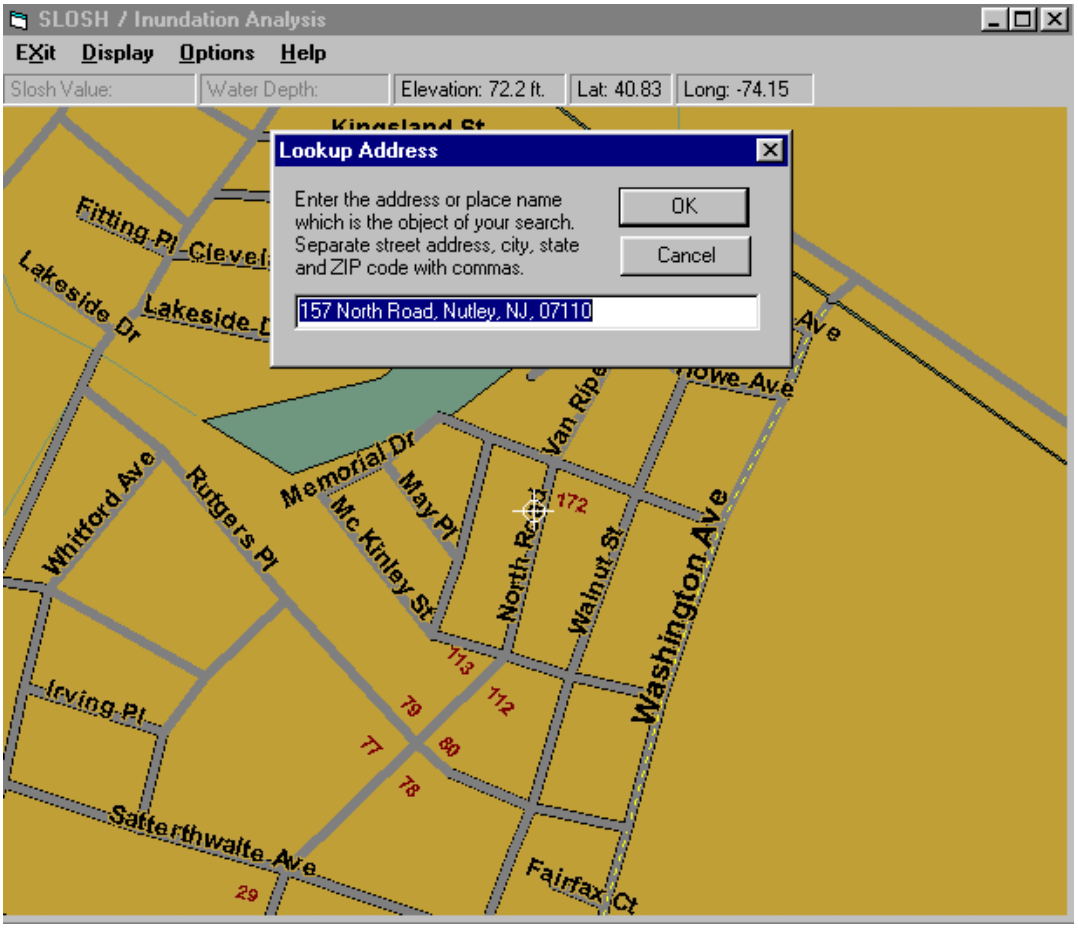
The SLOSHView system uses a 3rd party software product called Pepperwhite Streets (tm). When you right click on the screen, you are presented with several options (shown below). Most of them are self-explanatory, except for Configure Map and Look Up Address.



When you select **Configure Map,** you are presented with a separate screen that has many options related to what will be drawn on the current map. Review them and experiment to understand their function. Modifications done to these setting are only valid for the current session.



When you select **Look up Address**, you are presented with an entry screen which allows you to enter a complete address. If this address is found in the database, that map area will be shown. An example of a data entry line and the map it created is shown below.



Street Atlas data is only available for the US Gulf and East Coastal States, as well as PR and the USVI.

SLOSHView Considerations

Performance:

Due to the large number of calculations required to do a SLOSHView analysis, performance may be a consideration. An inundation analysis performed on a 1024 X 768 chart will result in 786,432 separate inundation calculation iterations. If you want to speed up the analysis, there are 4 ways to improve performance:

1. Get the fastest processor you can ☺
2. Run your system in true color mode (24+ bit).
3. Smaller maps. A 640 X 480 map will do 60% fewer calculations than a 1024x768 one.
4. Run the system local and not through a network server.

DETAILS:

While it is tempting to "zoom" down to a very detailed "street" level of chart, it is dangerous to go too far. Neither the SLOSH data nor the elevation data is resolved to a sufficient level of detail to do these street level comparisons. Some of this is dependent on how far the area being analyzed is from the SLOSH basin center, in addition to the topographical nature of the area.

H*Wind Display

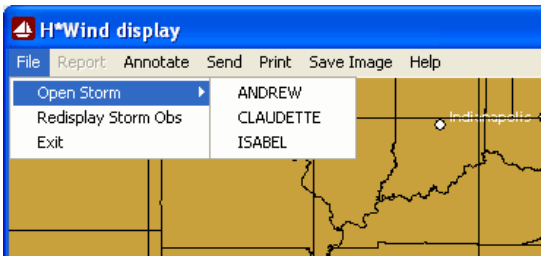
The NOAA's Atlantic Oceanographic and Meteorological Laboratory (AOML), Hurricane Research Division operates the H*Wind Project. The purpose is to devise computer programs to integrate wind data in and around a hurricane from a variety of platforms into a single wind analysis reduced to the surface. See http://www.aoml.noaa.gov/hrd/Storm_pages/surf_background.html for more information.

H*Wind display provides an interactive way to view this data as well as do some impact analysis.

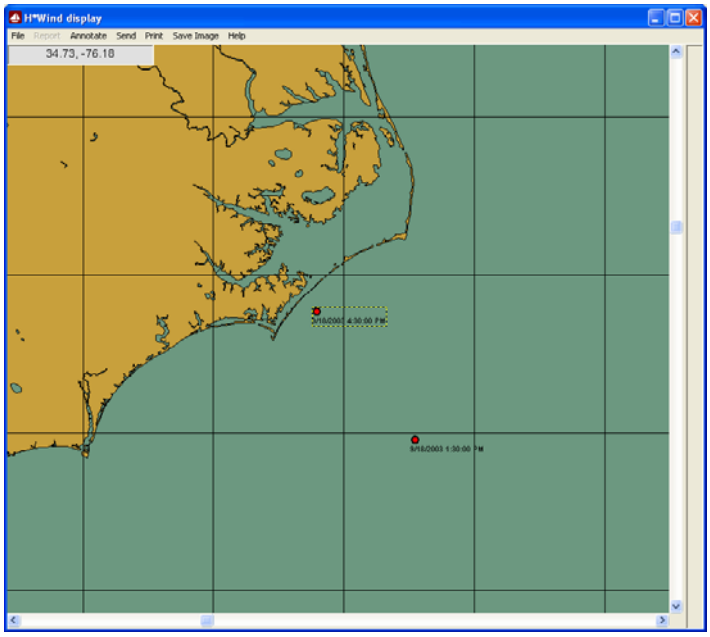
Important: H*Wind data is imported into the system via Hurrtrak Online. The user must manually request the latest H*Wind data via the HURRTRAK ONLINE Tab in the HURRTRAK system.

Availability: Because this is not NHC operational data but rather experimental data put out by AOML, data availability is highly variable and at the discretion of AOML. We will make data available as it becomes available to the "public" as the AOML web site.

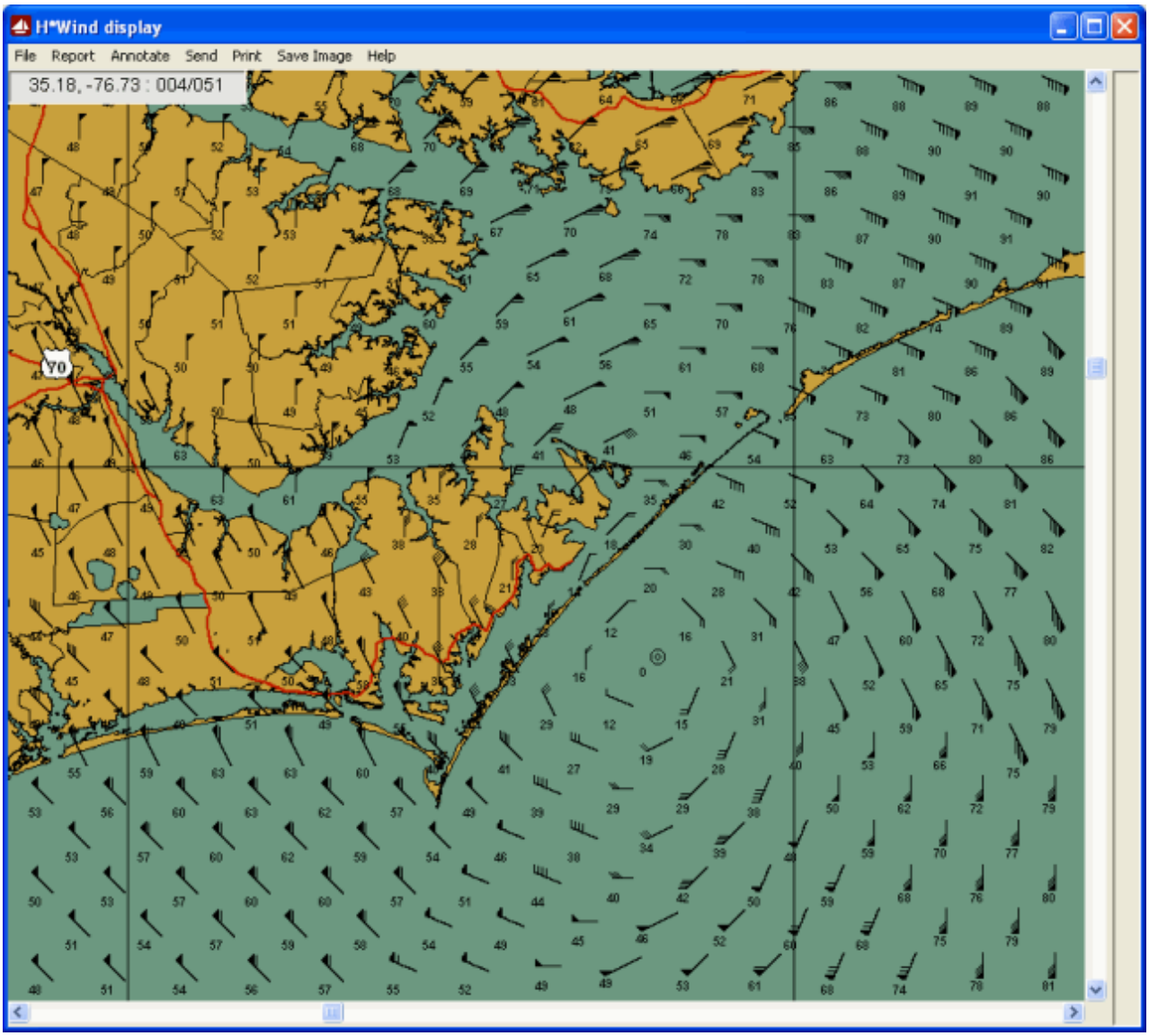
When the H*Wind display system is started, if data exists in the H*Wind database, the user will have the option of opening a "storm".



When a storm (Isabel) is opened, the user is presented with the following screen.



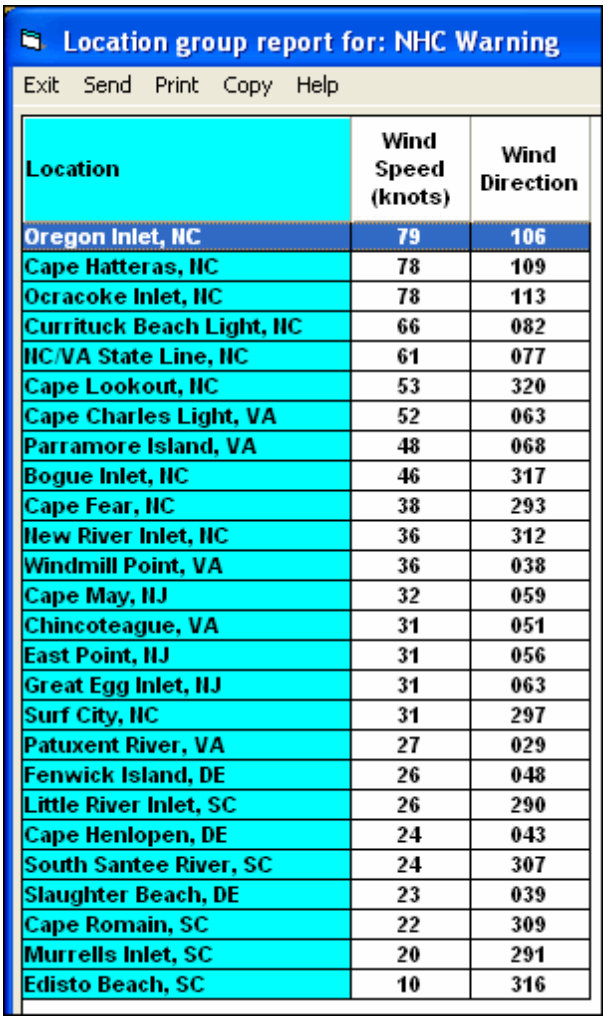
The user then can select a specific observation by left clicking on the observation point (storm center). After selecting, the following screen is presented showing some of this storm's H*Wind observation data. Point wind direction (arrows) and speed (in knots) are displayed. Zooming in or out will display more or less information (see Pan and Zoom mapping for more information). In addition mouse cursor position information of latitude, longitude, wind speed and direction is shown in the information box in the upper left corner.



File - This allows the user to open a new storm, redisplay observations for the current storm or Exit the system.
Report – This display the H*Wind impact report which details "current" wind conditions for a location group, counties or zip codes. See sample on next page.
Annotate – This allows the user to enter comment in a text box.
Send – This allows the user to send this image via email.
Print/Export – This allows the user to print this image or export to Google Earth.
Save Image – This allows the user to save this image to a graphic or PDF file.
Help – Displays help information about H*Wind

H*Wind Report

The H*Wind impact report details "current" wind conditions for a location group, counties or zip codes.



Location	Wind Speed (knots)	Wind Direction
Oregon Inlet, NC	79	106
Cape Hatteras, NC	78	109
Ocracoke Inlet, NC	78	113
Currituck Beach Light, NC	66	082
NC/VA State Line, NC	61	077
Cape Lookout, NC	53	320
Cape Charles Light, VA	52	063
Parramore Island, VA	48	068
Bogue Inlet, NC	46	317
Cape Fear, NC	38	293
New River Inlet, NC	36	312
Windmill Point, VA	36	038
Cape May, NJ	32	059
Chincoteague, VA	31	051
East Point, NJ	31	056
Great Egg Inlet, NJ	31	063
Surf City, NC	31	297
Patuxent River, VA	27	029
Fenwick Island, DE	26	048
Little River Inlet, SC	26	290
Cape Henlopen, DE	24	043
South Santee River, SC	24	307
Slaughter Beach, DE	23	039
Cape Romain, SC	22	309
Murrells Inlet, SC	20	291
Edisto Beach, SC	10	316

While viewing the report, there are several menu options available. They include:

Exit - Closes this window

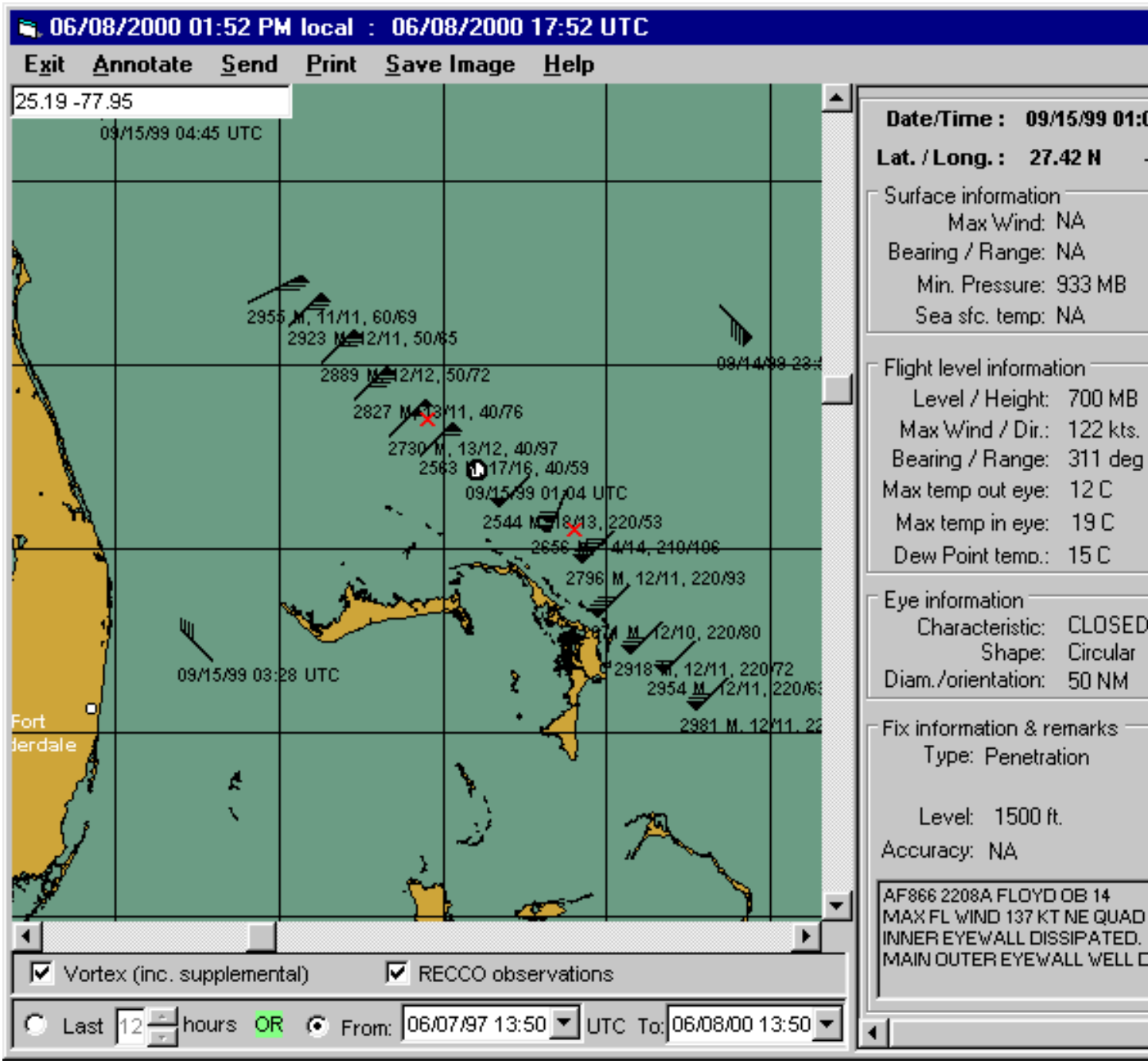
Send - Sends this report via email

Print - Prints this report

Copy - Copies the report content to the clipboard

Help - Displays this help

Hurricane Reconnaissance



When the hurricane reconnaissance program is started, the user is presented with the above screen. At this point the user can select the mapping area they are interested in (see page 278 for more information) and then perform the program functions.

The reconnaissance data is downloaded via the HURRTRAK ONLINE service. In addition to manually requesting the recon data, by setting the HURRTRAK ONLINE Automation option, you can force the system to check for new data on a regular basis.

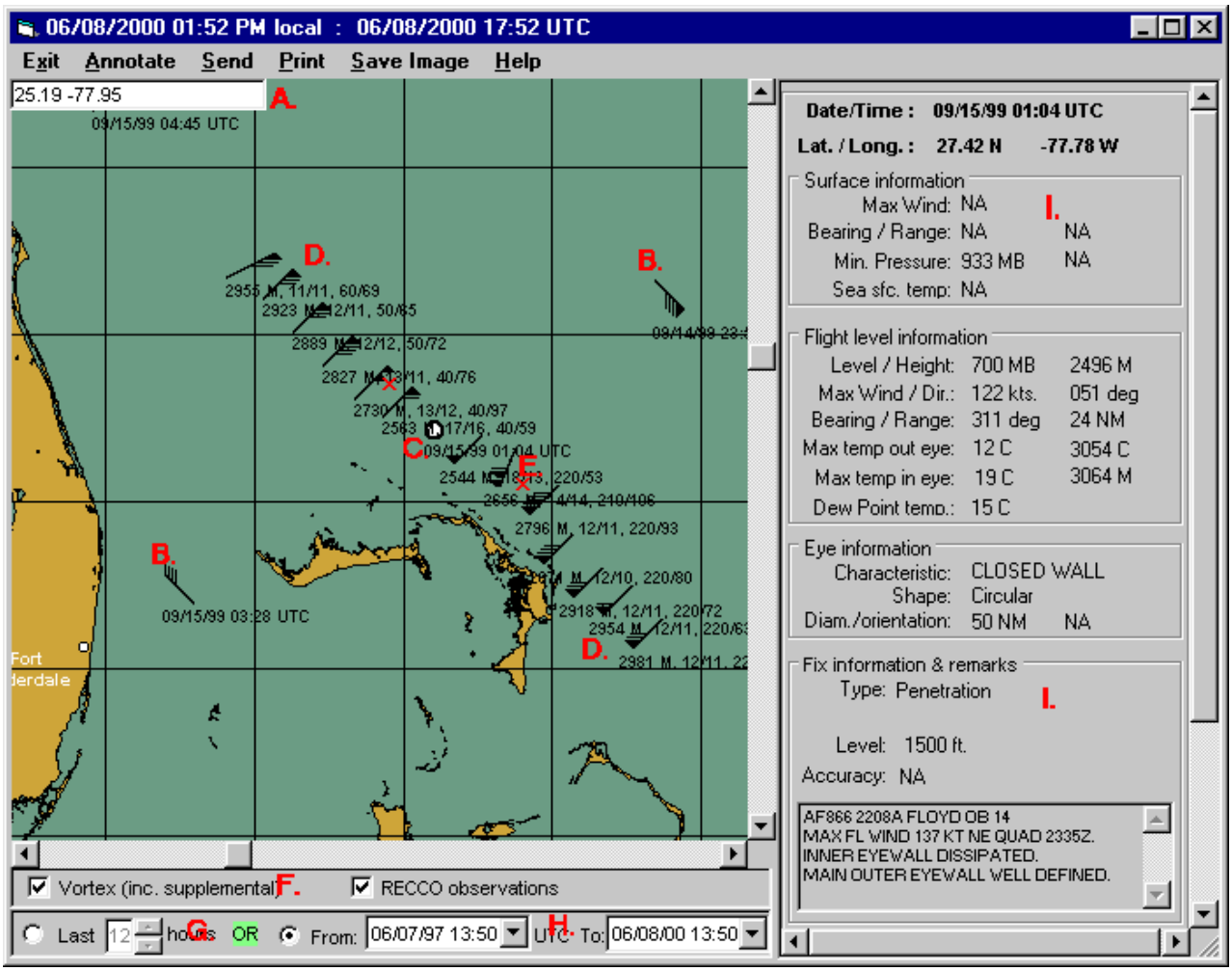
There are 3 types of recon reports that the program displays.

Vortex - Summarizes hurricane data, to include the location of the eye (the "fix"), the minimum central pressure, maximum winds on the way into the eye, temperature inside and outside of the eye, etc.

Vortex Supplemental - Profiles the flight-level data during one pass through the eye. Each line of weather data is spaced 15 nautical miles (nm) apart, usually from 105 nm out, into the center, then out the other side for another 105 nm.

RECCO - A line of weather data observed by the weather officer, usually every 30 minutes enroute, and at the turnpoints in the storm. Typically, only the first eight groups are encoded, but on rare occasions clouds, radar and surface winds are included.

An explanation of the key items shown in the recon program is shown below.



A. This displays the latitude and longitude of the cursor position.

B. These isolated reports represent non-vortex type recon reports. The wind speed and direction of the report is indicated and the remaining items are decoded on the right information panel.

C. The circle represents the storm's vortex center (eye in well defined storms). By passing the mouse over this area, the report is decoded on the right information panel. The supplemental vortex data is displayed and removed by left clicking on this point. Note: The supplemental reports typically "come in" about 30 minutes after the vortex report.

D. These observations indicate the wind speed and direction of the supplement vortex pass observations. By passing the mouse over these observations the information for the entire pass is shown on the right information panel.

E. The red X identifies the location of the maximum surface wind encountered on the inbound and outbound portions of the vortex pass. The time, speed and wind direction at these points are displayed on the right information panel when the user points the cursor at a supplemental report.

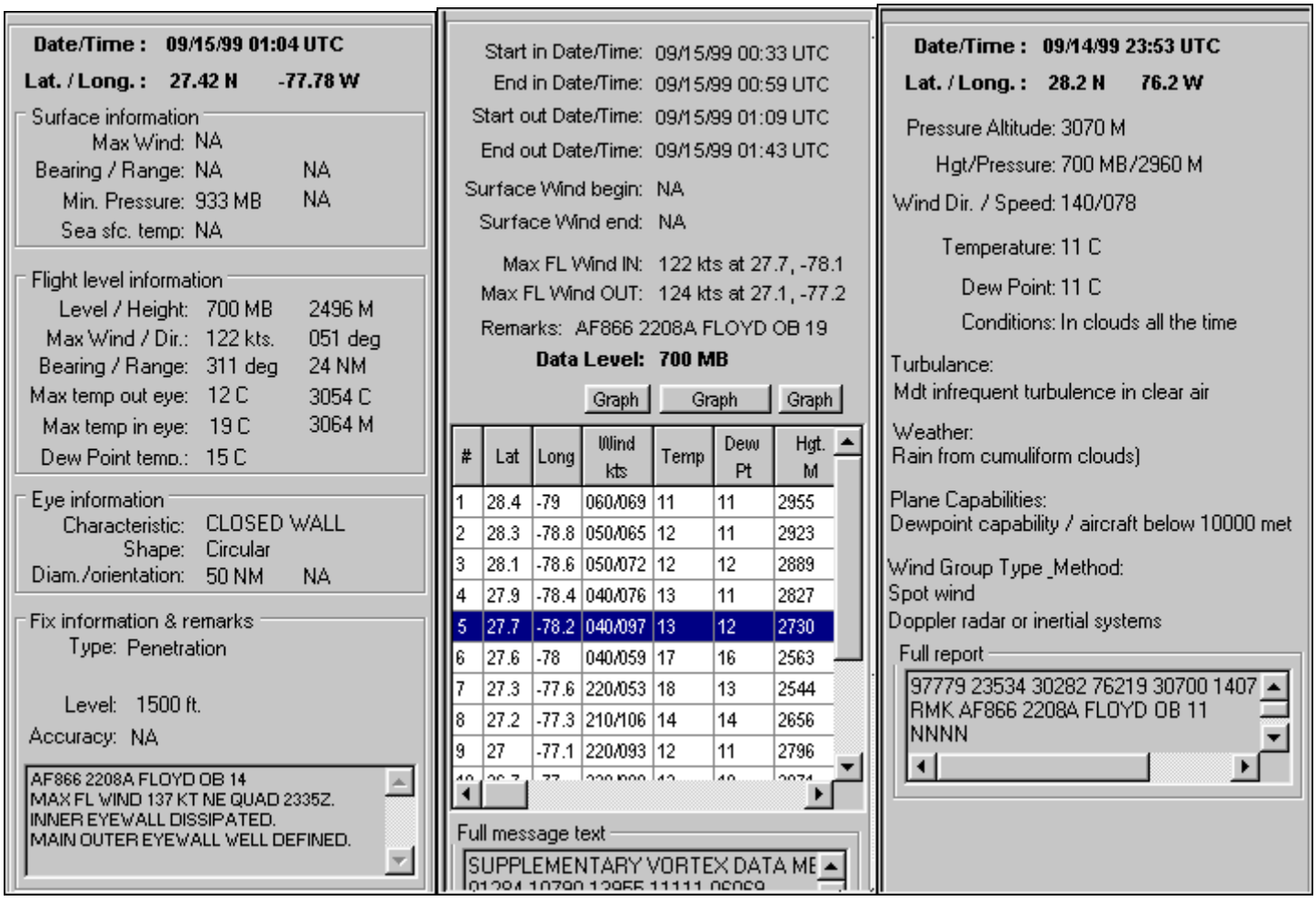
F. This option allows the user to identify what types of recon reports to show. If Vortex is selected, both the vortex and the vortex supplemental reports are shown.. If RECCO is selected then the non-vortex recon reports are shown. Both can be selected. Note: The supplemental reports are displayed and removed by left clicking on the vortex report.

G. This option instructs the system to display only the recon reports received in the last x hours... where x is selected by the user.

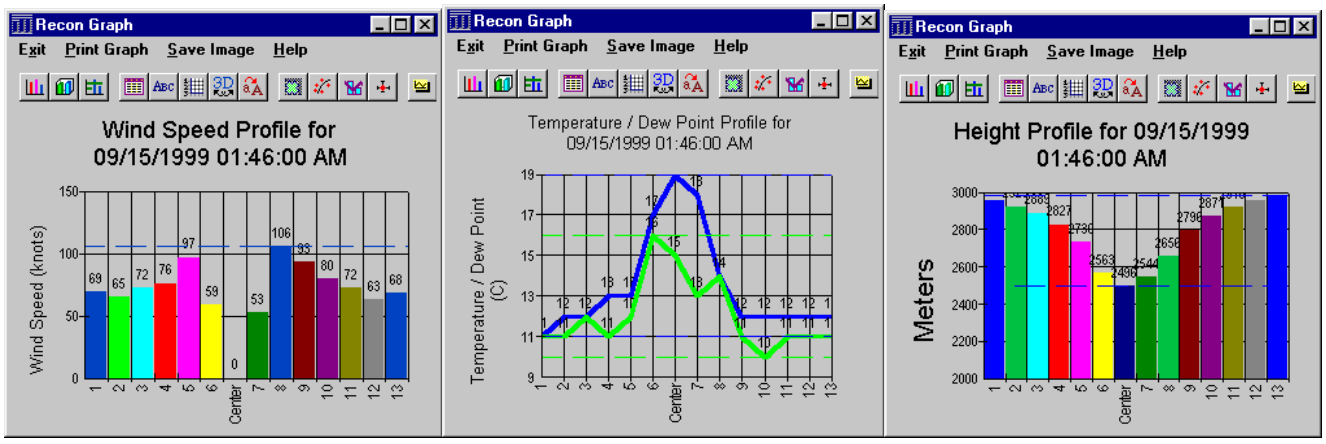
H. The user can also select "older" recon reports by selecting a from and to date range. All reports that fall inside this range will be displayed.

I. The right information panel displays the decoded information for vortex, supplemental vortex and non-vortex recco reports. The decoded information displayed varies based on which report is being pointed to with the mouse. An example of each is shown below.

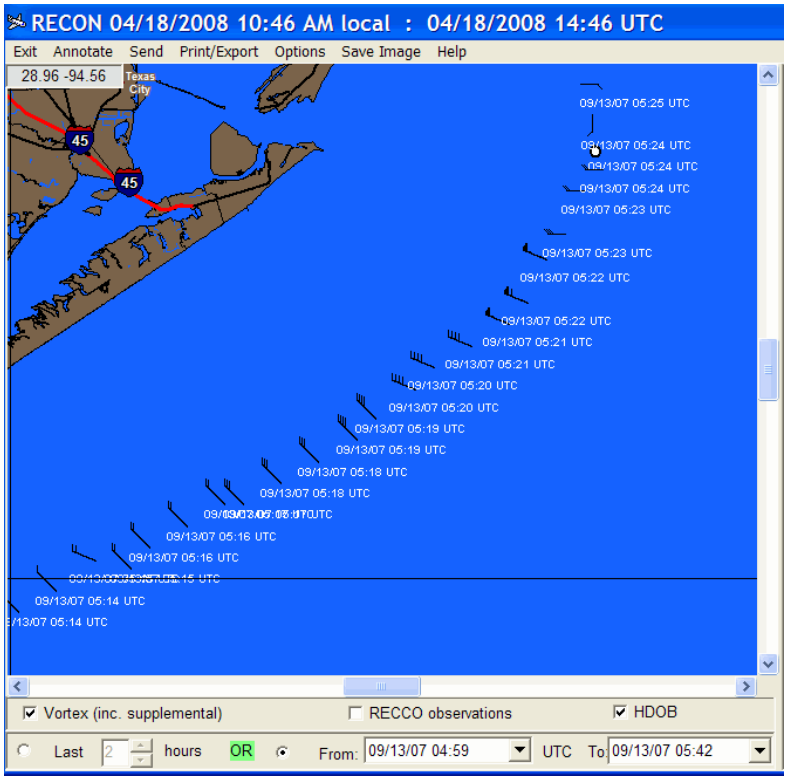
Vortex **Vortex Supplemental** **RECCO**



Additional supplemental report capabilities include the ability to plot the graph of wind speed, temperature/pressure and pressure/height of the pass through the storm. See the examples below.



In 2007, NHC started to supply high definition pass data instead of the vortex supplemental data. As the name suggest it is a observations taken from the RECON aircraft every 30 seconds as they make a pass into the center of the storm. This can be viewed by selecting the HDOB checkbox. You may have to zoom in very close to see the observation detail.



While using the reconnaissance program, the following options are available.

Exit - Closes this window

Send - Sends the current image to an Email recipient. For more information see page 178.

Annotate - The annotate feature here is identical to the one described earlier.

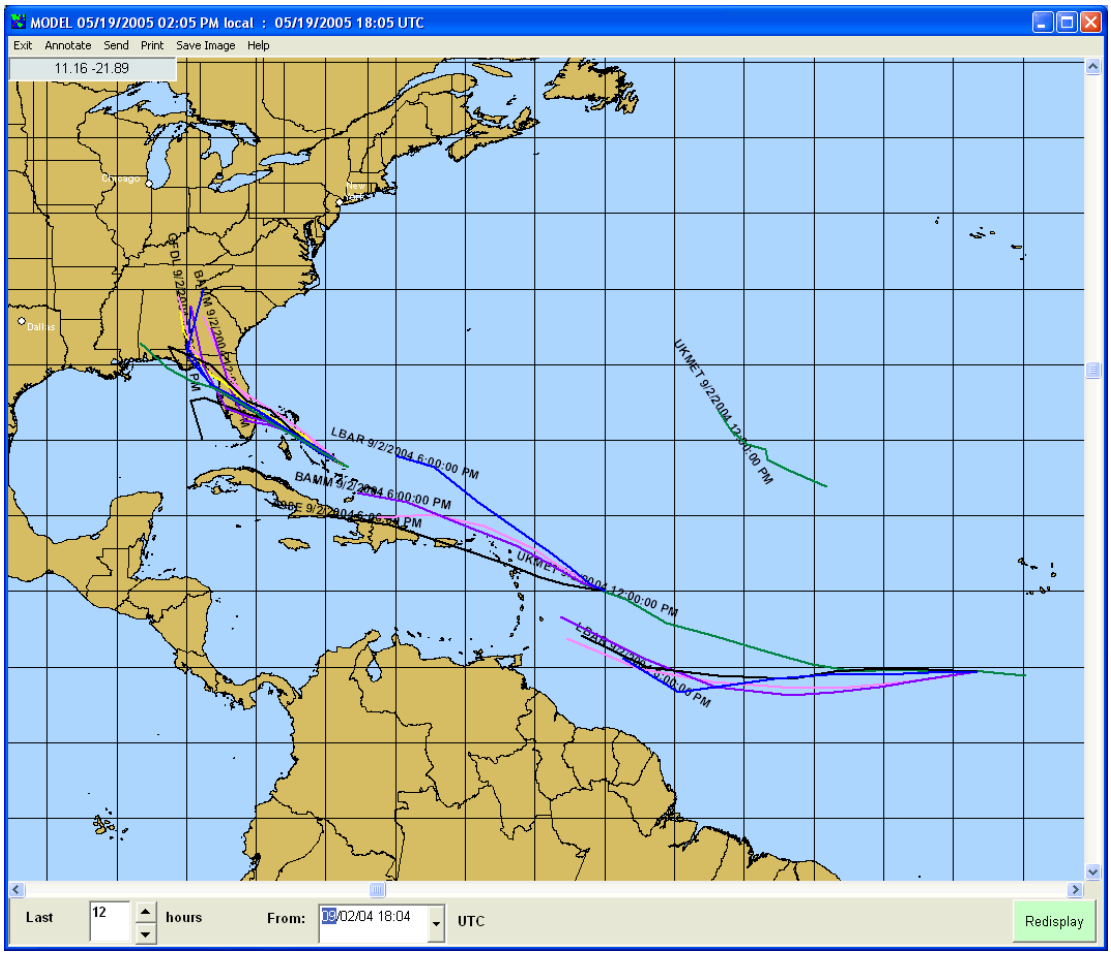
Print/Export - The print options here is the same as those described earlier **except** that the fax print option is not available. Export to Google Earth is available.

Save Image - The save image options here are the same as those described earlier..

Help - Displays help information

Finally if you want more information on hurricane reconnaissance, check www.hurricanehunters.com

Hurricane Model Plot



When the hurricane model plot program is started, the user is presented with the above screen. At this point the user can select the mapping area they are interested in (see page 278 for more information) and then perform the program functions.

The model data is downloaded via the HURRTRAK ONLINE service. In addition to manually requesting the model data, by setting the HURRTRAK ONLINE Automation option, you can force the system to check for new data on a regular basis.

Currently the forecast models that are available include the A90E, A98E, BAMD, BAMM, LBAR, GFDL and UKMET.

There are 2 program controls which determine which model forecast will plot.

- **The Date selection box which contains a date and time field.**
- **A duration (hours) field box which instructs the system how far to look back from the date selection.**

i.e. The example above is showing all model forecast that were issued within 12 hours of 9/20/2004 at 18:04 UTC.

While using the model plot program, the following options are available.

Exit - Closes this window

Send - Sends the current image to an Email recipient. For more information see page 178.

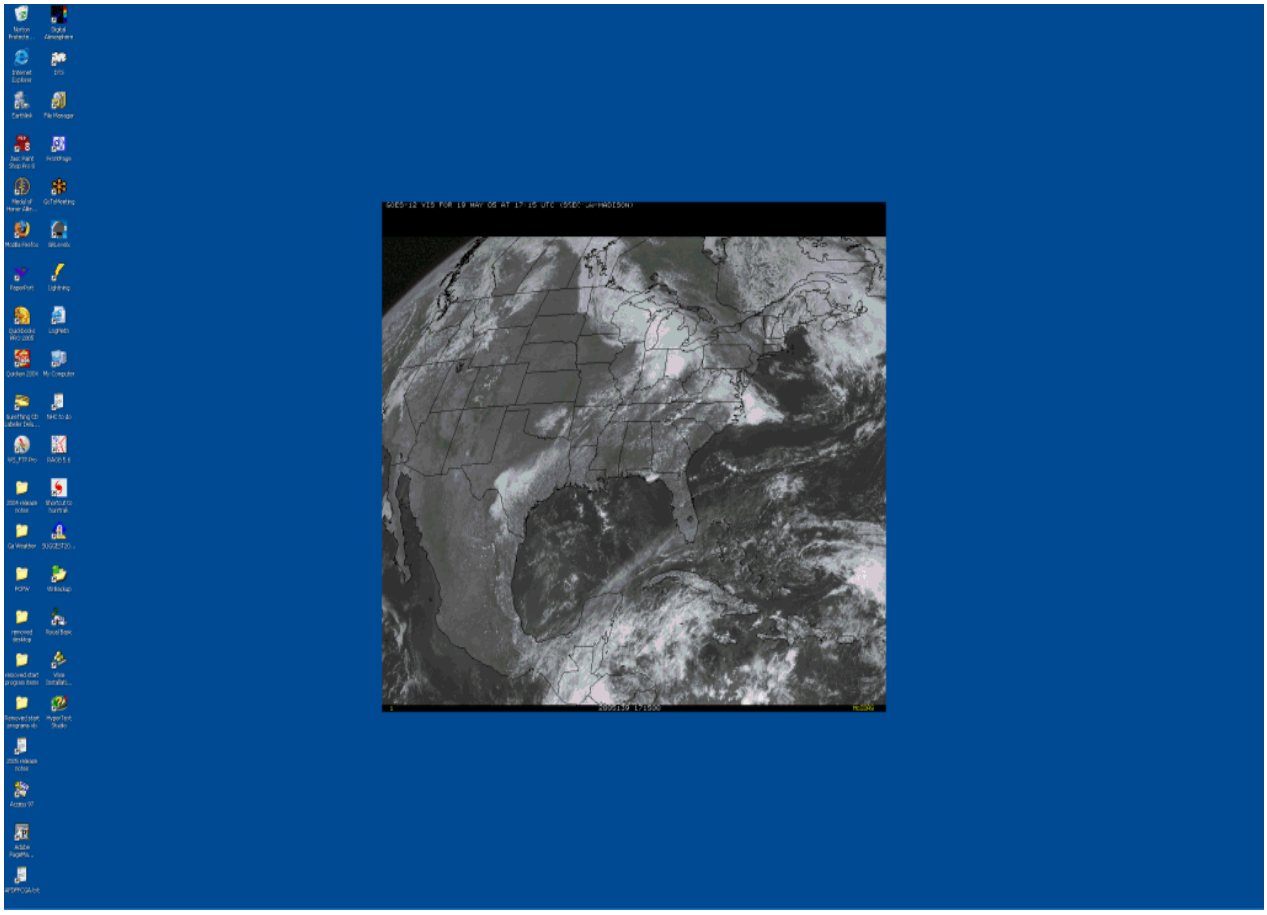
Annotate - The annotate feature here is identical to the one described earlier.

