

HURREVAC User's Manual

(Updated June 16, 2017)





Welcome to HURREVAC

HURREVAC (short for Hurricane Evacuation) is a storm tracking and decision support computer software tool for government emergency managers. The program tracks hurricanes, using the National Hurricane Center Forecast/Advisory product, and combines this information with data from the regional Hurricane Evacuation Studies (HES) to assist local emergency managers in determining an *evacuation start time*. Various National Weather Service (NWS) products are incorporated into the program to provide analysis of timing and severity for storm effects such as wind, storm surge, and inland flooding.

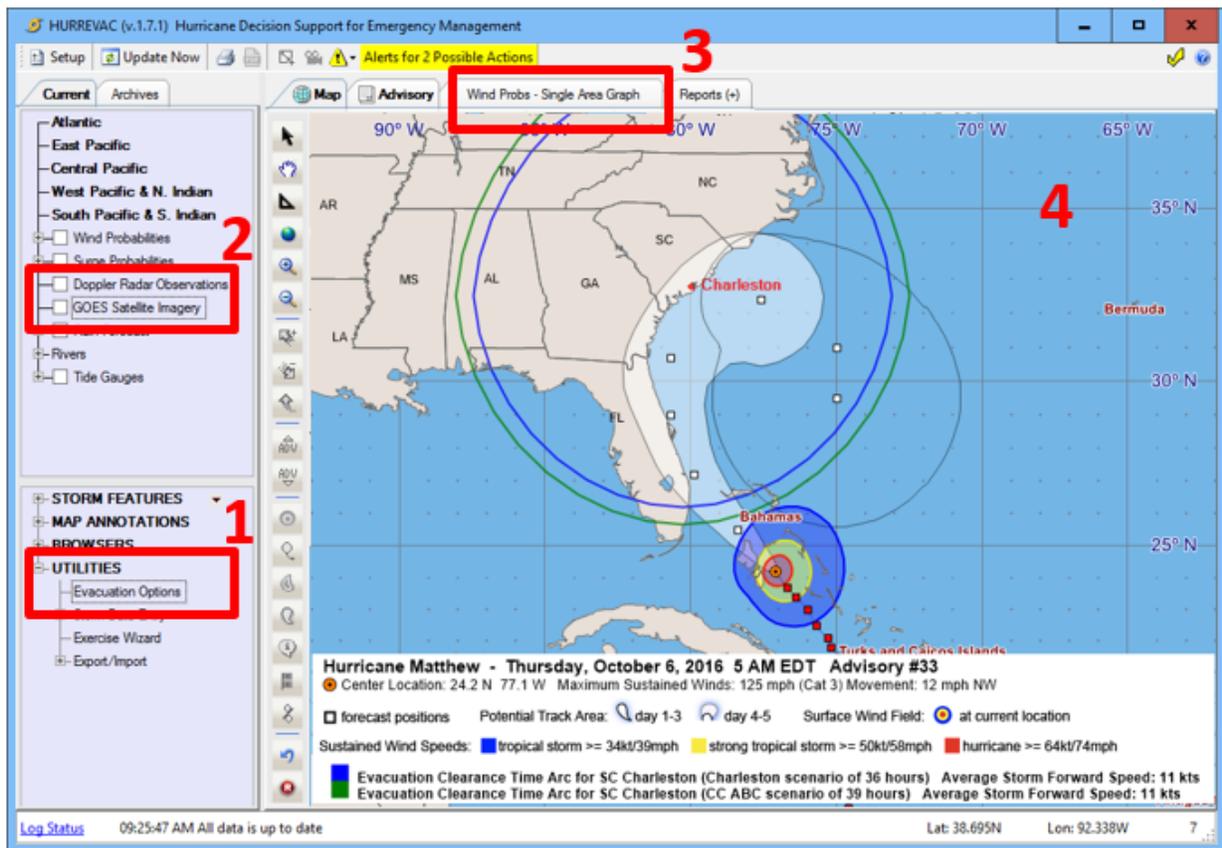
HURREVAC is a product of the National Hurricane Program, a partnership between the Federal Emergency Management Agency (FEMA), the U.S. Army Corps of Engineers (USACE), and the National Oceanic and Atmospheric Administration (NOAA). Sea Island Software is the private contractor tasked with development, operation, and maintenance of the HURREVAC program. The USACE Baltimore District office (Hurricane Program Office under the National Center of Expertise for Coastal Storm Damage Reduction) administers the contract with funding and guidance from FEMA.

What's New in the 2017 Season Version

The 2017 Season Version of HURREVAC is 1.7.1, as noted in the title bar of the main program window. This version is based upon a .NET program platform initially released for the 2010 season and dubbed Hurrevac2010. Previous platforms included Hurrevac2000, HurWin95, and the DOS-based state editions dating back to the program's beginnings in 1988. These previous platforms have now been phased out and are no longer supported with a live feed of forecast data.

This release of HURREVAC contains improved evacuation options for utilizing zone-based scenarios and for entering your own (manual) clearance times to utilize throughout the program in alerts, clearance time arcs, and evacuation timing reports.

The screenshot below highlights some areas of the program where this and other changes have been made.



New features of the 2017 Season Version of HURREVAC include manual-entry and zone-based evacuation options(1), radar and satellite imagery additions(2), a new probabilistic wind timing tool(3), and a change of map projection to Web Mercator(4).

Specific new features and improvements to the program are as follows:

1. [Evacuation Options](#) are now available for **evacuation zone scenarios and manually-entered evacuation clearance times**. Whereas under Storm Category Scenarios, HURREVAC attempts to select the most appropriate level of evacuation based on storm severity (the maximum forecast SSCat), under the new options the selection is left entirely up to the user. This should improve clarity within the program of exactly what clearance times are being used.
2. The [Doppler radar mosaic](#) has been expanded to include coverage of Puerto Rico and Hawaii. [Satellite imagery](#) has also been added from the **visible channel of the GOES-East and GOES-West geostationary satellites**.
3. A new probabilistic wind timing tool has been added to the cumulative [wind probabilities](#) graph for assistance in determining the likelihood that winds will begin by specified hours.
4. HURREVAC's basemap has been converted to a **Web-mercator map projection** to more accurately depict storm shape and direction at extreme northern latitudes.

Other changes of note in HURREVAC Version 1.7.1:

- The [river gauge charts](#) now have a tool similar to the [tide gauge charts](#)' tool for looking up water height at specified times.
- Beginning this season, HURREVAC will track **potential tropical cyclones** when NHC begins issuing early advisories for systems forming near land.
- Minor updates have been made to watch/warning breakpoints that include a few additional locations in the Central and West Pacific basins, and also changes to the names and break intervals in many other areas of the world.
- Many more [wind probability point locations](#) will be reported in HURREVAC for storms beginning this season.
- The potential track area ([120-hour error cone](#)) for the Atlantic and East Pacific is further narrowed as a result of NHC's improving accuracy in forecasting storm tracks. Central Pacific storms will utilize new CPHC-specific error rates for 2017.

IMPORTANT NOTE: Additional new features are in the works for a mid-season update to be distributed following testing on the first live storm with storm surge products. **Future HURREVAC (version 1.7.2) will include mapping and reporting of storm surge watches/warnings, both by breakpoints and by inland (gridded) extent. NHC's potential storm surge flooding map will also be incorporated into HURREVAC's Current view.**

Getting Started

Resources

HURREVAC includes a comprehensive help system that is installed along with the program. The help system's '[Using HURREVAC](#)' walk-through of program basics is a good place for new users to begin. Searchable topics are available for in-depth research. A print-formatted PDF version is located on the support site at <http://www.hurrevac.com/guides.htm>.

Technical Support

HURREVAC users have year-round access to 24/7 technical support from Sea Island Software, the contractor who develops, operates, and maintains the program.

Users should register for the program and submit questions through the support site at www.hurrevac.com. Routine web site contacts and e-mails to support@hurrevac.com are answered within one business day. Issues related to developing storms and other time-critical user needs are addressed immediately even if outside of normal business hours.

Sea Island Software maintains a toll-free support phone line at (888) 840-4089. Support calls are answered 24/7 during storm events.

Program Distribution

HURREVAC is an important emergency management tool for monitoring hurricane threats and determining evacuation and other operational decision deadlines. The program has approximately 12,000 registered users in federal, state, and local government. In actual practice there are likely two or three times as many users since registration is only required of one contact person per site.

As a federally-funded program, the software, datafeed, and technical support are provided free-of-charge to all individuals in government emergency management who request access. HURREVAC is not distributed beyond the government emergency management community.

For program access, please visit the registration page at <http://www.hurrevac.com/register.php>. Successful registrants receive an email reply with instructions for downloading the program installation file. It's important that you notify the [HURREVAC support team](#) of any change in email address so that you can be kept informed of program updates.

Installation and Configuration

Installation instructions and access to the program install file are emailed to new users who apply for program access through the registration page at <http://www.hurrevac.com/register.php>. If you are already registered but need to renew access to the program install file, please visit <http://www.hurrevac.com/resend.php>.

Program Requirements

HURREVAC is a stand-alone desktop application for computers running Microsoft Windows Vista, 7, or 8. An Internet connection is required in order for the program to retrieve live forecast data. The only other program requirement is Microsoft .NET Framework 4.5. This application framework is already included with most versions of Windows and may be obtained for older operating systems such as Windows Vista if not already present on your computer. HURREVAC's installation wizard will alert you if the prerequisite .NET Framework is missing and needs to be downloaded from Microsoft.com.

For full access to HURREVAC's entire toolbar and tracking map, Windows display settings must be configured for a screen resolution of at least 1024 x 768 pixels. Also, for optimal performance the computer should have at least 1GB of free RAM that is not in use by the operating system or other programs.

Installation

Basic steps for installation and configuration (as detailed within the emailed download instructions) include:

1. Download and run the program install file.
2. Launch HURREVAC from the desktop icon and go to the in-program [Setup](#) to import or define user preferences.

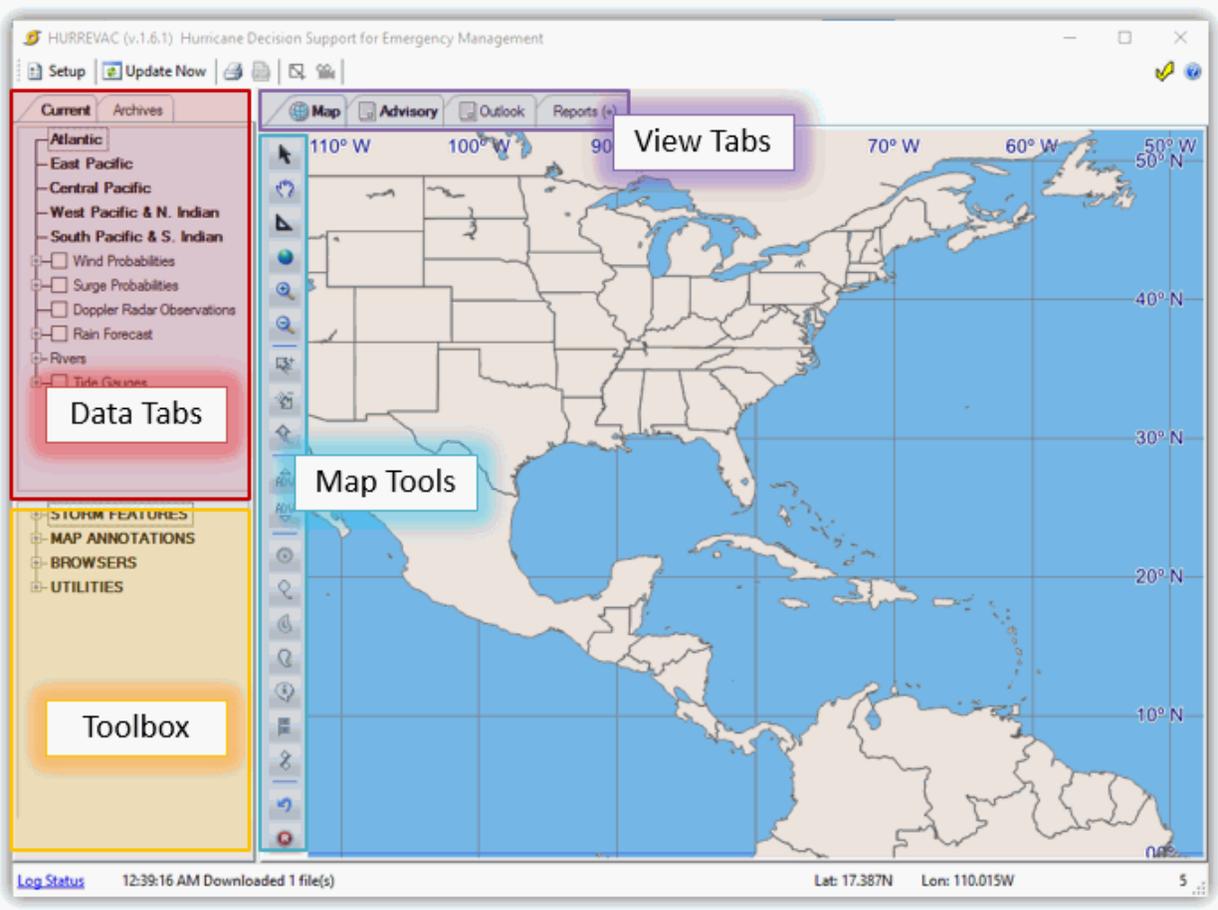
Using HURREVAC

The following is a short walk-through of HURREVAC intended for users who are new to the program and for those who wish to refresh their skills.

Topics in This Tour

- [Exploring the Workspace](#)
- [Tracking Current Storms](#)
- [Analyzing Threats](#)
- [Evacuation Start Timing](#)
- [Other Weather Data](#)
- [Working with Archive Storms](#)

Exploring the Workspace



HURREVAC's default view is dominated by a large tracking map. Additional **View Tabs** are available for viewing other items:

- text of the currently displayed storm [advisory](#);
- text and graphical depictions of the Tropical Weather Outlook; and
- various [reports](#) generated upon request.

The [program header](#) is reserved for global functions such as configuring the program setup, updating forecast data, and printing. The program footer holds messages concerning recent forecast data downloads, plus record of map coordinates and measurements made by the [distance ruler](#).

[Map Tools](#) for commonly-used functions are located on the left edge of the tracking map and are grouped as follows:

- map manipulation (zoom and pan functions)

- forecast hour buttons - HURREVAC's display defaults to the initial position of the very latest advisory. Use these buttons to view forecast information from some portion of the forecast (from 0 to 120-hours)
- storm advisory buttons - HURREVAC's display defaults to the very latest advisory. In order to view storm status and forecast information from a previous advisory use these buttons
- storm forecast features - display the [wind field](#) or [potential location](#) for a discrete forecast hour, plus the [wind swath](#) (for forecast hours 0-72), or [error cone](#) (region where the storm is most likely to track). Also forecast and past track position labels, [watch](#) and [warning](#) locations along the coastline, and wind probabilities
- back, forward, and reset options for restoring map extents and the storm display to previous states.

Data Tabs

[Live storms](#) and other forecast data appear in the list at top left on the **Current Tab**. You can expand list headings and check list items on and off to control their display on the map.

The **Archives Tab** is used to view [ended storms](#) and other types of archived data.

Toolbox

Additional operations of the program appear at the bottom left of the workspace.

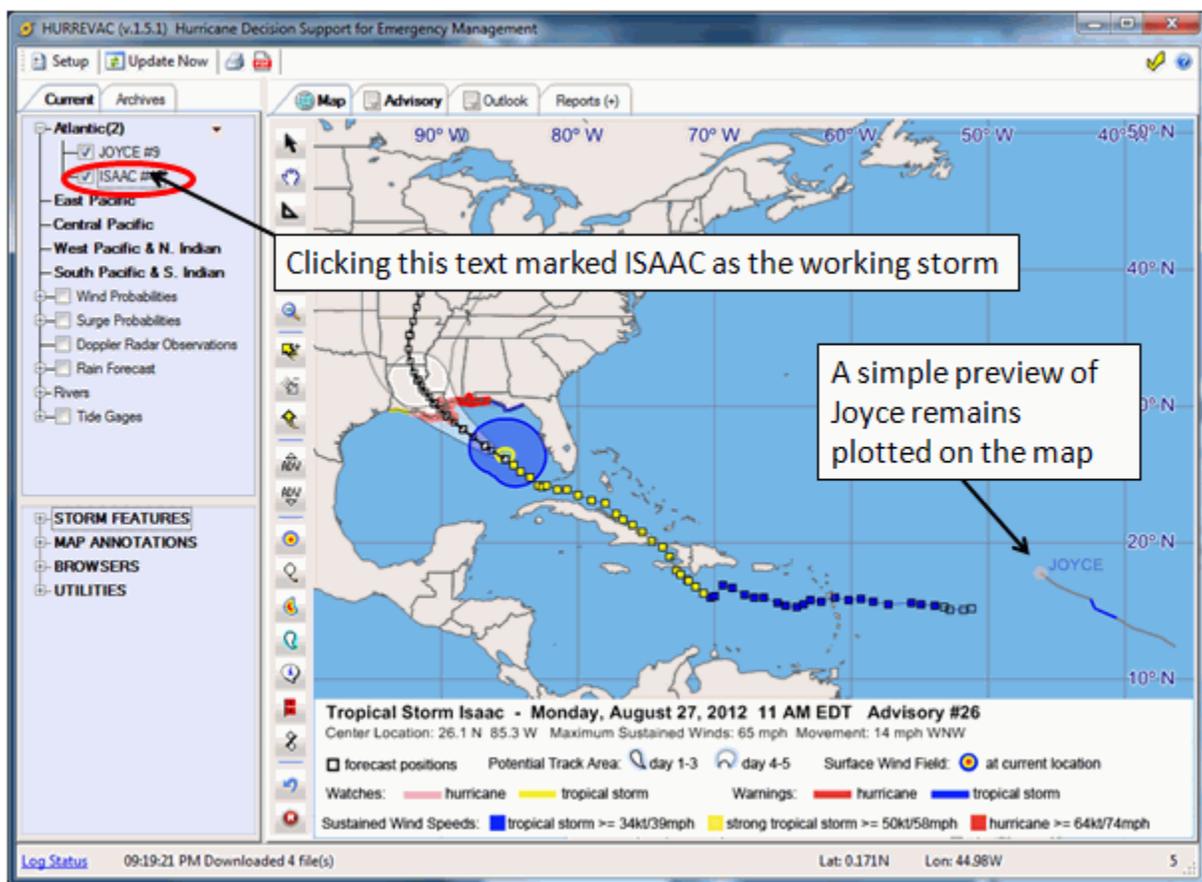
- **[STORM FEATURES](#)** displayed on the map for the current advisory
- **[MAP ANNOTATIONS](#)** for map labeling options
- **[BROWSERS](#)** for Hurricane Evacuation Study clearance times, storm surge maps, and historical hurricane tracks
- **[UTILITIES](#)** for storm file editing, import and export

Tracking Current Storms

Real-time monitoring and storm tracking are central to HURREVAC. The program's primary data sources are the three US government-based forecast centers which together cover *tropical cyclone* activity worldwide:

1. The **National Hurricane Center (NHC)** - responsible for the Atlantic basin (including the Caribbean and Gulf of Mexico) and the East Pacific basin that extends westward to 140 degrees longitude.
2. The **Central Pacific Hurricane Center (CPHC)** - responsible for the Central Pacific basin from 140 to 180 degrees west.
3. The **Joint Typhoon Warning Center (JTWC)** - with a large area of responsibility that includes the West Pacific and North Indian Ocean, plus the South Pacific and South Indian Ocean.

Whenever there is an active tropical cyclone, the responsible forecast center produces sequentially numbered advisories at 6-hour intervals. Issuance times are 03, 09, 15, and 21 Zulu (which translates to 11pm, 5am, 11am, and 5pm Eastern Daylight Time).