Print/Export - The print options here is the same as those described earlier **except** that the fax print option is not available. Export to Google Earth is available.

Save Image - The save image options here are the same as those described earlier..

Help - Displays help information

Desktop Satellite



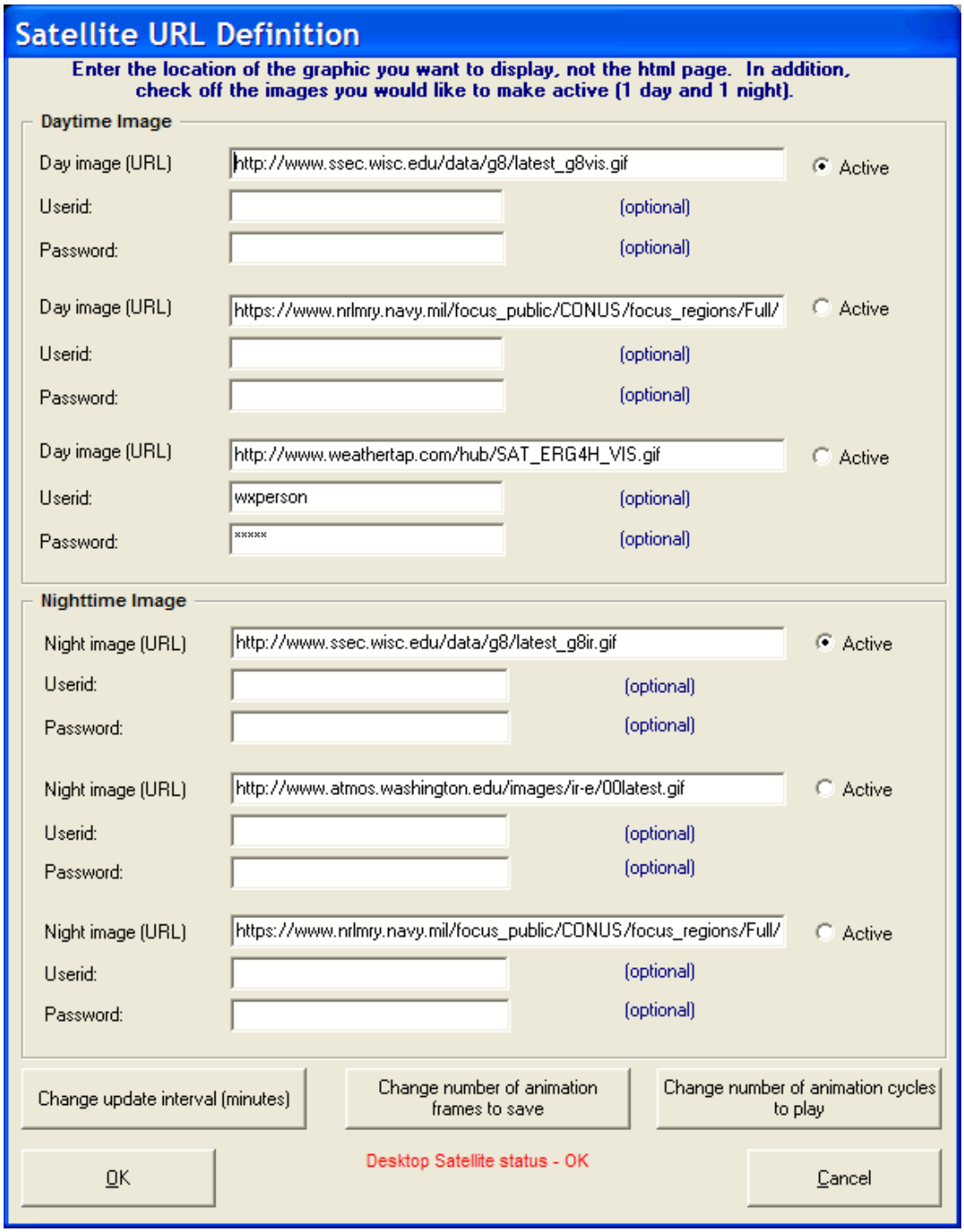
The desktop satellite program is a handy little program that runs in the system tray which will maintain a current satellite image on your Windows Desktop. It will automatically change from daytime to nighttime (IR) satellites and visa-versa at sunset and sunrise.

To allow this to function you need…

1. **An always on internet connection**
2. **To select the "Start DesktopSatellite on Windows startup" checkbox on the General User options**

The options for this tray program (right click on cloud icon in tray) are

Options – This option presents the user with the following window allowing them to change the 6 (3 day, 3 night) default satellite images as well as the update interval, number of frames to save for animation and the number of animation cycles to play. Only one URL of each (day/night) can be selected.



The userid and password fields can be used if your favorite satellite image is password protected.

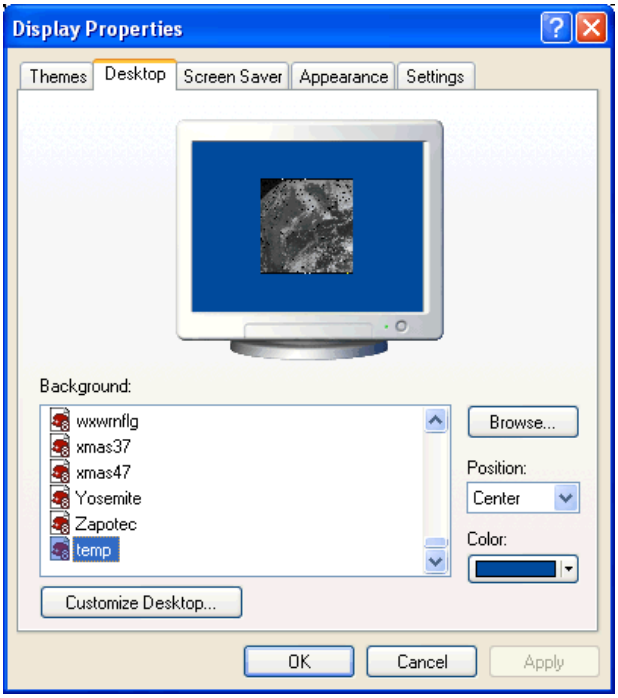
Force Update – This option will force the program to update the current satellite image rather than waiting the typical 20 minutes.

Animate saved images – This option will animate the saved images on the desktop. When animating all desktop icons are hidden to allow for a faster animation sequence.

Quit – Closes the tray options

End Desktop Satellite – Closes the program

Finally we suggest you setup your windows display options to CENTER the image on your desktop rather than stretch or tile.



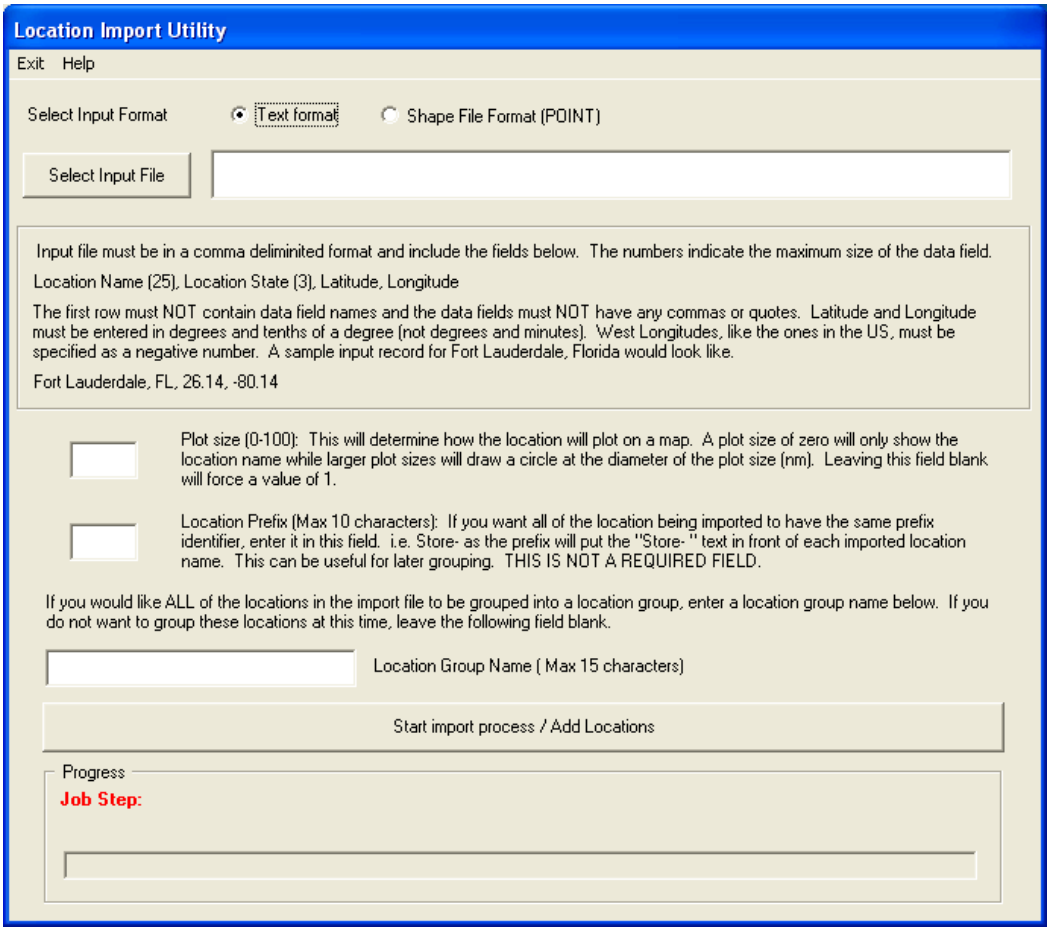
Location Import Utility

The Hurrtrak Advanced system includes a location / location group import utility. This program allows you to import your organization's locations, as well as the ability to automatically associate them to a location group.

The utility is accessible from the START PROGRAMS menu – Hurrtrak Advanced program group. Select "Run Location Import Utility". It is best if the main tracking program is not running at the time this utility is used.

When executed, the user is presented with the a screen, whereby they must select the input import file, as well as the location group the imported locations will be grouped under, if any. There are 2 choices of input files: Comma-delimited or an ESRI Point type shape file.

If selecting a comma-delimited input file, the following screen and field are presented.



The input file must be comma-delimited and is required to be in the following format:

Location Name (25), Location State (3), Latitude, Longitude.

The first row must NOT contain data field names and the data fields must NOT have any commas or quotes. Latitude and Longitude must be entered in degrees and tenths of a

degree (not degrees and minutes). West longitudes, like the ones in the US, must be specified as a negative number. A sample input record for Fort Lauderdale, Florida with a plot size of 5 miles would look like the following:

Fort Lauderdale, FL, 26.14, -80.14

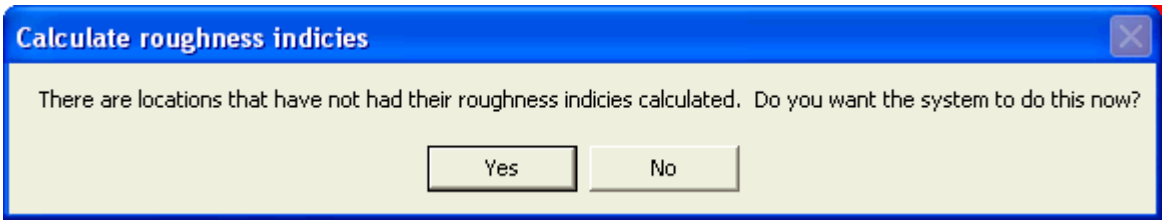
Plot Size: If you want to set the plot size to a certain value for all locations, specify it in the plot size field. It will determine how the location will appear on a map. A plot size of zero will only show the location name, while larger plot sizes will draw a circle at the diameter of the plot size (nm). Leaving this field blank will force a value of 1.

Location Prefix: If you want all of the location being imported to have the same prefix identifier, enter it in this field. For example, the prefix "Store-" will put this in front of the name of each imported location name. i.e. a location name 1234 will be loaded as "Store-1234" . This is not a required field.

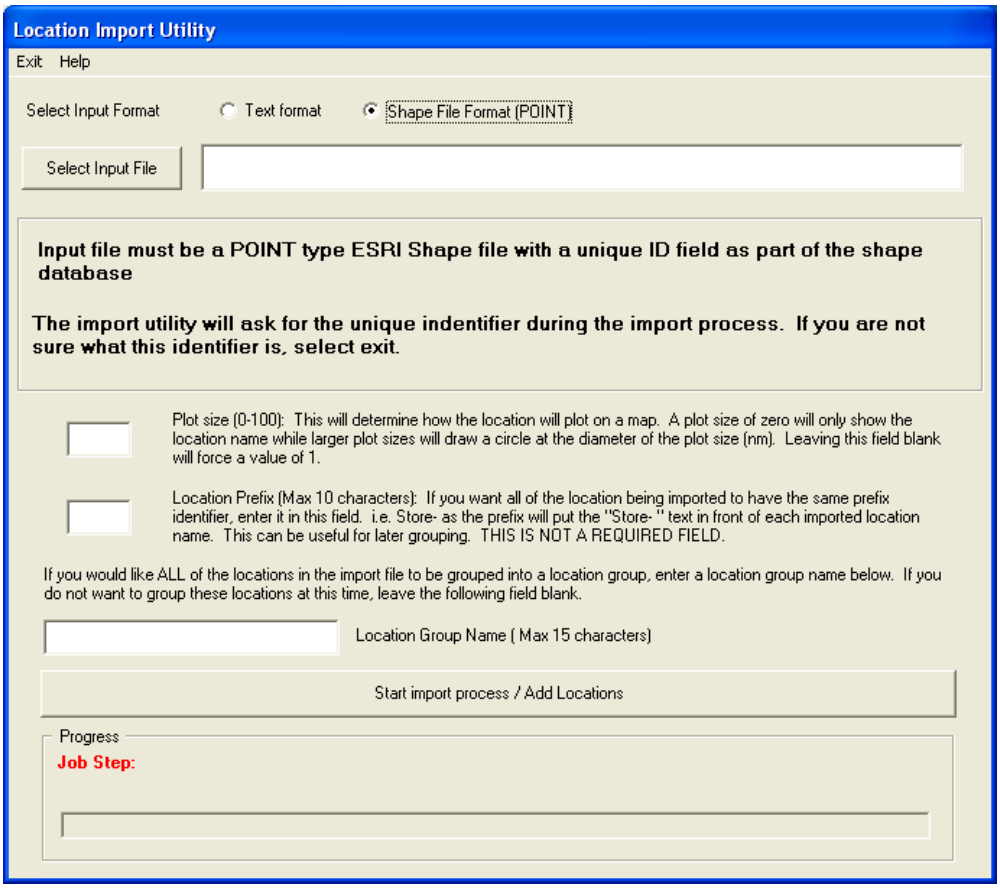
If you would like ALL of the locations in the import file to be grouped into a location group, enter a location group name in that field. If you do not want to group these locations at this time, leave the location group name field blank.

When the import is complete, the following verification message is displayed:

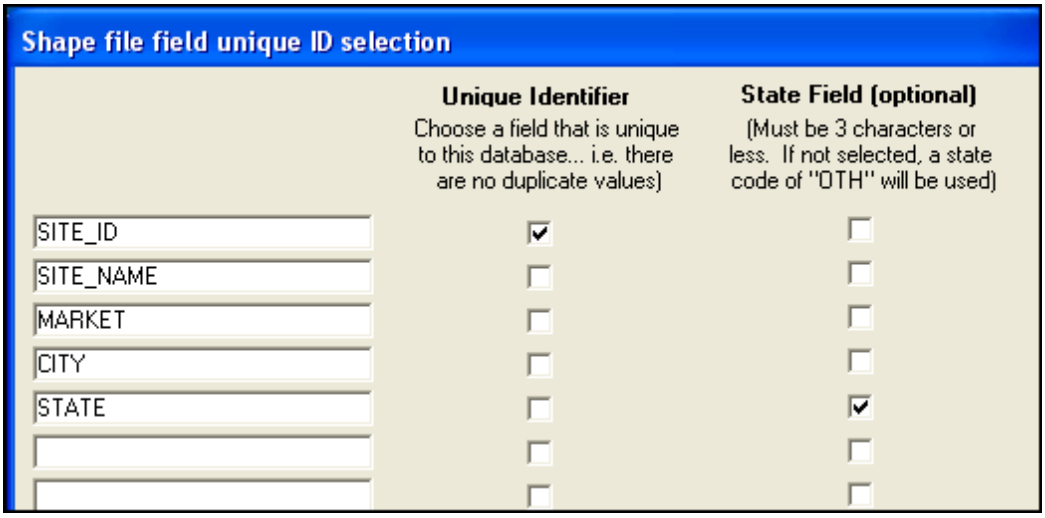
When the import is complete, the system will suggest that the locations roughness indexes be calculated. You do not have to do this now. However, the next time you go into System Maintenance – Location Maintenance, the system may ask if you want to calculate roughness indices for these locations. Reply Yes to do so. It may take a few minutes to complete.



If the input data file is a point type Shape file, the following screen is presented:

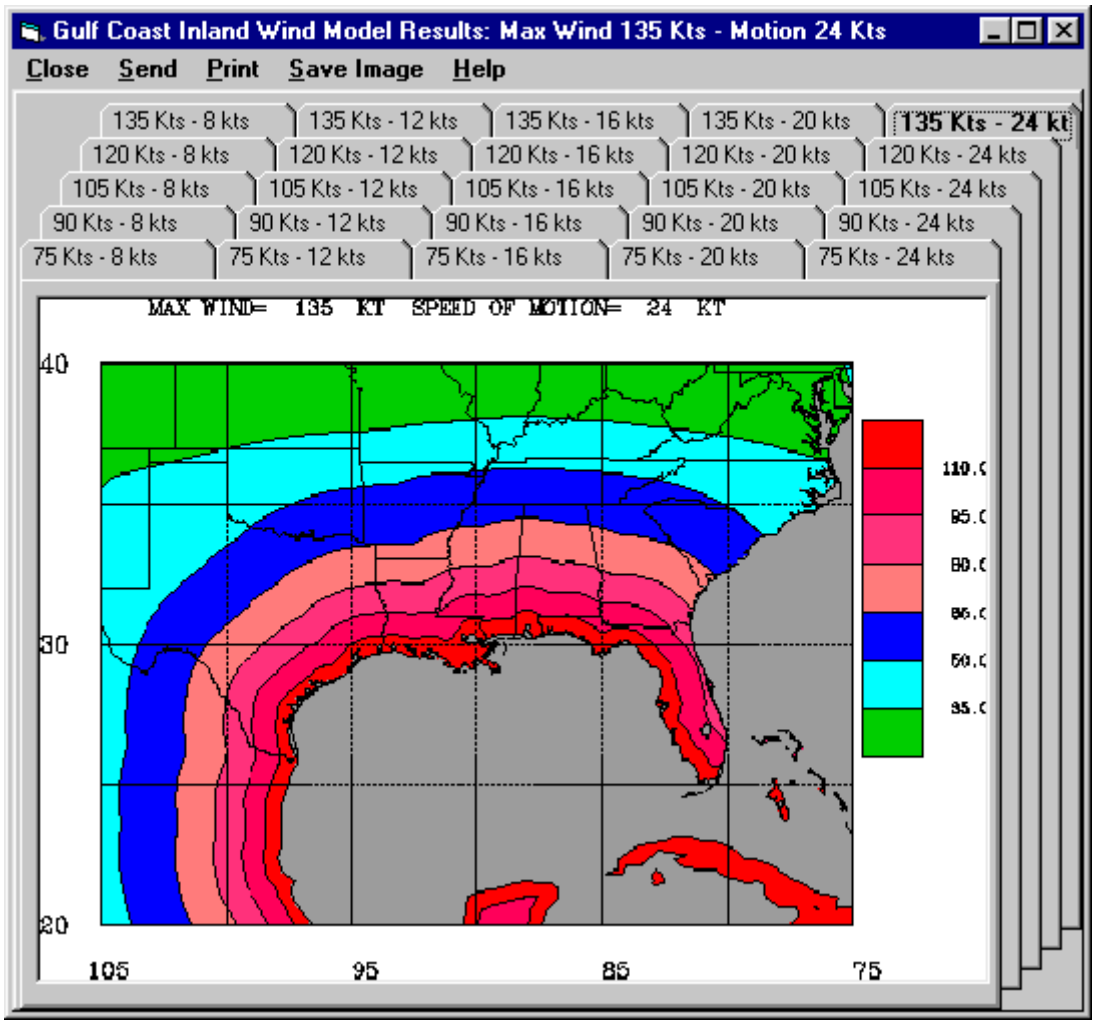


The data fields are identical to the comma-delimited input file method. However, an additional selection screen is presented during the import. It displays the data fields within the point shape file.



Here, you must identify the unique ID field and optionally, the State data field. When identified, select "continue" and the locations will be imported, as described with the comma-delimited method above.

Inland Wind Model



The **inland wind model** was developed by Mark DeMaria (NOAA/NWS/TPC) and John Kaplan (NOAA/AOML/HRD). The model applies a simple two parameter decay equation to the hurricane wind field at landfall to estimate the maximum sustained surface wind as a storm moves inland. This model can be used for operational forecasting of the maximum winds of landfalling tropical cyclones. It can also be used to estimate the maximum inland penetration of hurricane force winds (or any wind threshold) for a given initial storm intensity and forward storm motion. For further explanation refer to:

Kaplan, J., DeMaria, M., 1995: A Simple Empirical Model for Predicting the Decay of Tropical Cyclone Winds After Landfall. *J. App. Meteor.*, **34**, No. 11, 2499-2512.

The graphics included in the HURRTRAK system will allow you to display examples of the **M**aximum **E**nvelope **O**f **W**inds **(MEOW)**. Three sets of graphics are shown, one for each of the regions: Gulf coast, East Coast, and Northeast Coast. Click on the region desired and that set of graphics will be displayed.

While viewing the graphics, there are several menu options available.

Close - Closes this window

Send - Sends the current image to an Email recipient. For more information see page 178.

Print - The print options here is the same as those described earlier **except** that the fax print option is not available.

Save Image - The save image options here are the same as those described earlier.

Help - Displays help information

Appendixes

APPENDIX A. Initial System Setup Items

After installing the system there are several system/user parameters that should be setup first. They include the following.

1. Setting up a new storm database. The system comes with a PAST database and the databases from 1851onward. Unless already done, the first thing you will want to do is create a database for the current year. We recommend calling it the year.. i.e. 1999 or 2000, etc... To create a new storm database, go to FILE-Database from the Hurrtrak Menu OR go to System Setup Options and follow the on-screen directions. See page 12.

2. Define your "Base" Location. If you have an interest in a single location, you may define it to the system in the General options. After doing so, the main application status "bars" will show storm information relative to your location. See page 99.

3. Define your system's Email parameters. In order to use the Email capabilities of the system, you will need to define your preferences and settings in Email General option as shown on page 94.

4. Define your personal Email Address book. To send E-mail via HURRTRAK's native SMTP capability, you must first define all of the possible recipients in the Address book option on page 92. If you plan on using the MS Outlook interface, you will need to select the address books you would like Hurrtrak to use.

5. Define your HURRTRAK ONLINE parameters. To receive HURRTRAK Online information you must define several parameters.

- Define your Userid and Password via HURRTRAK Online Options on shown on page 108. Be certain that you enter them EXACTLY as shown on your subscription letter!

- If using a proxy server, set up http proxy parameters as directed by your system network administrator using Hurrtrak Online Options.

- Select "Start Hurrtrak Online Timer as Windows Startup" in the Hurrtrak Online Polling options.

There are many additional system and user options that are available within the system. This list just represents the ones that typically are setup first.

APPENDIX B: Decision Support Capabilities

The HURRTRAK EM/Pro and RM/Pro systems have several elements of decision support. While the storm graphics, summary and detail impact reports, etc. all provide information which assist the user in making key decisions, several new functions have been added that directly tie decision (action) points to the storm forecast data.

In this topic we will cover the key decision support functions implemented within the system. Please review each topic in sequence.

ACTION POINTS
DECISION ARCS
DECISION ARC USER OPTIONS
AFFECT OF ACTION POINTS ON DETAIL LOCATION REPORTS
DIRECT TO POINT

ACTION POINTS

Action Points are the key element to the added decision support in the HURRTRAK system. Action points are "points" in time that relates to key decisions for a particular location. Examples of decisions include the start of storm phases like:

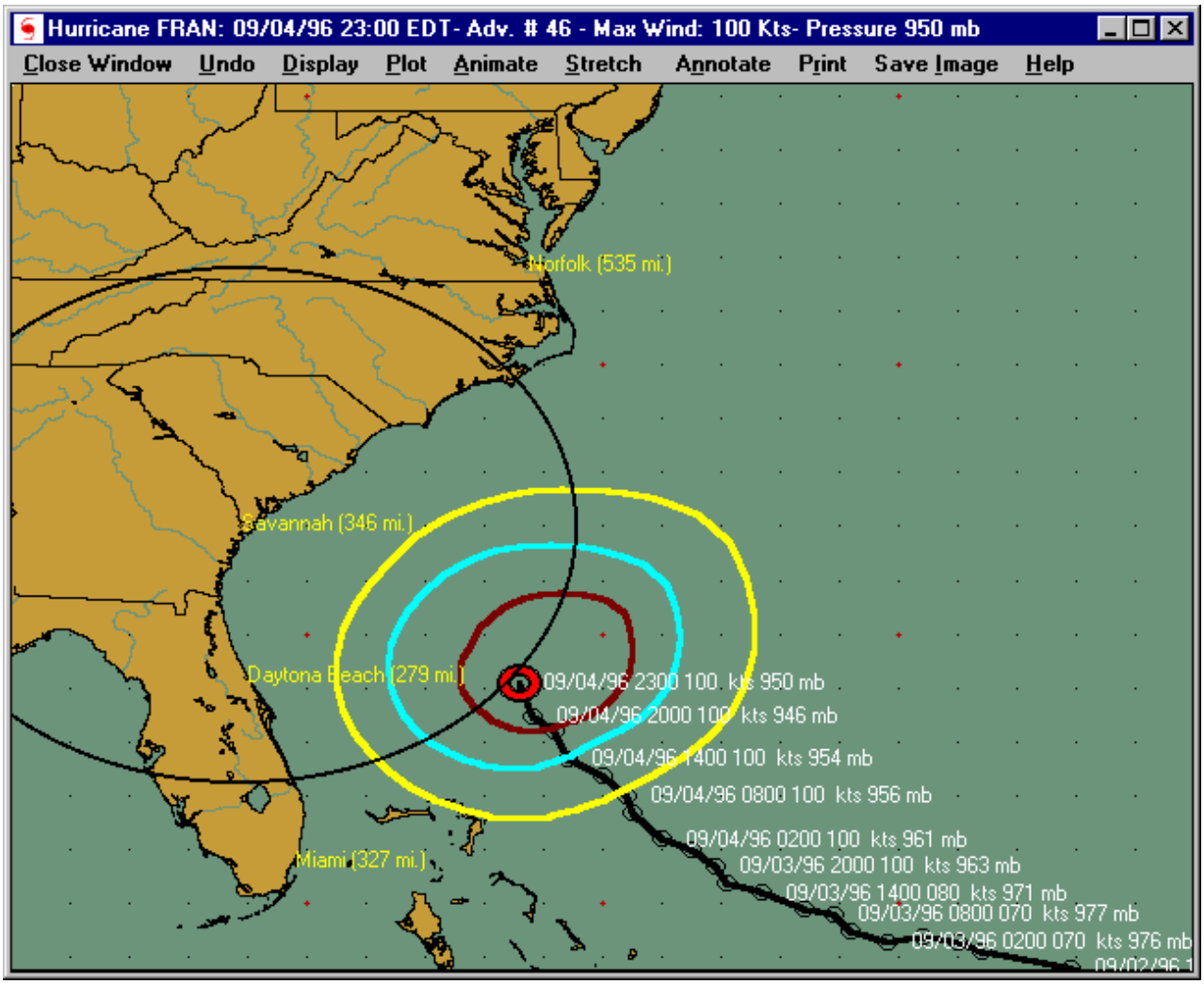
- Awareness
- Stand-By
- Decision
- Preparation
- Evacuation
- Storm Event
- Stand Down

These action points are "triggered" by the arrival of either 34, 50 or 64 knot winds and have lead times that may vary by category of storm. For example, for Escambia County, the Evacuation action may be triggered 24 hours prior to projected arrival of 34 knots winds for a category 3-5 hurricane and 16 hours prior to projected arrival of 34 knot winds for a category 1 or 2 storm.

Multiple action points can be setup for any set of locations or counties. In order to establish action Point(s) for a location, follow these steps:

1. Go to System Setup and select location or county maintenance.
2. Type in all or part of the location/county name until it shows up in the list
3. With that location highlighted, select define action points.
4. Select Add Action point and fill in the action point name and description
5. Fill in the rest of the information on this action point in the table
6. Add another action point, if desired

DECISION ARCS



As shown above, a decision arc is a tool that shows, graphically, the point when certain decisions are made or actions initiated. For example, if a storm is moving at 10 MPH towards a location and an action point is triggered by the arrival of 34 knot winds in 16 hours, then a "circle" is drawn around that location at a distance of 160 miles. When graphically, the area of 34 knot winds "intersects" with the arc, that action point checkpoint has arrived.

On a static tracking chart, the user is presented with the option of either accepting the storm's forecast speed of motion and intensity or to override it.

If selected in animation options, the decision arc will be shown during an animation sequence.

DECISION ARC OPTIONS

In order to utilize the location action point information that was entered, the user must set up several options within the system.

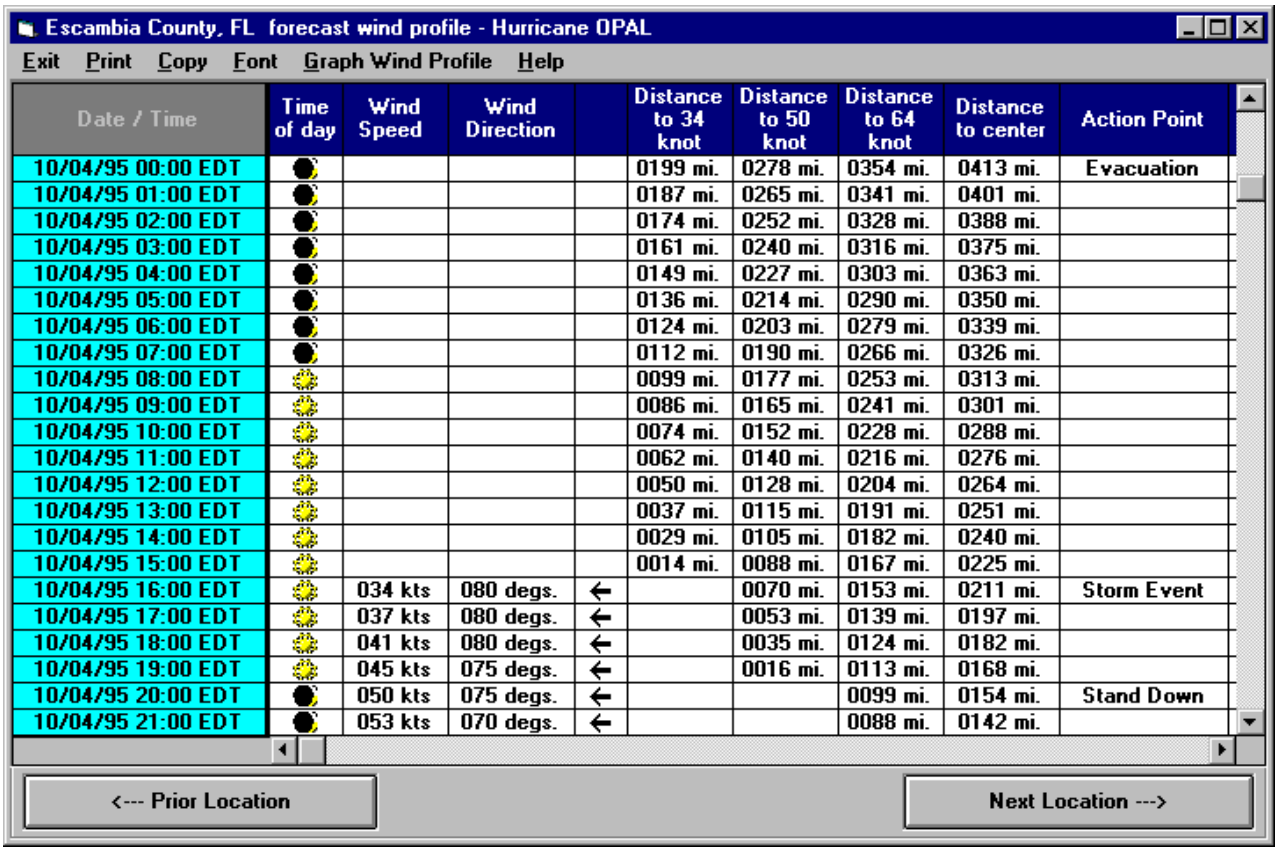
1. First the users must select the location they would like to use for the plot decision arc function. Within the general options, as shown on page 99, select the desired location from the list. Remember the only locations that will appear in the list are ones that have had action points defined, with the decision arc column selected.

2. Next the users can control the decision arc line color and line width within plotting options, as shown on page 118.

3. Within Animation Options, as shown on page 87, the users can specify if they would like a decision arc to be visible during animation. They must also specify which action point they would like to show the decision arc for. Finally, in calculating the size of the decision arc, the users may override the official forecast motion and intensity (category) which is normally assumed during animation. If override is checked, the users can then enter a different storm motion speed and intensity (category).

EFFECT OF ACTION POINTS ON DETAIL LOCATION REPORTS

When creating a detailed location or county forecast report, all of that location's action points are examined to see if they are triggered by the forecast wind conditions. If they are, then the appropriate action point will appear in the action point column at the defined time. Here is an example of a forecast location report for Escambia County with the Approach of Hurricane OPAL.



Escambia County, FL forecast wind profile - Hurricane OPAL

Exit Print Copy Font Graph Wind Profile Help

Date / Time	Time of day	Wind Speed	Wind Direction		Distance to 34 knot	Distance to 50 knot	Distance to 64 knot	Distance to center	Action Point
10/04/95 00:00 EDT					0199 mi.	0278 mi.	0354 mi.	0413 mi.	Evacuation
10/04/95 01:00 EDT					0187 mi.	0265 mi.	0341 mi.	0401 mi.	
10/04/95 02:00 EDT					0174 mi.	0252 mi.	0328 mi.	0388 mi.	
10/04/95 03:00 EDT					0161 mi.	0240 mi.	0316 mi.	0375 mi.	
10/04/95 04:00 EDT					0149 mi.	0227 mi.	0303 mi.	0363 mi.	
10/04/95 05:00 EDT					0136 mi.	0214 mi.	0290 mi.	0350 mi.	
10/04/95 06:00 EDT					0124 mi.	0203 mi.	0279 mi.	0339 mi.	
10/04/95 07:00 EDT					0112 mi.	0190 mi.	0266 mi.	0326 mi.	
10/04/95 08:00 EDT					0099 mi.	0177 mi.	0253 mi.	0313 mi.	
10/04/95 09:00 EDT					0086 mi.	0165 mi.	0241 mi.	0301 mi.	
10/04/95 10:00 EDT					0074 mi.	0152 mi.	0228 mi.	0288 mi.	
10/04/95 11:00 EDT					0062 mi.	0140 mi.	0216 mi.	0276 mi.	
10/04/95 12:00 EDT					0050 mi.	0128 mi.	0204 mi.	0264 mi.	
10/04/95 13:00 EDT					0037 mi.	0115 mi.	0191 mi.	0251 mi.	
10/04/95 14:00 EDT					0029 mi.	0105 mi.	0182 mi.	0240 mi.	
10/04/95 15:00 EDT					0014 mi.	0088 mi.	0167 mi.	0225 mi.	
10/04/95 16:00 EDT		034 kts	080 degs.	←		0070 mi.	0153 mi.	0211 mi.	Storm Event
10/04/95 17:00 EDT		037 kts	080 degs.	←		0053 mi.	0139 mi.	0197 mi.	
10/04/95 18:00 EDT		041 kts	080 degs.	←		0035 mi.	0124 mi.	0182 mi.	
10/04/95 19:00 EDT		045 kts	075 degs.	←		0016 mi.	0113 mi.	0168 mi.	
10/04/95 20:00 EDT		050 kts	075 degs.	←			0099 mi.	0154 mi.	Stand Down
10/04/95 21:00 EDT		053 kts	070 degs.	←			0088 mi.	0142 mi.	

<--- Prior Location Next Location --->

In this section of the report, only the Evacuation, Storm Event and Stand Down Action Points appear.

What If Capabilities

Unrelated to action points, "what if" is a powerful "worse case scenario" tool that allows the users to change the projected path of a storm directly to a specified location. All functions, reports, etc. except for the strike probabilities will then use this new path in its presentation and calculations. In addition the main menu screen background turns black indicating to the user that they are in "what if" mode.

When selected, the users are presented with 3 intensity and storm motion options.

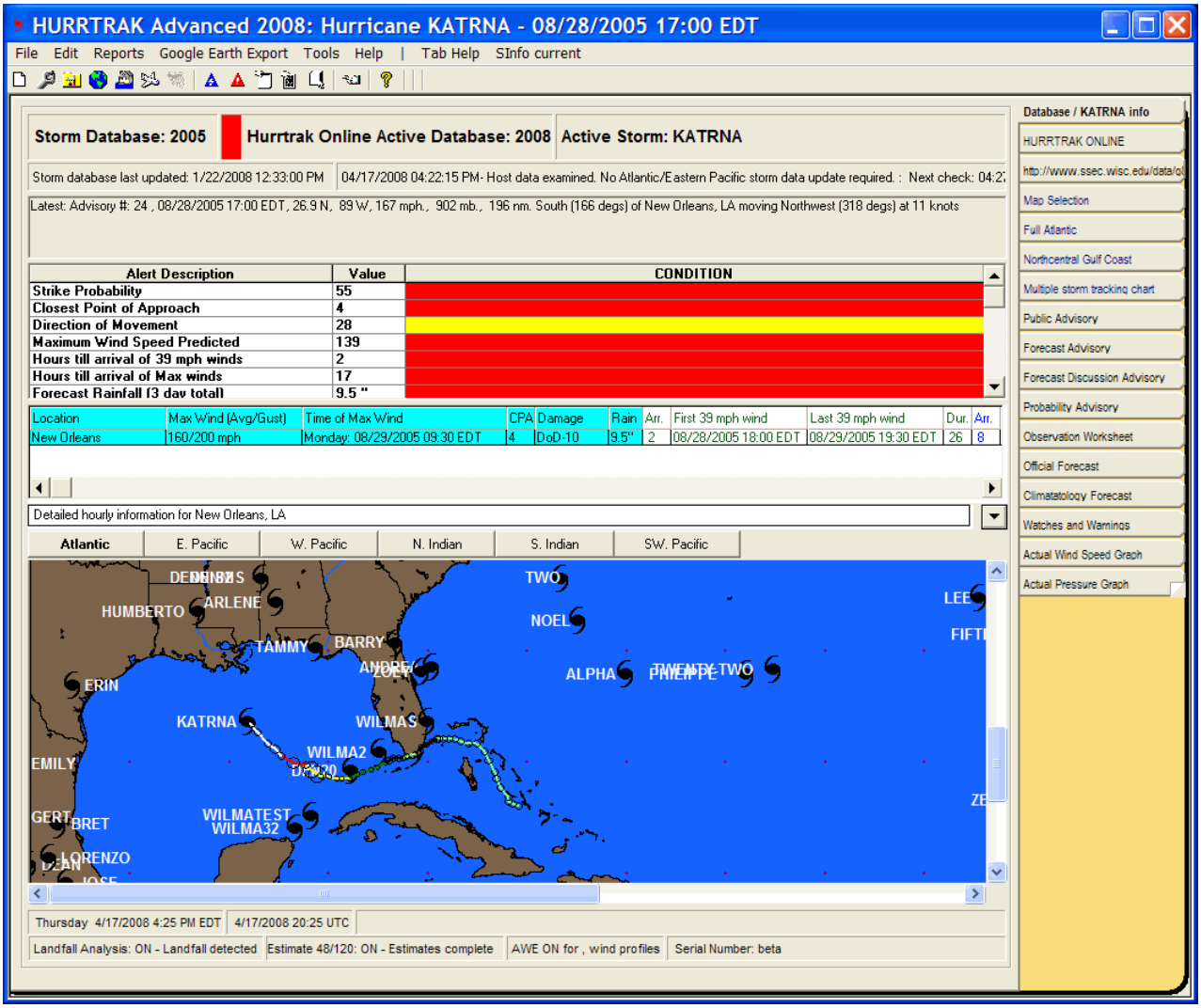
1. Maintain the storm's current intensity throughout the entire forecast period.
2. Assume the NHC forecast through the entire forecast period
3. Override the NHC forecast. If this is selected the user is presented with a screen that allows the entry of maximum wind speed, 34, 50 & 64 knot wind field and speed of storm through the forecast period.

See "What if" Options on page 78 for more information.

APPENDIX C: Status Bars / General Information

There are several status "areas" throughout the system that provides either general or cursor positional type information. They include.

Main Menu Status Bars and General Tab Information



The main menu status bars and information include:

Storm Database Name – This status bar indicates the open storm database. Operational database updates are applied to the Hurrtrak Online Active Database... not this one (unless they match)..