At startup, HURREVAC immediately checks the web to see if there are any active storms and downloads them for presentation on the tracking map. As long as the program is left in auto-

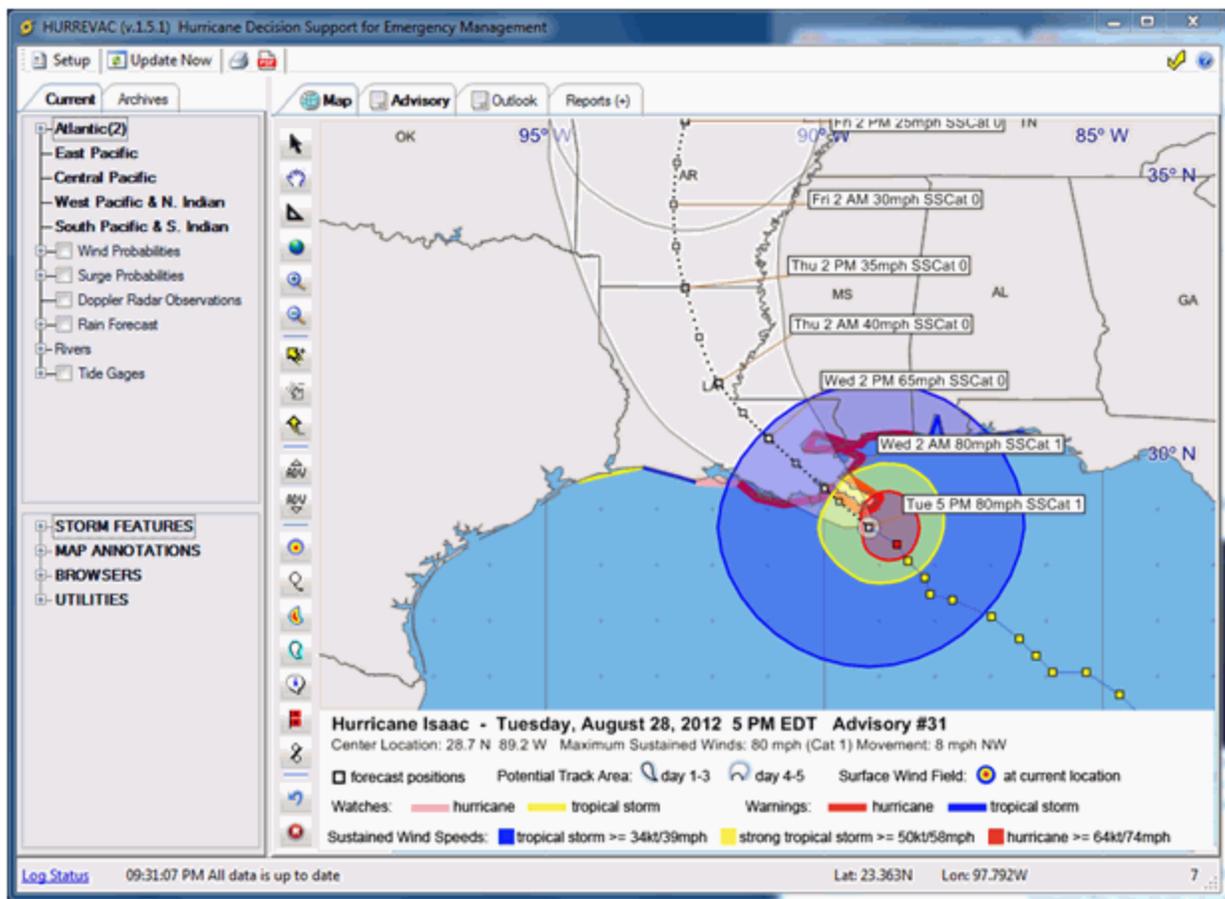
download mode (the default [download schedule](#)), you will receive updates with new forecast advisories.

HURREVAC's Current data tab, at top left of the program interface, organizes activity by the forecast *basins*. Numbers appear after the name of any basin containing one or more active storms. Click the + symbol next to an active basin to expand the listing to include the active storm name(s) and latest advisory number(s).

As per [default basin selections](#) made within HURREVAC's Setup form, the program automatically plots storms that are active in the Atlantic basin and leaves other basins' storms unchecked. If boxes for multiple storms are checked, one storm will be prominently displayed (in working mode) while the others show up as simple plots. Storm plots consist of a multi-colored line tracing the past track of the storm and a small red circle marking the location of the storm at the time of the most recent advisory. The Tropical Weather Outlook (accessed from the **Outlook** View Tab) contains a text summary of activity in each basin.

When you find a storm you wish to investigate further, click on the text of the storm's name in the list on the Current Data Tab. This will load this storm's STM file (HURREVAC's native file format for storing all the forecast advisories from a single storm). With a storm selected for working mode, you can begin to manipulate it using the [Map Toolbar](#), or [STORM FEATURES](#) and [MAP ANNOTATIONS](#) of the Toolbox. You can also view the text of its *advisory* package (accessed from the **Advisory** View Tab) or generate [Reports](#) from the Reports [+] View Tab.

Storm Presentation



The storm's *past track* appears as a solid blue line, with colored squares representing the locations of all previous (old) advisories. These are color-coded according to the maximum wind speeds observed at the time of each advisory. The colors indicate:

- Blue - tropical storm-force winds of at least 34kt or 39mph;
- Yellow - strong tropical storm-force winds of at least 50kt or 58mph; and
- Red - hurricane-force winds of at least 64kts or 74mph.

The [Wind Field](#) illustrates the *initial position* and size of the storm. The [Error Cone](#) illustrates the area in which the center of the storm is most likely to track. Forecast positions at 12, 24, 36, 48, 72, 96, and 120 hours are indicated by large white-filled squares.

Analyzing Distant Threats

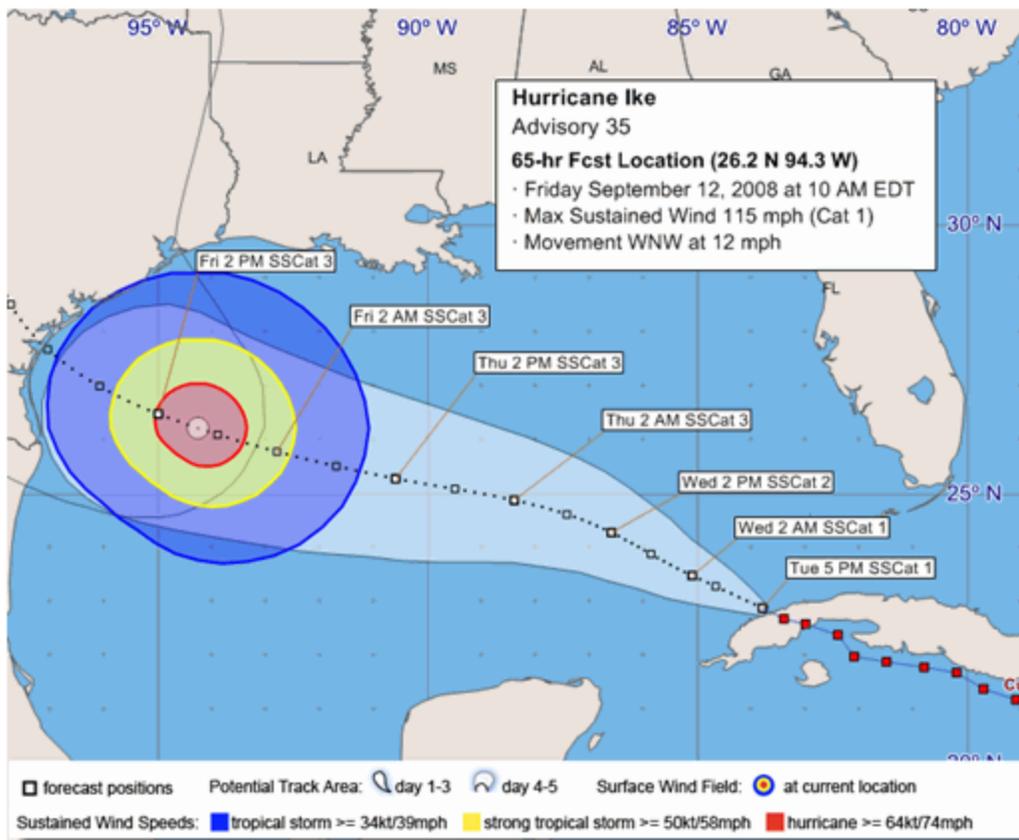
When tracking a still distant hurricane, HURREVAC enables you to answer basic questions about the threat such as:

- Where is the hurricane currently located and how big is it?
- Where is the hurricane expected to make landfall and at what [intensity](#)?
- What is the likelihood that the hurricane will impact my location and how soon could that happen?

Storm status is indicated by the Storm Information that initially appears as a Map Legend item across the bottom of the map display. The presentation style for storm information can be changed to the box style shown below by right-clicking on the map and opting to 'Move Storm Info Box Here.' To find out how the storm is forecasted to develop over the five-day period, use the (yellow) Move Storm AHEAD and BACK buttons of the [Map Toolbar](#). The Storm Info Box will update as you advance the storm along its *forecast track*.

An alternate way to gather statistics about the storm is through the [Storm Statistics Graph or Report](#).

You can determine when *tropical storm* force winds are projected to reach the coast by advancing the storm along its forecast track until the blue ring of the [Hourly Wind Field](#) touches the coast. Adding [Advisory Labels](#) to the forecast track can also be helpful in illustrating when the storm center is forecasted to be over an area.



You should not focus solely on the forecast track or precise wind timing, however, when a storm is still distant (36 to 120 hours away). Direction of the storm track, movement speed, and storm size is uncertain and one should be focused on *probabilistic forecast*, rather than *deterministic forecast* information. If you are in the [Error Cone](#) or fringe winds area surrounding the error swath, you should be concerned and following the storm closely. The [Forecast Error Cone Report](#) will list all counties/parishes within this potential track area and indicate how early the storm might arrive. This calculation will report an earlier time than the deterministic method (advancing the Hourly Wind Field) because it adds a margin of error.

You can also use [Wind Probabilities](#) to gauge the threat. Has the probability of hurricane-force winds at the coastal location nearest you increased or decreased from previous advisories?

If you are an inland county or parish, the *MEOW (wind) decay models* will tell you a lot about how much wind can be expected to penetrate inland to your area if the storm center comes very near or over you.