Hurrtrak Online Active Database - This status bar indicates the Active Hurrtrak Online Database. All current/operational database updates are applied to this database, not necessarily the open database. Under operational conditions this database should match the default open database. A **RED** bar is displayed next to the storm name when the default and Hurrtrak Online databases do not match.

Active Storm Name

Date the database was last updated

Date/Time the internet host data was last examined along with the status

Latest Advisory of the active storm as well as its location, movement and intensity in addition to its relative position to the users "base" location.

Risk Alert Status. For more information see APPENDIX R: Risk Alert on page 304.

Summary Forecast Impact information for the base location

Hourly detailed forecast information for the base location.

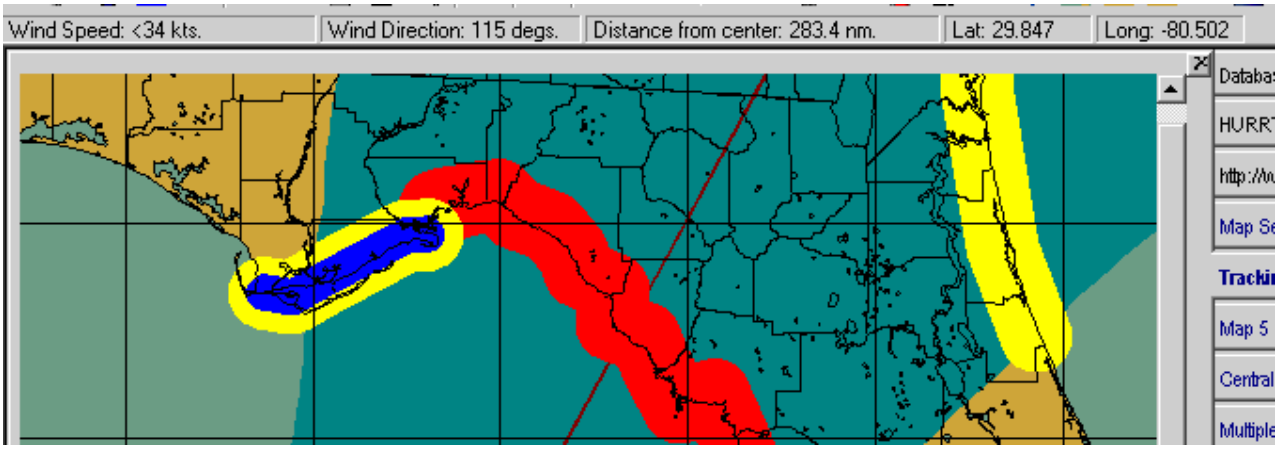
Map image – Through the use of icons, this image shows all of the storms in the current database. Older storms will be indicated with a black icon while recent storm will be indicated with a red icon. Double Clicking on an icon will load that storm and make it current. In addition, the track of the current, loaded, storm is shown.

Current Date/Time and tide information (if base location has been associated to tide station)

Software's Serial Number

"Special" conditions such as the system using post storm analysis, forecast estimation, landfall analysis, Advanced Wind Estimation, "What if " analysis, etc.

Tracking Chart Status Bars



The tracking chart status bar information includes mouse positional information:

Wind Speed

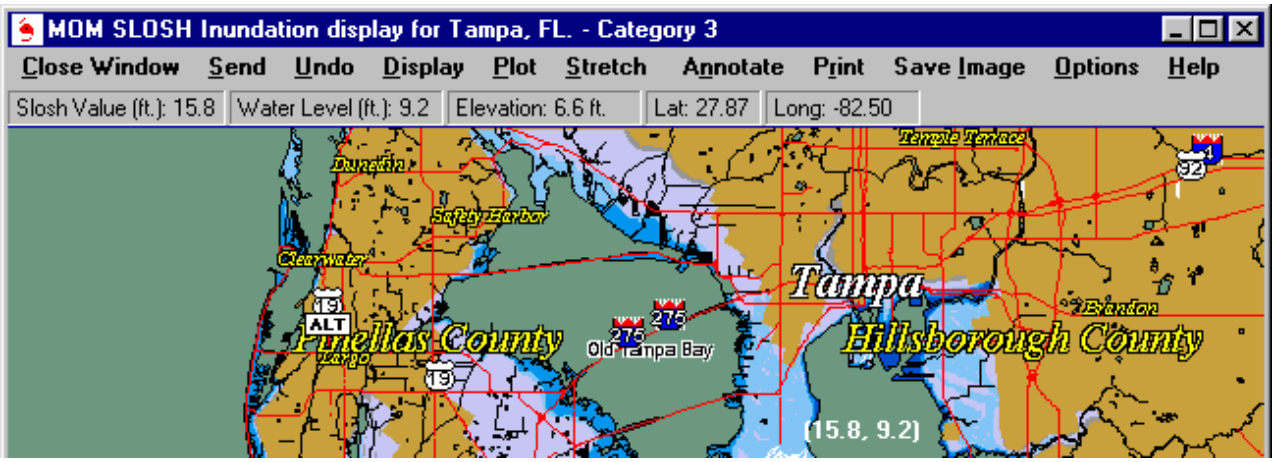
Wind Direction

Distance from Center of Storm

Latitude

Longitude

SLOSH Inundation Analysis Status Bars.



The SLOSH/Inundation chart status bar information includes mouse positional information of:

"Raw" SLOSH value

Calculated Inundation (water) level

Elevation

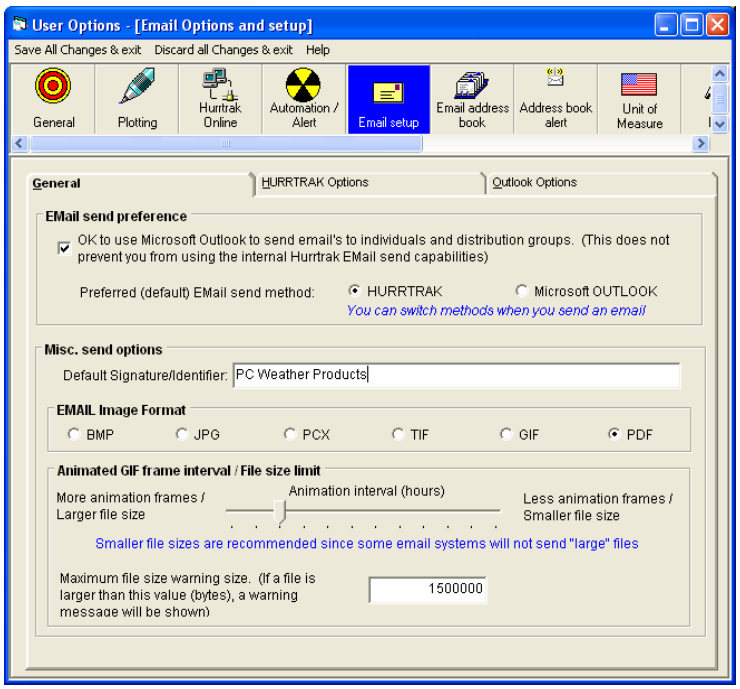
Latitude

Longitude

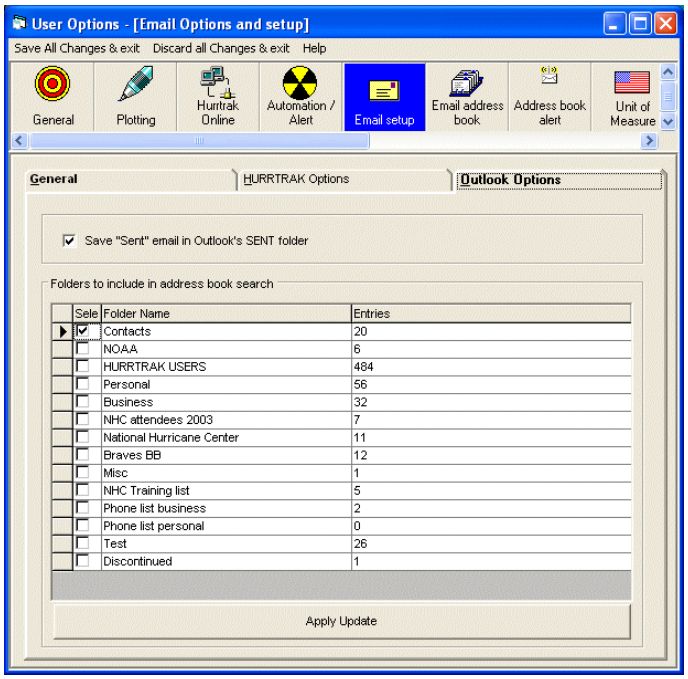
APPENDIX D: Email setup and capabilities

If you use Microsoft Outlook as your primary e-mail system, then do the following.

1. Select MS Outlook as your preferred method of sending e-mail via user preferences EMail General Options.

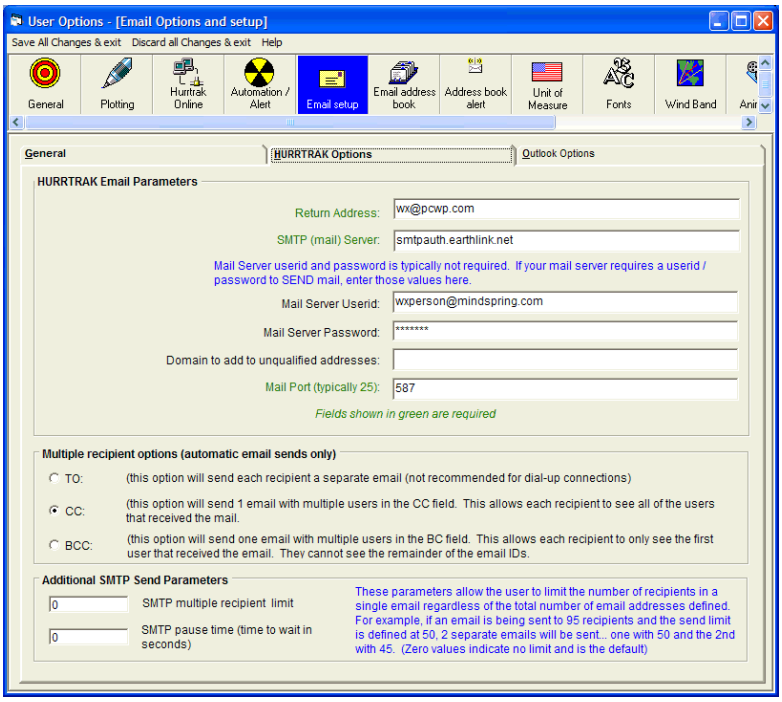


2. Define the address books you would like HURRTRAK to "see" via user preferences EMail General Option Outlook folders. Be sure to not select very large folders (>5000) as this will greatly impact the systems performance when sending email.

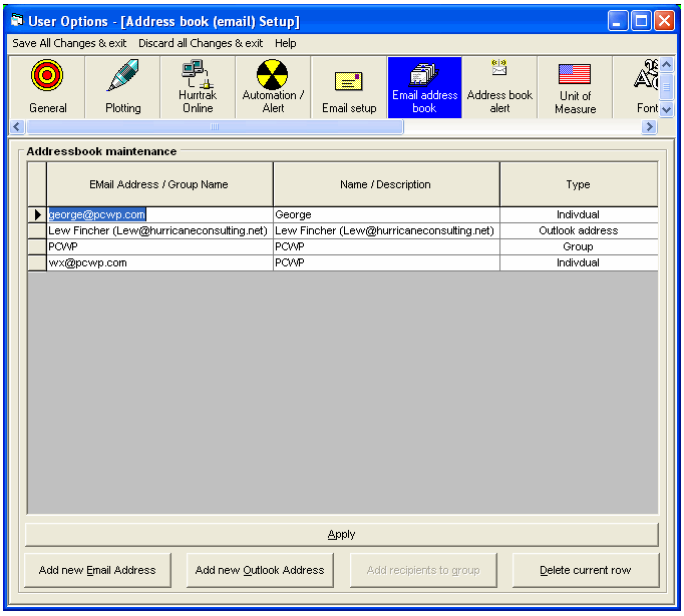


If you would like to use the Native Hurrtrak E-MAIL capabilities then there are just a few steps to complete.

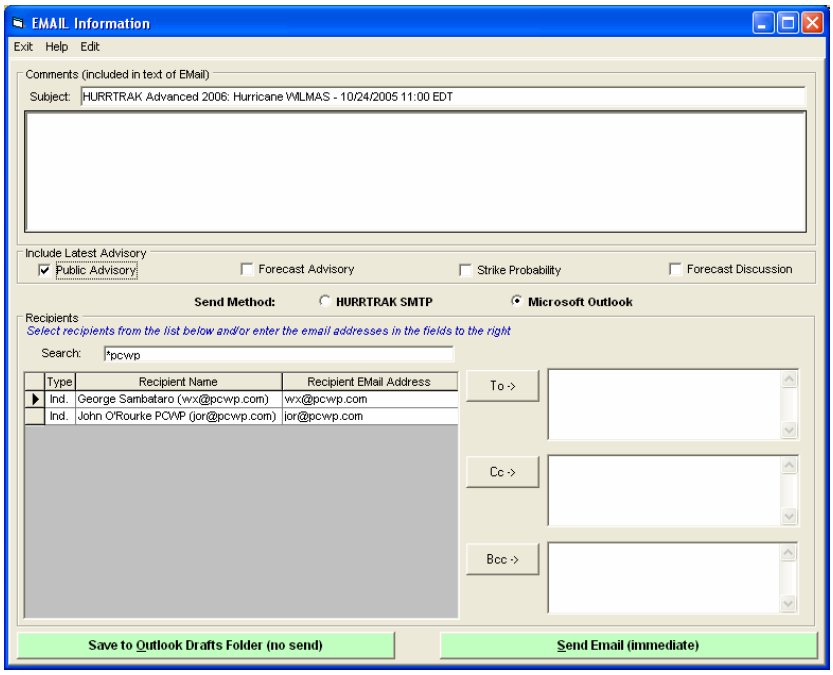
1. You must have an SMTP internet Email server available to you. If you connected to the internet via a network server, and you are not sure, check with your network administrator. Go to the Email General Options and define your system's email server parameters. In most cases you should be able to pull these from the options defined on your current email program.



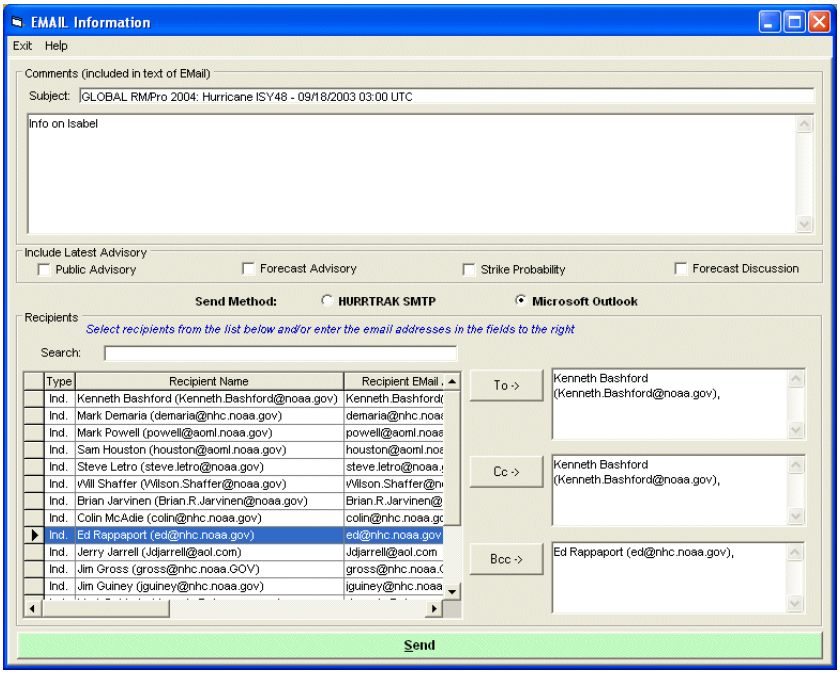
2. You must define the users you want to have the ability to send email messages to. This is a separate Addressbook from your native email system due to the additional data fields required. Go to the Addressbook Options and define your users/recipients and your user groups.



Now, when you are viewing a graphic or report, just hit the send option and the user will be presented with either the following screen.



or for the MS Outlook method…



Selecting the recipients and "hitting" send will transmit the message to the server defined.

NOTE: When viewing Emailed reports that have column type data, the receiver must change his Email programs viewing font to a non-proportional type (courier for example).

APPENDIX DD: Microsoft Outlook Considerations

In addition to the Native Hurrtrak SMTP E-mail capabilities, the system now interfaces with the Outlook address book and E-mail send capabilities of Microsoft Outlook.

There are several important considerations when using this capabilities that you should be aware of:

1. Outlook 98/2000 installed in the Internet Only Mode (IMO) (Help|About in Outlook) is not supported. This is because Microsoft does not support Extended MAPI in IMO. Microsoft got rid on IMO mode starting in Outlook 2002. Subsequent version of Microsoft Outlook and those installed in C/W mode and Exchange Server installations are OK.

2. When setting up your E-mail capabilities in Hurrtrak, be certain not to select very large contact folders. If you do so, performance will be greatly impacted when showing address book entries. It is difficult to put an exact number on this but folders with more than 5000 entries should be avoided. If you are in a large corporate environment where you do have large contact folders, I suggest you copy your Hurrtrak contacts from the large folder to a new Outlook contact folder and only select that folder in Hurrtrak E-mail setup.

3. Although rare, on some installations, when you send an e-mail from Hurrtrak using the Outlook option, the e-mail may remain in the drafts folder. Keeping Outlook open and setting your Outlook system to automatically send/receive every X minutes should take care of this. If this does not,, please report this to us and, until it is resolved, manually send this e-mail from Outlook. Please include a screen shot of your Microsoft Outlook's Help-About screen if you contact us for support.

APPENDIX E: Alert Email Process

Alert Email is a somewhat complicated topic. If we look at each component of the Alert process it can be simplified and easily understood.

Simply put... Alert Email is the capability to automatically send Email messages to other users (recipients) when certain storm forecast criteria are met.

Let's go through each step in order to understand this function better.

1. You must have Microsoft Outlook or for Hurrtrak native e-mail support a SMTP Internet Email server available to you. To define your preferred e-mail method, go to the Email General Options and for native support to define your system's Email server parameters. For Hurrtrak native support you should be able to pull the SMTP server option from the settings on your current Email program or obtain them from your network administrator.

2. You must define the users you want to have the ability to send ALERT Email messages to. This is also required for MS Outlook addressbook entries due to the additional alert data fields that must be associated with this entry. Go to the Addressbook Options and define your users/recipients and your user groups.

3. In the Automation/Alert options, Alert Definitions Tab, "check" the "Alert Automation" option. This turns on the global capability to send Alert Email.

4. Also in the Automation/Alert Options, Alert Tab, add the storm names for the storms you would like to send Alerts for and set their indicator as active. You may want to predefine these names for the entire season and then activate/deactivate them as needed. The only alert that does not require an entry in this table is the New Storm alert (see #8 below).

5. Alerts are automatically examined whenever "new data" arrives into the system via the HURRTRAK ONLINE service. In Automation/Alert options, Advanced Tab, you need to specify what your minimal requirements are that define "new data". In other words, which NHC advisory data must arrive before initiating Alert Email. We recommend the minimal selection be the Public Advisory, the Forecast Advisory, and the Intermediate Public Advisory. These advisories contain the critical current and forecast information. Be aware that selecting all of the advisories may result in a delay of any automated processing as the system waits for all of the advisories to become available. Selection of "ANY" on the other hand would cause the initiation of automatic process every time any type of new advisory becomes available. This is not recommended as multiple Alerts would be generated for each advisory package.

5. Earlier (step 2) we defined our Email users and group. Now it is time to the alert criteria for some or all of these users. Keep in mind that while the system allows for several Alert Conditions, typically only 1 or 2 of these would be set for a single recipient (or group). Also, only one criteria needs to be met in order for the Email Alert to be initiated. Select the Addressbook Alert to start the process.

6. Next to each user or user group indicate whether this user should be considered for any alert Email. This is the Alert ON/OFF field.

7. If you would like this user to receive an Email message whenever new data arrives, check the All Updates Alert option.

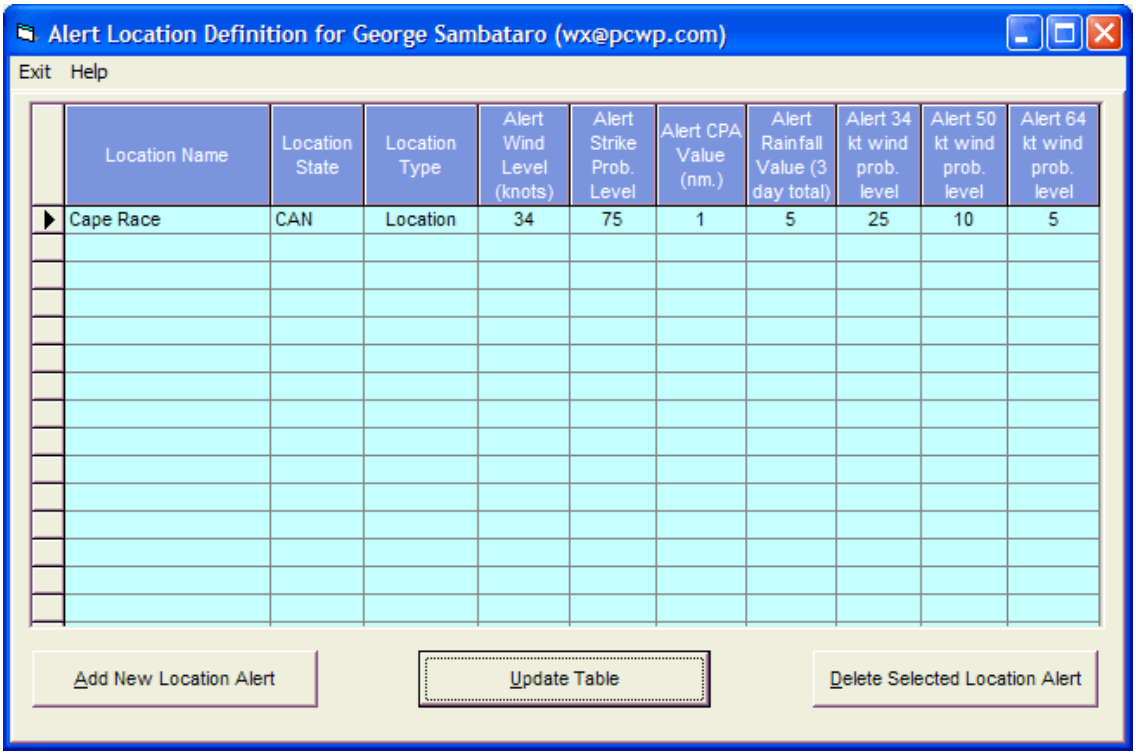
8. If you would like this user to receive an Email message whenever a new tropical depression forms or when a storm is named, check the First Advisory Alert option.

9. If you would like this user to receive an Email message whenever the category of a storm changes, check the Change Cat. Alert option.

10. If you would like to attach the latest advisory text information with your Alert Emails then check either one or all 4 of the Attach ... Advisory options.

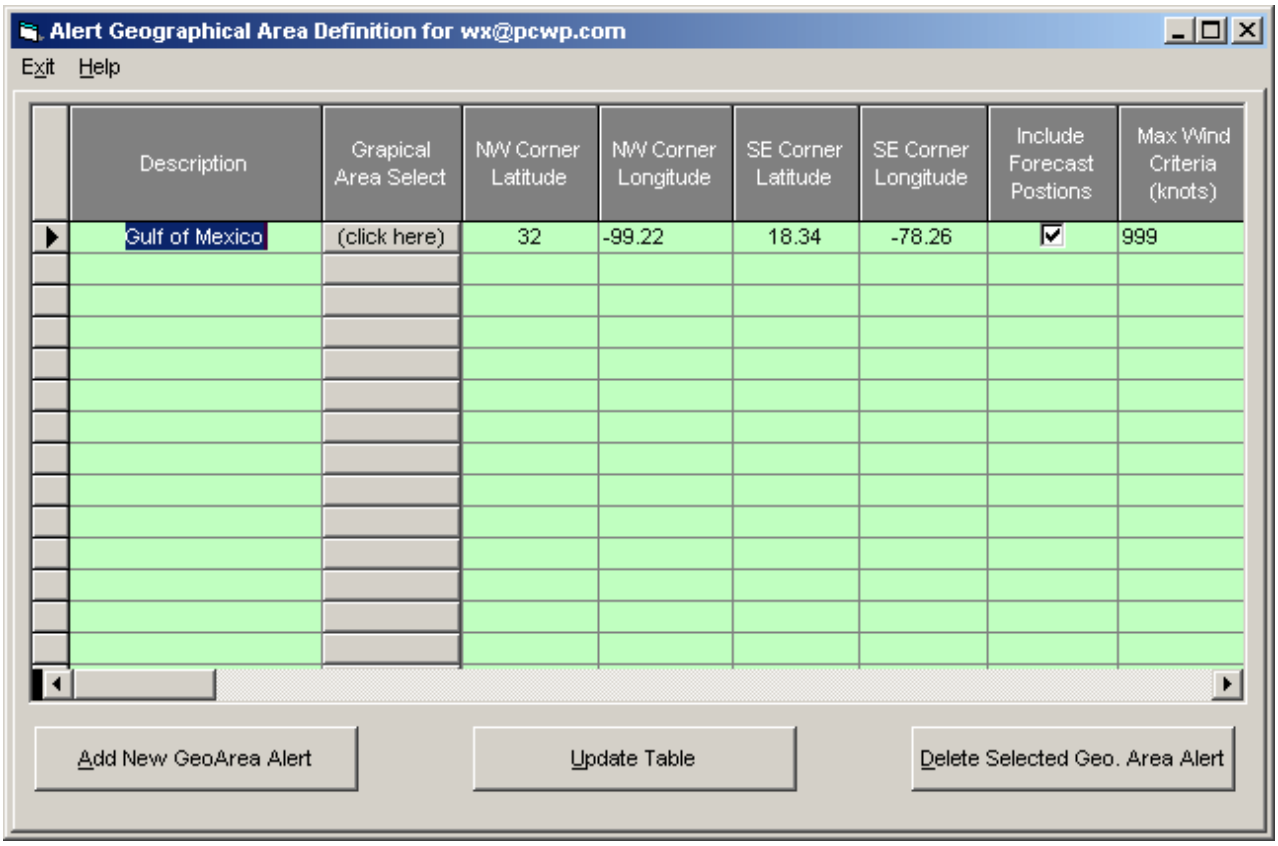
All of the Alert Email criteria describe above have been storm specific (changes in intensity, etc.). The next few are related to their affects on a location or existence in a geographical area.

11. If you would like to setup Email alert criteria specific to a storm's forecast affect on a location, select "Specify Location Dependent Alerts". Here you may identify locations of interest and setup 3 key Alert criteria. Wind Speed, Strike Probability and Closest Point of Approach. If you would like this user to receive an Alert Email when the forecasted wind speed for this location is greater than a certain value, then indicate that wind speed. If you would like this user to receive an Alert Email whenever the strike probability is expected to exceed a certain value, then indicate that strike probability value. Finally, If you would like this user to receive an Alert Email whenever the storm is forecast to pass within a certain number of nautical miles of a location, then indicate that value. An example of specifying Alert Email criteria for a location is shown below. Note that if the wind is expected to be greater than 34 knots OR the strike probability is greater than 75% OR the storm is expected to pass within 1 nm OR forecast 3 day rainfall is 5" or greater or the 34, 50 and 64 knot wind probabilities exceed 25, 10 and 5 respectively, the Alert Email Criteria would be satisfied.



12. If you would like to setup Email Alert criteria specific to a geographical area, then select "Specify Geographical Dependent Alerts". Here you may identify geographical areas of interest and setup 2 key criteria parameters. The 2 parameters, in addition to the definition of the geographical area, are whether to include storms forecast positions and at what wind speed should the criteria be satisfied. This may be clearer with an example. If a user would like to send Alert Email messages whenever a storm is forecasted to be in the Gulf of Mexico with wind of 64

knots or greater they would define the approximately area of the Gulf of Mexico and select "include forecast positions" and set the Max Wind Criteria at 64 knots. See example below.



At this point, your Alerts have been defined. The only other thing that you might want to consider is how you are going to receive your HURRTRAK ONLINE updates. If you truly want Alert Email's to be sent unattended then either schedule your HURRTRAK ONLINE updates or if you use the Internet, specify automatic polling in the HURRTRAK ONLINE Preferences, Automatic Polling Tab.

If you would like to initiate Alert Email manually you can do this from the main menu reports option. It is suggested that you use the manual method the first few times until you become familiar with automated Alert Email. If the criteria are not setup correctly, you have the potential to unintentionally send out a multitude of Email messages.

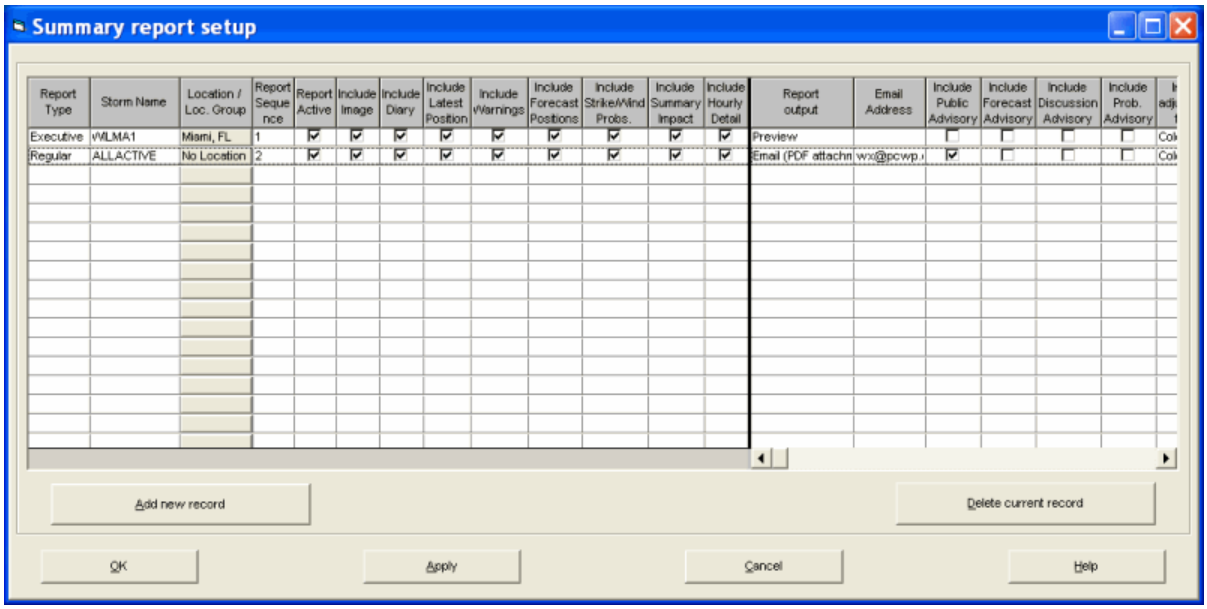
When viewing Emailed reports that has column type data, the receiver must change his viewing font to a non-proportional type (courier for example).

APPENDIX F: Summary Report Setup

Summary reports are a powerful feature of the system.

Simply put, a summary report is information about how a storm and optionally how a storm is expected to affect a particular location or group of locations. There are two types of reports, standard and executive.

You may create them manually or define them to automatically send the output to the desktop, printer, or to another user via Email.



To setup the summary reports to automatically generate their output, do the following.

1. Go to Automation Alert options and activate the "Summary Report Option".

2. Add individual summary reports by selecting the "Add new record" button. This will add a report using a "blank" template.

3. Select the type of summary report you would like to generate. Standard or Executive.

4. Update the new record by entering the Storm Name, Report Sequence and Report Location. A storm name of “ALLACTIVE” will result in the generation of a summary report for all active storms as defined in Automation Alert options. If “No Location” is selected the summary report will not include location specific sections.

5. Update the remaining fields to complete its definition.

6, Finally, since summary reports are automatically generated when new data arrives, in Automation/Alert options, Advanced Tab, you need to specify what your minimal requirements are that define "new data". In other words, which NHC advisory data must arrive before initiating a summary report? We recommend the minimal selection be the Public Advisory, the Forecast Advisory, and the Intermediate Public Advisory. These advisories contain the critical

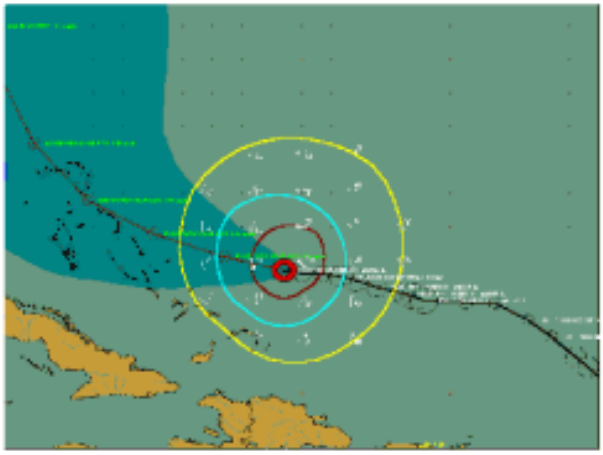
current and forecast information. Be aware that selecting all of the advisories may result in a delay of any automated processing as the system waits for all of the advisories to become available. Selection of "ANY" on the other hand would cause the initiation of automatic process every time any type of new advisory becomes available. This is not recommended as multiple Summary reports would be generated for each advisory package.

Example of printed Summary Reports are shown below

Standard

Hurricane FLOYD *Page 1*

GLOBAL RMPro 2001 Summary Report for Boca Raton, FL 09/13/1999 0500 EDT, Adv. # 23



Latest Position: 539 nm. East (107 degrees) of Boca Raton, FL

Latitude	Longitude	Motion (knots)	Wind Speed (MPH)	Central Pressure (mb)	64 kt NE	64 kt SE	64 kt SW	64 kt NW	50 kt NE	50 kt SE	50 kt SW	50 kt NW	34 kt NE	34 kt SE	34 kt SW	34 kt NW	Eye diam	Eye wall
23.7	-70.6	280/11	155	922	90	50	50	70	125	100	100	145	250	180	150	225	20	10

Watches and Warnings

Hurricane Watch from Flagler Beach, FL to Hallandale, FL

Official Forecast

Hour	Date (UTC)	Time (UTC)	Latitude	Longitude	Wind Speed (MPH)	64 kt NE	64 kt SE	64 kt SW	64 kt NW	50 kt NE	50 kt SE	50 kt SW	50 kt NW	34 kt NE	34 kt SE	34 kt SW	34 kt NW
Initial	09/13/1999	0900	23.7	-70.6	155	090	050	050	070	125	100	100	145	250	180	150	225
12	09/13/1999	1800	24.1	-72.6	155	090	050	050	070	125	100	100	145	250	180	150	225
24	09/14/1999	0600	24.8	-75	155	090	050	050	070	125	100	100	145	250	180	150	225
36	09/14/1999	1800	25.8	-77.2	155	090	050	050	070	125	100	100	145	250	180	150	225
48	09/15/1999	0600	27.5	-79	150					125	100	100	145				
72	09/16/1999	0600	31	-81	144					125	100	100	145				

Strike Probabilities for Boca Raton, FL

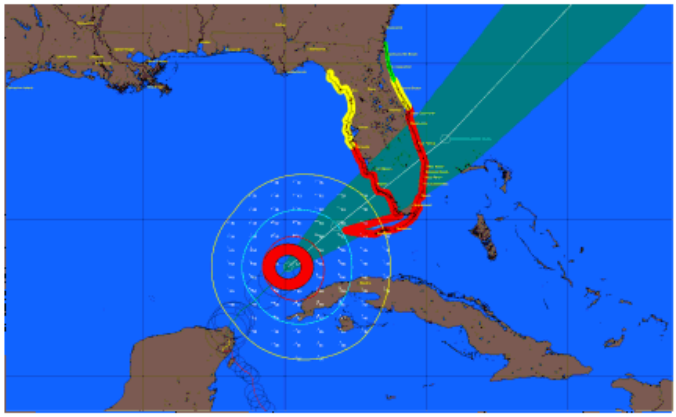
TOTAL	Next 24 hours	24 - 36 hours	36- 48 hours	48-72 hours
21	0	5	15	1

Forecast Impact Summary

Location	St.	Max Wind	CPA		Arr. hrs.	Time of arrival	Time of departure	Duration
Boca Raton	FL	63 mph	89	34 knot	30	09/14/1999 11:00 EDT	09/15/1999 12:00 EDT	25
				50 knot	37	09/14/1999 18:00 EDT	09/15/1999 04:00 EDT	10

Hurricane FLOYD *Page 1*

GLOBAL RMPro 2001 Summary Report for Boca Raton, FL 09/13/1999 0500 EDT, Adv. # 23



Hurricane WILMA2 Summary Update	Sunday 10/23/2005 05:00 PM Advisory 34
Current NHC Forecast Predictions	
Maximum Sustained Winds / storm Category:	90 KNOTS / Category 2
Forward motion:	13 mph towards the Northeast
Hurricane Force winds extend from the center:	86 miles
Tropical Storm winds extend from the center:	230 miles
Minimum Pressure:	959 MB
Storm Position:	23.5N, 84.9W
Estimated Coastal Strike County/Parish:	Collier, Florida
Pahokee, FL	
Estimated Time of First Tropical Storm force winds:	Monday 10/24/2005 05:30 AM
Duration of Tropical Storm force winds:	11 hours
Estimated speed of Maximum Sustained winds:	63 KNOTS
Estimated speed of Maximum Wind Gusts:	82 KNOTS
Estimated time of maximum winds:	Monday 10/24/2005 10:30 AM
Duration of Hurricane Force Winds:	N/A
Estimated closest point of approach:	12 miles
Forecast Rainfall (3 day total):	4.3 inches
Fort Pierce, FL	
Estimated Time of First Tropical Storm force winds:	Monday 10/24/2005 08:30 AM
Duration of Tropical Storm force winds:	6 hours
Estimated speed of Maximum Sustained winds:	57 KNOTS
Estimated speed of Maximum Wind Gusts:	75 KNOTS
Estimated time of maximum winds:	Monday 10/24/2005 11:30 AM
Duration of Hurricane Force Winds:	N/A
Estimated closest point of approach:	31 miles
Forecast Rainfall (3 day total):	3.8 inches
Naples, FL	
Estimated Time of First Tropical Storm force winds:	Monday 10/24/2005 04:30 AM
Duration of Tropical Storm force winds:	7 hours
Estimated speed of Maximum Sustained winds:	51 KNOTS
Estimated speed of Maximum Wind Gusts:	66 KNOTS
Estimated time of maximum winds:	Monday 10/24/2005 07:00 AM
Duration of Hurricane Force Winds:	N/A

HURRTRAK Advanced 2008 | *Hurricane WILMA2* Location Forecast Analysis Summary Report - Advanced Wind Estimation On | *Page 1* 10/23/2005 17:00 EDT

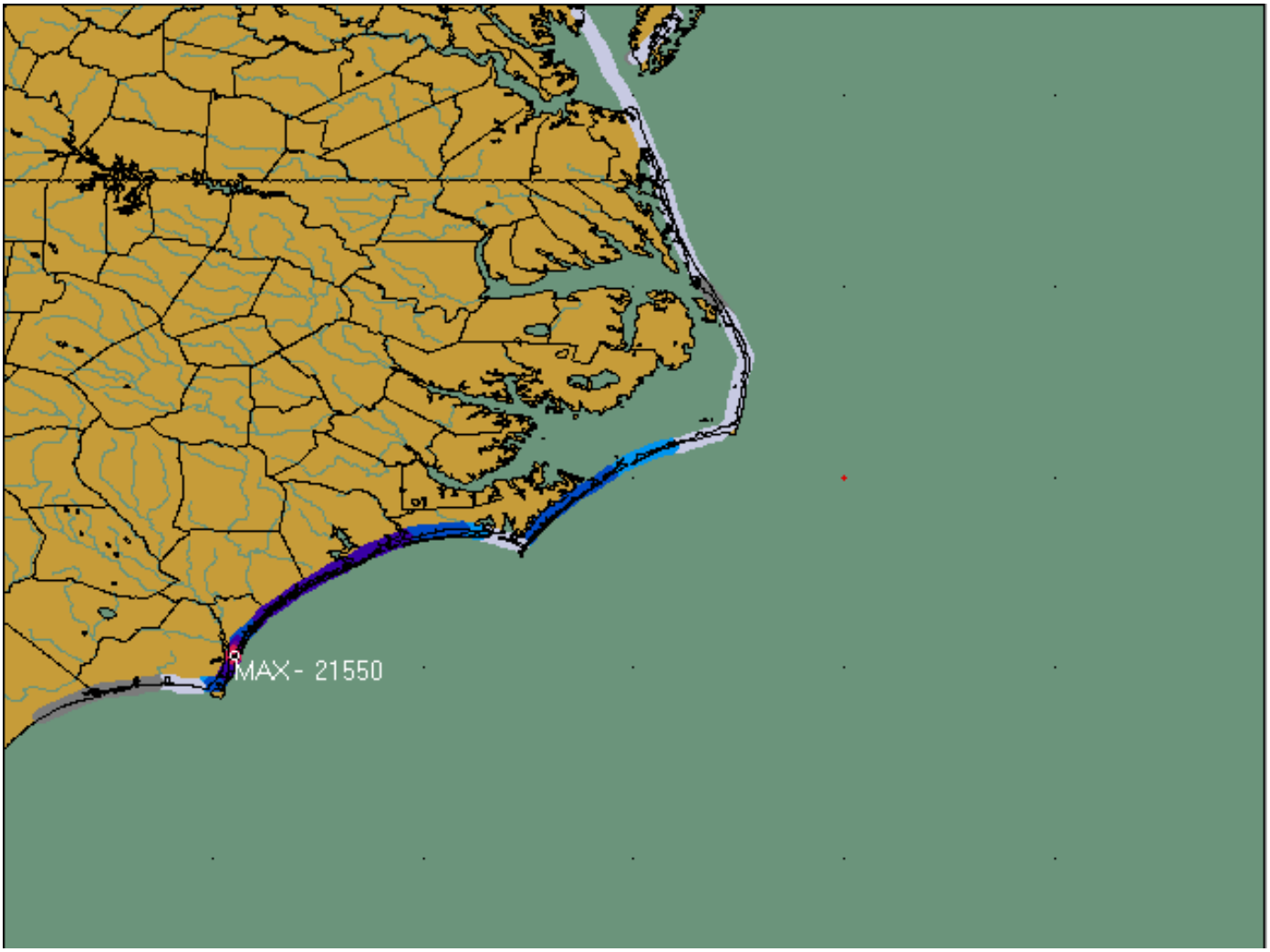
APPENDIX G: Flood Index Summary

Available in HURRTRAK EM/Pro and RM/Pro the **flood index** is an internally calculated algorithm that is designed to display the area of the coastline most likely to experience the highest flooding due to storm surge and wind driven water. In the case of "Actual" analysis it displays the actual flood index for an area of the coastline (as shown in the graphic below). **The value is an index and does not equate to any specific level of flooding.**

The flood index's main component is the strength and duration of the onshore wind flow. **It does NOT take into account the bathometry of the ocean floor nor any possible funneling situations, such as a strong SW flow into Tampa Bay. For this data you should refer to the SLOSH Data charts.**

In addition, you should not focus on the exact location of the forecasted maximum flood index since small changes in the storm's path will dramatically affect the area with the highest storm surge. It is best to use this data only within a few hours of landfall and in conjunction with the SLOSH information.

An example of a plotted Actual flood index for Hurricane Fran is shown below:



APPENDIX H: SLOSH Data Summary

The HURRTRAK system contains some of the SLOSH Storm Surge data. Only the Hurrtrak Advanced system has the SLOSH MEOW data. The **SLOSH Storm Surge data** is compiled by the National Weather Service to assist emergency management officials determine the risk of hurricane related storm surge flooding in their area. It is analyzed and created by "slosh basin" and takes into consideration the coastal bathometry as well as the effects of water being funneled into certain areas of the coastline.

The SLOSH analysis has been done for the most of the US Coastline, Puerto Rico and the US Virgin Islands. There are 2 types of analysis related to SLOSH.

MEOW - (Maximum Envelope of Water) and **MOM** (Maximum of Maximum)

The National Weather Service calculates the SLOSH Storm Surge, MEOWS and MOM's as follows...

For each slosh basin:

1. Select hypothetical storms appropriate to those found from historical record: storm directions, forward speeds, (Saffir-Simpson) intensities, sizes (radius of maximum winds, or RMW), and landfall sites sufficiently close together (typically 15 miles or less) to adequately map the surge flood plain.

2. Generate the set of hypothetical storms. Typically there will be about 10 directions, 4 forward speeds, 5 intensities and 10 to 20 landfall points*, resulting in 2000 to 4000 individual storms.

*Because the average error of forecast position of eye landfall is about +/- 100 miles in 24 hours, no single storm is sufficient to map the potential for storm surge flooding in a basin in advance of storm landfall, as the likelihood of having chosen exactly the correct track is dangerously too small.. Instead, the SLOSH model is run with a family of storms. In the family, all storms share the same intensity, size, speed and direction. For example, the storm surge flood plain of a basin by Cat 3 hurricanes, heading northwest at 15 mph will be calculated by running SLOSH with a succession of NW15C3 storms that have landfall sites separated by 5 or 10 or 15 miles from those flanking it. Then, after all the storms in a family have been run, the maximum surge value at each grid square in the basin, from any storm in that family, is retained. The result is a Maximum Envelope Of Water, (or **MEOW**), for the NW15mph Category 3 storms, in the above example.

3. Create **MEOW** maps of SLOSH modeled storm surge, for each combination of storm direction, speed, Saffir-Simpson intensity and initial datums (in the case of the Lake Okeechobee and Cape Canaveral basins). In the example #2 above, (10 directions, 4 speeds and 5 Saffir-Simpson Categories), there would be 200 **MEOWs**.

4. Consolidate **MEOW** results, (if requested to do so by emergency officials), into maps of MEOWS Of MEOWS or **MOMs**. Typically, **MOM** 's depict surge flooding for each intensity ONLY, regardless of storm direction or speed. However, in other instances, the MEOWS of the two faster speeds** were consolidated to create five "FAST **MOM's**", while **MEOWS** of the two slower speeds were consolidated to create five "SLOW **MOM'**s".

** Faster storms create higher surge on coastlines than do slower storms. Slower storms create higher surge values further inland (because there is more time available to pump water) up rivers or into heads of bays, than do faster storms.

Simply put, the **MEOW** analysis represents the highest water* due to a "family" of parallel tracks with the same direction, speed and intensity. The analysis is done for varying storm direction,

speed of movement and category. For example a **MEOW** exist for a Cat 4 storm moving from the east at 12 mph into the Miami SLOSH basin. The **MOM** data is the "Maximum of Maximum or "Meows Of Meows" or the highest water* due to a composite of MEOWs.

This system includes the **MOM** data for all of the analyzed basins. While most are shown by storm category, some basins have more qualified **MOM**s (see Charleston, SC).

An example of a Cat 4 MOM for Tampa Bay is shown on page 272.

*** IMPORTANT NOTE: All of the SLOSH surge heights are referenced to NGVD - National Geodetic Vertical Datum (the mean sea level as determined in 1929.) This is the same reference the USGS uses for its quadrangle maps. So, when you see a 10 surge for a given area, you expect flooding up to the 10 foot contour on the quadrangle map at that location. Imagine that there's a 10 foot surge in an area. One house has a base elevation of 11 feet, so it is "high and dry." But a neighboring house which is at 9 feet will get one foot of flooding in it's home.**

Example of a Cat. 4 Mom on standard chart for Tampa Bay

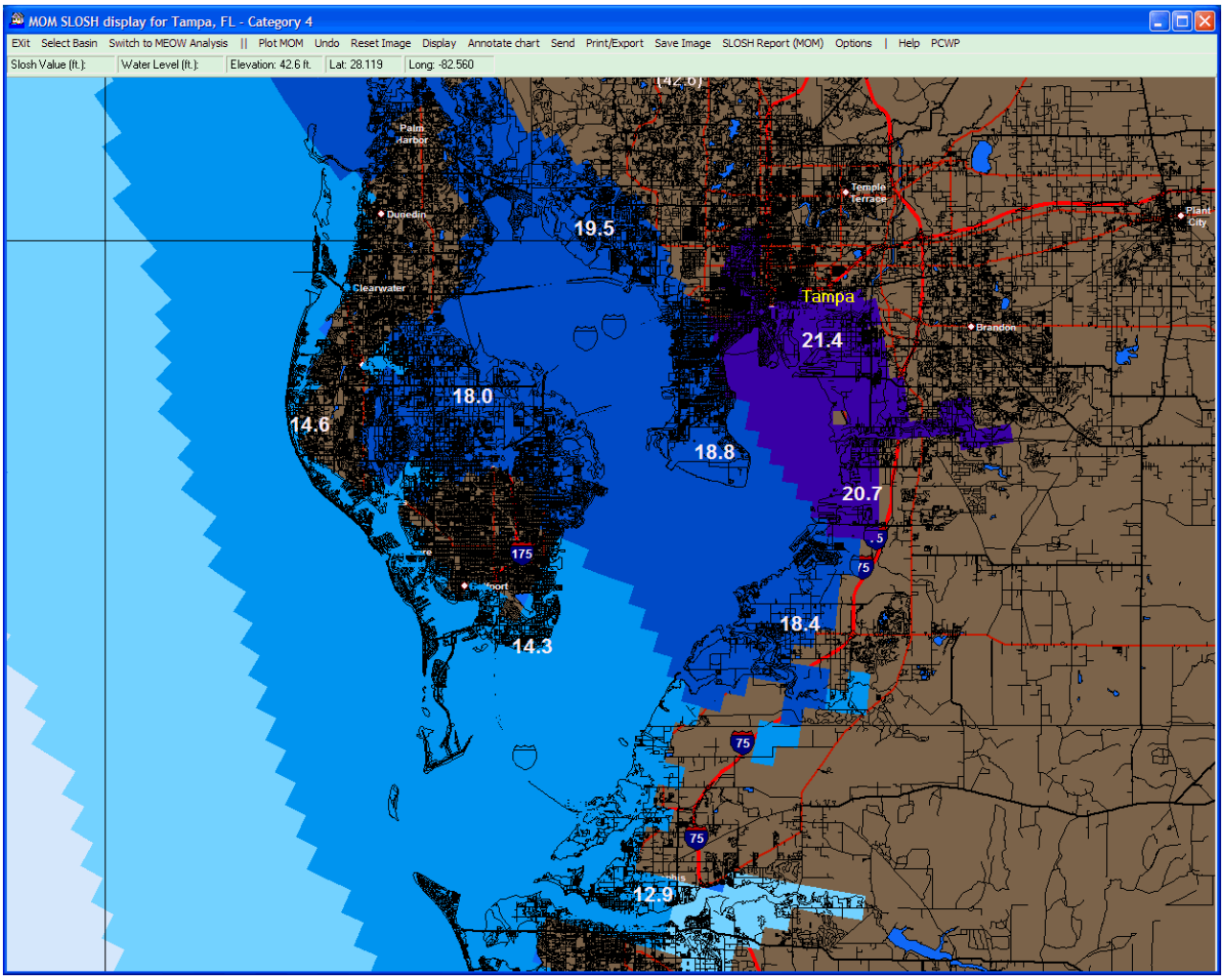


Figure 20

APPENDIX I: SLOSH Inundation Analysis

The SLOSH Inundation Analysis represents the potential storm surge water level that an area may expect for a category of storm. It is available in limited form in the HURRTRAK EM/Pro system and completely in the RM/Pro system. For more details, read on.

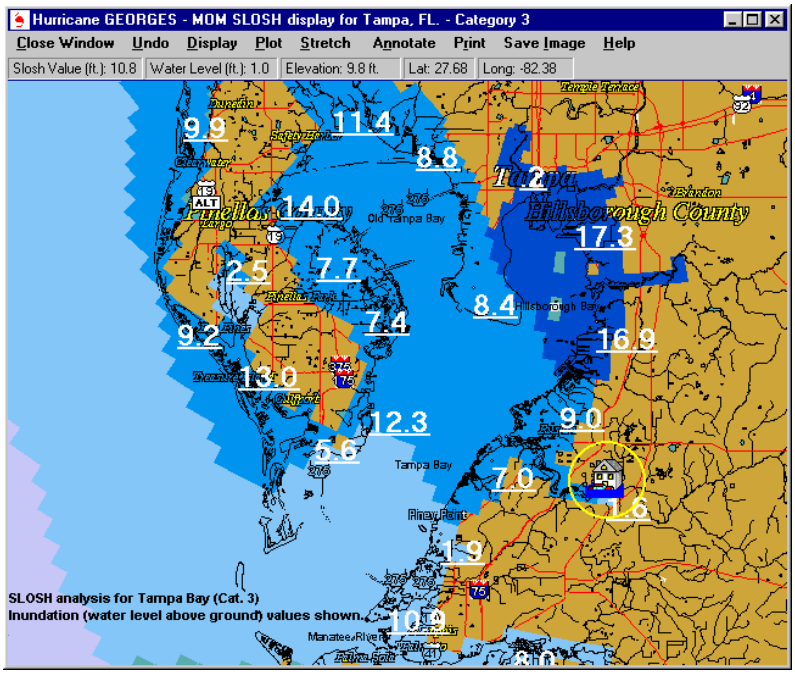
The **SLOSH Storm Surge data** indicates the highest water (above sea level) that coast-al areas may expect for a certain category of storm. For a separate discussion on how SLOSH was developed, see page 270.

The SLOSH data is just part of the "equation" in determining the extent of storm surge flooding. The other part is the elevation of the inland areas in those areas. For example the areas to the East of Mobile Bay have a sharp rise in elevation very close to the coast while areas like Florida Bay or the Savannah River Basis have a slow rise, thus allowing for greater flooding further inland. In addition, the SLOSH data analyses flood level in "rectangular" segments. The differences in elevation across these segments are sometimes significant so while one part of the segment is "under water" other parts may not be. SLOSH alone will indicate the entire area as "flooded".

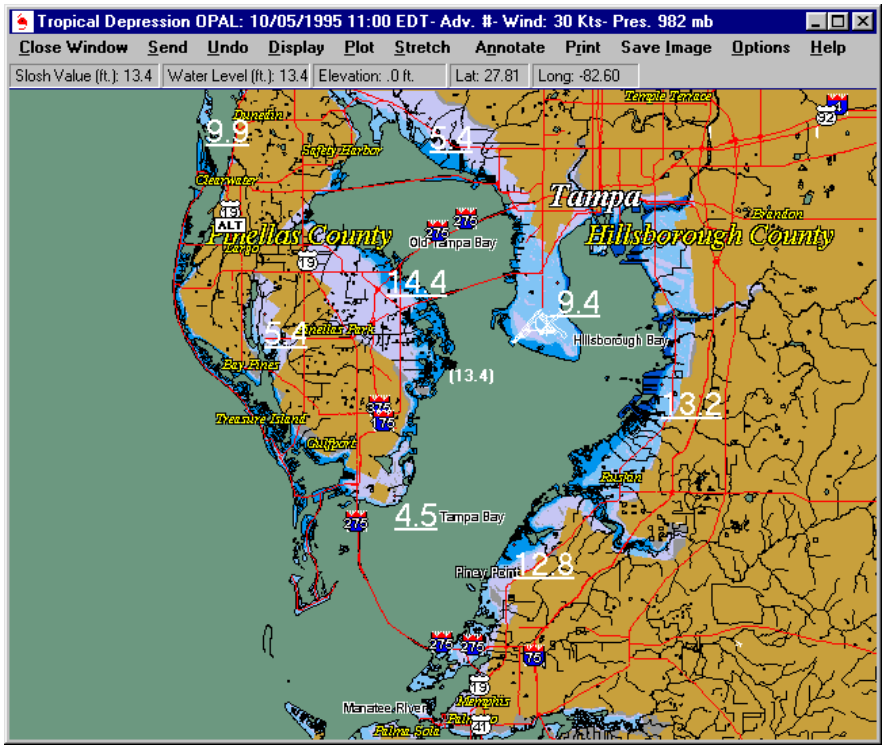
To include the 2nd part of the equation, the HURRTRAK system now includes the 1 arc-second USGS elevation data for all the areas along the US Coastline, PR and the USVI.

When the SLOSH data is "combined" with the elevation data, the result is the SLOSH Inundation Analysis. The system represents that water level (inundation) value with colors.

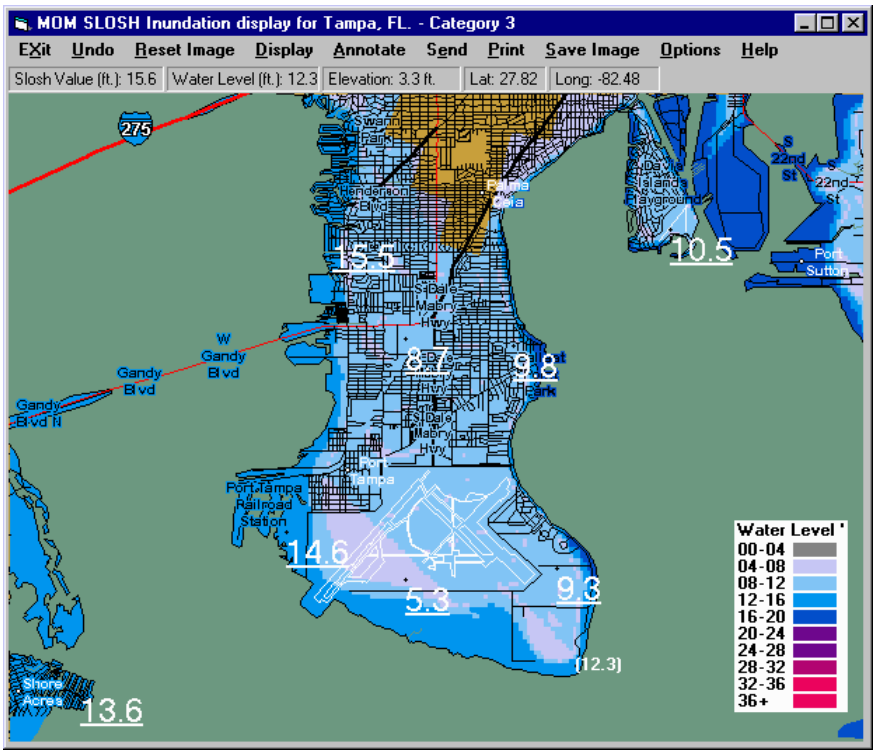
The following is an example of a Category 3 SLOSH analysis using Standard HURRTRAK Charts, showing inundation value as text (Em/Pro).



The following is an example of a Category 3 Inundation analysis using standard HURRTRAK charts (RM/Pro). In this case the inundation levels are analyzed.



The following is an example of a Category 3 Inundation Analysis using the SLOSHVIEW program (RM/Pro).



There are a couple of important things to consider when viewing the Inundation data.

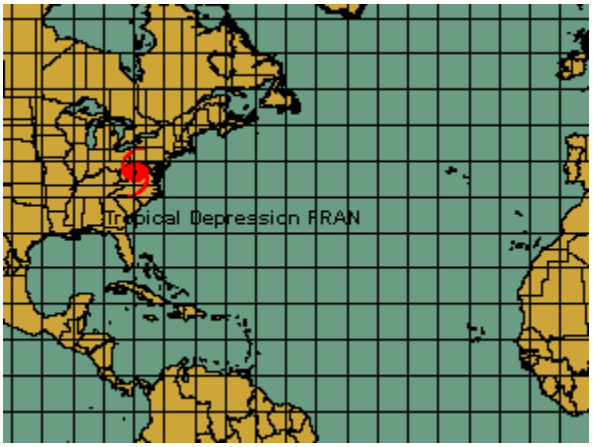
1. Do not attempt to analyze at too detailed a chart level. Using the SLOSHVIEW program you can zoom down to the street level....however neither the slosh data nor the elevation data is resolved to that level of detail.

2. Depending on your processor, it may take quite a while to render the inundation images. A status bar gives you some indication of progress and you can stop the process at any time. Using the smaller charts and running in true color mode (24+ bit color) will provide the best performance. Large maps and lower color capabilities will take the longest. You can check your system video color settings on Windows in Control Panel Display Settings.

3. In HURRTRAK EM/Pro, inundation values may be viewed and labeled on a "standard" SLOSH analysis chart. Complete graphic representation (plots) is only currently available in the RM/Pro system.

APPENDIX J: Legacy Pan and Zoom mapping

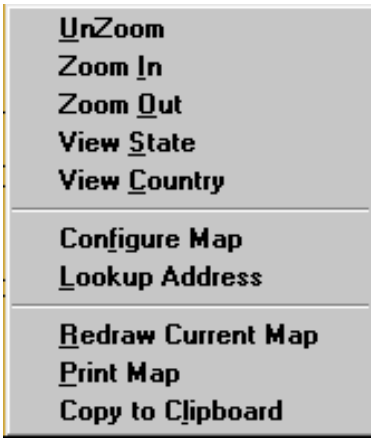
While the tracking system has a “true” pan and zoom implementation, some of the other modules (Recon, Sloshview, Model Display, HWIND) in the system use the built in “legacy” pan and zoom maps. The mapping database (TIger/Line 2006) for the variable size maps, is current, extremely detailed and allows the user to display maps from a large scale all the way down to street level.



Mouse controlled map functions are:

Moving Map - The map area can be shifted by either using the scroll bars on the right and bottom of the screen or by holding down the ctrl key and "hand" moving with the left mouse bottom depressed. You may also move the map using the scroll bars.
Zoom - Zooming in can be accomplished by "rubber banding" area selection using the left mouse button. The user can also use the "zoom in" and "zoom out" tool icons.

Right Mouse Click controlled functions are:



UnZoom - This option undoes the latest zoom in or zoom out.
Zoom In - This option changes the current map to a smaller scale
Zoom Out - This option changes the current map to a larger scale
View State - This option changes the current map to a scale what will fit the entire state currently in the map view. Note: If you are not within a state boundary (like in an ocean area), this function will display a blank map.

Configure Map - This option is a built in function of the mapping system and is not supported by PC Weather Products. You may experiment with the options displayed in the option as none of the changes made are permanent.
Lookup Address - This option allows the user to display a map centered on an address. Use street address, city state and zip.
Redraw Current Map - This option redisplays the current map
Print Map - This option is a built in function of the mapping system and is not supported by PC Weather Products. Use at your own risk.
Copy to Clipboard - This option will copy the current map to the windows clipboard. This is also a built in mapping system function. Do not confuse this with the copy to clipboard function that is available after displaying a storm track.

APPENDIX J1: HURRRAK Maps / Tracking Charts

The system's mapping capabilities are somewhat varied depending on what type of tracking map you use.

Fixed Maps - To maintain compatibility with prior versions, fixed maps are available. They are predefined and cover all of the tropical regions.

Pan/Zoom Maps - Greatly enhanced in 2008, the user has the ability to zoom in and out, or pan in any direction on ANY tracking map.

Specialty Maps - Radar and satellite tracking chart are special types of fixed tracking charts. The radar and satellite chart (including SST) are obtained via a connection to the Internet. It is important to note that panning or zooming on these types of charts will result in a "standard" tracking map.... not a zoomed in satellite or radar image..

Fixed ("favorite") Maps

How it works...

There are a considerable number of fixed tracking charts that are included with the system. These tracking charts are shown on the "favorite" tracking chart tabs (up to 3 tabs). The user can move from one chart to another by selecting the Next, Prior and Best Map button. Once selected, this map will always be on this tab until changed.

Sizes:

The come in 3 standard sized.. 640x480, 1024 x 768 and 1400x1048. The size map displayed is controlled in General Options.

Custom maps:

Five of the fixed maps are actually custom maps. This allows the user to create their own "fixed" map. There are 2 ways to do this.

1. Use the Custom Map Creation Function.
2. From the "Map Select" tab, utilize the "Save as Custom Map" option. This will save the current map view as a custom map. Note: Unless the county outlines are shown before "saving", you will not be able to view them when used on a favorite tab.

Misc:

If the user pans or zooms the special topographical fixed map, the re-plotted map will result in a "standard" tracking map, not a zoomed in topographical map.

Pan/Zoom Maps

How it works...

The user has the ability to zoom in and out, or pan in any direction on ANY tracking map. This includes mouse "rubber banding". The system will display the new map area / zoom level and re-plot all of the items originally plotting on the chart. These charts can be zoomed down to street level.

Sizes:

The new map size is dependent on the size of the Hurrtrak "window" as the system will create a map at the largest size possible.

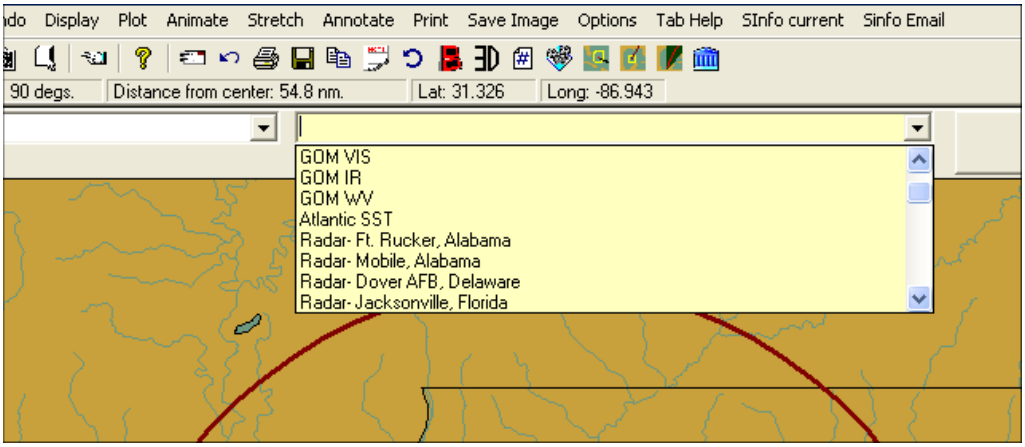
Misc:
- All of the items plotted on the original tracking chart (i.e. forecast track, wind field, locations, etc.) will replot on the new zoomed image. The only exception are any chart notes and legends as they are manually placed by the user.
- The Map Selection Tab is automatically used when the system creates the new map image
- The toolbar has specific icons for assisting the user in the pan and zoom action.

 The bulls eye icon re-centers the map at the storm location while the arrows will pan the map in the direction indicated.

Speciality Maps

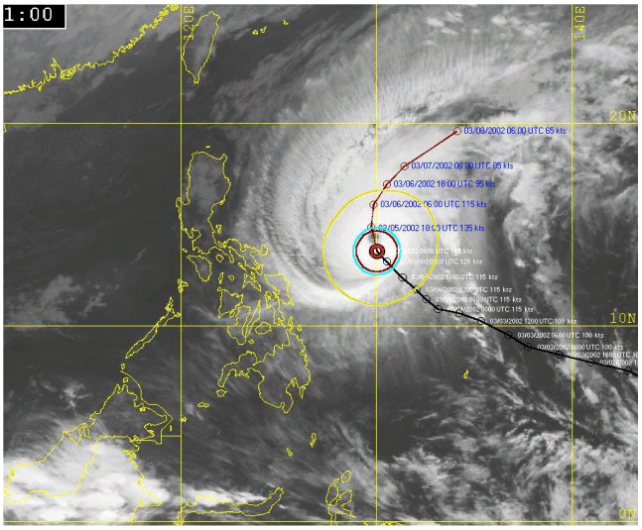
Satellite, SST and Radar image Maps
How it works...
Hurrtrak Online users are able to plot a storm on certain satellite, Sea surface temperature and Radar images. They can be selected from the Satellite image drop down list on any of the "fixed map" tabs. The source for these maps is from 3rd party free internet web sites.

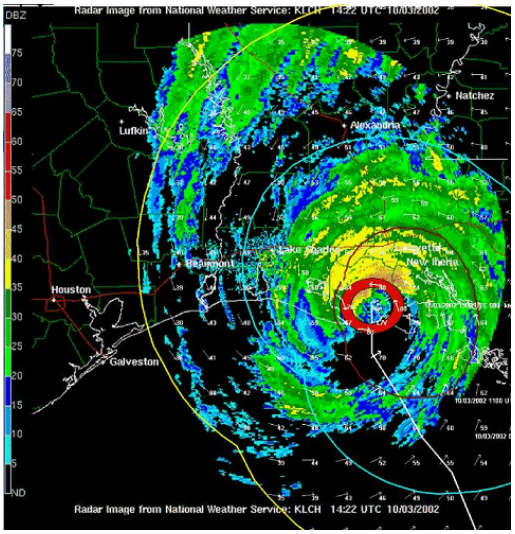
How to select...
These images are selected from any of the three Fixed Tracking Charts by selecting the dropdown just above the tracking chart image. i.e. you must first be looking at a tracking chart image before they can be selected. See below.



Sizes:
They come is miscellaneous sizes and can be scrolled if the image is larger than your display area.

Misc:
These images can be quite large (300K) so a fast internet connection is recommended. Examples of a Typhoon and Radar plot are shown below.


1:00
20N
10N
0N


Radar Image from National Weather Service: KLCH 14:22 UTC 10/03/2002
DBZ
Natchez
Alexandria
Houston
Galveston
Radar Image from National Weather Service: KLCH 14:22 UTC 10/03/2002

APPENDIX K. Memory Management

(THIS SECTION ONLY APPLIES TO USERS WHO ARE RUNNING PC SYSTEMS WHICH ARE GREATER THAN 5 YEARS OLD)

The HURRTRAK system incorporates a "tab interface" into its design. This allows the system to build and display multiple graphics, text and reports... all at the same time. Like most things, you don't get something for nothing. This design used a considerable amount of system memory. If you are using a "memory challenged" system, below are some tips that will reduce the memory requirements of the system.

1. Reduce the amount of variable tracking chart images.
Graphics use a considerable amount of system memory. By setting the number of variable maps in General Options to a lower setting; you will reduce the amount of graphic memory.

2. Reduce the amount of fixed "favorite" maps image.
Again, via the General Options, we can save on graphic memory by deactivating the "favorite tracking chart 2" and/or the "multiple storm tracking chart" tabs.

3. Run the system in a lower resolution graphic mode.
While this suggestion may not be practical for everyone, running the WINDOWS system in 1024x768 rather than 1600x1200, etc. will save a considerable amount of graphic memory. This is because the variable charts always maximize to the largest size as possible. The Windows desktop settings are changed via the Windows control panel.

APPENDIX L. GIS Wind Band Export

The system includes the ability to export the actual, forecast or both actual and forecast wind band data in an ArcInfo™ GIS importable format. This allows the user to do further analysis with that tool. The export format is generic enough so that it could easily be converted to other GIS tool formats by the user. The default wind bands are 34, 50 and 64 knots however this can be easily changed in the general options (see page 99) to any set of wind values (up to 10) desired.

When the Export Wind Data is selected from the FILE menu the system plots the wind bands desired over a "blank map" and then processes this data. The entire process takes anywhere from 20 seconds to several minutes depending on processor speed. During processing, 2 files are written out to the directory specified in the general options (GIS tab). If no location was specified it will be written to the applications temp directory.

File Descriptions:

filename.att

This file contains the wind band attributes information.
An example of the data is shown below. Here the file indicates 3 wind areas of 34, 50 and 64 knots

```
1,34
2,50
3,64
```

filename.dat

This file contains the latitude & longitude boundaries for each attribute.
example data

```
1,auto
-83.37891,28.85417
-83.37891,28.80859
-83.37891,28.76302
-83.37891,28.71745
-83.37891,28.67188
..
.
```

```
where filename is a variable with the following naming convention.

filename= stormname + advisory number + type

where type = F (forecast), A (actual) or B (both actual and forecast)

e.g. FLOYD20F indicates this analysis is done for storm Floyd, advisory 20,
forecast data only.
```

ArcInfo™ IMPORT PROCESS:

The following describes the process for importing the exported wind band data into ArcInfo™.

Data Files:

filename.dat - A text filed formatted to be used by the Arc/Info "GENERATE" command.

filename.att - A text file of attribute information for populating the Arc/Info coverage generated by the "GENERATE" command.

Process:

1. Create an Arc/Info coverage from the filename.att file.

2. Establish topology for the coverage using BUILD

3. Load xport.att into INFO table

4. Join coverage with INFO table (attribute data).

5. Result - a coverage with topology and attribute data that can be used in Arc/Info, ArcView, or loaded into SDE.

Steps:

* Use the "GENERATE" command in Arc to create an Arc/Info polygon Coverage.

* To create topology, you will need to then use the Arc/Info "BUILD" command with the "POLY" option. This will separate the overlaying wind band areas in to distinct, spatially related polygons.

** After this process, the "USER-ID" (in the INFO table) of the first two polygons (surrounding polygons) become zero. You will need to re-assign the "USER-ID" in TABLES or INFO in order to match its attribute table. The "USER-ID" is the key to correctly join the polygon information with the attribute information.

* Use TABLES or INFO to create the database file for loading filename.att. The DEFINE command is used to create the table structure. After the structure is created, use the "ADD FROM" command to add the records from the filename.att file.

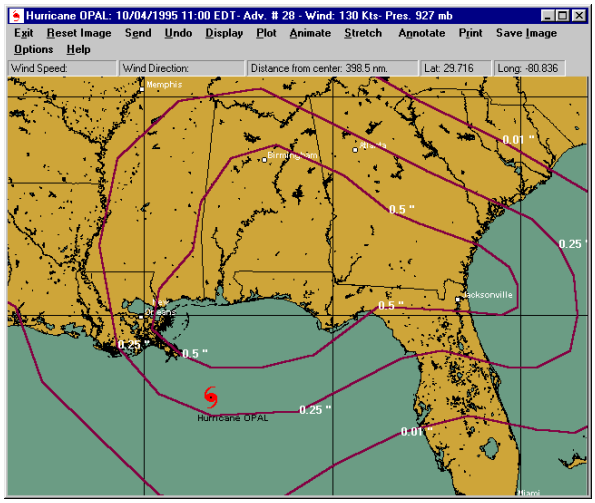
* After the table and coverage are created, join the two by using the Arc/Info "JOINITEM" command.

If you have any suggested additions or changes to this process, please contact us at support@pcwp.com.

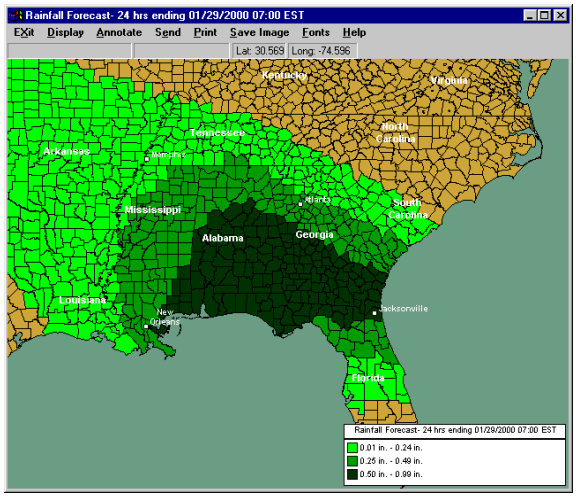
APPENDIX M. Rainfall Forecast Capabilities

The HURRTRAK software coupled with HURRTRAK ONLINE allows the use to depict that latest Quantitative Precipitation Forecast (QPF) information. It can be displayed in either an analysis format or a color shaded county thematic format. The QPF information is issued by the National Weather Services Hydrometeorological Prediction Center. Please note, while the QPF information does a good job of showing the location of "normal" precipitation amounts, it is not designed to forecast excessive precipitation amounts over a "small" area. The information is presented in the HURRTRAK system in one of the 2 following formats.

ANALYSIS



COUNTY THEMATIC



Some more information on the National Weather Services QPF "desk" is shown below (excerpts from http://www.hpc.ncep.noaa.gov/)

Quantitative Precipitation Forecasts (QPF)

The QPF desk prepares and issues forecasts of accumulating (quantitative) precipitation, heavy rain, heavy snow, and highlights areas with the potential for flash flooding. The basic QPF products are primarily directed to the NWS's forecast offices, but are available for anyone to use. The heavy snow forecast products, in association with the short-range public forecast products (described below), serve as a coordinating mechanism for the NWS's winter storm watch and warning program. Through a continuous watch for excessive rainfall, heavy snow, and winter storms, this desk ensures that the highest quality forecast products are constantly available.

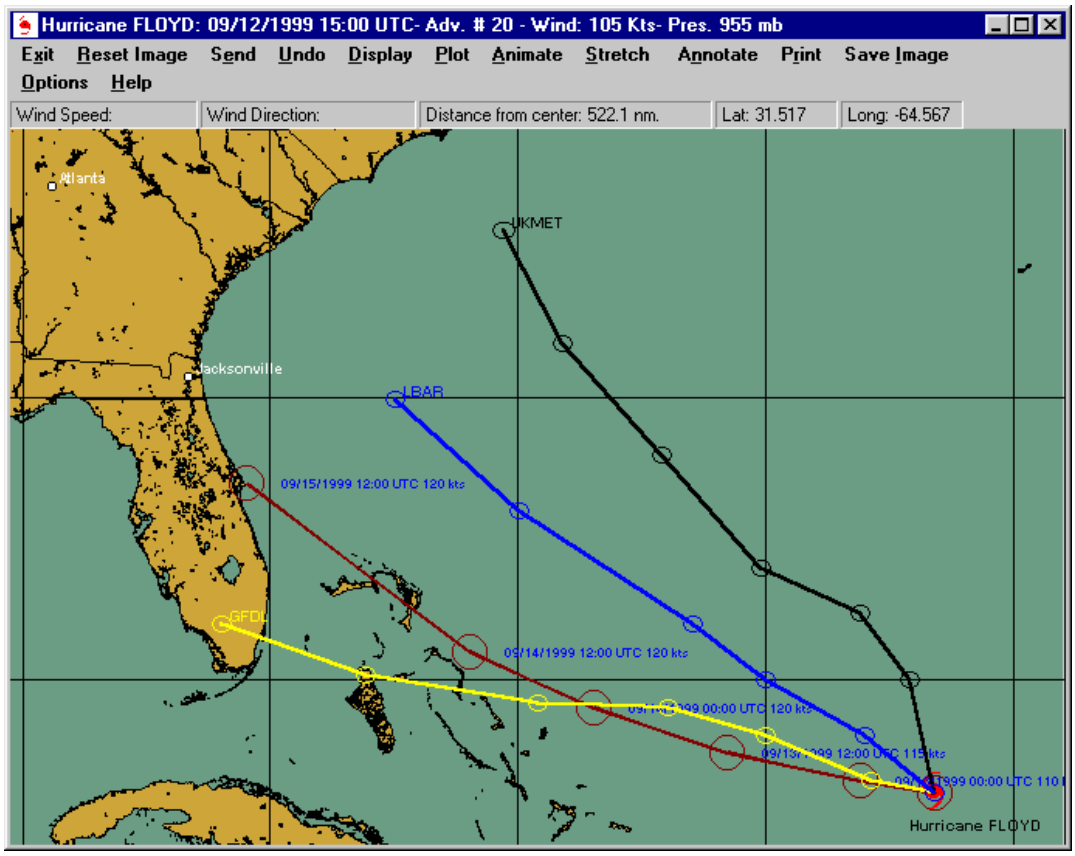
The QPF desk is collocated with the National Environmental Satellite Data and Information Service (NESDIS) and together, they comprise the National Precipitation Prediction Unit (NPPU). NESDIS meteorologists prepare estimates of rainfall and current trends, based on satellite data and this information is used by the QPF short term forecaster as part of the input for individual 6-hourly forecasts that cover the next 12 hours. With access to WSR-88D/Doppler radar data, satellite estimates, and NCEP model forecast data as well as current weather observations and HPC analyses, the forecaster has the latest data for use in preparation of short-range precipitation forecasts. Meteorological reasoning discussions are regularly written and issued with the forecast packages to explain and support the forecast.

Short-Range (days 1 and 2) Public Forecasts

The primary aim of this forecast desk is to accurately depict the evolution of weather systems that will affect the continental U.S. during the next two (2) days. Forecasts are based on the subjective interpretation of the NWS's short-range computer models (namely the Eta, NGM, and the aviation model (AVN)). The short-range forecast package is issued twice a day on output from the 00Z and 12Z model runs. These forecasts predict the location and strength of fronts and pressure systems and the coverage and type of any

precipitation every 12 hours out to two days in the future. These forecasts serve as the basis for the forecast maps that appear on many television weather forecasts across the country.
The Basic Weather forecaster is responsible for initiating reconnaissance flights whenever the potential exists for major winter storm development over the East and Gulf Coast states. These data gathering flights provide additional data for the forecasters and computer models to more accurately assess the pre-storm environment.

APPENDIX N. Hurricane Model Forecast



The HURRTRAK software coupled with HURRTRAK ONLINE allows the use to depict that latest available Hurricane Model Forecast. The models that we are likely to include are the GFDL, UKMET, LBAR, BAMM, BAMD and NHC98. A complete discussion on the various hurricane models that the NHC utilizes can be found at

www.nhc.noaa.gov/aboutmodels.html.

It is important to note that the user should always make plans based on the official NHC forecast and not on forecast model "raw" output.

APPENDIX NN. Google Earth Interface

Go to earth.google.com to download the software. This function will not work without Google Earth being installed. We strongly suggest you learn how to use Google Earth and understand all of its capabilities. We will not be able to support your questions about Google Earth.

From Wilipedia….

Google Earth is a virtual globe program that was originally called Earth Viewer and was created by Keyhole, Inc. It maps the earth by the superimposition of images obtained from satellite imagery, aerial photography and GIS over a 3D globe. It is available under three different licenses: Google Earth, a free version with limited functionality; Google Earth Plus, which includes a few more features; and Google Earth Professional, intended for commercial use.

Formerly known as Earth Viewer, Google Earth was developed by Keyhole, Inc., a company acquired by Google in 2004. The product was renamed Google Earth in 2005 and is currently available for use on personal computers running Microsoft Windows 2000, XP, or Vista; Mac OS X 10.3.9 and above; Linux (released on June 12, 2006); and FreeBSD. In addition to releasing an updated Keyhole based client, Google also added the imagery from the Earth database to their web based mapping software.

The resolution is high enough in many large cities, such as Melbourne, London, Washington, D.C., and Seattle, that it is possible to clearly discern individual buildings, houses, the color of cars, and even the shadows of people and street signs.

The degree of resolution available is based somewhat on the points of interest, but most land (except for some islands) is covered in at least 15 meters of resolution[3]. Las Vegas, Nevada and Cambridge, Massachusetts include examples of the highest resolution, at 15 cm (6 inches). Google Earth allows users to search for addresses (for some countries only), enter coordinates, or simply use the mouse to browse to a location.

Google Earth also has digital elevation model (DEM) data collected by NASA's Shuttle Radar Topography Mission. This means one can view the Grand Canyon or Mount Everest in three dimensions, instead of 2D like other map programs/sites. Since 23 November 2006, the 3D views of many mountains, including Mount Everest, have been improved by the use of supplementary DEM data to fill the gaps in SRTM coverage[4]. In addition, Google has provided a layer allowing one to see 3D buildings for many major cities in the US and Japan.