Regional planners may wish to use the [Closest Approach of Storm Center Report](#) to determine which locations are under the greatest threat.

Evacuation Timing

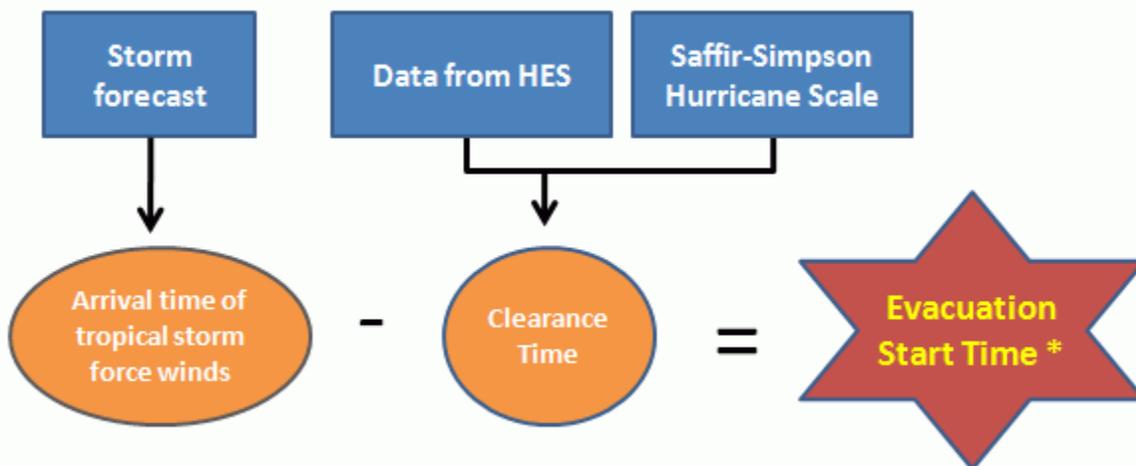
If a hurricane is determined to be close and threatening, you should begin to focus more specifically on the official *forecast track* and precise timing calculations derived from it.

The 'close and threatening' time frame is determined to a certain extent by the lead time that your community needs to make its evacuation preparations. In *USACE* Hurricane Evacuation Studies, this is referred to as the **Evacuation Clearance Time, the number of hours needed to move the vulnerable population to safety**. Clearance times vary according to both storm and local conditions. In HURREVAC, you can use the [Evacuation Clearance Time Browser](#) to review all available scenarios for your county or parish.

Timing Calculations

HURREVAC arrives at an evacuation start time using input from the official hurricane forecast (from *NHC*, *CPHC*, or *JTWC*) and the Hurricane Evacuation Study for the county or parish of interest.

Evacuation Timing in HURREVAC



* Necessity of evacuation should not be inferred by this calculation. HURREVAC only provides timing guidance on how soon an evacuation must start IF A DECISION TO EVACUATE IS MADE. Evacuation decisions are complex and require consultation with emergency management and NWS officials.

To determine the arrival time of tropical storm force winds, the program takes an [Alternate Forecast Track](#), worst-case scenario of a direct hit in which the *forward speed* and *wind ranges* of the official forecast are retained, but the track is straightened and redirected to the county of interest. Typically, the alternate track adjustment for counties in or near the error swath will result in a slightly earlier arrival time for tropical storm force winds than the official track.

Note that because of the alternate track adjustment, it possible to run timing calculations on counties well outside of the error swath where a storm strike is unlikely. HURREVAC

cannot tell you whether or not an evacuation is justified...only when the last possible moment is for starting an evacuation to allow enough time for completion before the hazards. The advantage of waiting as long as possible is that you have the most accurate forecast information and are therefore in a position to make the best decision.

The precise *evacuation clearance time* (number of hours) used in the calculation will be based upon your selection of [Evacuation Options](#).

Finally to run the *evacuation start time* calculations, you generate an [Evacuation Timing Report](#) from the +tab. These calculations should be updated each time a new forecast advisory is received. This is easily accomplished either with the Refresh button at the bottom of original report or by generating an additional tabbed report.

If configured, an [Evacuation Timing Alert](#) will appear when your county or parish is within 12 hours of a potential evacuation start time.

Those familiar with the pre-computer methods for evacuation timing may also wish to use a graphical [Clearance Time Arc](#).

Other Weather Data

In addition to wind effects, storm surge and inland flooding are two critical hazards that also need to be considered when preparing for a hurricane strike. HURREVAC incorporates a number of *NOAA / NWS* products to assist with the assessment of these threats through the Surge Probabilities, Rain, Rivers, and Tide Gauges headings of the Current data tab. The Doppler Radar, Rain, Rivers, and Tide Gauges information is available year-round, even when no tropical cyclones are active, but is of special interest within 48 hours of storm landfall.

Doppler Radar Observations

This [Radar Mosaic](#) shows the current rates of rainfall across the continental US, Puerto Rico, and Hawaii. The layer is a static image that updates every 10 minutes with the latest observations.

GOES Satellite Imagery

[Composite satellite imagery](#) is available from the visible channel of GOES-East and GOES-West, geostationary satellites that together cover North America, Central America, and surrounding Atlantic to Pacific Ocean areas.

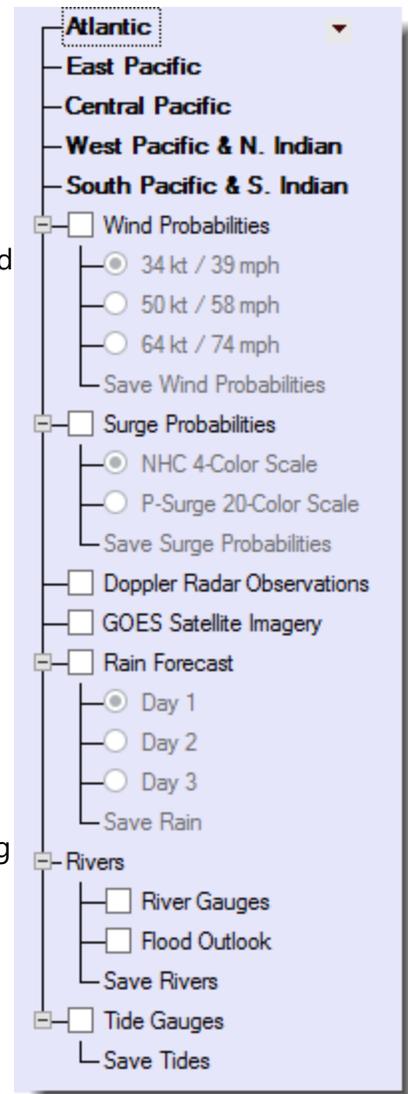
Coastal Storm Surge and Tide Station Tools

The [Surge Probabilities](#) layer shows coastline areas that have at least a 1 in 10 chance of flooding due to storm surge as a result of an approaching storm. The National Hurricane Center publishes this P-Surge information at times when hurricane watches and warnings are in effect for the continental US.

The [Tide Gauge](#) charts should be used to consider tidal fluctuations and potential changes in these fluctuations due to storm surge. To access coastal tide stations, select the Tide Gauges heading of the Current data tab. The latest gauge information will be downloaded from the Internet as you turn this on for the first time. Click on a station on the map to display the tide chart of predicted (astronomical) and observed tide levels. Depending on the storm size, location, and other factors, differences between the two tide values can begin to show up well in advance of the approaching storm.

The Tide Gauge charts also contains several [SLOSH Display](#) tools for determining potential storm surge under various *direct hit* scenarios.

Inland Flood Tools



The [3-day Quantitative Rainfall Forecast](#) (activated under the Rain heading of the Current data tab) and [River Flood Outlook](#) (located under the Rivers > Flood Outlook heading of the Current data tab) provide generalized guidance on possible inland flooding threats. Reports for both of these forecast products are available under the heading of Rain/River.

In order to display the latest rainfall and flood information in HURREVAC, you must have the program's [Download Schedule](#) set to 'Automatic Status Check' or have clicked 'Update Now' within the [Program Header](#). You can confirm the date and time of the currently displayed forecast by checking the contents of the white banner that appears across the bottom of the tracking map.

The [River Gauge](#) charts should be used to consider potential flood scenarios surrounding specific rivers gauge locations. To display inland river gauges, select the Rivers > River Gauges heading of the Current data tab. The latest gauge information will be downloaded from the Internet as you turn this on for the first time. With the gauge locations displayed on the map, zoom in and click on a single gauge of interest to view a chart of water levels over time. In addition to observed and forecasted river levels, charts for many gauges contain helpful static information on defined flood levels, historical crests, flood impact statements, and inundation maps.

Working with Archive Storms

Want to simulate live hurricane tracking or review a storm that impacted your area in the past? In addition to its live tracking capabilities, HURREVAC is a useful tool for evaluating historical and hypothetical storms. When viewing and analyzing storms from the Archives Tab, you will have access to all of the same STORM FEATURES, MAP ANNOTATIONS, and REPORTS functions employed as when tracking a live storm.

Your installation of HURREVAC is accompanied by an extensive database of STM files (HURREVAC's native file format for storing all the forecast advisories from a single storm). Complete seasons of STM records extend back to 1996 for the Atlantic basin, 1999 for the East and Central Pacific basins, 2001 for the West Pacific basin, and 2006 for the South Pacific basin.

Archive Organization

STM files of the Archives Tab are cataloged under headings for sequential years (2010, 2009, 2008, etc). Within each year, STM files are further cataloged by *basins* - Atlantic, East Pacific, Central Pacific, West Pacific and North Indian Ocean and South Pacific and South Indian Ocean. Checking the box corresponding to a single storm in the list will load the relevant STM file, at which point you can begin to manipulate and analyze the forecasts from that particular storm.

The **Favorite Storms** heading at top of the Archives Tab is intended as a placeholder for frequently accessed storms. To add a storm to Favorites, browse the year/basin headings and right-click on the desired storm name. Select 'Add to Favorites' from the options that appear next to your cursor. Favorites should also be employed if you wish to show storms from different years on the tracking map simultaneously. Your Favorites selections will be retained upon exit of the program. To remove a storm, simply right-click on its name under the Favorites heading and choose 'Remove from Favorites'.