Many people using the applications are adding their own data and making them available through various sources, such as the BBS or blogs mentioned in the link section below.

Google Earth supports managing three-dimensional geospatial data through Keyhole Markup Language (KML). It is available in a free version, and in licensed versions for commercial use.

……..

There are 2 methods in which HURRTRAK interfaces with Google Earth (GE).

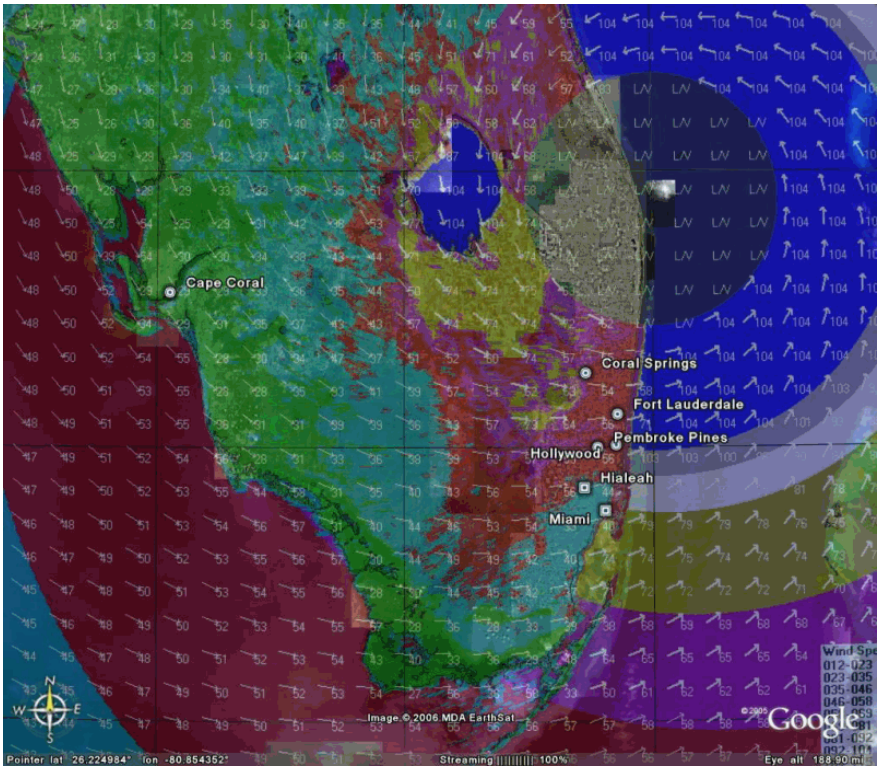
- Graphic Export
- KML language interface

Each method is described in more detail below.

Graphic Export:

The Hurrtrak system has the ability to export “ANY” graphic image that is currently being viewed within the system to a format that can then be viewed using Google Earth. When selected, Hurrtrak will automatically display the image on Google Earth without any other user key/mouse strokes needed. Depending on the image, land and sea areas are set to transparent, allowing the Google Earth maps to show through. Please keep in mind that the graphics will enlarge as you zoom in with Google Earth... i.e. the detail will remain constant.

An example of an exported image is shown below.



Export of wind pattern around Wilma

KML Export:

Definitely more powerful than Graphic Export is the KML method… In this case, the Hurrtrak system has the ability to export key hurricane tracking and analysis data to Google Earth via it's native interface language called KML. Somewhat similar to a GIS type language, KML allows data to be presented many different ways including a three dimensional manner. The data types that are available for export from HURRTRAK to Google Earth are:

Current Storm Track & Observations
Current Wind Radii (poly)
Current Wind Field (points)
Current Watch and Warning area
Official Forecast path (track and points)
Official Forecast Average Error
Official Forecast Wind Radii
Official Forecast Wind Field Grid
Climate Forecast (latest)
Forecast Model Plots
Rainfall Forecast (latest)
Storm Animation
Wind Band
Report (Impact Summary) *
SLOSH Storm Surge data (from SLOSHVIEW program) **

* This is a special option that will generate multiple GE KML outputs as defined by General - Google Earth options on page 106. This is an easy way to create the same set of output every time in addition to saving time and keystrokes.

** This imports data from various National Weather Service and other sources for viewing on Google Earth. See Using Google Earth external data on page 317 for more information on this option.

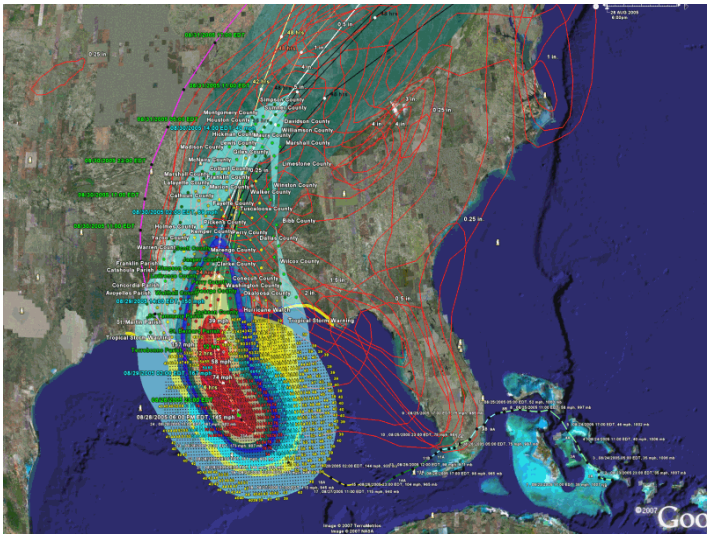
All of these are available from the Google Earth (GE) menu dropdown except the additional option of exporting an impact summary report from that tab menu and the SLOSH export which is found in the SLOSHVIEW program.

When one of these is selected,, the system will create the KML If GE is installed, GE will start up and display the data requested on the GE interface. There are several considerations when using the KML Export method.

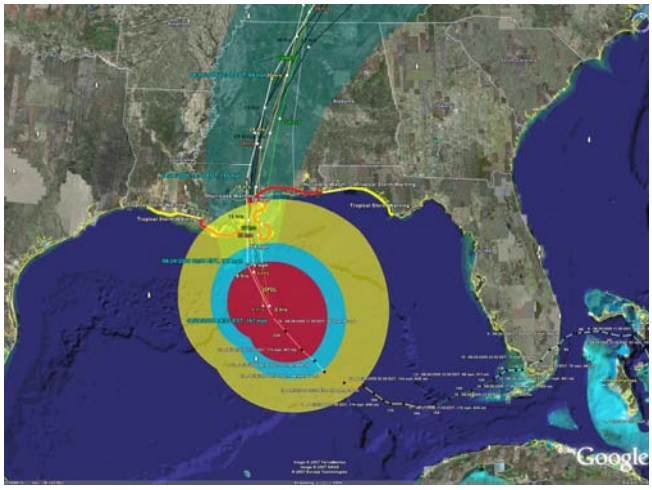
1. Make sure you are running the latest version of Google Earth.
2. Within the tracking system, the user has the ability to generate multiple KML files/layers with a single selection of "ALL SELECTED OUTPUT". The outputs that will be created is controlled within the General Options of User Preferences. Most users will select a subset of all of the possible outputs.
3. When exporting multiple layers at once, we suggest you deselect all of them initially in GE and then select the data you want to view. If you don't do this you may be presented with something that looks like the image on the next page.

4. GE has animation controls which will allow you to control the animation characteristics.
5. When viewing SLOSH storm surge polygons on GE, make sure you do the following
    a. have the “Terrain” layer on (checked) in GE
    b. In GE options, set the terrain quality to its max value
    c. In GE options, set the terrain exaggeration to a value of 1
    d. Zoom in as far as you can in order to analyze the data as the terrain data is not reflected at a low to medium zoom level. You may have to experiment with this.
    e. Turning 3D Buildings on in GE will create some interesting affects.
6. Learn Google Earth (it’s not that hard)

The following is an example of multiple (TOO MANY) KML layers on one image.



It is best to deselect all of the layers within GE first and then display only the ones you want to see together at the same time. See image below.



APPENDIX O. NHC Wind Radii Forecast Considerations

The national hurricane centers forecast advisory details the current and forecast wind radii for the area of 34, 50 and 64 knot winds. Since many of the functions of the system utilize this data, there are several considerations the user need to be aware of.

1. Due to the squally structure of a tropical system, the winds vary greatly in each quadrant. While a portion of a quadrant may be experiencing sustained hurricane force winds other areas in that quadrant at the same radius may be sustaining a much lower wind speed.

2. The "observed" and forecast wind radii represent the largest radii of those winds in that quadrant. The reason for this is the same as indicated in #1.

3. The maximum winds and the radii winds being forecast represent sustained winds that are experienced from an open "ocean type" exposure. Due to the affects of friction, sustained surface winds over land are much less. Since the winds above the surface are not impacted as much by friction, land areas typically experience "forecasted" winds only during the passage of squalls… when these higher level winds are brought to the surface in the form of gusts.

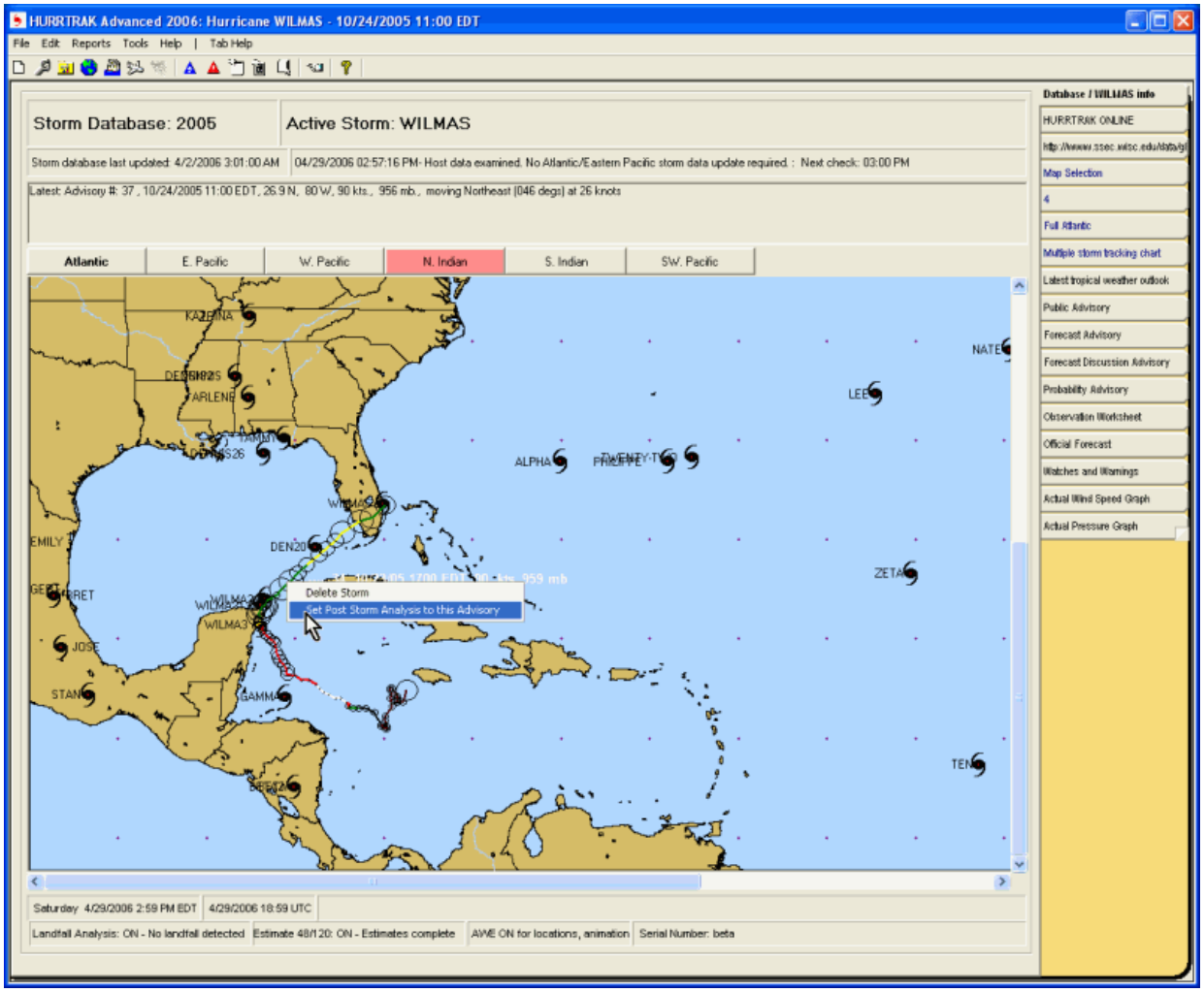
4. While 12 and 24 hour forecast are quite good, the NHC Average forecast error at 120 hours is over 370 nm. Care should be taken when utilizing forecast information past 24 hours.

APPENDIX OO. Interactive Chart Notes

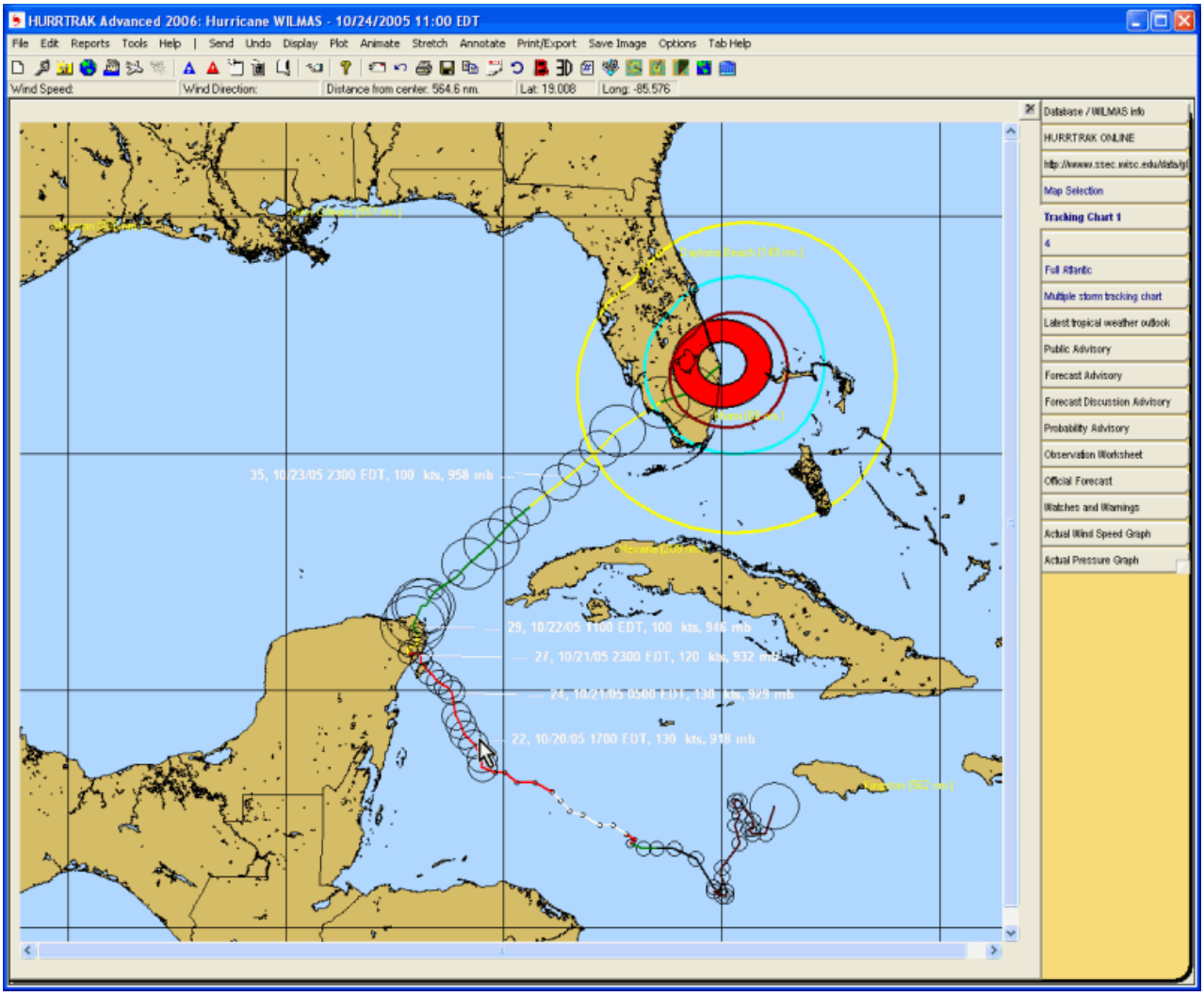
The Hurrtrak system, optionally, displays the Chart Notes or observation details directly upon the tracking chart. The automatic display of the chart notes is controlled via the Plotting Options as shown on page 115.

The user also can view these chart notes on the Database Tab and any TRACKING CHART TAB. As you pass over an observation point (not forecast point), the chart notes for that observation are displayed. The secondary function initiated by a "right click" of the mouse is different for each type of tab.

With the Database Tab, a "right click" over an observation allows you to set that advisory as the Post Storm Analysis point. If you happen to point at a storm, you can also delete the storm from the database.



While viewing one of the TRACKING CHART TABS, a "right click" will permanently place the chart notes onto the image. If you press the right button down, hold it down, while dragging your mouse to another location, and then letting go of the right button, the chart notes will display in that location. The image below shows how the chart notes were positioned away from the storm track.

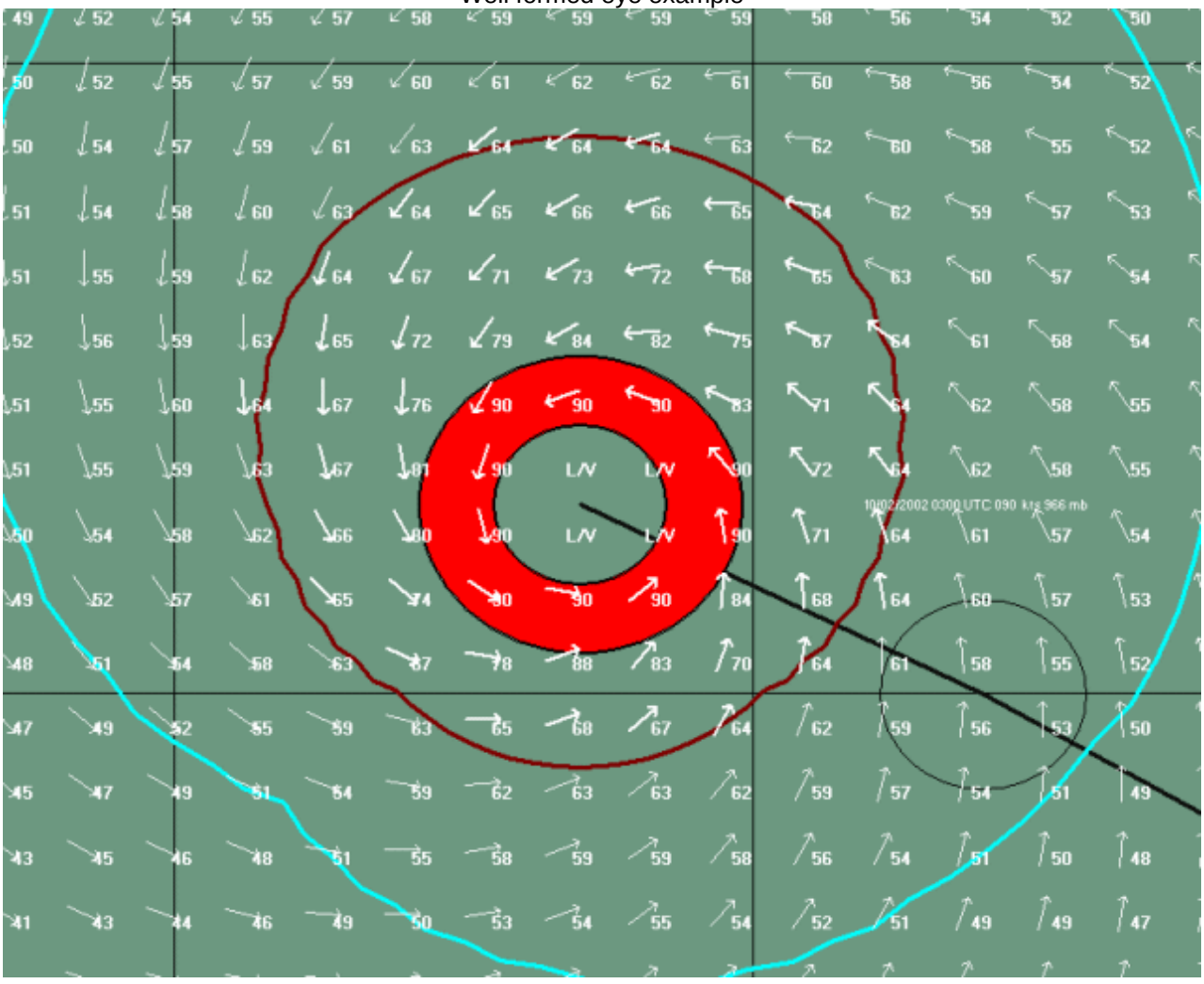


APPENDIX P. Depiction of storm's eye, eye wall and wind field

The Hurrtrak system depicts a storm's eye and eye wall (if they exists) as well as the areas of 34, 50 and 64 knot winds.

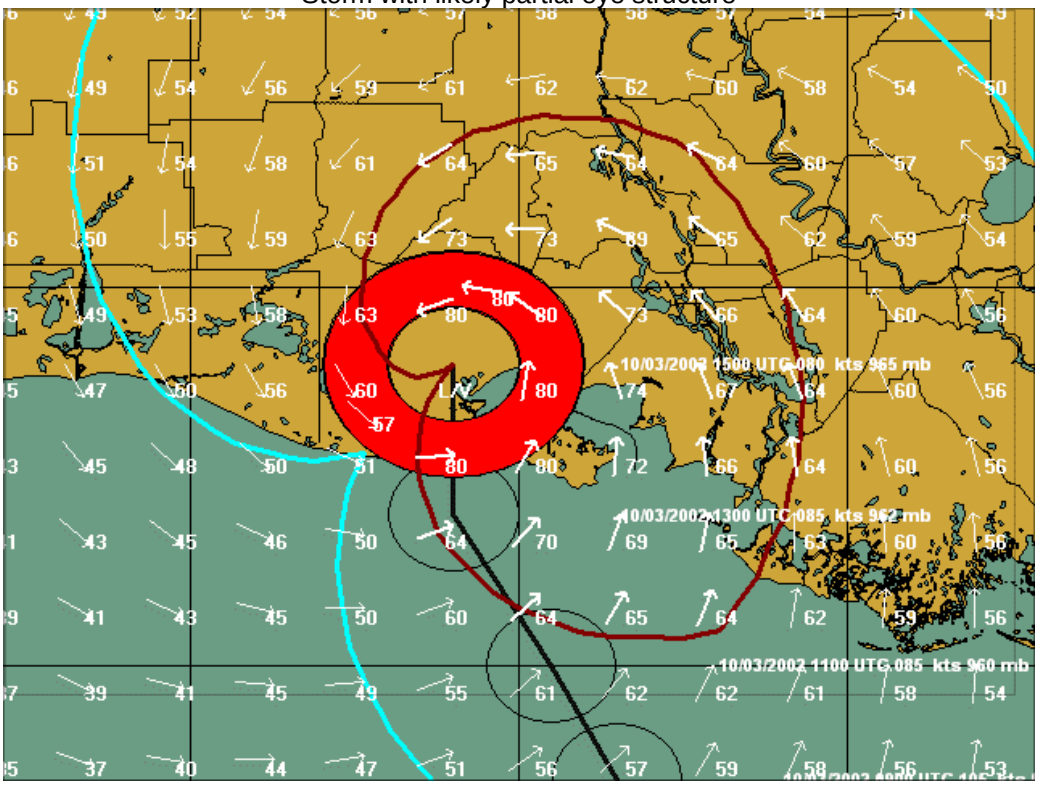
EYE/ EYE WALL:
If the storm has a well formed eye structure and is reported on the NHC Forecast Advisory, the system will use the reported eye diameter and draw a donut type structure that looks like the image below. The eye wall width is assumed to be 1/2 of the diameter of the eye. i.e. a 20 nm eye diameter is assumed to have an eye wall width of 10 nm. Maximum winds are assumed to be in the eye wall with light and variable winds in the eye.

Well formed eye example



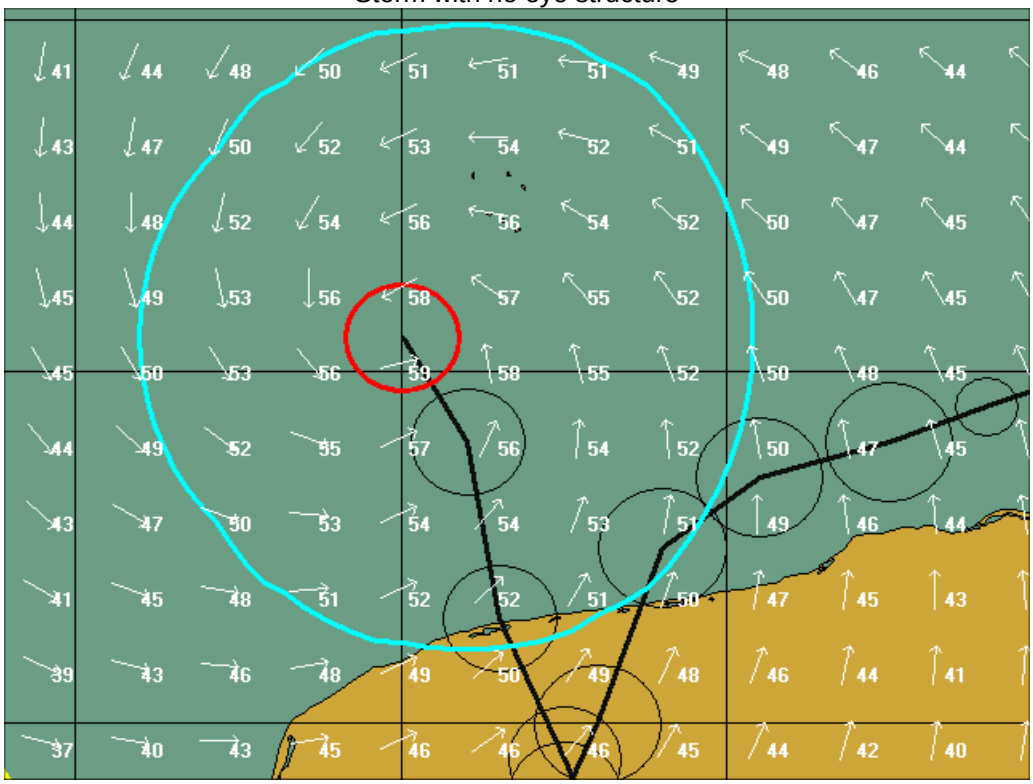
The Hurrtrak system does not depict partial eye walls however it does show quadrants where lighter winds exists.. even if an eye is reported. The example below shows what is likely to be a partial eye wall situation.

Storm with likely partial eye structure



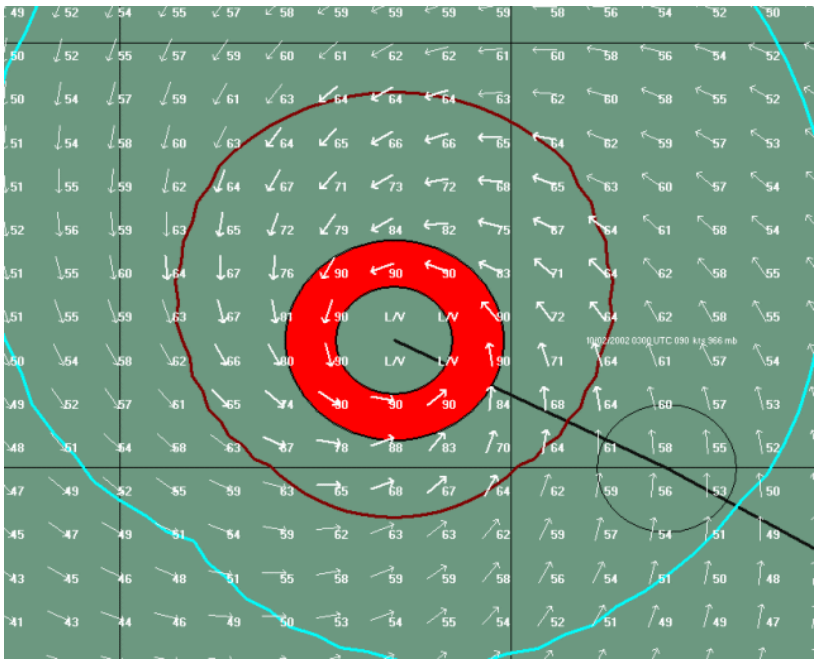
If the storm does not have an eye, the eye and eye wall width are set to 0 (via Hurrtrak Online). In this case the system shows a small red circle indicating the center area of the storm. Maximum winds are assumed to be near the center of the storm

Storm with no eye structure

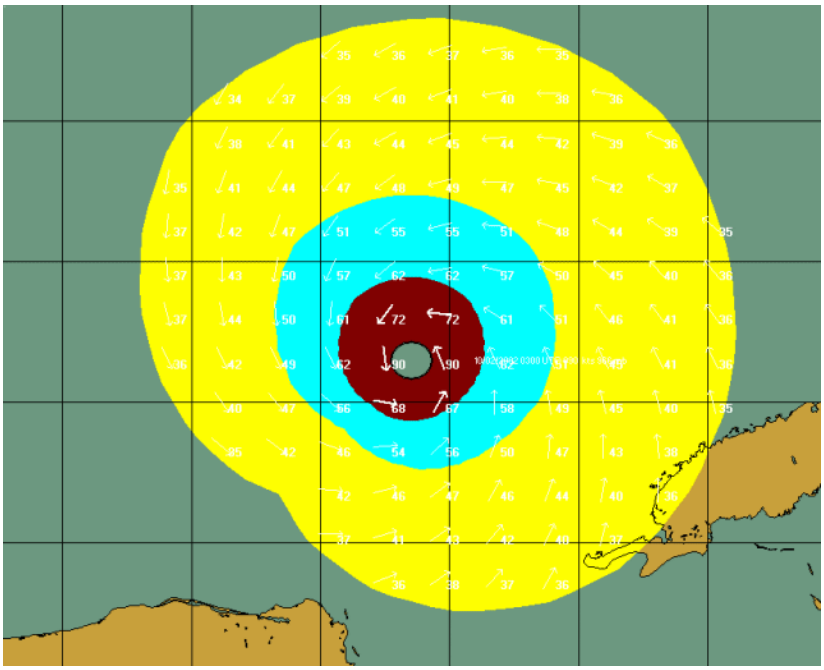


Note: Hurrtrak Online reports an eye under the following conditions.
1. It is reported on the NHC forecast advisory
2. If it is not reported on the NHC forecast advisory but a storm has winds of 70 knots or greater, an eye diameter of 18 nm is assumed. This is to cover the situation where hurricane recon is not available for the storm but it is likely to have an eye.

WIND FIELDS:
The 34, 50 and 64 knot winds areas are depicted based on the information in the NHC Forecast Advisory. See NHC Wind Radii Considerations for more information about the data represented in this advisory. The example below shows a 90 knot hurricane with the areas of 34, 50 and 64 knot winds depicted.

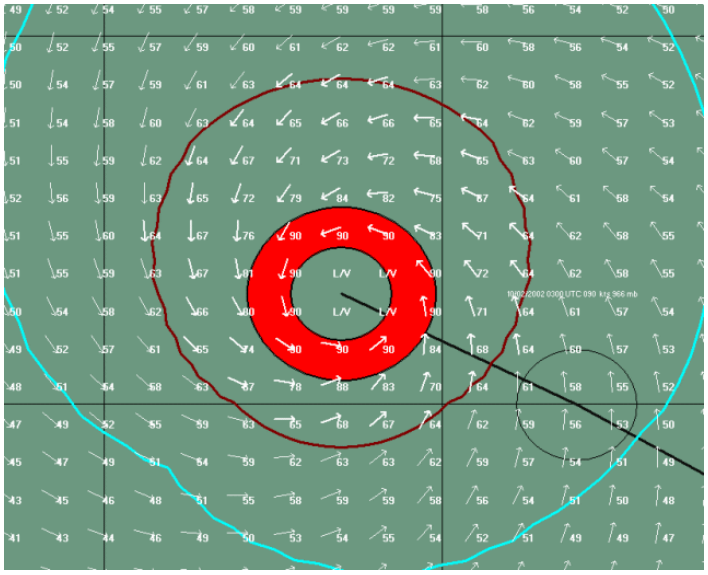


Plotting Options (wind circle vs area):
The user also has the option, via Plotting Options, to depict the wind fields as shaded areas or not at all. The example below is an example of a storm with wind field shading

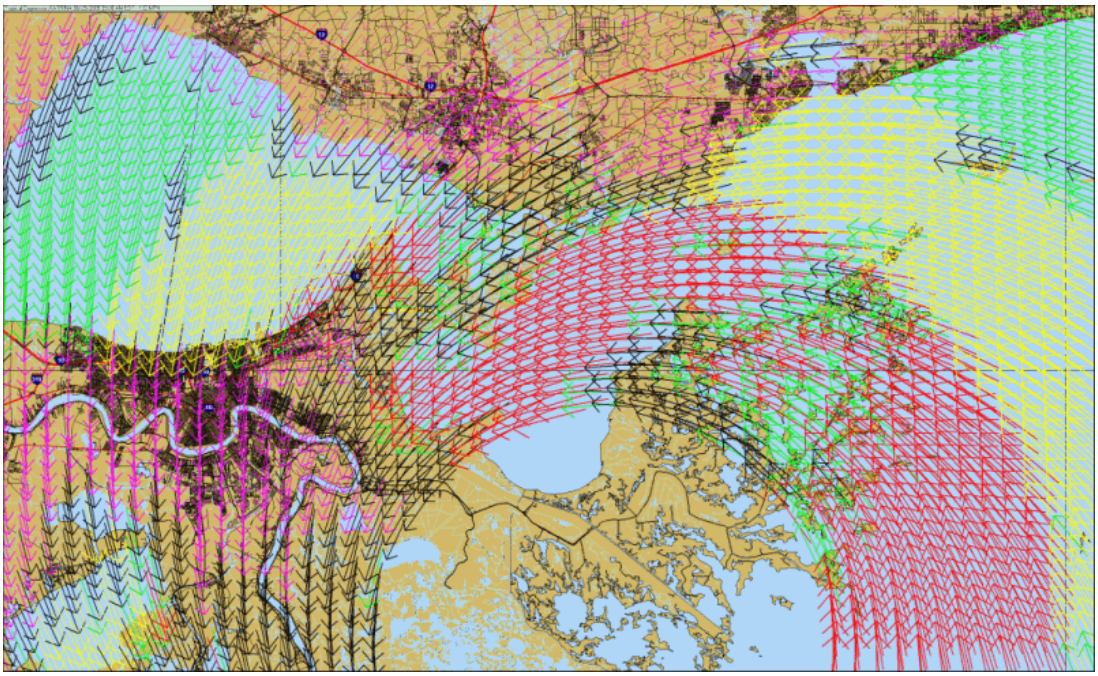


APPENDIX PP. Multi-Colored wind vector display

The Hurrtrak system has the ability to display wind “arrows” around a storm or present a multi-colored wind vector display. The standard wind arrow display on both static and during animation looks like the following



The user can change the plotting and/or animation options to, instead, plot multi-colored wind vectors where the vector color and size represents the wind speed. See Plotting Options on page 115 and/or Animation Options on page 87 to view those user preferences. When choosing the multi-colored display it is recommended that you increase the density of the arrow plot and perhaps decrease the arrow size. It all depends on the scale of map being used and the size of your screen display. An example of a vector display is shown below.



The color of the vector is controlled within the plotting user options.

APPENDIX Q: Advanced Wind Estimation

This function should be used with extreme care as it can lower the estimated wind speeds significantly. While we believe it produces more accurate results, it is highly dependent on accurate Land Cover Database information or correct user input. Like any good estimation calculation, it may in some cases, underestimate the actual winds experienced. If you always want to overestimate wind speeds, do not use this feature. See considerations section at the end of this topic.

The National Hurricane Center's estimated maximum winds and wind field radii issued in their advisories are valid, generally, for open sea exposures only. They cannot factor local wind characteristics for inland areas. This is where Advanced Location Wind Estimation "comes in".

Advanced location wind estimation (AWE) is a function of HURRTRAK that applies a wind speed "correction factor" to the forecast/estimated wind speeds based on the local “site” characteristics. These include distance from open (ocean) exposures, types and density of vegetation and man made structures, and elevation being analyzed. Established wind dynamics formulae are applied for the location... adjusting the estimated wind speeds (sustained and gusts) to account for frictional, exposure and height considerations of the location.

There are 2 methods of employing this capability.

Site/Location characteristics - With this option the user specifies the characteristics of a specific location. This is useful when creating impact reports.

NLCD (National Land Cover Data) - This option allows the system to determine the characteristics of locations. zip codes and county area. This method is only available for US mainland locations.

All graphics that use AWE, such as wind pattern and wind arrows, utilize the NLCD information while reports can use either. If there is no user entered information for a report location, the system will use the NLCD data.

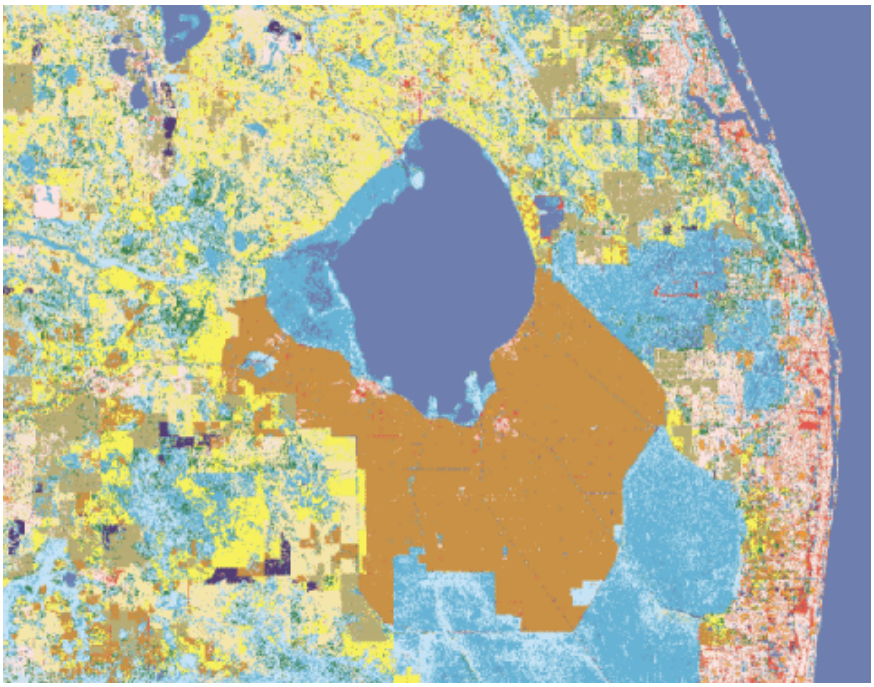
If you require the most accurate wind speed estimate reports possible, we recommend that you use the site/location method and enter the roughness index information for each of your locations. This can be a time consuming exercise as it requires detailed knowledge of a locations surroundings and the ability to translate this into roughness index values.

We will describe each method below.

NLCD Method :

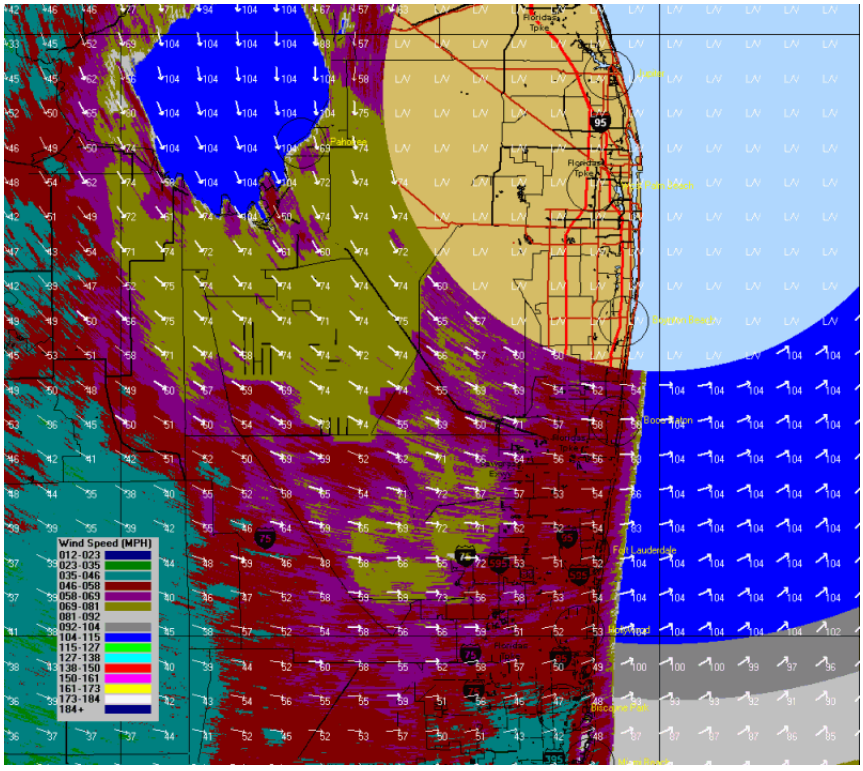
The NLCD Enhanced AWE has 3 important changes over the original Site/Location characteristics method.