The **Exercise Storms** heading is populated with STM files that are located in a special *ExerciseSTMFiles* data directory. Most often, these are hypothetical storms created using the [Exercise Track Wizard](#). You can also use UTILITIES > Export/Import > Import Plot (.stm) to place a copy of an actual STM file in this directory and then manually alter the parameters of this storm using the [Storm Data Entry Utility](#) to create a slightly different storm scenario.

The **Other Archived Data** option is for viewing an old wind and surge probabilities, rain, river gauge, flood outlook, or tide gauge files saved on your computer. See the [HURREVAC Tech](#)



[Note 6](#) for instructions on how to retrieve a dated file from the hurrevac.com server. You can also save these file types from the Current tab for viewing at a later time.

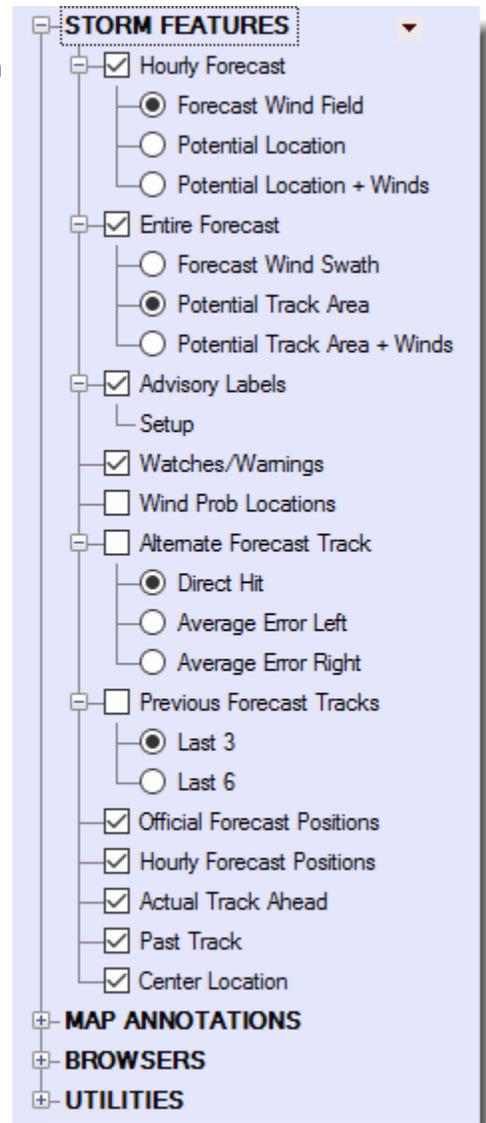
Storm Features

Storm Features are options for how forecast information associated with a particular storm advisory is displayed on the map. Wind ranges, wind swath, and error swath, and many other storm features can be viewed in combination. Additional forecast attributes such as advisory labels, watches and warnings, and wind probability locations also appear under the STORM FEATURES heading of the Toolbox.

Available Storm Features

- [Hourly Wind Ranges](#)
- [72-Hour Wind Swath](#)
- [120-Hour Error Swath](#)
- [Advisory Labels](#)
- [Watches/Warnings](#)
- [Wind Probability Locations](#)
- [Alternate Forecast Track](#)
- [Previous Forecast Tracks](#)
- [Hourly Forecast Positions](#)
- [Actual Track Ahead](#)
- [Past Track](#)
- [Center Location](#)

When a storm is initially loaded, the default map display uses the combination of storm features that are checked in this screenshot. A different combination can be set as the default display for future sessions of the program by right-clicking on the [Reset button](#).

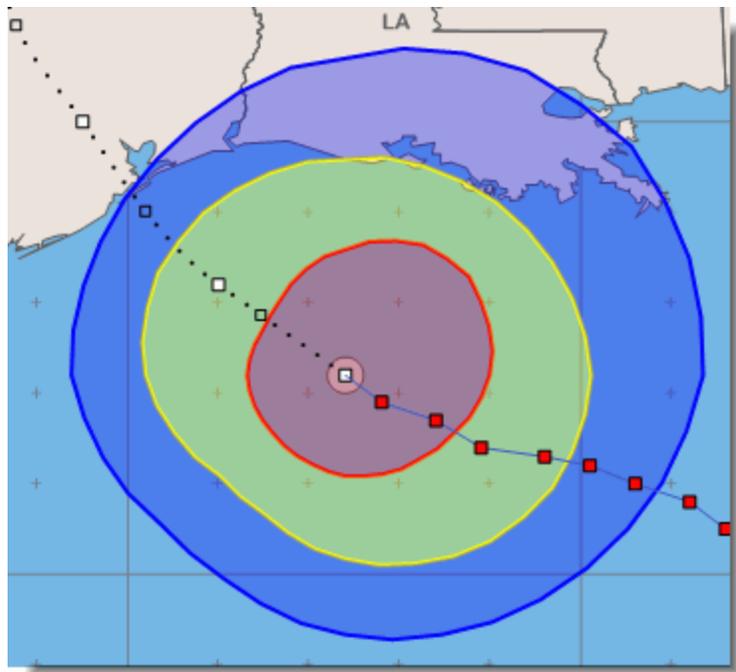


Forecast Wind Field

This display shows storm position and size at a certain hour of the forecast. Concentric rings represent the extent of 1-minute average sustained tropical storm force winds (34kt or 39mph) in blue, 50kt or 58mph winds in yellow, and hurricane force (64kt or 74mph) winds in red.



The Wind Field button at the edge of the map view toggles these rings on and off. A Forecast Wind Field radio button is also available in the Toolbox under STORM FEATURES > Hourly Forecast. Right-clicking this button changes the wind field appearance from filled polygons to open circles.



Forecast Hours

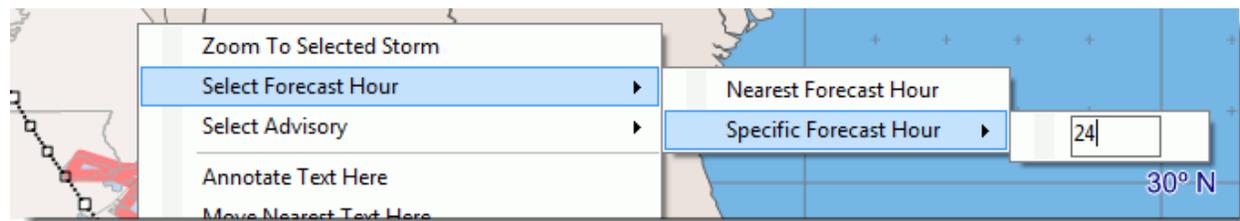
The Wind Field display defaults to the initial position (hour 0) of the latest advisory.



Use the Time+ button at the edge of the map view to advance the storm along its forecast track and the Time- button to return to earlier hours. The wind field disappears from the display once a storm is advanced beyond forecast hour 72. This occurs because the hurricane centers do not make wind extent forecasts beyond the 72-hour point.

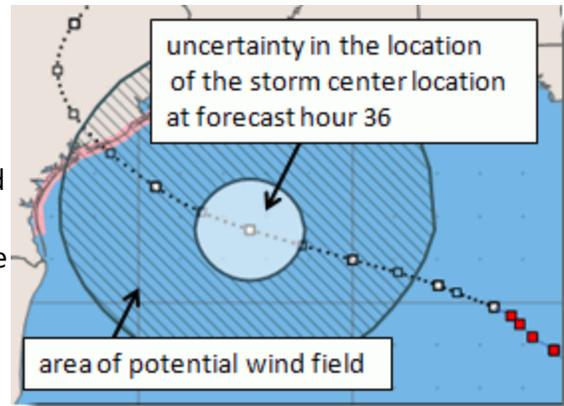


Another way to advance the storm's wind field to a specific forecast hour is by right-clicking on the map and selecting from one of the following 'Select Forecast Hour' options.



Potential Location

The white ellipse surrounding the forecast position in this display represents the region in which the storm center is most likely to be somewhere located at that discrete hour. Tropical storm force winds at that hour could potentially reach to the fringe of the grey hatched area.

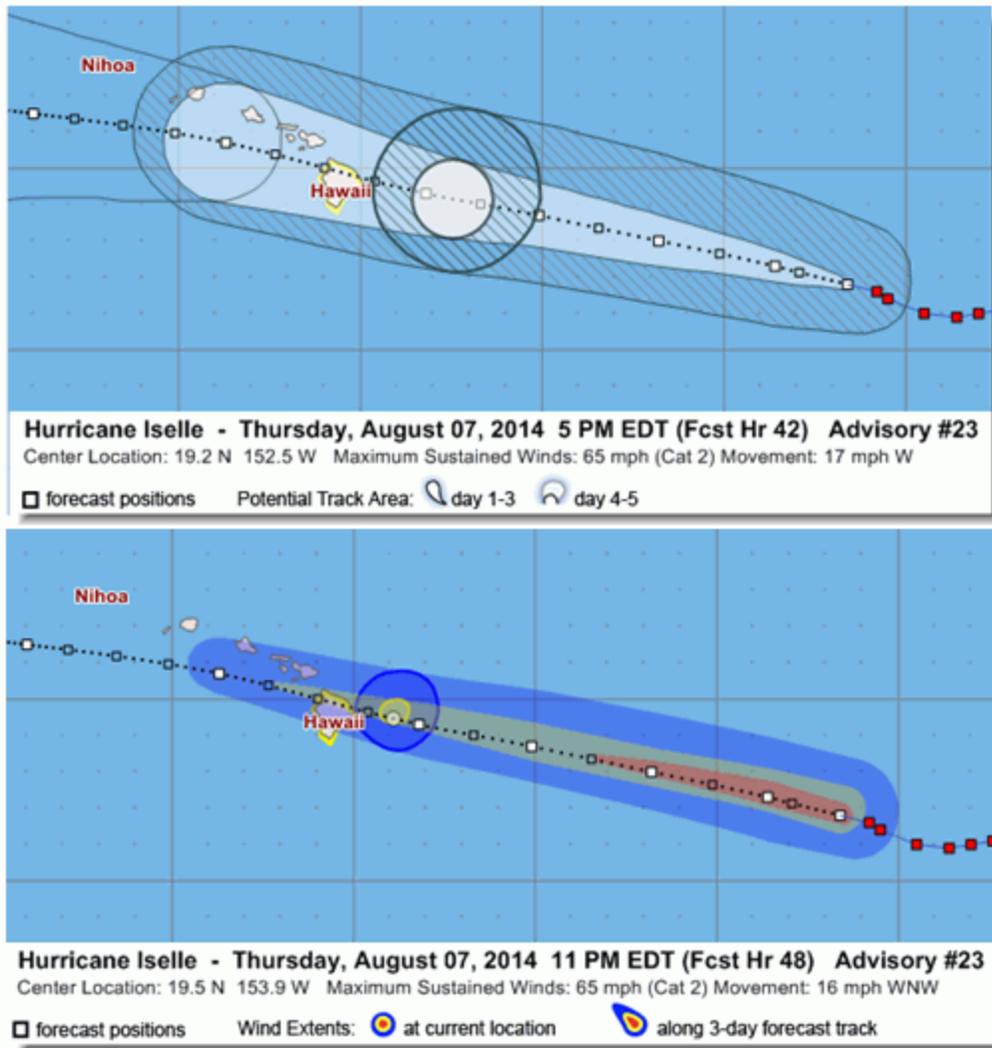


 This button at the edge of the map view toggles the view between potential location only, location + *fringe winds*, and no display. Left-click to turn the display on and off. Right-click to change the display type. These operations are also duplicated in the Toolbox under STORM FEATURES > Hourly Forecast.