The NLCD database (see image below) has land usage information on every state. An example of the land usage graphic for part of S. Florida is shown below. It shows the urban land usage of the Florida east coast as well as the Everglades and Crop areas. With his information we can estimate the "roughness index" (friction) for any location by direction of wind. i.e. an East wind into Palm Beach has a different "roughness index" than a west wind.



The system then considers these factors to adjust the “raw” derived wind speed (as determined by the NHC forecast advisory) for this site. Typically the adjusted wind speeds are considerable lower than the “raw” values. This function affects the forecast and actual location wind impact reports as well as the summary report.

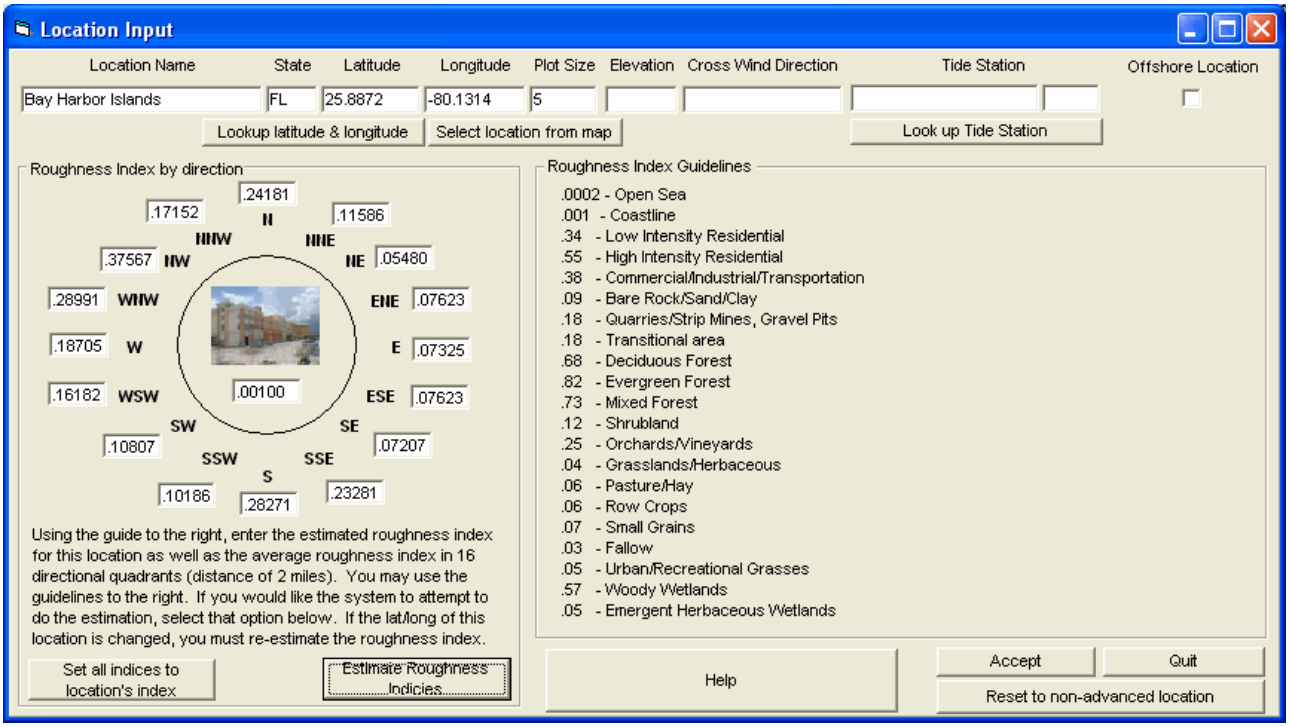
This type of information allows us to create graphics such as the wind pattern shown below.



Site/Location Characteristics Method:

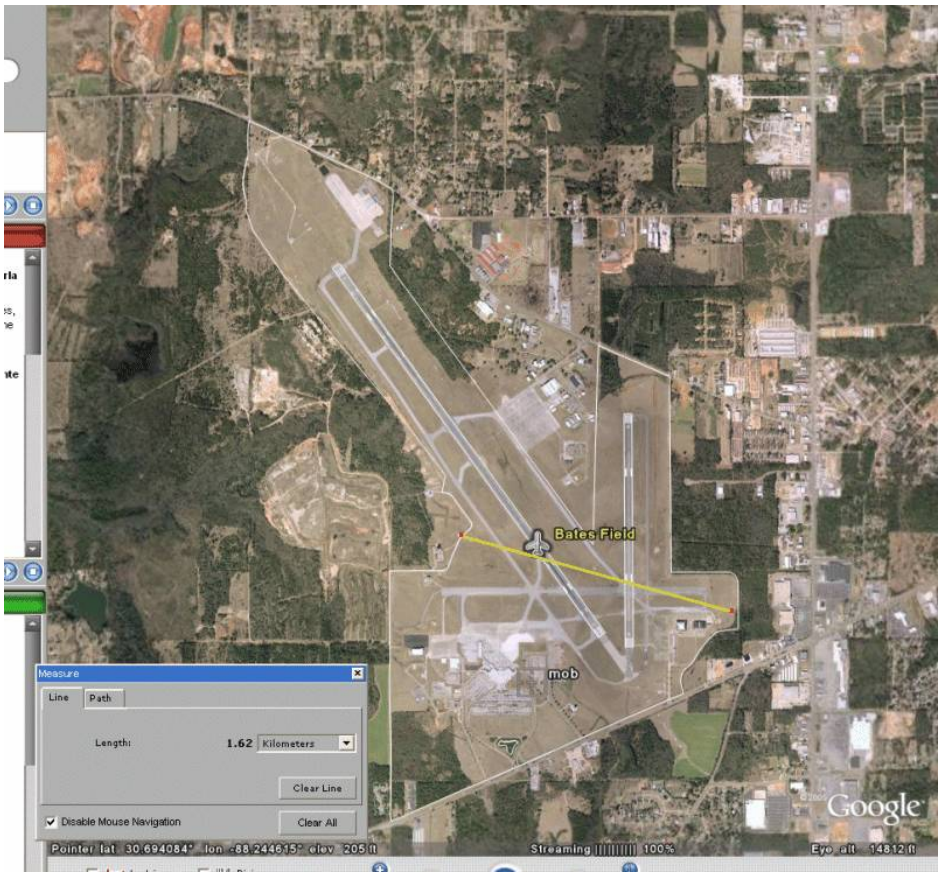
For the most accurate wind estimation reports possible and for areas outside of the US, the user can enter site/location characteristics within the Location Maintenance portion of the System Setup function.

An example of the advanced location data entry screen is shown below.



In this example, we have defined a location, Bay Harbor Island, FL. Based on the site characteristics, we have entered the average roughness indices, for 16 compass directions. We used a distance of about 2 KM “upstream” for each direction to help determine the average RI. This type of analysis requires a good knowledge of your sites and may require some experimentation as real data is analyzed. i.e., if the system is always underestimating easterly winds, your RI values may be too high in that direction.

Many users use aerial images and local knowledge to help determine the best values. The image below is for an airport location as shown on Google Earth. In order to determine a point location's surrounding RI values, these kinds of tools are invaluable.



If your requirements are not quite as strict, the NLCD method does provide good results and you do not need to this type of site analysis.

Advanced Wind Estimations affect on reports:

When creating a wind impact location report, the system will utilize the user entered information, if available. If no information was entered, it will use the NCLD database data to estimate the friction (RI) values instead.

The following is an impact summary report for Hurricane Wilma in 2005. All of the locations used the NLCD database information.

General							
Location	ST	Max Wind AWE (mph)	Max Wind Non AWE (mph)	Max Gust AWE (mph)	Date/Time of Max Wind EST	CPA	D
Pahokee	FL	99	121	129	Monday: 10/24/2005 11:00	25	N
Fort Pierce	FL	79	108	103	Monday: 10/24/2005 11:00	43	N
Boca Raton	FL	70	118	92	Monday: 10/24/2005 07:30	23	N
Key Biscayne	FL	70	118	91	Monday: 10/24/2005 10:00	54	N
Fort Myers	FL	67	125	87	Monday: 10/24/2005 06:30	46	N
Key West	FL	67	119	87	Monday: 10/24/2005 05:00	73	N
West Palm Beach	FL	67	115	87	Monday: 10/24/2005 08:00	2	N
Boynton Beach	FL	66	115	86	Monday: 10/24/2005 08:00	16	N
Naples	FL	66	127	85	Monday: 10/24/2005 05:00	16	N
Miami Beach	FL	65	118	85	Monday: 10/24/2005 07:30	50	N
Stuart	FL	65	109	84	Monday: 10/24/2005 12:30	25	N
Jupiter	FL	64	112	83	Monday: 10/24/2005 12:30	6	N
Perrine	FL	63	121	82	Monday: 10/24/2005 07:00	53	N
Homestead	FL	62	121	81	Monday: 10/24/2005 08:00	59	N
Okeechobee	FL	62	115	81	Monday: 10/24/2005 08:00	53	N
Fort Lauderdale	FL	61	118	80	Monday: 10/24/2005 07:30	32	N
Hollywood	FL	61	118	79	Monday: 10/24/2005 07:30	38	N
Biscayne Park	FL	60	118	78	Monday: 10/24/2005 07:00	44	N
Marathon	FL	53	74	69	Monday: 10/24/2005 09:30	91	N
Key Largo	FL	48	80	62	Monday: 10/24/2005 09:30	84	N

The Max Wind AWE column represents the maximum sustained winds using Advanced Wind Estimation; the next column shows the “uncorrected” wind speeds and the next column shows the max gusts using AWE. As you can see, the impact of AWE on the report values is significant. Sustained wind speeds along the SE coast of Florida, where the land usage is most dense, have been decreased about 40-50% while the wind speed adjustment in more exposed areas, is much less.

One interesting location on this report is Pahokee. It is located on the SE shore of Lake Okeechobee and thus is more exposed to a NW wind off of the lake. The detail hourly report (below) verifies that indeed their highest winds were likely on the back side of the storm when the winds switched to the NW.

Pahokee (AWE), FL profile - Hurricane WILMA									
Date / Time	Time of day	Wind Speed (mph)	Wind Gusts (mph)	Wind Direction (degs.)		Distance to 39 mph winds	Distance to 58 mph winds	Distance to 74 mph winds	Distance to center
Monday: 10/24/2005 00:30 EDT		026	037	113	↖		0084 mi.	0153 mi.	0228 mi.
Monday: 10/24/2005 01:00 EDT		027	039	113	↖		0076 mi.	0145 mi.	0220 mi.
Monday: 10/24/2005 01:30 EDT		028	041	113	↖		0066 mi.	0135 mi.	0210 mi.
Monday: 10/24/2005 02:00 EDT		030	043	113	↖		0054 mi.	0123 mi.	0198 mi.
Monday: 10/24/2005 02:30 EDT		031	042	113	↖		0044 mi.	0113 mi.	0188 mi.
Monday: 10/24/2005 03:00 EDT		033	044	113	↖		0033 mi.	0102 mi.	0177 mi.
Monday: 10/24/2005 03:30 EDT		034	046	113	↖		0024 mi.	0090 mi.	0168 mi.
Monday: 10/24/2005 04:00 EDT		035	048	114	↖		0015 mi.	0078 mi.	0159 mi.
Monday: 10/24/2005 04:30 EDT		037	049	114	↖		0006 mi.	0066 mi.	0150 mi.
Monday: 10/24/2005 05:00 EDT		038	051	115	↖			0054 mi.	0140 mi.
Monday: 10/24/2005 05:30 EDT		041	054	114	↖			0036 mi.	0122 mi.
Monday: 10/24/2005 06:00 EDT		045	058	112	←			0017 mi.	0104 mi.
Monday: 10/24/2005 06:30 EDT		048	062	110	←				0085 mi.
Monday: 10/24/2005 07:00 EDT		078	101	112	←				0067 mi.
Monday: 10/24/2005 07:30 EDT		076	099	113	↖				0058 mi.
Monday: 10/24/2005 08:00 EDT		074	096	111	←				0048 mi.
Monday: 10/24/2005 08:30 EDT		072	094	105	←				0041 mi.
Monday: 10/24/2005 09:00 EDT		000	000	000					0036 mi.
Monday: 10/24/2005 09:30 EDT		000	000	000					0028 mi.
Monday: 10/24/2005 10:00 EDT		000	000	000					0025 mi.
Monday: 10/24/2005 10:30 EDT		000	000	000					0031 mi.
Monday: 10/24/2005 11:00 EDT		099	129	344	↓				0041 mi.
Monday: 10/24/2005 11:30 EDT		099	129	328	↘				0055 mi.
Monday: 10/24/2005 12:00 EDT		081	105	319	↘				0069 mi.
Monday: 10/24/2005 12:30 EDT		069	089	316	↘			0005 mi.	0083 mi.
Monday: 10/24/2005 13:00 EDT		062	081	315	↘			0018 mi.	0097 mi.
Monday: 10/24/2005 13:30 EDT		054	071	304	↘		0006 mi.	0038 mi.	0119 mi.

APPENDIX QA: Advanced Wind Estimation Considerations

We are pleased with the performance of Advanced Wind Estimation (AWE) but we feel that is important to mention a few things about the accuracy of wind estimation in general and advanced wind estimation specifically.

In the documentation and helps we try to communicate that AWE does a good job of estimating sustained winds in Cat 3 and below storms and also outside of the eye wall. The eye wall is an extremely turbulent region where violent up and down motions of air will bring very strong winds aloft down to the surface.. thus reducing the "normal" effect of friction on wind speed.

In Cat 4 and 5 storms like Charley and Katrina, we suggest that you do not rely solely on AWE for estimating winds in the eye wall of this hurricane. We cannot afford to underestimate the winds in these violent storms near the center.

To understand this better, generally, a perfect site specific wind forecast (location impact report) depends on several things to occur.

1. A perfect forecast of storm track, storm strength and 34, 50 and 64 wind radii.

2. A homogeneous wind field around the storm. i.e. no eyewall vortices, local effects and squally areas of higher winds, etc.

3. For AWE, a perfectly analyzed location with exact roughness index figures in all quadrants.

Let's address each one.

1. It is obvious we do not have item #1.. While NHC forecast are very good, especially 12 and 24 hours in advance, the average error is still in the 80-90nm range at 24 hours. That aside, forecasting the exact storm strength and wind radii has proven to be nearly impossible.

2. As everyone who experienced hurricanes knows, a homogeneous storm does not exist in nature. Hurricane Frances, for example, caused much higher winds in NE Florida than was expected due to a detached persistent area of squalls that prevailed in this region even though the storm center was near the Florida West Coast. The region inside the eyewall can be a violent area with vortices and other local effects that no software can predict.

3. While we have a good feel for the type of land usage around a location, without a detailed site by site analysis, it is not exact. AWE uses this information to adjust the raw extrapolated winds downwards to a more realistic level.

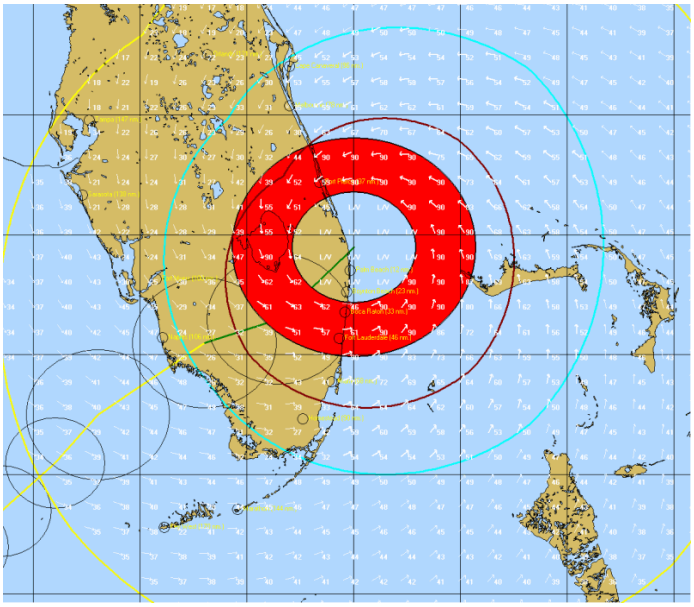
Due to these 3 factors, Hurrtrak (and any other software) is not able to provide EXACT wind speed forecast.. thus the use of the word estimate. While AWE is a huge improvement, it is not a panacea.

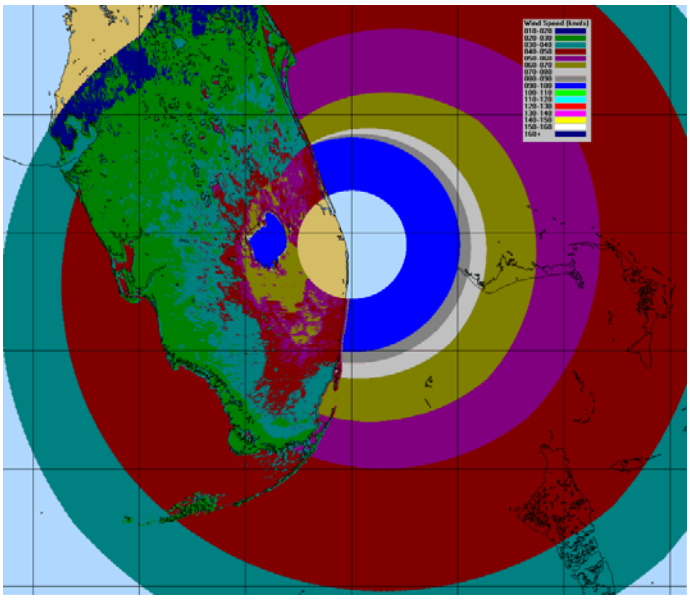
Specific to AWE, because it lowers the location's wind speed to a more realistic level, It is important to understand that it WILL sometimes UNDERESTIMATE wind speed forecast for a location (as in a location impact report) something that the standard method rarely did. This may be suitable for some customers while other customers might want to make decisions based on the higher end forecast generated from the standard (non-AWE) method. Remember the wind impact reports estimate SUSTAINED (2 minute average) wind speeds at an observation point 10 meters above ground level. Wind gusts can be as much higher and average about 30-50% greater than the average wind speed.

Finally, If you choose to use AWE, I would highly recommend that you do not use AWE for the county or zip code report. This is because AWE is site specific and a zip code/county area average is not representative of a single point. Imagine a county that is 5% coastline and 95% pine forest. The pine forecast friction factors will dominate bringing the calculation of the wind level down to an unrealistic level for the coastal location. The only place you can use AWE on the zip and county report with some confidence is with areas that are entirely inland and uniform in nature.

APPENDIX QQ: Wind Pattern Display

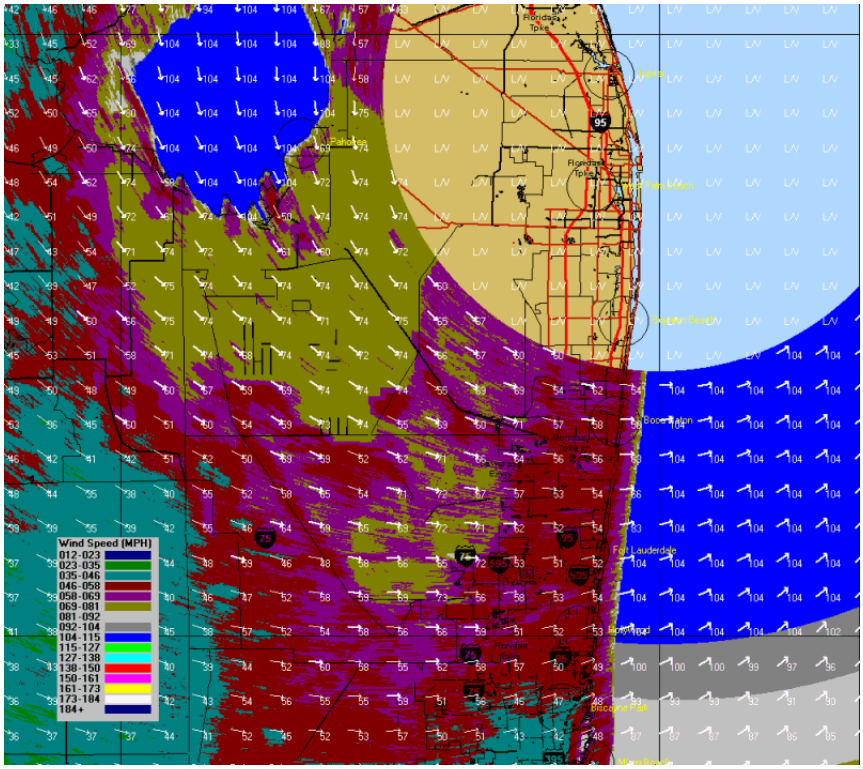
One of the capabilities of the HURRTRAK system is to display an actual or forecast image of the estimated winds across a geographic region. This display is unique because unlike a wind arrow or wind vector display, this image is a solid pattern that covers every "pixel" location on a map. This is best described with the following 2 graphics. The first one shows wind arrows around a storm. The 2nd image is the same area described with the "wind pattern" display.





As you can see the 2nd image provides much more detail than the first. This kind of detail, using Advanced Wind Estimation, does come with a cost… processing time. If not using the pre-processed RI files, depending on screen size, the rendering of this image may take 20 minutes or longer. Fortunately, if you download, the RI files, the rendering time is reduced to less than 1 minute. You can find our more about the Processed RI files on the topic of Plotting Options on page 115.

The great advantage of the wind pattern display is that “rougher” areas, that typically reduce sustained winds, are easily depicted. For example on the image below, you can see the higher winds over and leeside of Lake Okeechobee with lower winds over the metro areas of Broward, Palm Beach and Dade counties.



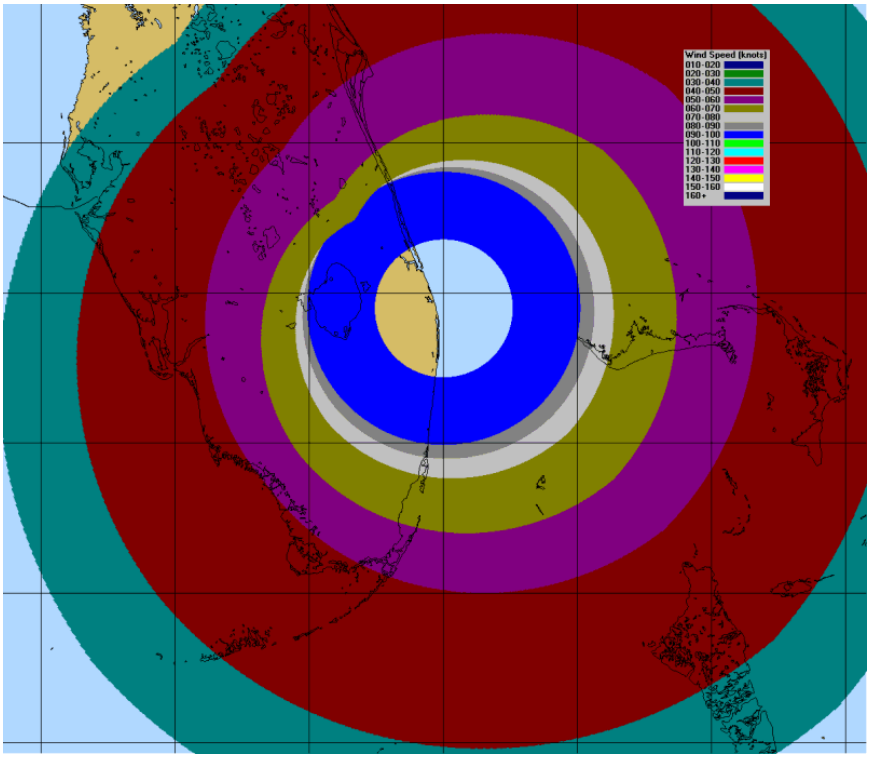
The wind pattern display is available for selection from any tracking chart.

To view a forecast wind pattern, the user must first select the PLOT- Forecast Position option from the Map Select Tab (see page 131 and page and page 147). Once the forecast plot is displayed, Display- Wind Pattern can then be selected from the menu.

Wind Pattern Animation:

- The user can also select to create an animated wind pattern. This may take very long because multiple animation frames are being created. If you are going to use this function it is imperative that you download the processed RI files mentioned on the prior page. You can find our more about the Processed RI files on the topic of Plotting Options on page 115.
- After the wind pattern animation is created, it is not saved unless you select the Save to Animated GIF option. It can then be redisplayed using MS Internet Explorer or some other animated GIF viewer.

One final note… if using EMPRO or AWE is not selected, the resulting Wind Pattern image plots much faster but does not show the effects of friction on the sustained wind levels. See image below.



APPENDIX R: Risk Alert

Alert Description	Value	
Strike Probability	48	
Closest Point of Approach	84	
Direction of Movement	45	
Maximum Wind Speed Predicted	44	
Hours till arrival of 34 knot winds	0	
Hours till arrival of Max winds	8	

The Risk Alert section of the General Tab is designed to quickly analyze an approaching storm's critical risk factors to the user's base location. There are 6 separate factors represented. It is important to note that not all factors should be treated equally. For example, a situation where a location has a 100 recent chance of getting hit by a tropical storm in the next 5 hours may appear to have more red risk factors than a situation where you have a 40 percent chance of getting hit by a Category 4 storm in the next 24 hours. Obviously, the second situation represents a much higher risk!

The risk factors are...

Strike Probability - This is the probability that a storm will pass within 60 nm of the base location. The colors equate to the following probability values.
Red- 33+
Orange- 22- 32
Yellow- 11 –21
Green- 0-10

Closest Point of Approach - This is the storm's forecasted closest point of approach in nautical miles to the base location. The colors equate to the following values.
Red - < 80 nm
Yellow- 81 - 200 nm
Green- 201+

Direction of Movement - If the storm is within 600 nm of the base location, this represents the deviation of the storm's current motion from the compass angle of a direct approach. For example if a storm is heading at right angles to a direct approach, this value would be 90, if moving in the opposite direction, this value would be 180. The colors equate to the following values.
Red- 0 – 22
Yellow- 23- 45
Green- 46+

Maximum Wind Speed Predicted - This represents the maximum wind speed forecast (knots) for the base location. The colors equate to the following values.
Red- 100+
Orange- 65 – 99
Yellow- 36 – 64
Green- < 36

Hours until arrival of 34 knot winds - This represents the number of hours before the first 34 knot winds are expected. The colors equate to the following values.
Red- 0 - 23 hours

Yellow- 24 - 48 hours
Green- > 48 hours

Hours until arrival of maximum winds - This represents the number of hours before the maximum winds are expected. The colors equate to the following values.
Red- 0 - 23 hours
Yellow- 24 - 48 hours
Green- > 48 hours

APPENDIX S: User Interface Considerations

The "tabstyle" user interface allows the user to access data faster as well as making the system much easier to use.

There are a few items, however, that need to be kept in mind while using this system interface.

1. **Since a lot of information is being created when the system is initiated, startup time is longer than most systems. The "rewards" of waiting is in the time you save after the system is initialized.**

2. **For the same reason as stated above, the system requires more memory than most systems. This is why we have stated that the suggested memory requirements are 512 MB.**

3. **Tab setup can be done via the General Options. This allows the user to disable tabs, move the tab labels and otherwise personalize their preferences.**

4. **To CLOSE a tab, select the small X at the upper right hand corner of the tab area.** 

APPENDIX T: Tool Bars

There are several button icons on the main menu's tool bar. While operating the system, when you pass your cursor over them, text will highlight indicating what action that icon performs.

APPENDIX T1: Default vs. Hurrtrak Online Database

In 2008 we changed the way Hurrtrak Online updates current storm databases.

Prior to 2008 Hurrtrak Online would always update the current default database. This caused problems because many times users while reviewing storm from prior years (databases) would have current data automatically loaded into the prior database. i.e. if is is 2008 and a user was reviewing storms from 2005 and therefore had the 2005 database set as the default database, 2008 data would be loaded into the 2005 database.

To avoid this situation, as well as a few others, in 2008 we now have 2 database variables defined.

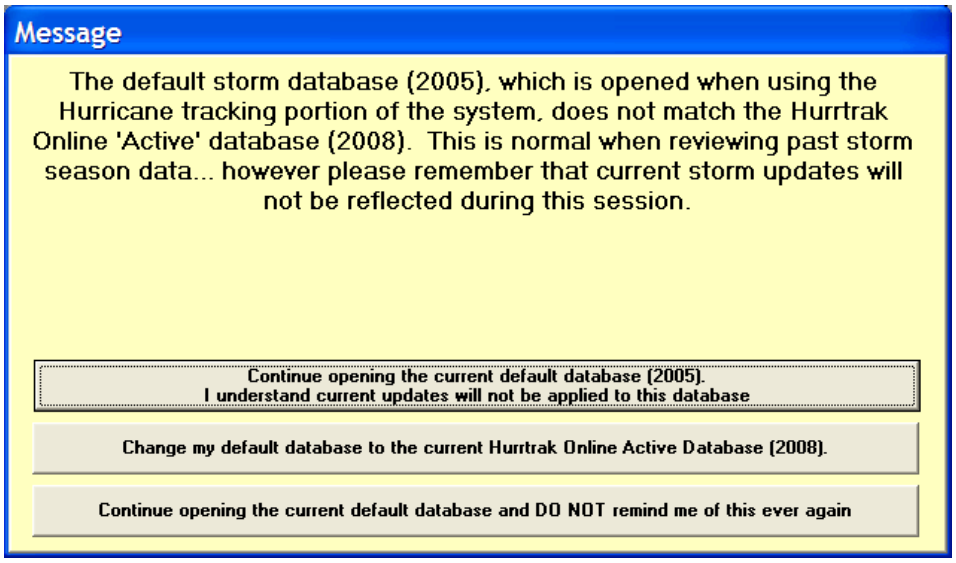
- Default Storm Database: This is the database that the system will open when using the Hurricane Tracking modules of the system.. This also includes the QuickPlot program. This option is set via the FILE menu option of Hurrtrak or in the System Setup portion of the system.

- Active Hurrtrak Online Database: This is the database that Hurrtrak Online will update with current data or past storm year's data you may manually select from the Hurrtrak Online Tab. This option is set in the Hurrtrak Online options.

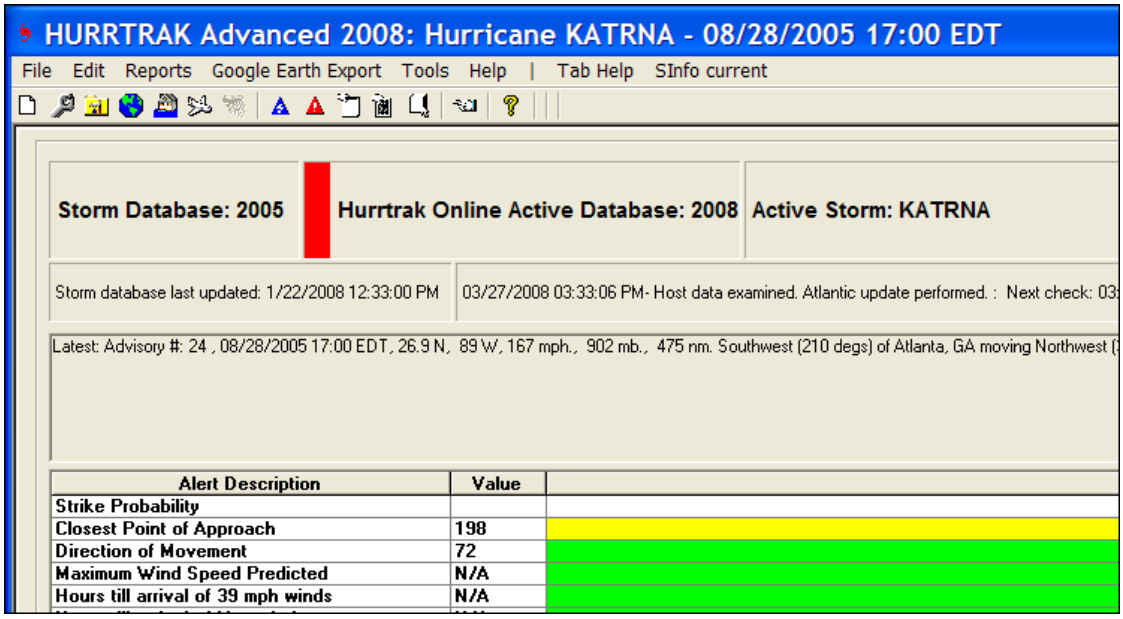
The value of these field will allow for several situations

1. When the default and Hurrtrak Online databases match the system will not notify the user. This is considered the "normal" operating mode.

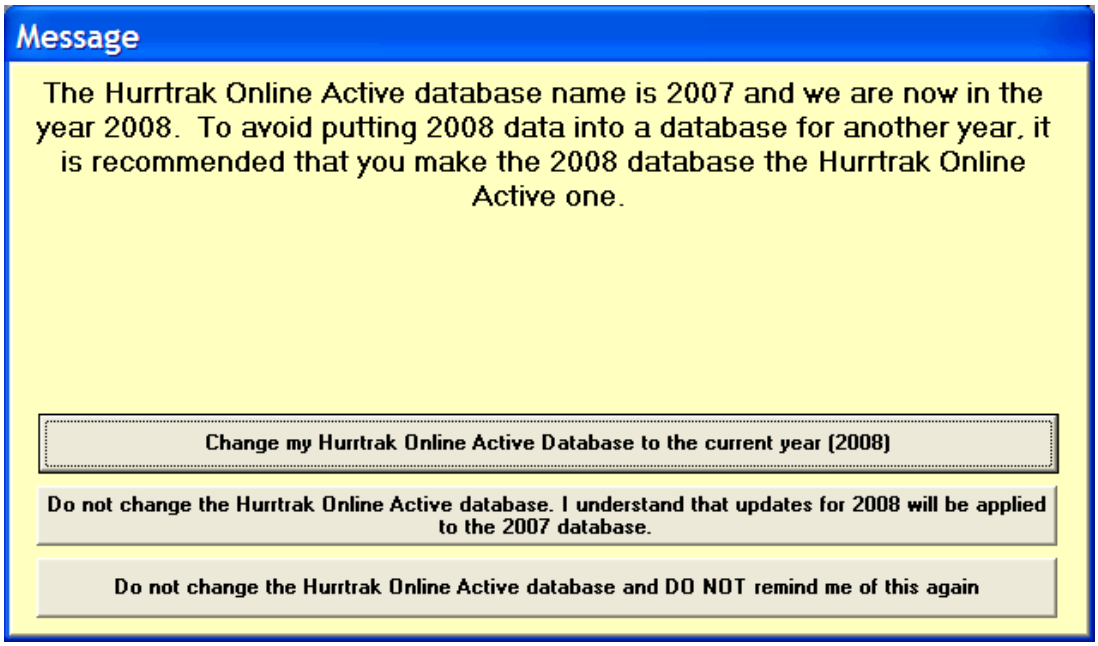
2. When the default and Hurrtrak Online databases do not match the system will present the user with an opening message informing them of this situation and providing options to continue, change the default database or disable this warning message forever in the future. We do not recommend disabling the message unless you are an expert user. Be aware that if you choose to continue in this condition, any storm data coming in from Hurrtrak Online will not be reflected during the session. This includes the notices that indicate new storm data has arrived for a storm.



In addition, if you continue, the main database tab will show a red "flag" next to the Hurrtrak Online database name field. This serves as a reminder.



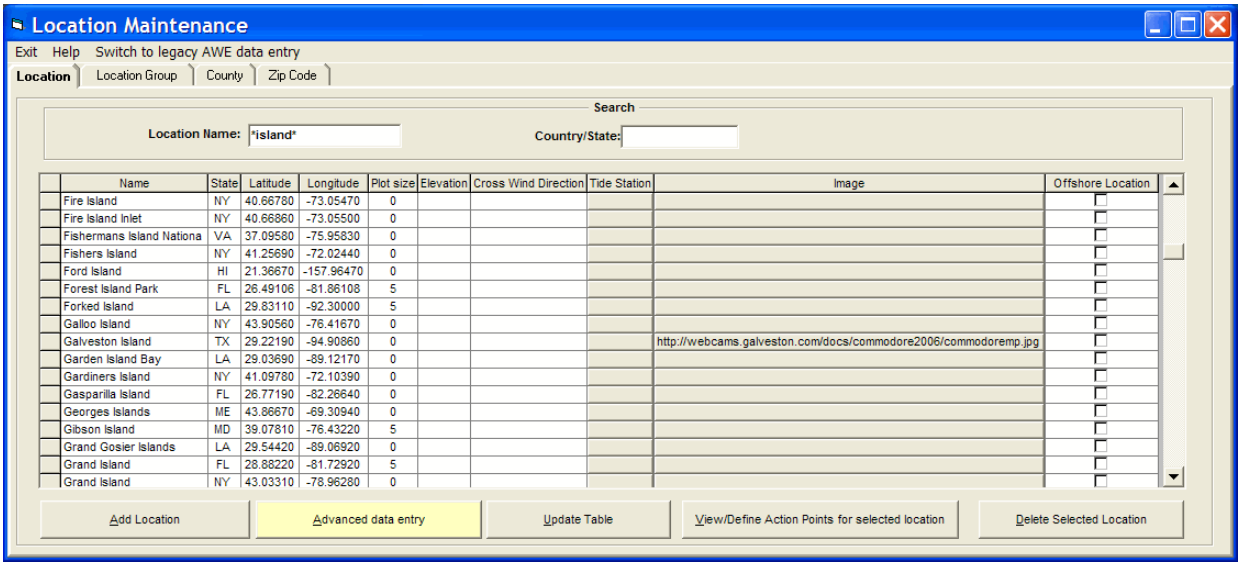
3. Finally, if the Active Hurrtrak Online Database is not in the current year.. The system will warn the user when opening the main tracking program of this condition and provide the option of changing the Active database to the current year. This should reduce the chances that data from one year will be stored into the wrong database.



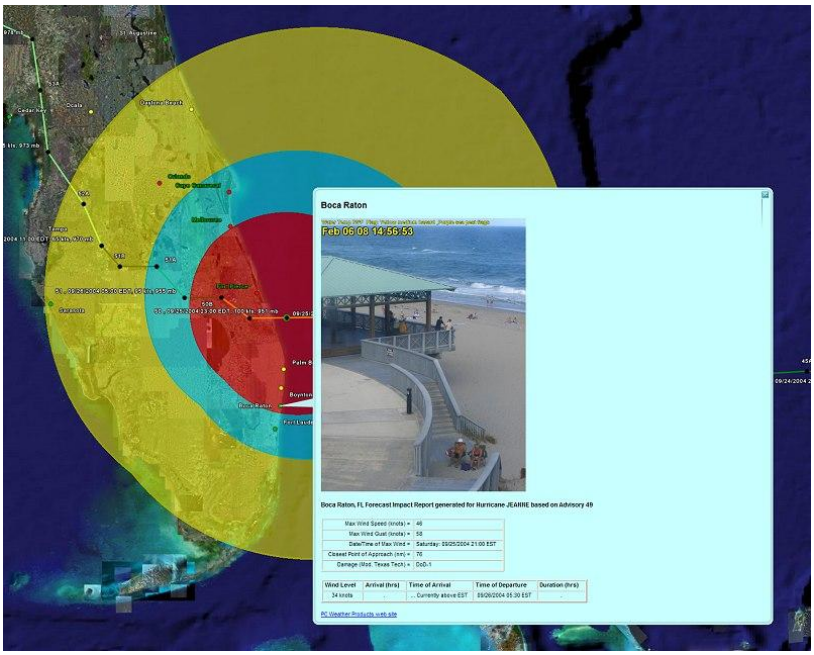
APPENDIX T2: Webcam/Location Images

When exporting the Summary impact report (tab) to Google Earth, you have the ability to view a *"live" web cam image* of the location being analyzed (if available).

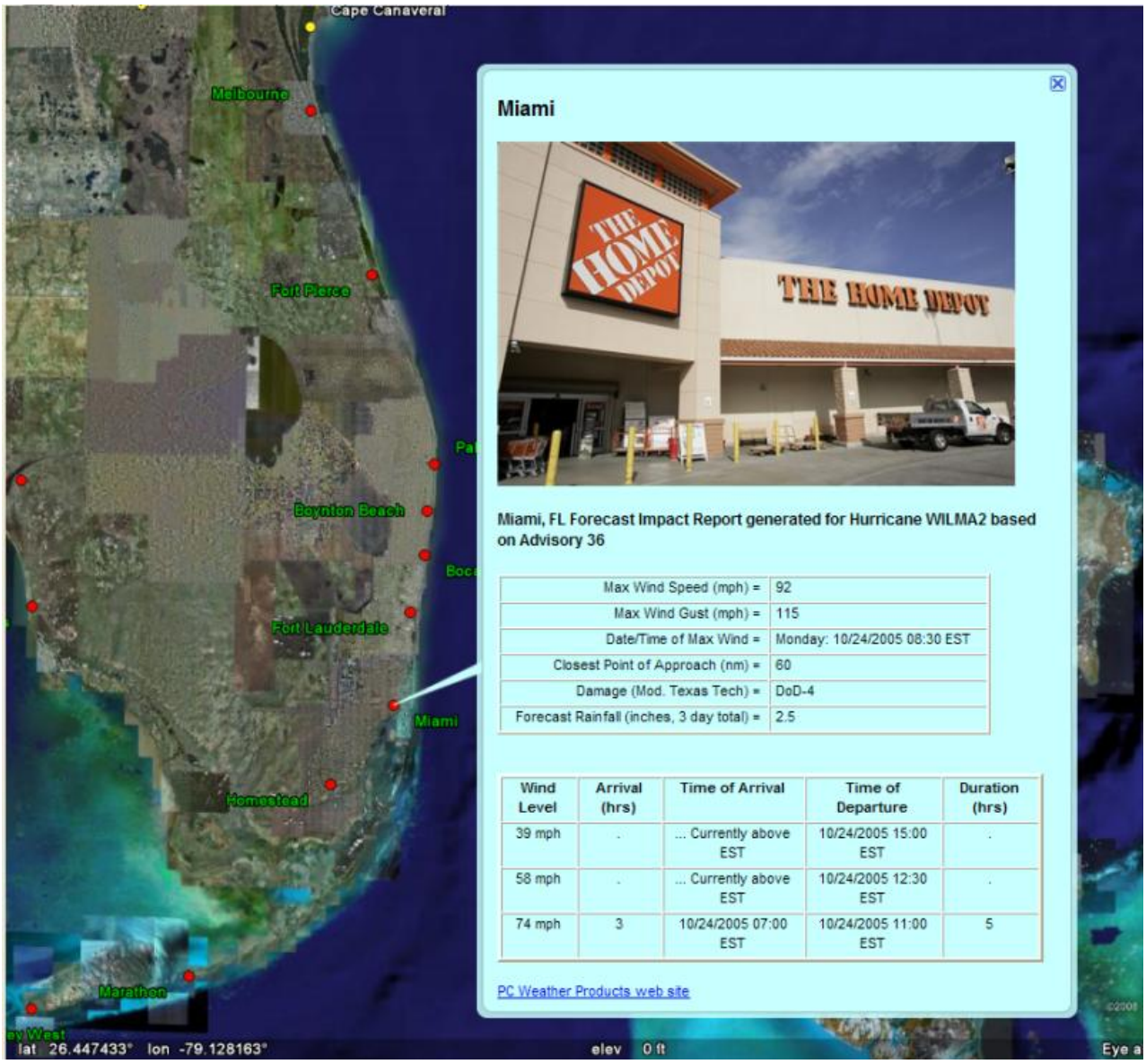
The system is pre-loaded with about 100 web cams links but you can also select custom images (web or local) for specific location in the location database. They just need to be in a graphic format (jpg, bmp, tif, gif). The custom images are defined in the System Setup - Location Maintenance option.



The following Google Earth example shows the beach conditions at Boca Raton along with the forecast wind impact information for Wilma. (for this example, the image does not correspond to the same time frame as Wilma).



For some organizations this is a great way to associate forecast wind conditions to a real location. For example a department store could associate static images of each store in the database. When the data is presented on Google Earth, the user can see both the location's forecast impact as well as an image of the site. This capability can be extended to private live web cams. A great example would be a lumber store showing a report for each of their impacted locations with a live image of what is the activity at the current time. A great way to present to management!

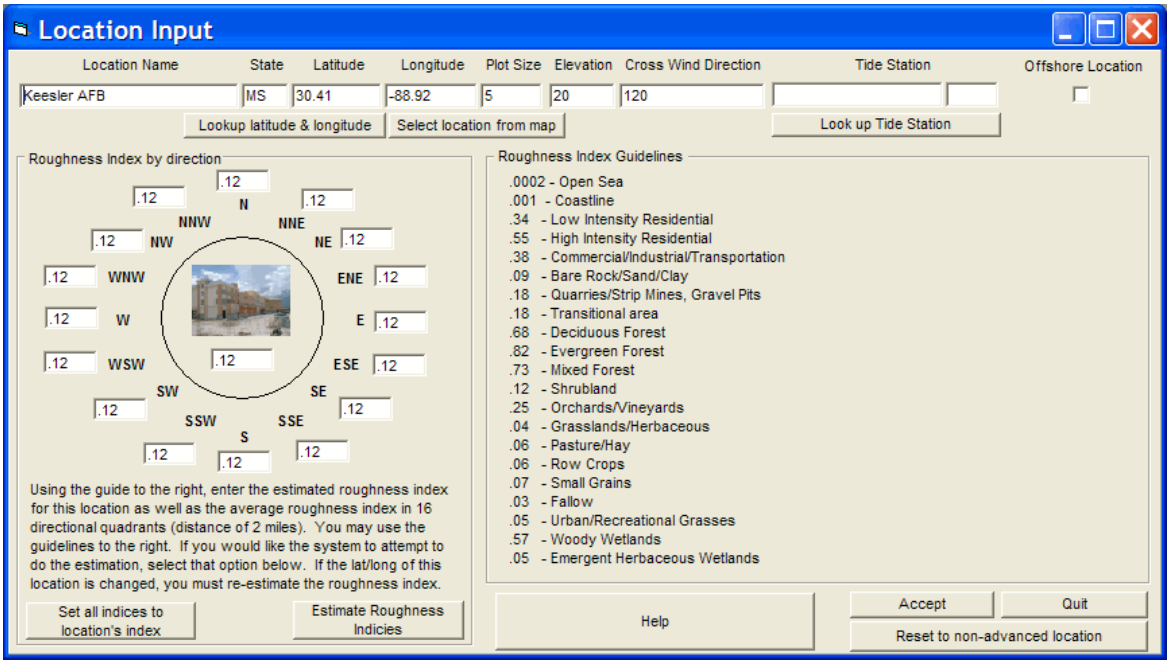


APPENDIX T3: Cross Wind Calculation, setup and use

Once the user defines the cross wind direction for any location, typically airport runways, the system is then able to include this information on the location wind impact report. In addition with the ability to estimate wind speeds below 34 knots (from 25 knots - 34 knots) this is a valuable tool for aviation/airport facility users.

To define the cross wind direction, the user must select the location via the System Setup - Location Maintenance (Advanced Data Entry) option and then input the azimuth value (0-360) that represents the cross wind direction. For example a runway running due north and south, would have a cross wind value of either 090 (due east) or 270 (due west). Either direction can be used, the only difference will be the sign.. i.e. If 090 is selected then a -35 knot value would represent a westerly component of 35 knots while a +35 knot value would represent an easterly component of 35 knots.

The following Keesler AFB example shows how you would define the cross wind for a runway that runs 030 - 210. The value for the cross wind direction is defined as 120.



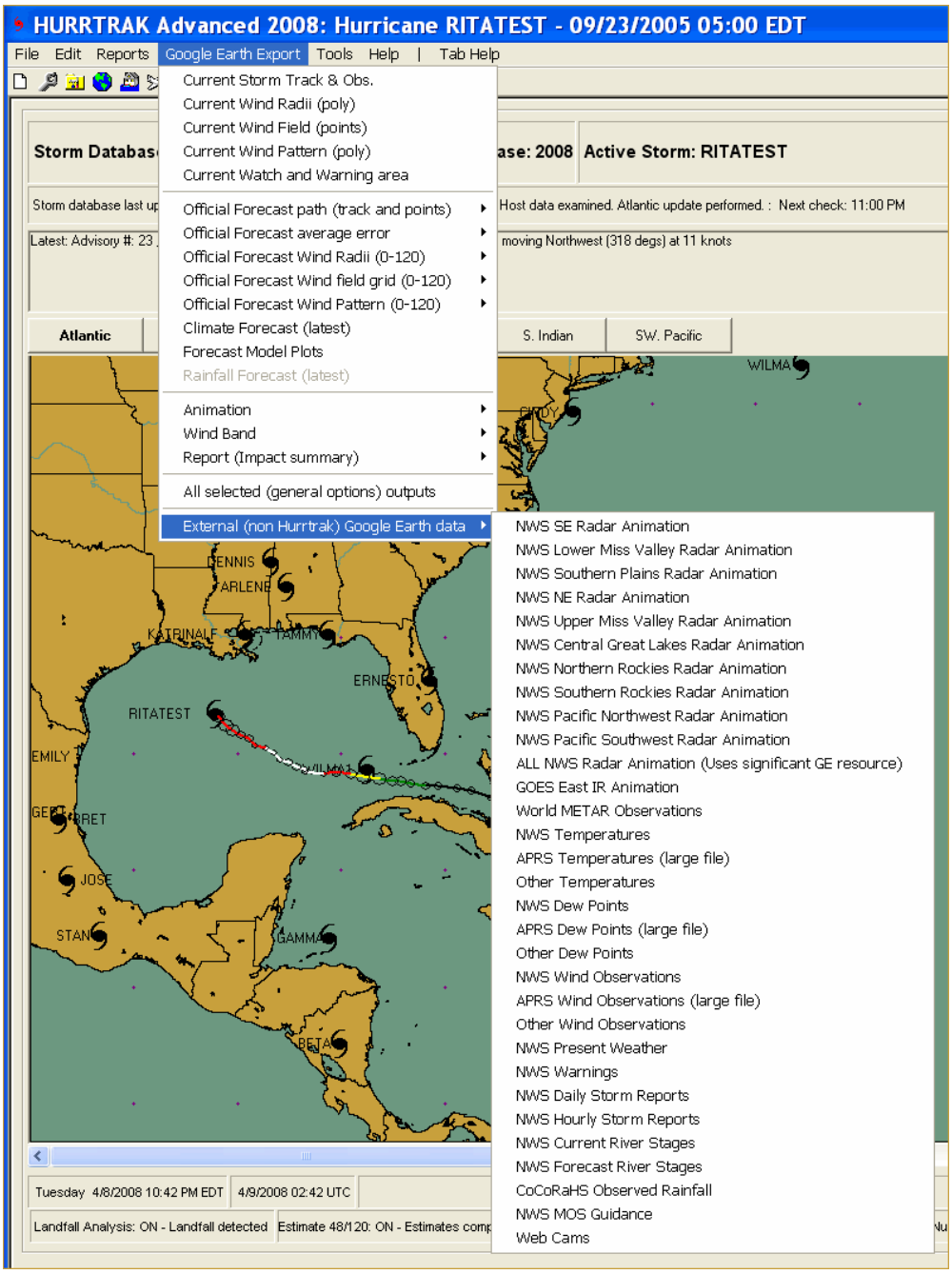
When a wind impact report is run for this location, it includes the component of cross winds as well as the absolute estimate of wind speed. The report below shows the estimated winds for Keesler AFB (runway 030) during Katrina. Advanced Wind Estimation was not used for this report. The column for Cross Wind Component shows the sustained and wind gusts cross winds. Note, the first yellow row indicates when the cross runway wind gusts are expected to exceed 25 knots while the red colored row indicates when the sustained cross runway component of wind is greater than 25 knots.

Keesler AFB, MS profile - Tropical Depression KATRINA

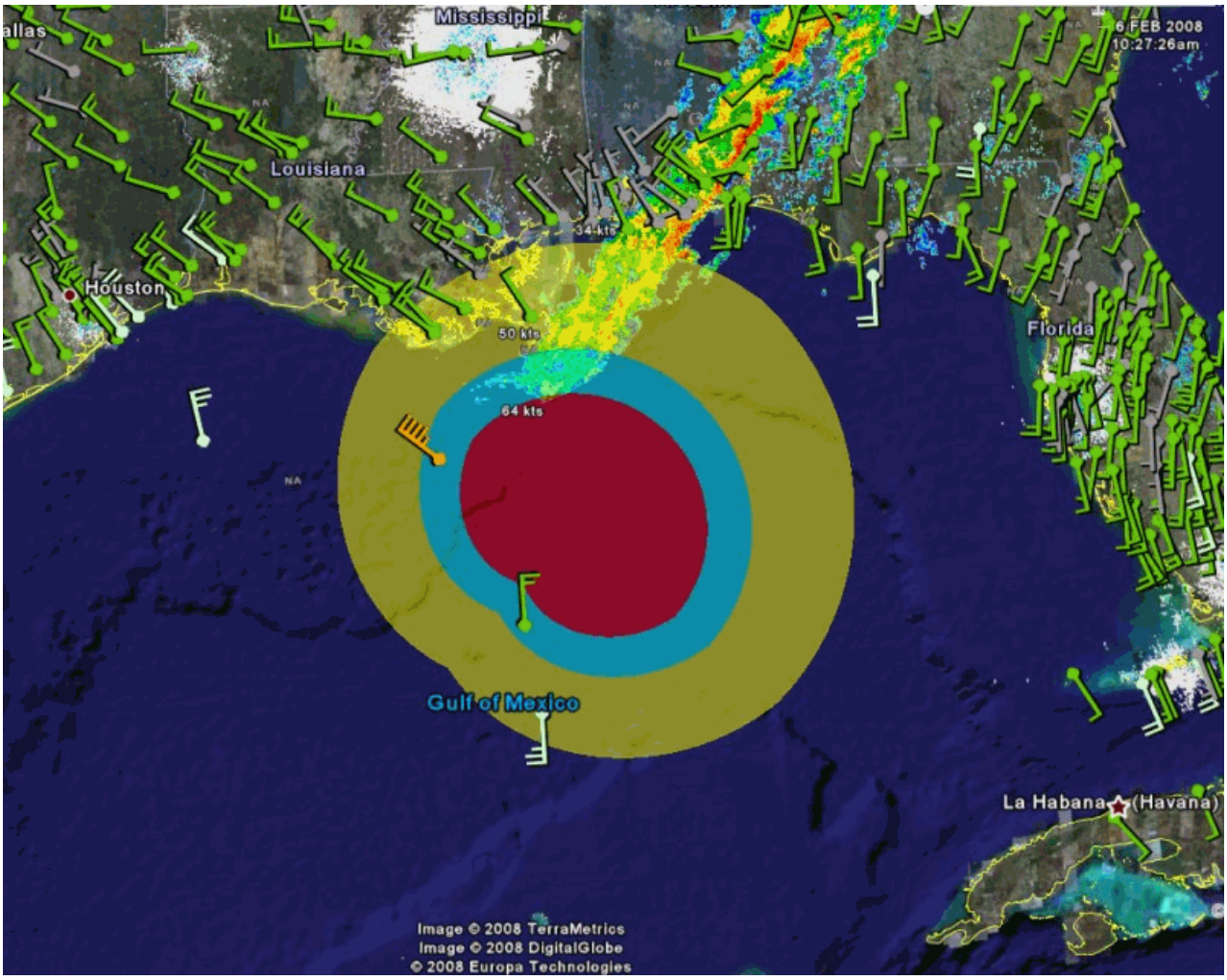
Date / Time	Time of day	Wind Speed (kts)	Wind Gusts (kts)	Wind Direction (degs.)		Cross Wind Component (kts)	Distance to 34 knot winds	Distance to 50 knot winds	Distance to 64 knot winds	Distance to center
Sunday: 08/28/2005 16:30 EDT		027	034	065	↙	015/020	0033 mi.	0111 mi.	0144 mi.	0246 mi.
Sunday: 08/28/2005 17:00 EDT		029	037	066	↙	017/022	0024 mi.	0105 mi.	0139 mi.	0243 mi.
Sunday: 08/28/2005 17:30 EDT		030	037	066	↙	018/022	0021 mi.	0101 mi.	0136 mi.	0240 mi.
Sunday: 08/28/2005 18:00 EDT		031	038	067	↙	019/023	0017 mi.	0098 mi.	0132 mi.	0236 mi.
Sunday: 08/28/2005 18:30 EDT		031	039	067	↙	019/023	0014 mi.	0094 mi.	0129 mi.	0233 mi.
Sunday: 08/28/2005 19:00 EDT		032	040	067	↙	019/024	0010 mi.	0091 mi.	0126 mi.	0229 mi.
Sunday: 08/28/2005 19:30 EDT		033	041	068	←	020/025	0006 mi.	0088 mi.	0122 mi.	0226 mi.
Sunday: 08/28/2005 20:00 EDT		034	042	068	←	021/026	0002 mi.	0084 mi.	0119 mi.	0222 mi.
Sunday: 08/28/2005 20:30 EDT		034	043	069	←	021/027		0082 mi.	0115 mi.	0218 mi.
Sunday: 08/28/2005 21:00 EDT		035	044	070	←	022/028		0081 mi.	0111 mi.	0213 mi.
Sunday: 08/28/2005 21:30 EDT		036	045	070	←	023/029		0078 mi.	0107 mi.	0208 mi.
Sunday: 08/28/2005 22:00 EDT		037	046	071	←	024/030		0078 mi.	0105 mi.	0205 mi.
Sunday: 08/28/2005 22:30 EDT		037	047	072	←	025/031		0076 mi.	0100 mi.	0200 mi.
Sunday: 08/28/2005 23:00 EDT		038	048	073	←	026/033		0074 mi.	0097 mi.	0196 mi.
Sunday: 08/28/2005 23:30 EDT		039	049	074	←	027/034		0069 mi.	0092 mi.	0191 mi.
Monday: 08/29/2005 00:00 EDT		040	049	075	←	028/035		0064 mi.	0088 mi.	0187 mi.
Monday: 08/29/2005 00:30 EDT		040	050	076	←	029/036		0060 mi.	0083 mi.	0182 mi.
Monday: 08/29/2005 01:00 EDT		041	051	076	←	029/037		0055 mi.	0078 mi.	0177 mi.
Monday: 08/29/2005 01:30 EDT		042	053	077	←	031/039		0050 mi.	0073 mi.	0172 mi.
Monday: 08/29/2005 02:00 EDT		043	053	078	←	032/039		0045 mi.	0068 mi.	0167 mi.
Monday: 08/29/2005 02:30 EDT		044	055	079	←	033/042		0039 mi.	0062 mi.	0162 mi.
Monday: 08/29/2005 03:00 EDT		044	055	080	←	034/042		0035 mi.	0058 mi.	0158 mi.
Monday: 08/29/2005 03:30 EDT		046	058	081	←	036/045		0025 mi.	0048 mi.	0149 mi.
Monday: 08/29/2005 04:00 EDT		048	060	082	←	038/047		0015 mi.	0038 mi.	0138 mi.
Monday: 08/29/2005 04:30 EDT		049	062	084	←	040/050		0005 mi.	0028 mi.	0128 mi.
Monday: 08/29/2005 05:00 EDT		053	066	085	←	043/054			0018 mi.	0119 mi.
Monday: 08/29/2005 05:30 EDT		056	070	086	←	046/058			0014 mi.	0114 mi.
Monday: 08/29/2005 06:00 EDT		059	073	087	←	049/061			0008 mi.	0108 mi.
Monday: 08/29/2005 06:30 EDT		062	078	088	←	053/066			0002 mi.	0104 mi.
Monday: 08/29/2005 07:00 EDT		064	080	089	←	055/069				0099 mi.
Monday: 08/29/2005 07:30 EDT		066	082	092	←	058/072				0090 mi.
Monday: 08/29/2005 08:00 EDT		069	087	095	←	063/079				0081 mi.
Monday: 08/29/2005 08:30 EDT		075	094	099	←	070/088				0073 mi.
Monday: 08/29/2005 09:00 EDT		081	101	105	←	078/098				0063 mi.
Monday: 08/29/2005 09:30 EDT		088	110	110	←	087/108				0058 mi.
Monday: 08/29/2005 10:00 EDT		095	118	117	↖	095/118				0052 mi.
Monday: 08/29/2005 10:30 EDT		099	123	125	↖	099/123				0047 mi.
Monday: 08/29/2005 11:00 EDT		102	127	135	↖	099/123				0043 mi.
Monday: 08/29/2005 11:30 EDT		100	125	149	↖	087/109				0040 mi.
Monday: 08/29/2005 12:00 EDT		095	119	164	↑	068/086				0041 mi.

APPENDIX T4: Using Google Earth External data

One of the options within the Google Earth Export option is "External (non Hurrtrak) Google Earth Data".



It allows the user to export National Weather Service and other weather information to display on Google Earth. This data includes radar, satellite, wind, temperature, dew point, river stages and more! When this information is displayed with Hurricane layers exported from the Hurrtrak system the user is able to view both storm and "weather" information on the same Google Earth image. An example of hurricane wind radii superimposed with radar and wind data is shown below.



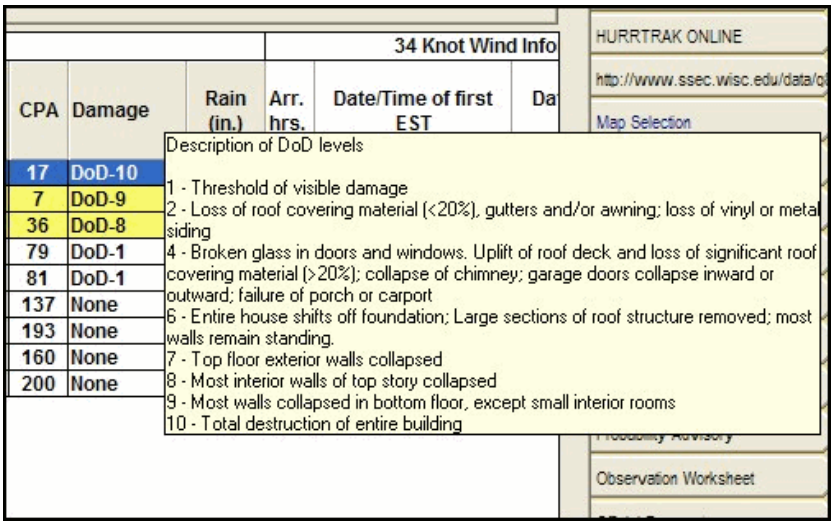
Please note that the sources of this weather information are external to PC Weather Products and its content may change over time. The system will automatically adjust to these changes and the drop down menu may not change. We expect the amount of information available to increase as time goes on.

APPENDIX T5: Damage Comments

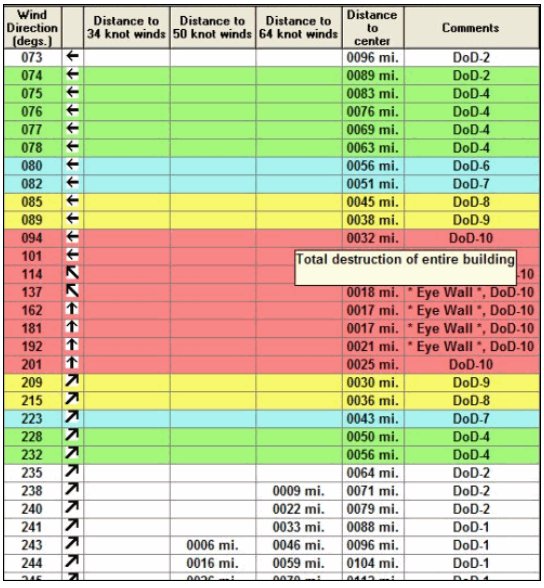
Prior to 2008, the "Damage" column on the location wind impact reports contained a damage description based on the *Saffir-Simpson* scale. While certainly a good measure of storm strength, we have found that the *Saffir-Simpson* scale is not necessarily tailored for damage at individual locations. In 2008 we introduced the ability for the user to choose an alternative scale which is based on observed damage in real situations. This scale is based on work done by the scientists at Texas Tech University and is modified somewhat for hurricanes.

The user can select the damage scale they would like to use via the User Preferences - Report/Impact Analysis option. The option selected will be reflected in the system on all wind impact summary and "hourly" reports.

While viewing a report, the user can display the entire scale by moving the mouse over the DAMAGE header.



Or to see the description of an individual damage level, point the mouse at that value.



The two scales available are shown below:

Saffir Simpson Scale:

Category One Hurricane:
Winds 74-95 mph (64-82 kt or 119-153 km/hr). Storm surge generally 4-5 ft above normal. No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Some damage to poorly constructed signs. Also, some coastal road flooding and minor pier damage.

Category Two Hurricane:
Winds 96-110 mph (83-95 kt or 154-177 km/hr). Storm surge generally 6-8 feet above normal. Some roofing material, door, and window damage of buildings. Considerable damage to shrubbery and trees with some trees blown down. Considerable damage to mobile homes, poorly constructed signs, and piers. Coastal and low-lying escape routes flood 2-4 hours before arrival of the hurricane center. Small craft in unprotected anchorages break moorings.

Category Three Hurricane:
Winds 111-130 mph (96-113 kt or 178-209 km/hr). Storm surge generally 9-12 ft above normal. Some structural damage to small residences and utility buildings with a minor amount of curtainwall failures. Damage to shrubbery and trees with foliage blown off trees and large trees blown down. Mobile homes and poorly constructed signs are destroyed. Low-lying escape routes are cut by rising water 3-5 hours before arrival of the center of the hurricane. Flooding near the coast destroys smaller structures with larger structures damaged by battering from floating debris. Terrain continuously lower than 5 ft above mean sea level may be flooded inland 8 miles (13 km) or more. Evacuation of low-lying residences with several blocks of the shoreline may be required.

Category Four Hurricane:
Winds 131-155 mph (114-135 kt or 210-249 km/hr). Storm surge generally 13-18 ft above normal. More extensive curtainwall failures with some complete roof structure failures on small residences. Shrubs, trees, and all signs are blown down. Complete destruction of mobile homes. Extensive damage to doors and windows. Low-lying escape routes may be cut by rising water 3-5 hours before arrival of the center of the hurricane. Major damage to lower floors of structures near the shore. Terrain lower than 10 ft above sea level may be flooded requiring massive evacuation of residential areas as far inland as 6 miles (10 km).

Category Five Hurricane:
Winds greater than 155 mph (135 kt or 249 km/hr). Storm surge generally greater than 18 ft above normal. Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. All shrubs, trees, and signs blown down. Complete destruction of mobile homes. Severe and extensive window and door damage. Low-lying escape routes are cut by rising water 3-5 hours before arrival of the center of the hurricane. Major damage to lower floors of all structures located less than 15 ft above sea level and within 500 yards of the shoreline. Massive evacuation of residential areas on low ground within 5-10 miles (8-16 km) of the shoreline may be required.

Texas Tech Study Scale (modified):

DOD*	Damage description
1	Threshold of visible damage
2	Loss of roof covering material (<20%), gutters and/or awning; loss of vinyl or metal siding
3	Broken glass in doors and windows
4	Uplift of roof deck and loss of significant roof covering material (>20%); collapse of chimney; garage doors collapse inward; failure of porch or carport
5	Entire house shifts off foundation
6	Large sections of roof structure removed; most walls remain standing
7	Exterior walls collapsed
8	Most walls collapsed, except small interior rooms
9	All walls
10	Destruction of engineered and/or well constructed residence; slab swept clean

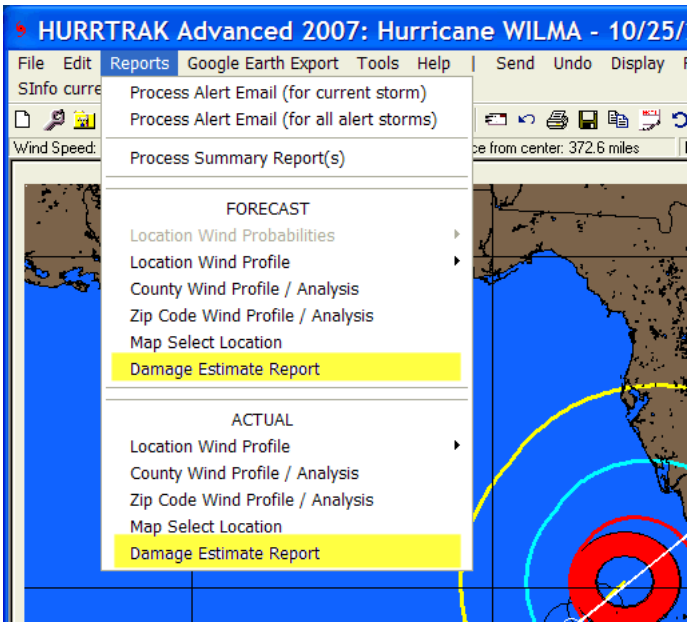
More information on the Texas Tech Study can be found at http://www.wind.ttu.edu/EFScale.pdf. Again, we use a modified version of this to account for hurricanes.

APPENDIX T6: Damage Estimate Report (Advanced only)

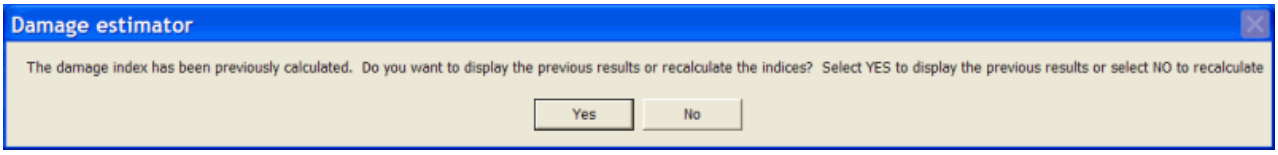
It is important that this report is only used as a guideline. The index values cannot and should not be correlated to the amount of insured losses.

Introduced in 2008 for the Hurrtrak Advanced system, the Damage Estimate Report is designed to analyze a storm's forecast overall damage potential. It can also be run after the storm has had an impact to help determine the extent of damage which may have occurred. The calculation of the Damage Estimate Index uses the force of the wind and the height of the estimated storm surge... along with the population of the area(s) affected. The absolute value of the index has no meaning and is used only to compare to past storm's index values. Since the population of the area is critical, it is possible to have a Category 5 storm impacting a low population density area have an Damage Index value lower than a Category 1 storm impacting a densely populated area.

The report is run by selecting it from the drop down Report menu. It can be run for the latest forecast or the actual observations of the storm

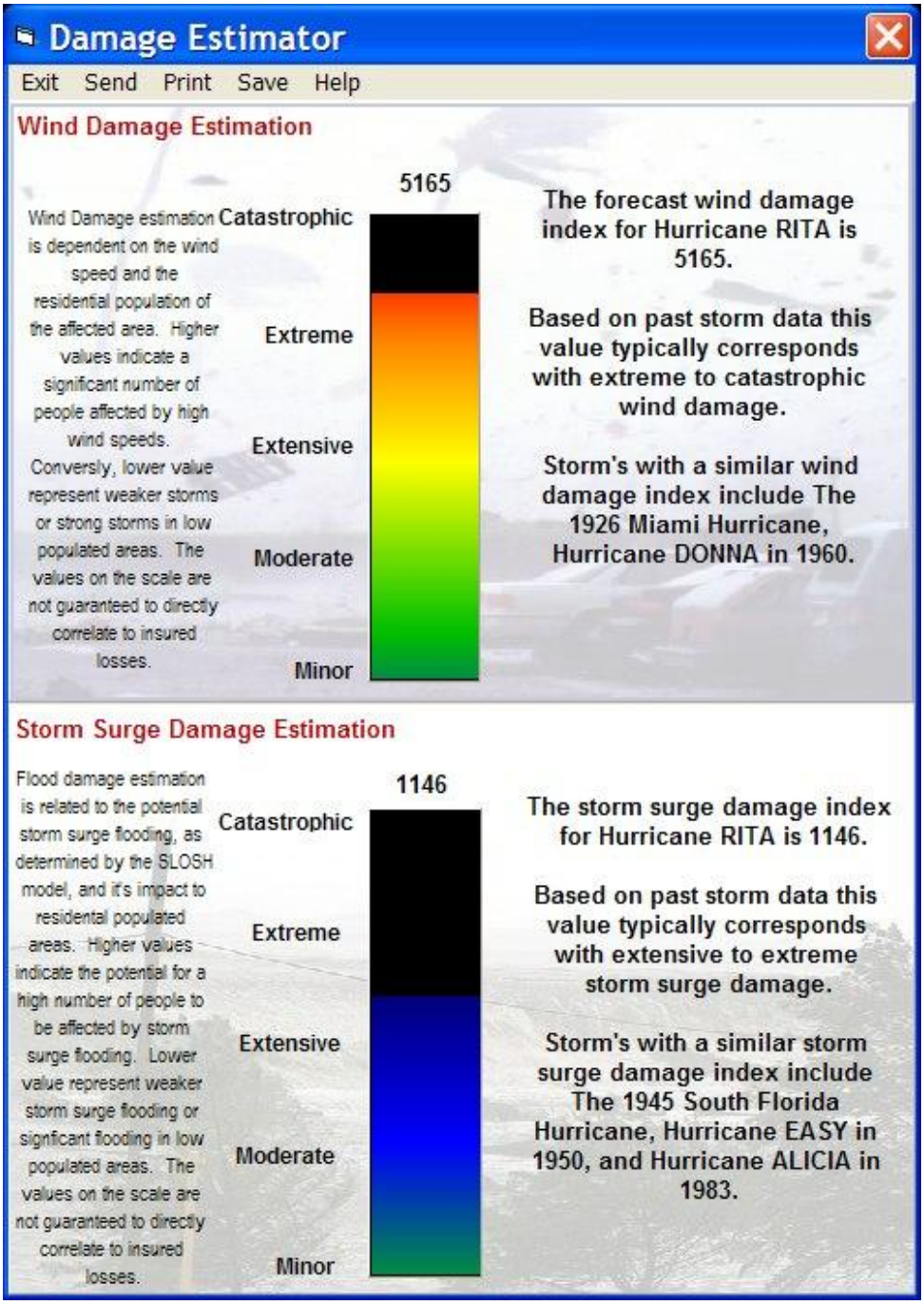


The system will check to see if this report has been run earlier. If so, it will allow the user to show the previous calculation. Viewing the previous calculation is recommended unless storm forecast data (for the same advisory) or actual advisory data has changed for the storm.



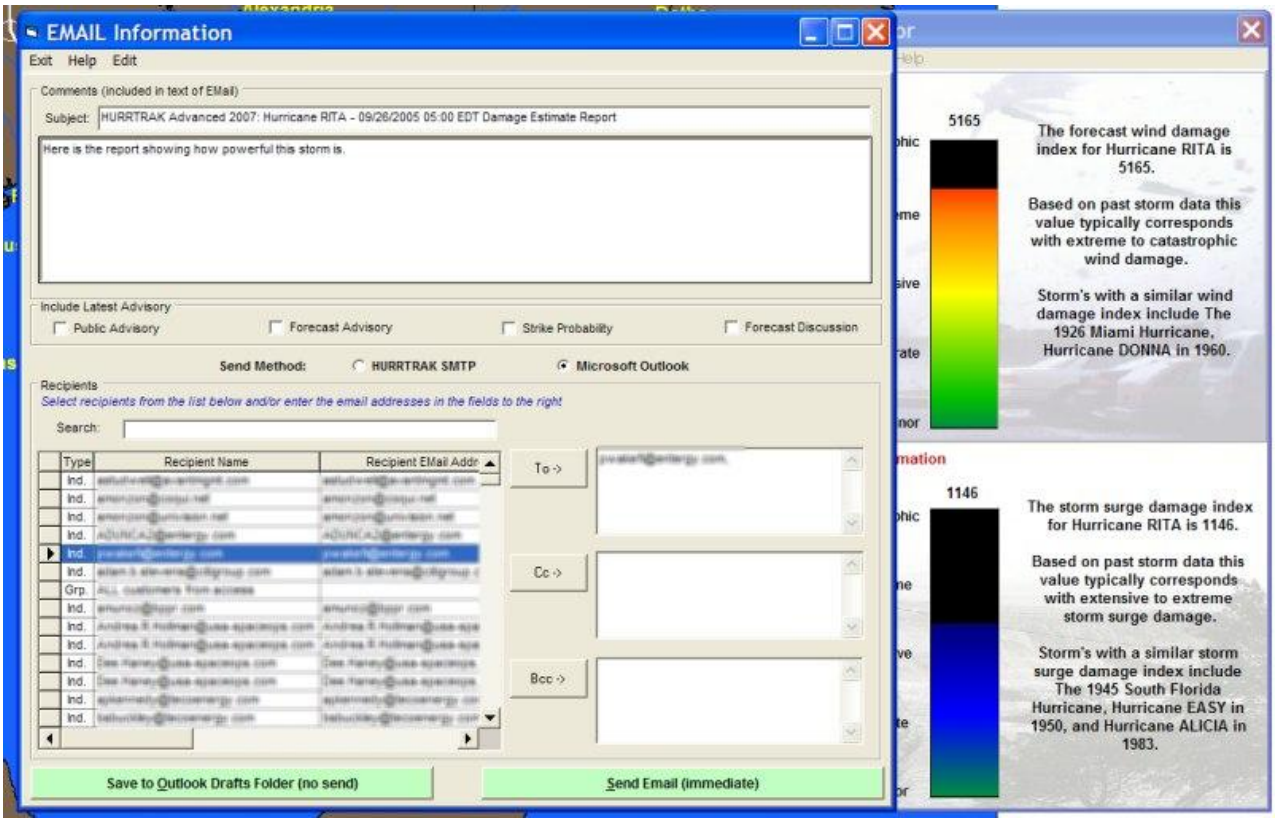
The damage report's performance varies greatly and can take anywhere from a few

seconds to several minutes to complete a calculation. When complete it will present the user with the following window.



As you can see the report calculates two indexes, one for wind damage and the other for Storm Surge Damage. It is important to separate these two factors as some locations are more prone to storm surge flooding than other areas... at the same level of wind. The report's descriptive scale is meant to only give a general idea of how the index value compares to past storms. The difference in actual damage may not be significant for storms that are described as extreme and extensive but you can be fairly confident that a storm with an extreme rating will be more damaging than one with a minor or moderate one. Finally, the current storm is compared to past storms with "similar" index values. The report will show up to 3 comparative storms for both wind and storm surge.

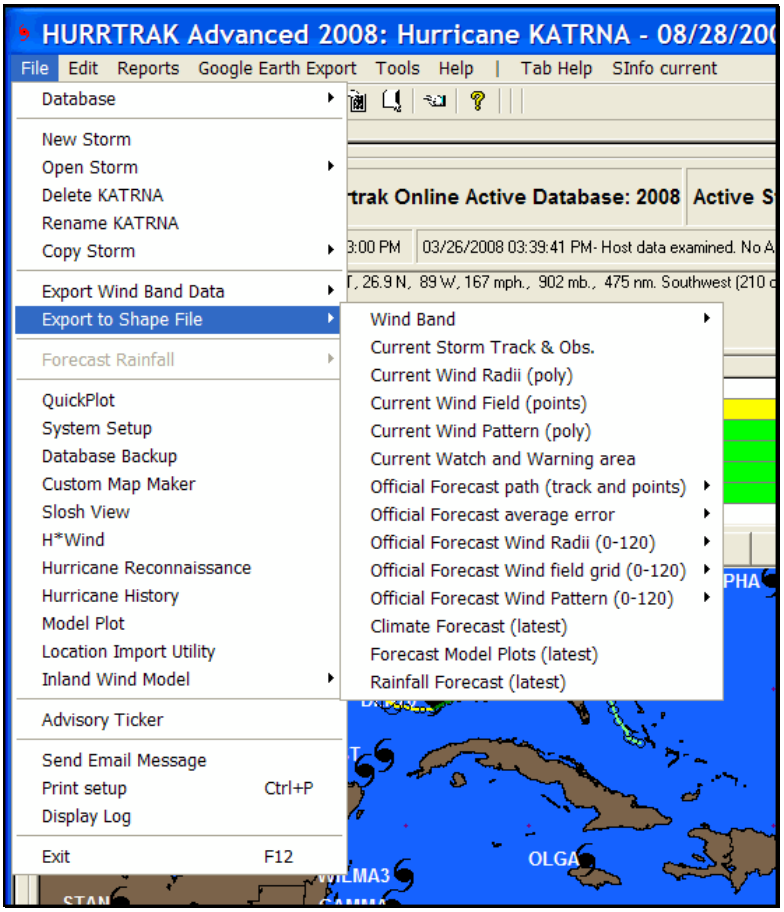
The information can be shared via email, printed output, etc..



It is important that this report is only used as a guideline. The index values cannot and should not be correlated to the amount of insured losses.

APPENDIX T7: Shape File Export

Hurrtrak Advanced has the ability to export several types of storm graphic and report information to an ESRI™ Shape type GIS file. Graphic-type Shape files for the currently loaded storm can be created by selecting the FILE – Export to Shape File menu option.