 Use the Time+ button at the edge of the map view to advance the position of the storm along its forecast track and the Time- button to return to earlier hours. The white ellipse representing potential location of the storm center will be very small at early hours of the forecast, but will grow gradually larger over the 120-hour forecast period. The hatched wind ellipse disappears from the display once a storm is advanced beyond forecast hour 72. This occurs because the hurricane centers do not make wind extent forecast data available beyond the 72-hour period.

Wind Timing with a Margin of Error

The Potential Location + Winds tool is especially appropriate for use when a storm is distant and forecast uncertainty great. In the example below, the tool indicates that there is a some potential for onset of tropical storm force winds in Hawaii 6 hours prior to what is projected by the *deterministic forecast*.



You can also use the companion [Storm Statistics and Track > Forecast Error Swath](#) report for finding out which counties are affected and when.

Background Information

The size of ellipse in HURREVAC is derived from error rates published by the *NHC*, *CPHC*, and *JTWC* each year for forecast hours 12, 24, 36, 48, 72, 96, and 120. These official error rates are based on a 5-year average of track forecasting success and represent a 66% confidence interval. Error rates have declined significantly in recent years due to improved skill in forecasting the track that a storm will take.

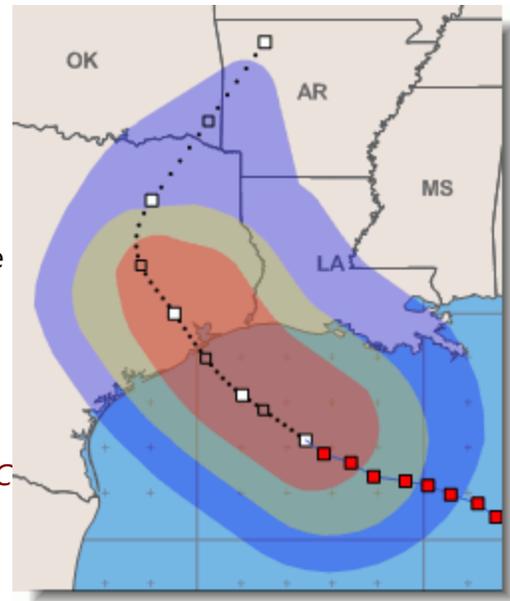
Forecast Wind Swath

The Forecast Wind Swath is a composite of the [hourly wind field](#) along the 72-hour forecast period. The fill colors represent the extent of 1-minute average sustained tropical storm force winds (34kt or 39mph) in blue, 50kt or 58mph winds in yellow, and hurricane force (64kt or 74mph) winds in red.

This storm feature should be utilized only when the storm is close. It is a specific forecast subject to error, and should be given credence only with the last few advisories before landfall. On the mainland US, the *NHC* will use a specific version of the *MEOW (wind)* Decay Model to prepare this forecast of winds beyond landfall.

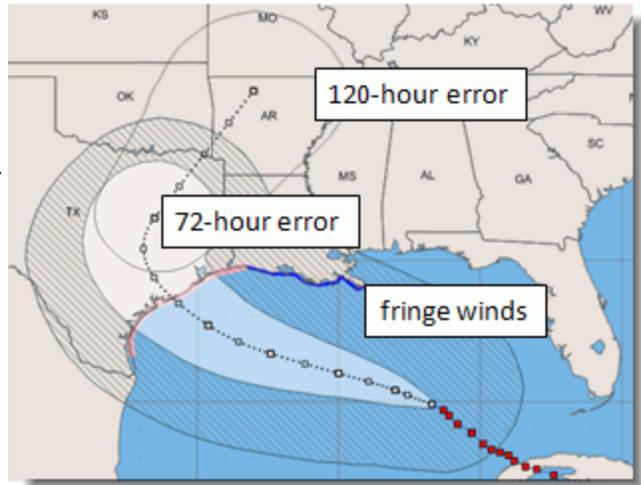
See the [Wind Overforecasting Disclaimer](#) help topic for discussion of another important caveat of this display.

You can use the companion [Wind Timing > All Affected Areas](#) report for finding out which counties are affected and by how much.



Potential Track Area

The white error cone surrounding the forecast track in this display represents the potential track area, or region in which the storm center is most likely track within the next 72 hours (3 days). Tropical storm force winds could potentially reach to the fringe of the grey hatched area. Extending beyond the 72-hour cone, the transparent error cone represents the potential track area for 73 to 120 hours (days 4 & 5).



 The Potential Track Area button at the edge of the map view toggles the view between potential track only, track + *fringe winds*, and no display. Left-click to turn the display on and off. Right-click to change the display type. These operations are also duplicated in the Toolbox under STORM FEATURES > Entire Forecast.

You can use the companion [Storm Statistics and Track > Forecast Error Swath](#) report for finding out which counties are affected and by how much.

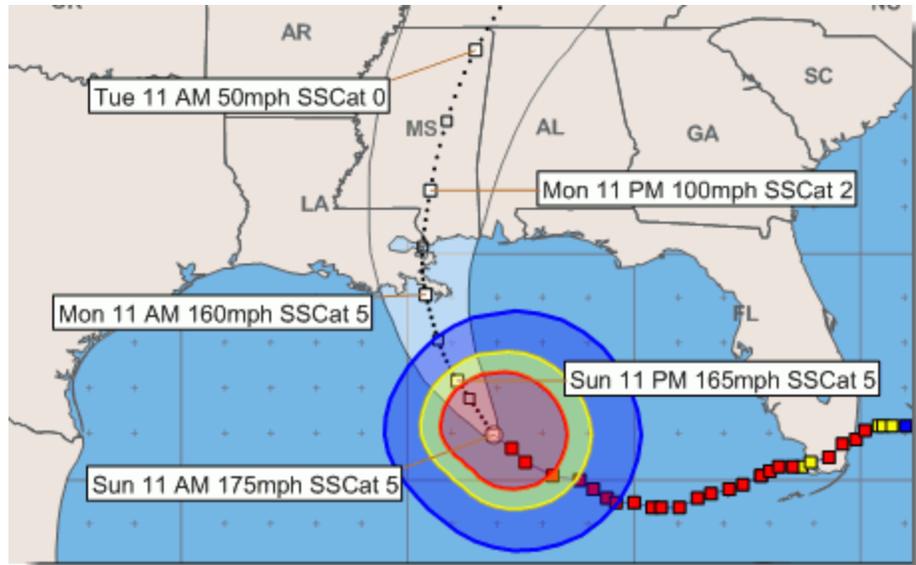
Background Information

The error cone is a composite of the [error ellipse](#) rates published by the *NHC*, *CPHC*, and *JTWC* each year for forecast hours 12, 24, 36, 48, 72, 96, and 120. Even though a specific forecast track is provided, the storm could end up anywhere within the potential track area within the next 72 hours with around a 66% confidence level. Indeed, the storm could end up outside the cone, but the size of the cone is based on a 5-year average of forecast errors and recent developments in forecast models have improved forecast skill. Nevertheless, if your area is in or near to this area, you should be concerned and begin at least some preliminary planning for possible action.

Advisory Labels

Advisory Labels are located within [STORM FEATURES](#).

Advisory labels appear as text tags along the track of a single storm and can be toggled on and off using the 'Advisory Labels' check box under the STORM FEATURES heading of the Toolbox.



Directly below this check box is access to label setup options. The Storm Labels Setup form contains the following options:

- Label Text (Advisory Number, Day of Week, Date, Time, Max Wind, S/S Category, Pressure, Forward Speed)
- Label Which Points? (Forecast Points, Past Advisories)
- Plot Interval (from 6 - 48 Hours)
- Forecast Labels (Masked or NO Mask)
- Font Type (Regular or Bold)

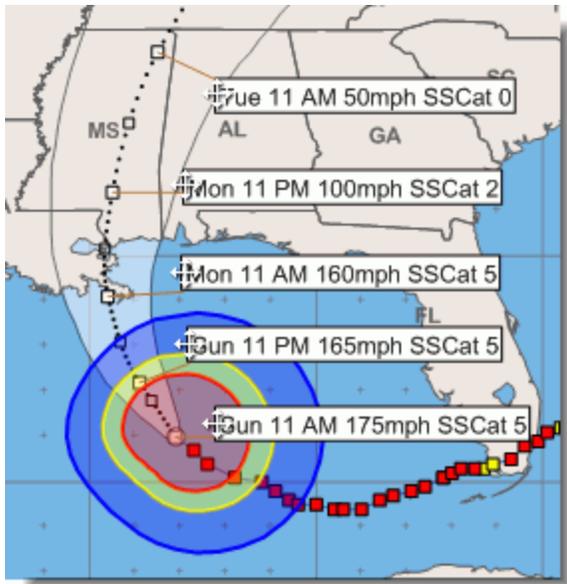


The Advisory Label Button on the Map Toolbar will also toggle labels on/off with a left-click. Right-click for Label Setup.

Working with Advisory Labels

HURREVAC attempts to place labels in sequential order along the storm track. If labels seem overcrowded, try using a larger interval (24 hours or greater) and be selective with the number of items you include in the label text.

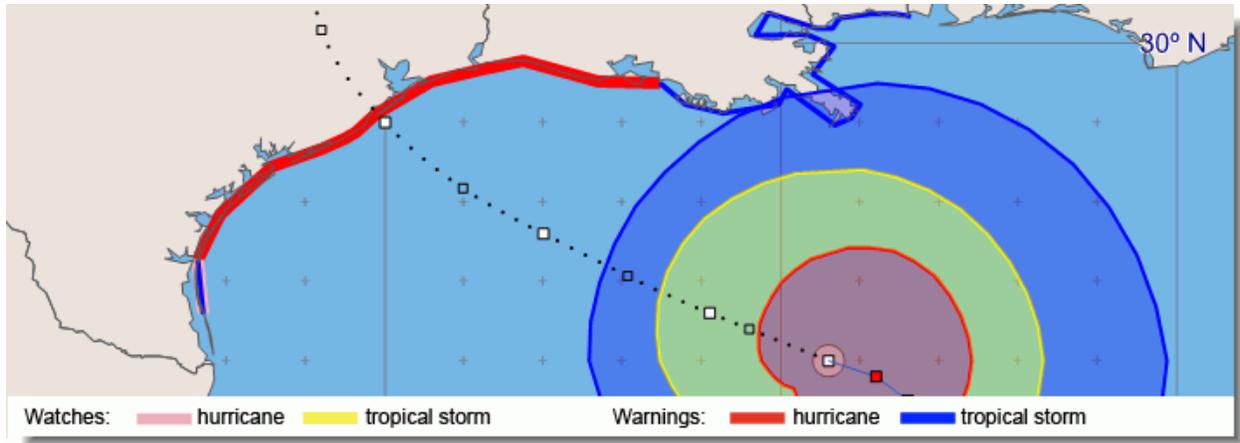
Individual label placement can be adjusted by enabling Label Dragging (CTRL-L on the keyboard or right-click on the map and select Advisory Labels > Allow Advisory Label Dragging). A handle appears near the beginning of each label that can be used to hold-click and drag the label to a new position.



Once satisfied with all label positions, press CTRL-L on the keyboard to lock in these locations or right-click on the map and select Advisory Labels > Lock Advisory Label Items. Advisory label auto-positioning can be restored by right-clicking on the map and selecting Advisory Labels > Reset Advisory Labels.

Watches/Warnings

Watches and warnings appear as lines along the coast. Watches and warnings are only visible when you are working with a particular advisory in which they were issued.



 The Watch/Warning button at the edge of the map view toggle their display on and off. This operation is also duplicated in the Toolbox under the STORM FEATURES > Watches/Warnings.

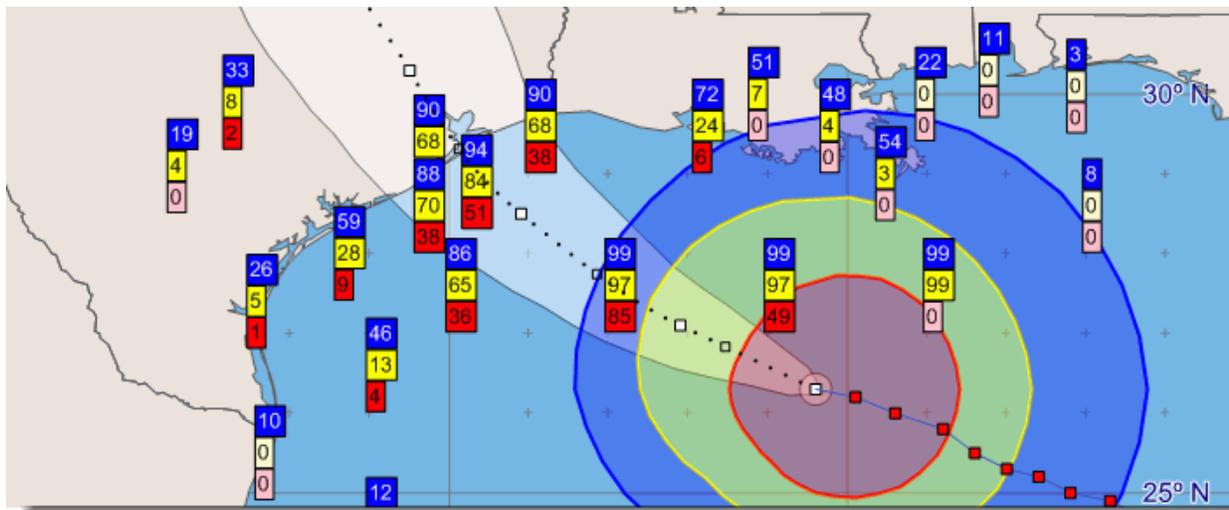
Background Information

Prior to 2010, the *NHC* and *CPHC* issued hurricane warnings (red) when hurricane conditions were expected within 24 hours and hurricane watches (pink) when *hurricane* conditions were possible within 36 hours. Tropical storm warnings (blue) were issued where *tropical storm* conditions were expected within 24 hours and tropical storm watches (yellow) when that threat was possible within 36 hours.

Since the start of the 2010 hurricane season, watches and warning are issued 12 hours earlier than in previous years....so 48 hours for watches and 36 hours for warnings.

Wind Probability Locations

These numbers indicate the probability of hurricane, 50kt, and tropical storm-force winds within a 120-hour period. Wind probabilities appear as numbered boxes along the coast and are only visible when you are working with the particular storm advisory in which they were issued.



Three numbers are given at each location. The red box is probability of 64 knot (74mph) winds; yellow boxes contain probability of 50 knot (58mph) winds; and blue boxes contain probability of 34 knot (39mph) winds.

 The Wind Probabilities button at the edge of the map view toggles this display on and off with a left-click.

Background Information

The Surface Wind Speed Probabilities text product, which is attached to the bottom of the Forecast Advisory Text product in HURREVAC, provides probabilities, in percent, of sustained wind speeds equal to or exceeding 34-, 50-, and 64-knot wind speed thresholds. These wind speed probabilities are based on the track, intensity, and wind structure forecasts and uncertainties from the National Hurricane Center and Central Pacific Hurricane Center, and are computed for coastal and inland cities as well as offshore locations (e.g., buoys).

For each probability value, the event in question is a sustained (one-minute average) surface (10 meter) wind speed of at least a particular threshold value (34, 50, or 64 kt) at a specific location.

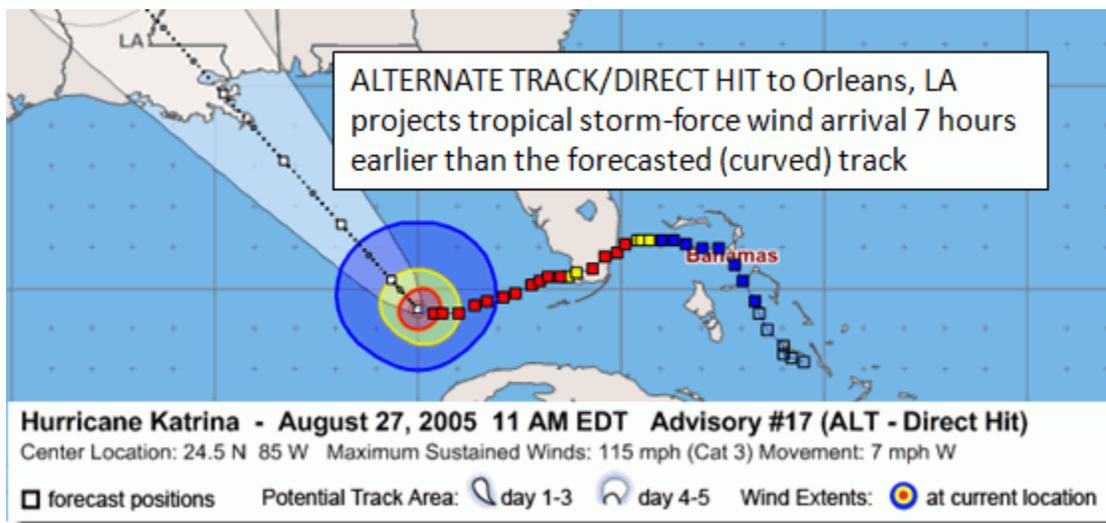
The numbers shown on HURREVAC's map are the cumulative 120 hour (5-day) probabilities. These values tell you the overall probability the event will occur sometime during the specified cumulative forecast period (0-120 hours) at each specific point.

A broader presentation and more detailed analysis of this type of data is possible using HURREVAC's gridded [Wind Probabilities](#) layer.

Alternate Forecast Track

Alternate track displays are a useful tool for exploring what-if scenarios. After changing the tracking map to display one of the three alternate track options, you can run reports on the new scenario and manipulate the storm features on the tracking map in the usual manner. If you change advisories or receive a live advisory update, this mode is canceled and the original track restored.

Direct Hit - This option allows one to see the effects/timing when the storm is moved along a direct hit track to a specified county. The track is then laid out in the direction of the specified county, using the forecast *forward speed* for the 120 hours ahead. This is the track used by HURREVAC to make [Evacuation Timing](#) calculations.