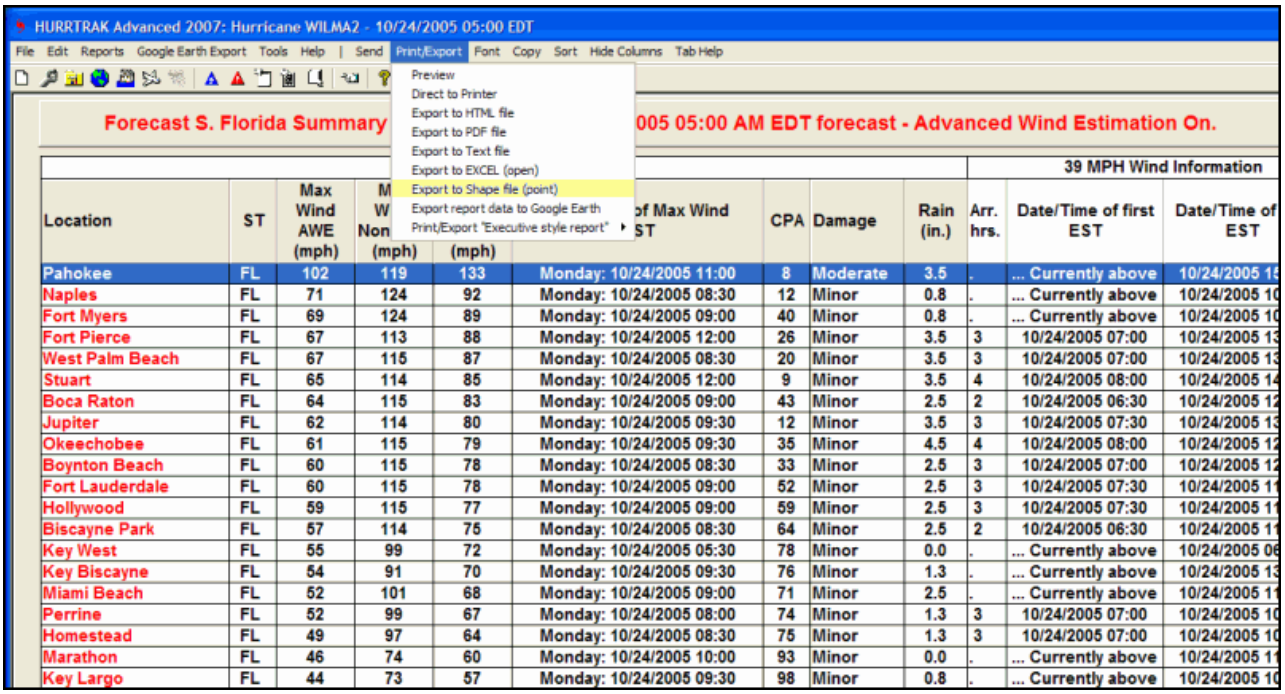


The data which can be selected includes:

- **Wind Bands (Polygon):** A polygon Shape file containing the actual and/or forecast wind bands for a storm.
- **Current Storm Track and Observation (Polyline and Point):** This action creates 2 Shape files… one that shows the actual storm track, and a 2nd Shape file containing a storm's observation points.
- **Current Wind Radii (Polygon):** This contains a polygon-type Shape file that describes the wind radii of a storm's 34, 50 and 64 knot wind areas.
- **Current Wind Field (Point)**: This option creates a point-type Shape file containing a grid of the current wind pattern across a storm. The grid size is determined via the GIS Export tab of the General User Options.
- **Current Watch and Warning area (Polyline):** This creates multiple polyline-type Shape files which represent the current tropical watches and warning.
- **Official Forecast Path track and points (Polyline and Point):** This action creates 2 Shape files… one that shows the forecast storm track, and a 2nd Shape file containing the official forecast verification points.

- **Official Forecast Average Error (Polygon):** This action creates a Shape file that represents the forecast storm track average error.
- **Official Forecast Wind Radii (Polygon):** This contains a polygon-type Shape file that describes the wind radii of a storm's 34, 50, and 64 knot wind areas at a specific forecast hour.
- **Official Forecast Wind Field grid (Point):** This option creates a point-type Shape file containing a grid of the wind pattern across a storm at a specific forecast hour. The grid size is determined via the GIS Export tab of the General User Options.
- **Climate Forecast (Polyline) –** This option creates a Shape file that represents the current climate forecast.
- **Forecast Model Plots (Polyline) –** This option creates a Shape file that contains multiple polylines which represent the latest forecast model plots.
- **Rainfall forecast (Polygon):** This option creates 3 polygon-type Shape files. One for each 24 hour forecast period, out to 3 days.

There is one additional type of Shape file export which is associated with the Location, County, or Zip Code impact report (example show below).

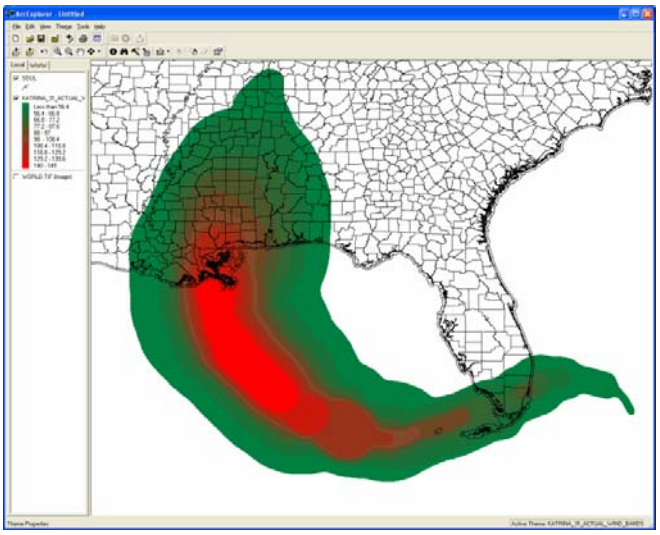


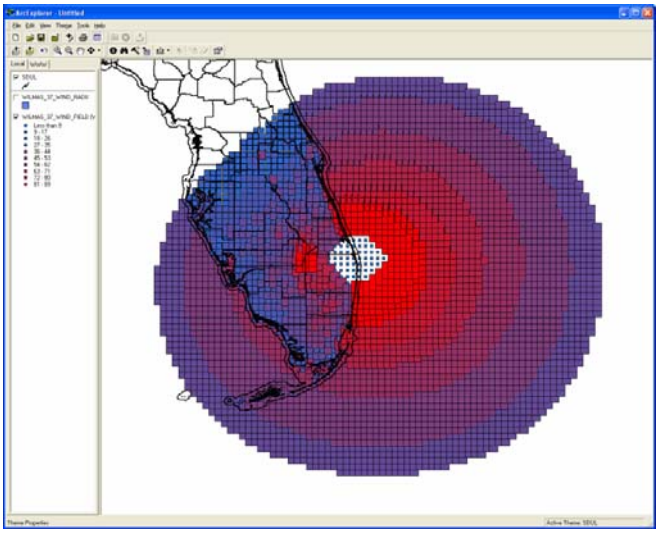
Location	ST	Max Wind AWE (mph)	M W Non (mph)	(mph)	of Max Wind ST	CPA	Damage	Rain (in.)	39 MPH Wind Information Arr. hrs.	Date/Time of first EST	Date/Time of EST
Pahokee	FL	102	119	133	Monday: 10/24/2005 11:00	8	Moderate	3.5	.	... Currently above	10/24/2005 1
Naples	FL	71	124	92	Monday: 10/24/2005 08:30	12	Minor	0.8	.	... Currently above	10/24/2005 1
Fort Myers	FL	69	124	89	Monday: 10/24/2005 09:00	40	Minor	0.8	.	... Currently above	10/24/2005 1
Fort Pierce	FL	67	113	88	Monday: 10/24/2005 12:00	26	Minor	3.5	3	10/24/2005 07:00	10/24/2005 1
West Palm Beach	FL	67	115	87	Monday: 10/24/2005 08:30	20	Minor	3.5	3	10/24/2005 07:00	10/24/2005 1
Stuart	FL	65	114	85	Monday: 10/24/2005 12:00	9	Minor	3.5	4	10/24/2005 08:00	10/24/2005 1
Boca Raton	FL	64	115	83	Monday: 10/24/2005 09:00	43	Minor	2.5	2	10/24/2005 06:30	10/24/2005 1
Jupiter	FL	62	114	80	Monday: 10/24/2005 09:30	12	Minor	3.5	3	10/24/2005 07:30	10/24/2005 1
Okeechobee	FL	61	115	79	Monday: 10/24/2005 09:30	35	Minor	4.5	4	10/24/2005 08:00	10/24/2005 1
Boynton Beach	FL	60	115	78	Monday: 10/24/2005 08:30	33	Minor	2.5	3	10/24/2005 07:00	10/24/2005 1
Fort Lauderdale	FL	60	115	78	Monday: 10/24/2005 09:00	52	Minor	2.5	3	10/24/2005 07:30	10/24/2005 1
Hollywood	FL	59	115	77	Monday: 10/24/2005 09:00	59	Minor	2.5	3	10/24/2005 07:30	10/24/2005 1
Biscayne Park	FL	57	114	75	Monday: 10/24/2005 08:30	64	Minor	2.5	2	10/24/2005 06:30	10/24/2005 1
Key West	FL	55	99	72	Monday: 10/24/2005 05:30	78	Minor	0.0	.	... Currently above	10/24/2005 0
Key Biscayne	FL	54	91	70	Monday: 10/24/2005 09:30	76	Minor	1.3	.	... Currently above	10/24/2005 1
Miami Beach	FL	52	101	68	Monday: 10/24/2005 09:00	71	Minor	2.5	.	... Currently above	10/24/2005 1
Perrine	FL	52	99	67	Monday: 10/24/2005 08:00	74	Minor	1.3	3	10/24/2005 07:00	10/24/2005 1
Homestead	FL	49	97	64	Monday: 10/24/2005 08:30	75	Minor	1.3	3	10/24/2005 07:00	10/24/2005 1
Marathon	FL	46	74	60	Monday: 10/24/2005 10:00	93	Minor	0.0	.	... Currently above	10/24/2005 1
Key Largo	FL	44	73	57	Monday: 10/24/2005 09:30	98	Minor	0.8	.	... Currently above	10/24/2005 1

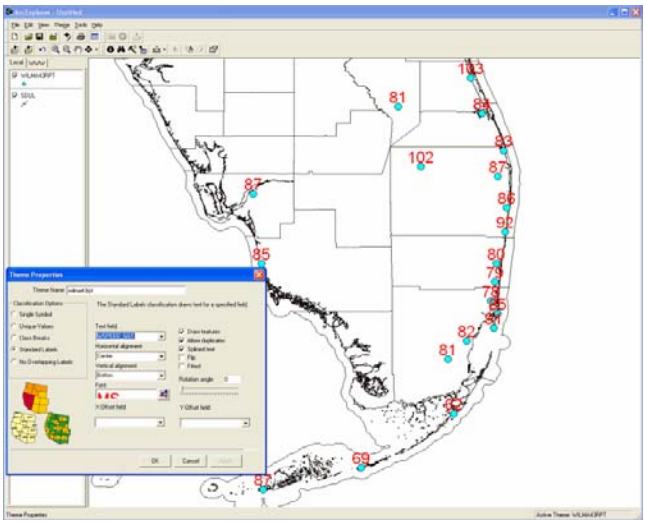
When selected, the content of this report is exported into a point-type Shape file. Each point represents a row/location on the report, and all of the report's data fields (max wind, date/time of Max Wind, etc.) are contained within the Shape file.

All of the exported Shape files can be viewed/analyzed using your GIS software (separate from HURRTRAK). While we do not recommend or support any particular GIS software, you should be able to download ArcExplorer for free from the ESRI™ Web Site.

Some examples of data being displayed on ArcExplorer © ESRI, are shown below.

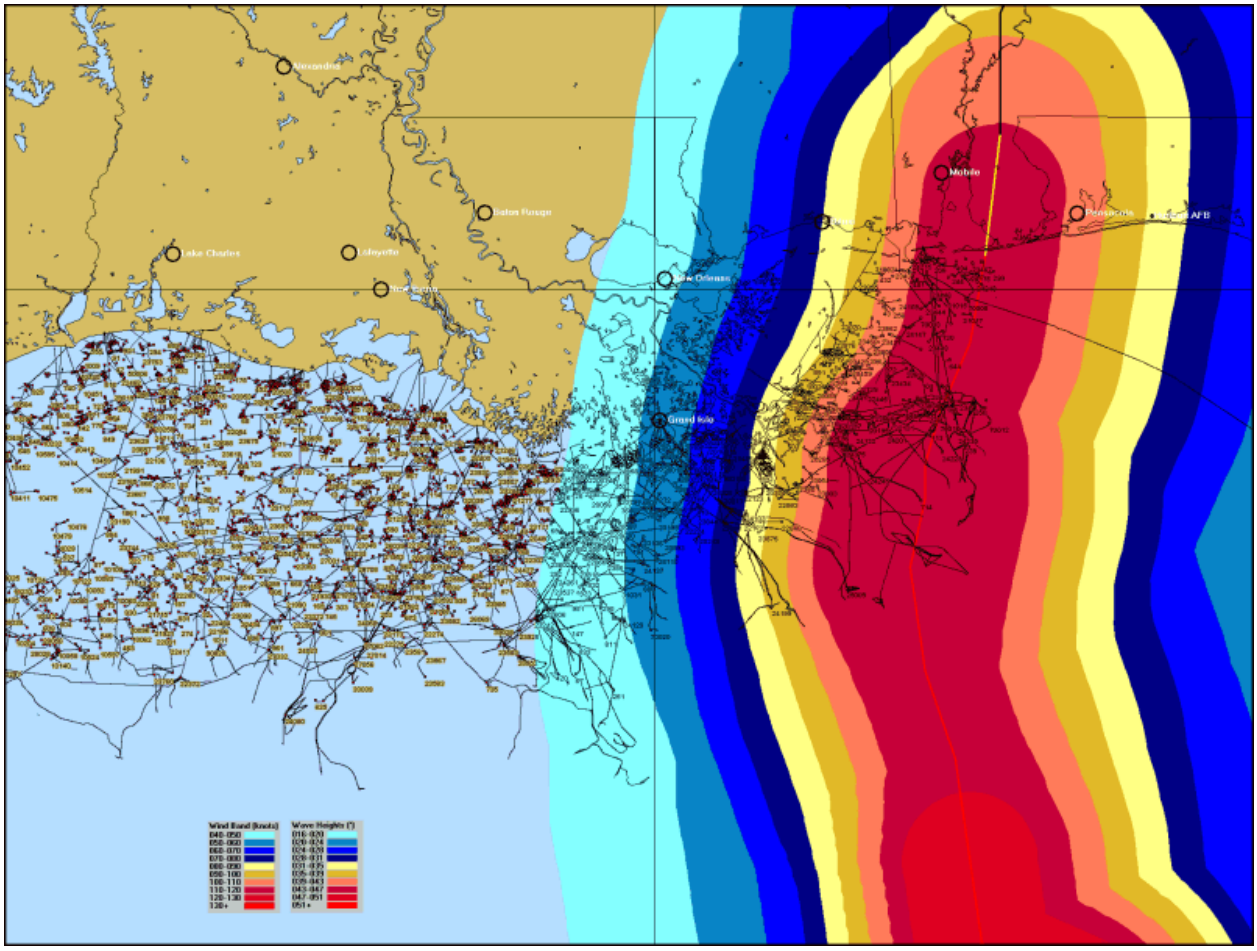




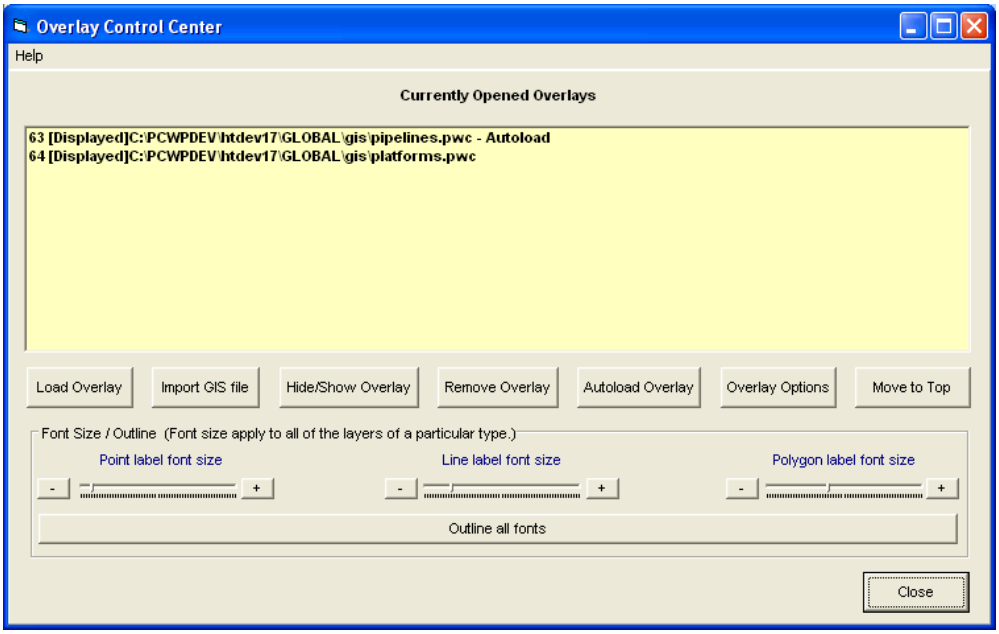

103
81
102
87
85
82
81
69
82

APPENDIX T8: Overlay Control Center

The system includes the ability to display a shape file layer on top of a map used for tracking. The shape file is converted to a proprietary format (PWC) used by the Hurrtrak system. Once converted, it can quickly be loaded without conversion in the future. The image below shows platforms and pipelines in the Gulf of Mexico along with the forecast wind speeds and wave heights from Hurricane Ivan.



From the Map Selection Tab, when the Display Overlay Control Center is selected, the following screen is displayed.

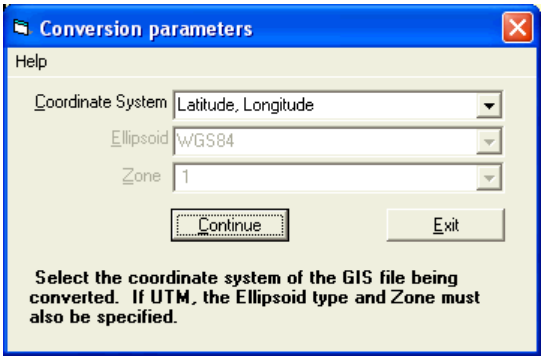


The screen displays the overlays currently loaded, as well as several options.

These options include:

Load Overlay – This loads an existing PWC file.

Import GIS File – This option will convert a Shape ™ file into PWC format and load it. The user must have some knowledge of the Shape file, particularly its coordinate system, Ellipsoid and UTM zone (if applicable).



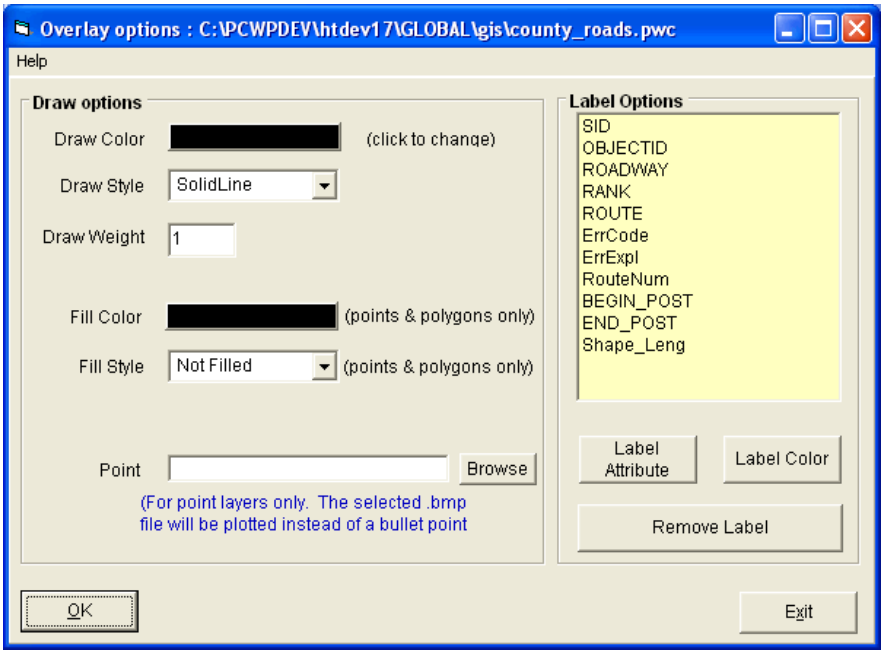
Hide/Show Overlay – This option will change the layer from being visible to being invisible, but keeps it loaded at all times.

Remove Overlay – This option will remove the overlay.

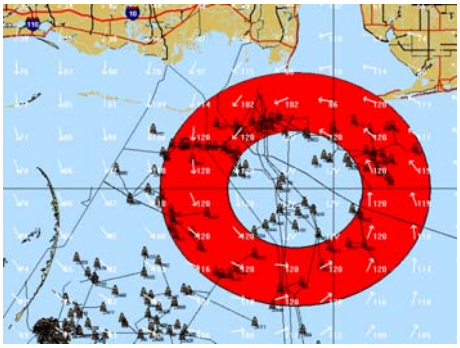
Autoload overlay – This option will instruct the system to automatically load this layer the next time HURRTRAK system starts up. Otherwise, it will not be loaded.

Move to Top – This option will take the currently selected overlay and make it the top layer.

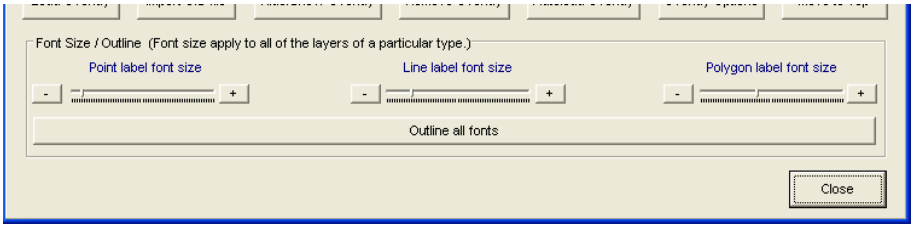
Overlay Options – This option will display a new set of screens that allow the user to control the way a specific layer is displayed, colors and any labeling.



It also will allow the user to select a small .bmp file to represent points in a GIS layer. (i.e. an oil platform icon for that type of asset)



At the bottom of the main overlay control screen, there are additional options which allow the user to control the different types of layer's font size and appearance.



While different layers can be displayed differently, the font size for one type of layer is all the same. i.e. the font for multiple point layers is the same size. Label colors can be assigned by layer.

Finally, the “outline font” option applies to all layer labels and the background outline is the same as the “land” color.

NOTE: You can download some PWC files which show Oil/Gas Platforms, Pipelines, Pipe Points and Blocks as well as US State Borders and US Highways/Interstates, and man made Dams from our web site at http://www.pcwp.com/ftp/pwc.zip .

APPENDIX U: Network Installations

The network installation of Hurrtrak is “network unaware”.. i.e., the system does not know it is running on a network. The server install puts all of the application’s executables and data onto its system while the workstation install installs the necessary windows components and defines the server executables as shortcuts. The only exception is the street database which is installed on both server and workstation.

Network Considerations & Directory Structure

The following diagrams describe how the network administrator should set up the authorities on the network directories. This model assumes that the "signon required" field is set ON in the System setup (SYSTEM) program.

Directory Structure and authorities:

SYSOP

Directory	
/APPL	Read
/APPL/data	Create, Read, Update, Delete
/APPL/database	Create, Read, Update, Delete
/APPL/database/user	Read, Update
/APPL/dem	Read, Update
/APPL/maps1400	Create, Read, Update, Delete
/APPL/maps1024	Create, Read, Update, Delete
/APPL/maps640	Create, Read, Update, Delete
/APPL/Temp	Create, Read, Update, Delete
/APPL/n	Create, Read, Update, Delete
/APPL/nlcd	Read
/APPL/slosh	Read, Update
/APPL/streetdata	Read
/APPL/miscgraphics	Read
/APPL/reconbmp	Read

Regular User with Update option = "Y"

Directory	
/APPL	Read
/APPL/data	Create, Read, Update, Delete
/APPL/database	Read, Update
/APPL/database/user	Read, Update
/APPL/dem	Read, Update
/APPL/maps1400	Create, Read, Update, Delete
/APPL/maps1024	Create, Read, Update, Delete
/APPL/maps640	Create, Read, Update, Delete
/APPL/Temp	Create, Read, Update, Delete
/APPL/n	Create, Read, Update, Delete
/APPL/nlcd	Read
/APPL/slosh	Read, Update
/APPL/streetdata	Read
/APPL/miscgraphics	Read
/APPL/reconbmp	Read

Regular User with NO update capabilities

Directory	
/APPL	Read

/APPL/data	Read, Update
/APPL/database	Read
/APPL/database/user	Read, Update
/APPL/dem	Read, Update
/APPL/maps1400	Create, Read, Update, Delete
/APPL/maps1024	Read
/APPL/maps640	Read
/APPL/Temp	Create, Read, Update, Delete
/APPL/n	Create, Read, Update, Delete
/APPL/nlcd	Read
/APPL/slosh	Read, Update
/APPL/streetdata	Read
/APPL/miscgraphics	Read
/APPL/reconbmp	Read

Directory Contents:

/APPL- System Executables, strike probability DAT files and other system files
/APPL/n** - Database History Files
/APPL/data - Miscellaneous system data files
/APPL/database - MS Access (MDB) files
/APPL/database/user- User Preferences Access File MDB
/APPL/dem - Digital Elevation Model Data
/APPL/maps1024 - 1400x1180 maps
/APPL/maps1024 - 1024x768 maps
/APPL/maps640 - 640x480 maps
/APPL/nlcd – National Land cover database
/APPL.slosh - SLOSH data files
/APPL/Temp - Temporary files, Pre-Compress/Repair copies of .MDB files
/APPL/streetdata - Street Atlas data used in SLOSHView program
/APPL/reconbmp - Collection of bitmaps used in the recon program
/APPL/miscgraphics - Collection of bitmaps used in the system

***** The APPL for HURRTRAK EM/Pro is **HTEM2008**
The APPL for Global EM/Pro is **GTEM2008**
The APPL for HURRTRAK RM/Pro is **HTRM2008**
The APPL for Global RM/Pro is **GTRM2008**

****** n = 1 for HURRTRAK, n=1 through 6 for Global

Full create / update / read access for all users must be given to .LDB files in the database and database/user subdirectory.

APPENDIX V: Global Tracker Considerations

Users of the system have the ability to track and analyze storms from around the world. The 6 tropical basins are Atlantic, East/Central Pacific, Western (North) Pacific, Northern Indian Ocean, Southern Indian Ocean and Southwest Pacific. When tracking global systems there are several important considerations.

Hurrtrak Online

There are a few differences on how the global data is processed by Hurrtrak Online. The 3 data sources for tropical cyclone data are

1. National Hurricane Center (NHC) – Covers the Atlantic and Eastern Pacific basin
2. Central Pacific Hurricane Center (CPHC) – Covers the Central Pacific from 140 degrees West to 180 degrees.
3. Joint Typhoon Weather Center (JTWC) – Covers the Western Pacific, Indian Oceans and Southwest Pacific

The hurricane center data is retrieved and processed by PC Weather Products servers and then made available to its users. The client software (that's you) then retrieves the data from our servers and updates your local storm database. If there is a problem with the released advisories we take every measure to correct these problems to make sure the data gets to the user correctly. In addition, the data is mirrored on a 2nd backup site. For this reason, the data from the Atlantic and Eastern/Central Pacific is more complete and very reliable.

The JTWC data is handled a little differently. PCWP servers download and save key data from the JTWC and then make that available to its users. The client software then retrieves this key data from our servers. While this approach has worked well in the past, there are several opportunities for problems that the user needs to be aware of.

1. JTWC server problems – If the JTWC servers go down, no data will be available for the period of outage. There is nothing we can do at this point but wait until they fix the problems.
2. JTWC format changes – Since the server software contains program logic to decode the JTWC advisories, if they change the format unexpectedly or make an error, the server software will not update correctly. If it is an error, it will be corrected (hopefully) with the next advisory. If the change is permanent, we will have to modify our server software.

One other important item has to do with the download of watches and warnings. Watches and warning areas are only downloaded for the Atlantic basin and only when they affect US coastal areas. This is because; this is the only area that standard watch and warning breakpoints are defined. The user can manually input other watch and warning areas via the edit function.

Program Function differences

The following functions are not available to the Global user tracking storms outside of the Atlantic.

1. Strike Probability Analysis – Strike probabilities cannot be calculated outside of the Atlantic.
2. County & Zip Code Reports – The county and zip code report data is only available for the US and PR/USVI so analysis in the Pacific is not feasible.
3. Forecast Rainfall – Rainfall data is only available for the US.
4. Model Forecast – Hurricane forecast model data is only available for the Atlantic and Eastern Pacific.

5. RECON – Hurricane reconnaissance information is only available for the Atlantic.
6. SLOSH – Slosh flood analysis is only available for the coastal Atlantic, Bahamas, PR and USVI.
7. Advanced Wind Estimation – The NLCD database used for advanced wind estimation covers only the US Mainland.

Recommended user preferences

Most of the user preferences are the same for the Atlantic only version and the Global version. There are 2 areas that need consideration.

1. Hurrtrak Online Preferences – Global users have additional options regarding how often to check for new data. It is recommended that if you have an always on internet connection to turn on the options to check for Atlantic, Eastern/Central Pacific and Western Pacific/Indian Ocean. Set the intervals to 10-15 minutes for the Atlantic and 30-60 minutes for the Western Pacific. Of course if you have no interest in a geographical area, do not check that option.
2. Automation Alert (advanced) Preferences – Since the JTWC data comes in differently than the other data, you may need to change how you define new data. If you are NOT automatically sending email alert and/or summary reports, set the new data option to ANY. If you are sending email alerts or summary reports, then set the new data option to FORECAST ADVISORY. This is always issued for all global areas and will prevent you from sending out multiple messages for each advisory.

APPENDIX W: Technical Support

PC Weather Products provides free support via our Web Site and EMAIL. HURRTRAK Advanced customers also receive telephone support at no extra charge. In order to continue to provide support at no additional cost, please make sure to follow the order of support shown below.

Before contacting us, please make sure you have done the following

1. Review the system help text (this document)

2. Review the system documentation

3. Review the training modules at www.pcwp.com/training.html

4. Check the FAQ on our web site at http://www.pcwp.com

If these methods do not provide an answer, please contact PCWP via EMAIL:
EMAIL support requests to: support@pcwp.com

Hurrtrak Advanced customers may call us: (770) 953-3506 or by FAX at (770) 952-2540.

E-mail is the preferred method of support.

APPENDIX X: Software License Agreement

§HURRTRAK EM/Pro
§HURRTRAK RM/Pro
§Global Tracker - EM/Pro
§Global Tracker - RM/Pro
§Hurrtrak Advanced

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If you need to utilize the Software in a manner outside of this Agreement, please contact Licensor.

APPENDIX Y: Hurrtrak Online Information Services Agreement

1. This Agreement provides terms and conditions of PC Weather Products, Inc.'s HURRTRAK-ONLINE Information Services. The services consist of on-line access to data for use with PC Weather Products, Inc.'s HURRTRAK Professional Edition and HURRTRAK EM/Pro Software which is separately licensed from PC Weather Products, Inc. These terms and conditions and any other terms and conditions enacted by PC Weather Products, Inc. as Operating Rules for these Services constitute the entire agreement between the parties with respect to these Services and supersede all other communications and agreements with regard to the subject matter hereof.

2. Services begin upon receipt by PC Weather Products, Inc., of an electronic message from Customer acknowledging Customer's agreement with these terms and conditions and authorizing payment via a charge card acceptable to PC Weather Products, Inc. or authorizing PC Weather Products, Inc. to invoice Customers' whose credit worthiness is acceptable to PC Weather Products, Inc. for these Services. The only binding forms of acceptance of any order for Services shall be either a message of acceptance electronically conveyed to Customer by PC Weather Products, Inc., or written acceptance mailed, delivered, or sent to the Customer, at PC Weathers Products, Inc.'s option. The initial term of this Service Agreement is one year from the date of acceptance of Customer's order; however the on-line data and information services which are the subject matter of this Agreement will only be available from June 1 of each year until November 30 of each year, the period normally considered to be "hurricane season".

3. PC Weather Products, Inc. may modify the terms and conditions under which these Services are offered, the Operating Rules, and any charges for Services, and may discontinue Services or revise any or all aspects of the Services at its sole discretion and without prior notice.

4. Customer is responsible for and must provide all telephone and other equipment and services necessary to access the Services.

5. Neither Customer, nor any of its agents or authorized users, may reproduce, distribute, retransmit, publish or otherwise transfer, or commercially exploit any data or information available to Customer from PC Weather Products, Inc. in conjunction with the Services. Notwithstanding the foregoing, any data or information provided as part of the Services may be used in accordance with the terms and conditions of the separate Software Licensing Agreement for HURRTRAK- Professional Edition or HURRTRAK EM/Pro Software entered into by the parties.

6. PC Weather Products, Inc. may terminate this Agreement upon written notice in the event the Customer breaches any provision of this Agreement, or becomes insolvent, bankrupt, or has or suffers an assignment for the benefit of creditors and/or the appointment of any trustee or receiver for all or substantially all of its assets.

7. Customer will indemnify and hold PC Weather Products, Inc. harmless from and against any liability for any and all use of Customer's account.

8. CUSTOMER EXPRESSLY AGREES THAT USE OF THE SERVICES IS AT CUSTOMER'S SOLE RISK. PC WEATHER PRODUCTS, INC. DOES NOT WARRANT THAT SERVICES WILL BE UNINTERRUPTED OR ERROR FREE, OR THAT ACCESS TO THE DATA OR INFORMATION CONTAINED IN THE SERVICE OFFERINGS WILL BE AVAILABLE TO CUSTOMER AT ANY AND ALL TIMES. THE SERVICES ARE PROVIDED "AS IS" WITHOUT ANY WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED. PC WEATHER PRODUCTS, INC. HEREBY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow the exclusion of implied warranties in consumer transactions, so the above exclusion may not apply to you.

9. PC WEATHER PRODUCTS, INC.'S LIABILITY TO CUSTOMER, FOR ANY CAUSE WHATSOEVER, WHETHER ARISING OUT OF CONTRACT, TORT, EQUITY OR OTHERWISE, SHALL BE LIMITED TO

RETURN OF THE CHARGES PAID TO PC WEATHER PRODUCTS, INC. BY THE CUSTOMER FOR ONE YEAR OF SERVICES. IN NO EVENT WILL PC WEATHER PRODUCTS, INC. BE LIABLE TO CUSTOMER FOR ANY OTHER DAMAGES, INCLUDING ANY LOST PROFITS, LOST SAVINGS, OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES, ARISING OUT OF CUSTOMER'S USE OR INABILITY TO USE SUCH SOFTWARE OR CUSTOMER'S POSSESSION THEREOF. Some States do not allow the limitation or exclusion of liability for incidental or consequential damages in consumer transactions, so the above exclusion may not apply to you.

10. This Agreement is governed by the laws of the State of Georgia, U.S.A. Any action against PC Weather Products, Inc. under this Agreement must be brought within eighteen (18) months of the time it accrues or it shall be time barred.

11. This Agreement is the entire Agreement between the parties relating to its subject matter. It supersedes any prior negotiations or communications between the parties, and except as provided in paragraph 3 above, can only be modified and amended in a written agreement between the parties. This Agreement cannot be modified through any provision of any purchase order form, voucher, memorandum, check endorsement, or other acknowledgment form used by Customer. If any provision of this Agreement is or becomes unenforceable in any Court, the remaining portions of this Agreement remain in full force and effect between the parties. Any failure by PC Weather Products, Inc. to enforce any provision of this Agreement on any occasion shall not be deemed a waiver of said provision, and nothing shall prevent PC Weather Products, Inc. from strictly enforcing these terms and conditions. This Agreement is not assignable by either party.

APPENDIX Z: FAQ & TROUBLESHOOTING

FOR THE LATEST VERSION OF THIS INFORMATION, PLEASE EXAMINE THE FAQ AT OUR WEB SITE (WWW.PCWP.COM)

What is the best video mode to use?
Which screen resolution to use is a matter of personal preference. In order to see the main menu window as well as the other system windows, we recommended that you run the system in 1024x768 or greater. We also recommend true color (24 bit or higher).

Is there some easy way of setting the "current" advisory for an earlier point in a storms history? All attempts are giving me a map with the last plot of the storm.
Yes, the Post Storm Analysis feature under User Preferences or Tools will do this.

How does the Estimate of 48, 72, 96 and 120 hour 34 and 64 knot wind fields work?

Since the National Hurricane Center does not provide the forecast wind field information for the areas of 64 knot winds and in the 96 and 120 hour outlook... the 34, 50 knot wind areas...., we allow the user to turn on the option which will force the system to estimate these wind fields. A series of algorithms are utilized to come up with a best guess of what these wind fields will be. Please remember these are only estimates based on storm trend and climatology.

How does the Landfall Recognition work?

Since landfall will often be in-between forecast verification times, this presents a problem of linearly extrapolating forecast winds between forecast points. I.E. if a storm's 36 hour forecast is to be 100 miles offshore with top winds of 125 MPH and it's 48 hour position is forecast to be 100 miles inland with top winds of 75 MPH, then a linear extrapolation would calculate a 100 MPH storm at landfall. Turning Landfall Recognition ON will force the system to maintain the intensity of the storm until landfall. Landfall is defined (by the system) as 5 contiguous hours over land.

Can I put the images from the system in a public forum, like a web site?
The license agreement for this software does NOT allow for its images to be placed in a public forum such as a BBS, WEB Site, ON-Air, etc. If you have a desire to do so, please contact PC Weather Products to discuss separate license agreement possibilities.

Will this run on a Network?
Yes, contact PC Weather Products for more information on the Network version.

How can I get the data in the tracking system into the historical database for use by the Hurricane History program?
You can't. The historical database is based on "official" storm track information provided by the NHC (Atlantic / East Pacific). In addition the data is pre-processed to allow for rapid information access.

Where can I get updates to the history database as well as program fixes, etc.?
You can get yearly updates to the historical databases and program fixes from the PC Weather Products web site at http://www.pcwp.com.

Why should I create separate storm databases in system setup.?
While separate storm databases are not required, they are recommended in order to segregate storms by year. Creating a separate storm database for 2000, 2001 ,etc. should make management of storm data much easier. Remember, the system's default database after installation is the "PAST" database. If you wish to segregate this year's storms, create a new database right after you install.

Why would I want to turn database security ON?
Unless you have the LAN version of the system you probably don't. Turning on security forces the user to signon before starting any of the system's programs.

How should I utilize 'Location Groups' and why are there predefined groups (like Emailalert, small map and large map group)?
Location groups are a powerful addition to the tracking system's capabilities. Not only can you display the locations within a group on the tracking charts they also are used to determine which locations will be analyzed in the batch location analysis and with the strike probabilities report. The small map group can be used as the set of locations you want to display whenever you are using a small map (<20 degrees wind). The large map group as you might expect can be used when displaying locations on a large map, like the whole Atlantic, etc.. The EmailAlert location group is used when creating a map for an e-mail alert message.

What is the significance of the value of the flood index?
The value of the index is determined by the strength of the onshore wind flow for that area. For a complete discussion of this topic see Flood Index Summary on page 269.

In the systems, there are options to display SLOSH data. What is this data?
The SLOSH data is data compiled by the NWS to determine the potential extent of coastal flooding due to a storm surge. For a complete discussion of this topic, see SLOSH Summary on page 270

I can't get the summary report to work. Why?
In order to get the summary report to function you must follow the Setup Summary Reports directions as shown on page 266.

TROUBLESHOOTING - PROGRAM

My tab labels are not showing unless I select that tab.
This is a video driver problem. You can try setting the tab labels to a different location. If that does not work you should replace you windows video driver with a newer one. These are usually available from your PC vendor or via internet support sites.

Why does my entire window become filled with a solid color while performing certain functions like wind band analysis and plotting the storm track?
If you are experiencing color flooding problems, it is likely that you have a bug in your video driver. You should replace your windows video driver with a newer one. These are usually available from your PC vendor or via internet support sites.

When I Email reports with the imbedded text option the format of the report gets all messed up.
When viewing Emailed reports that has column type data, the receiver must change his Email program viewing font to a non-proportional type (courier for example). A better solution is to email the report as HTML or PDF.

When I attempt to start the system, I am getting an error message that says "... is not a MS Access Database". What's wrong, it worked fine the last time I used it?
This error message indicates that the main system database file(s) have become corrupted. This is typically due to a unplanned shutdown, power outage, etc. To correct this, run a database repair. If this does not work, then restore from the latest backup. If this is not available, then the only option is to reinstall the entire system. Note: most of the time the file that became corrupt is the userdb.mdb file. If you replace just that file, you may be up and running without having to reinstall. This file is on your installation CD.

I downloaded the latest information from HURRTRAK ONLINE, but the watch and warning areas are not available. Why?
The automatic detection of watch and warning areas from the NHC advisories is operationally challenging. Depending on how they word the watch and warning verbiage some manual intervention may be required by PCWP. When this happens there may be a delay in getting the watch and warning data updated on the HURRTRAK ONLINE system. Until then, the user can manually setup the areas from the Edit Watch and Warning function.

When creating a custom tracking chart and all I get is a blank map, why?
You are probably entering the center latitude and longitude outside the valid mapping area. Make sure that you are entering Western Longitudes as negative numbers and Eastern Longitudes as positive. Also all coordinates must be entered in degrees and tenths of a degree not degrees and minutes.

When creating custom tracking charts, the ocean and land colors do not come out correct and I cannot fix it with the paint command. Why?
If you are having trouble with the custom tracking charts colors then it is likely that you have a video driver bug. Make sure you obtain the latest video driver for your system.

I add new Locations in System Setup but they are not appearing in the correct position on the tracking charts, why?
You have probably entered latitude and longitude in degrees and minutes; make sure you enter it in degrees and tenths of a degree. To convert to tenths divide the minutes by 60. I.E. 29 degrees 30 minutes is 29.5 degrees.

TROUBLESHOOTING - ONLINE - Internet Connection

In addition to reviewing this topic, please review the FAQ at our web site (www.pcwp.com) to see the latest information. If you cannot get this feature working properly, you may want to consider using the direct dial option instead.

Everything's been working fine for a while, and now all of a sudden I am getting errors.
Do a cold reboot (shutdown and turn the PC off). You'd be amazed by how many windows problems get fixed this way.

I am using a direct connection to the Internet through my organizations server but I keep getting error messages.
If you are connecting to the internet through your organizations server there are 2 potential obstacles.

1. Proxy Server - If you are using a non-authenticating proxy server contact your network administrator and find out what proxy server parameters you need to enter into the internet setup option.
2. Authenticating Proxy Server - Some organizations operate "Authenticating" Proxy Servers which require additional passwords to get data from the internet. The HURRTRAK ONLINE INTERNET system will not operate with these types of proxy servers. Contact your system administrator to request that an authentication exception be defined just for the purposes of retrieving data from http://www.pcwp.com/data. Then define the proper parameters as shown in the internet setup option.