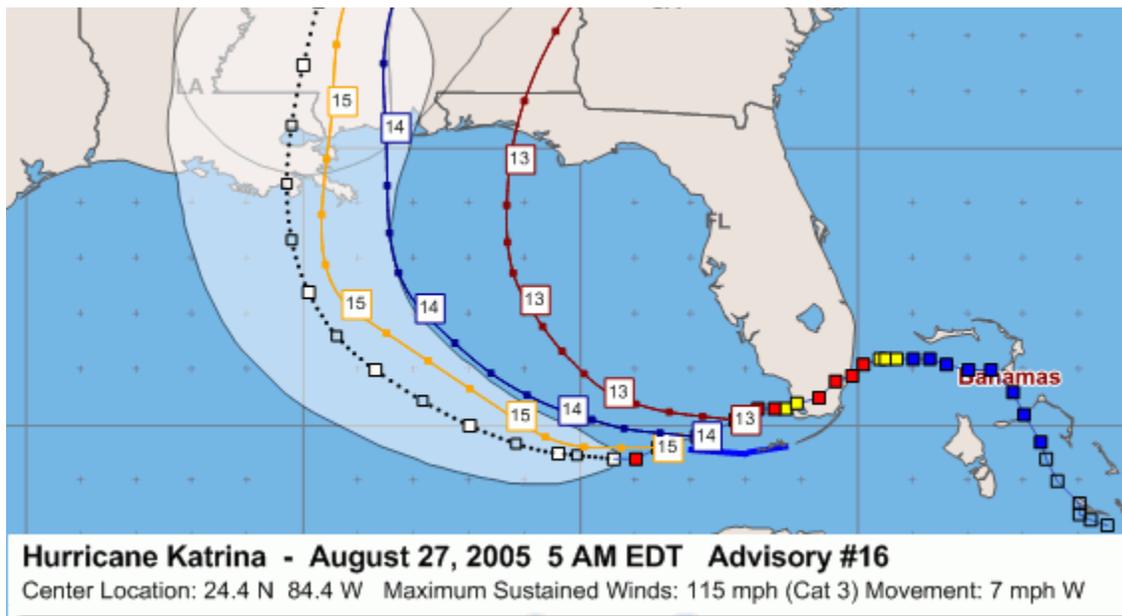


Average Error RIGHT - This option allows one to see the effects/timing when the storm is moved at an angle to the RIGHT equivalent to average error. Note - this does not necessarily coincide with the average error swath right edge. That could not be used because average error occasionally is circular when the storm is moving slow and the size of the error simply enlarges in place.

Average Error LEFT - This option allows one to see the effects/timing when the storm is moved at an angle to the LEFT equivalent to average error. Note - This does not necessarily coincide with the average error swath left edge. That could not be used because average error occasionally is circular when the storm is moving slow and the size of the error simply enlarges in place.

Previous Forecast Tracks

Overlays of the forecast tracks from previous advisories are useful for illustrating shifts in the forecast from one advisory to the next. Under the STORM FEATURES menu, you have the option of turning on either 3 or 6 of the most recent advisories. Intermediate A and B advisories are not included in this display since they maintain the same track as the full advisory before them.

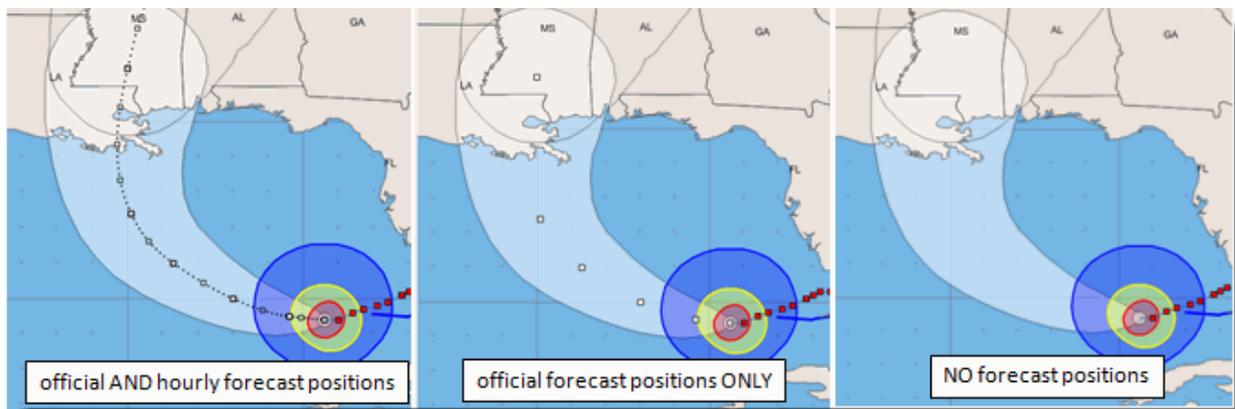


Forecast Positions - Official and Hourly

Official forecast positions are those included in text of the forecast center advisories. Their times of 12, 24, 36, 48, 72, 96, and 120 hours are referenced to model runs which occur 3 hours prior to forecast advisory issuance. The official positions are therefore just 9, 21, 33, 45, 69, 93, and 117 hours from the initial hour of the advisory.

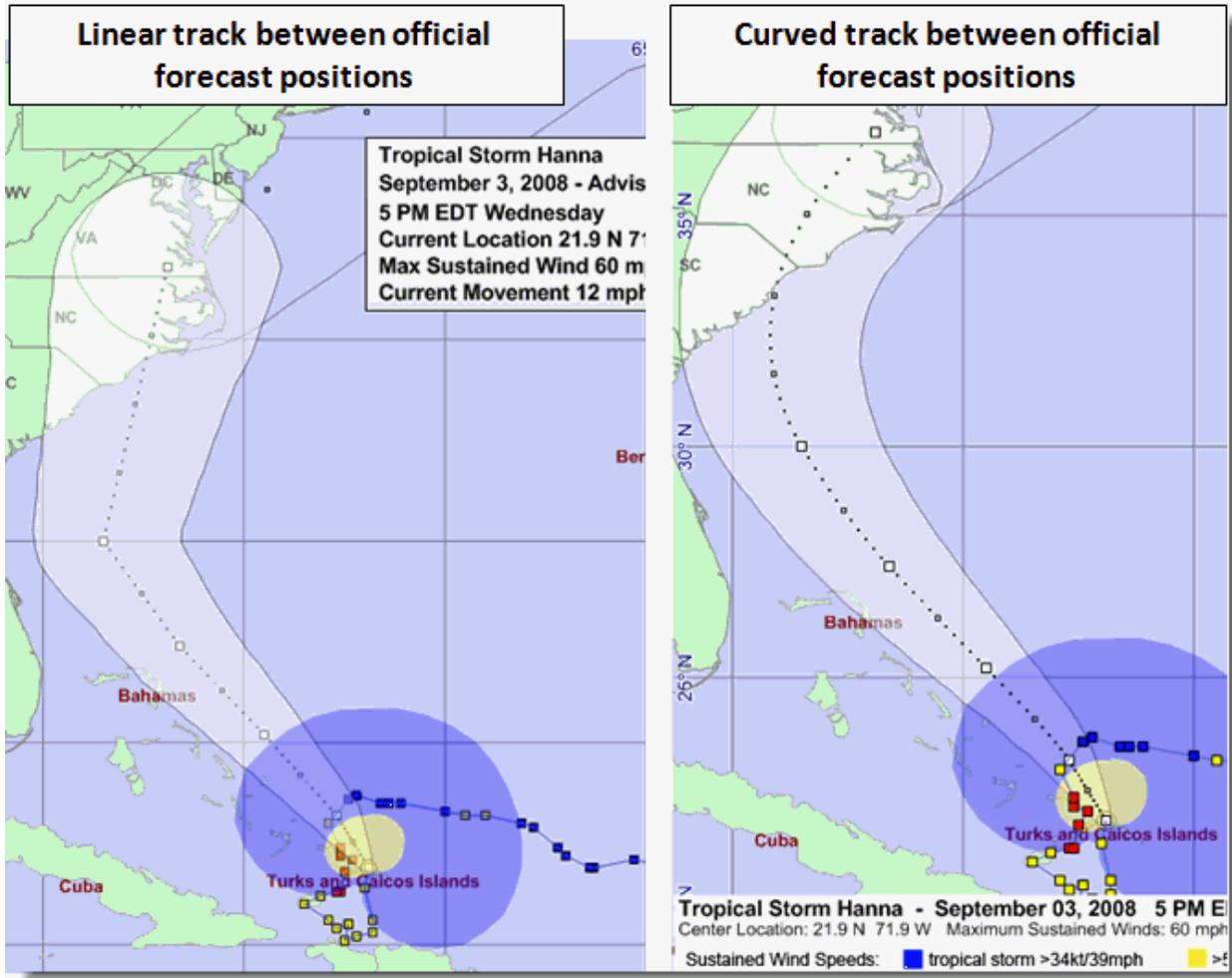
Hourly forecast positions are the black dots and small (6-hour) squares that appear in between the official forecast positions of 0, 12, 24, 36, 48, 72, 96, and 120 hours.

Hourly forecast positions create the illusion of a track line that communicates more forecast certainty than may be desirable. For that reason, you may wish to turn them off so that more focus placed on an entire region of potential landfall (as indicated by the [error cone](#)).



A Curved Forecast Track

Prior to the 2013 hurricane season, both HURREVAC and graphics published by NHC used linear interpolation to determine hourly positions in between the 0, 12, 24, 36, 48, 72, 96, and 120-hour official forecast positions. This linear interpolation has now been replaced by an Akima spline formula which can produce noticeably different results in instances where a storm's track is projected to turn in between widely spaced forecast positions. In the comparison below, note how the spline changes the appearance of a projected landfall location.



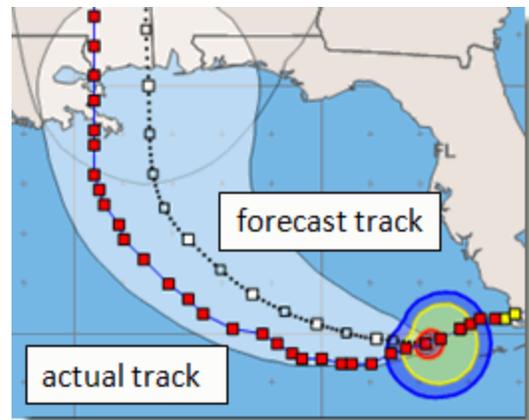
Actual Track Ahead

Two storm tracks appear ahead of the storm location whenever you are viewing an earlier advisory. The black-dotted line is the *forecast track* from the particular advisory you are viewing and the solid blue line is the 'Actual Track Ahead'. This *actual track* is comprised of initial positions from all later advisories.

Colored squares represent the locations of all later advisories. These are color-coded according to the maximum wind speeds observed at the time of each advisory. The colors indicate:

- Blue - tropical storm-force winds of at least 34kt or 39mph;
- Yellow - strong tropical storm-force winds of at least 50kt or 58mph; and
- Red - hurricane-force winds of at least 64kts or 74mph.

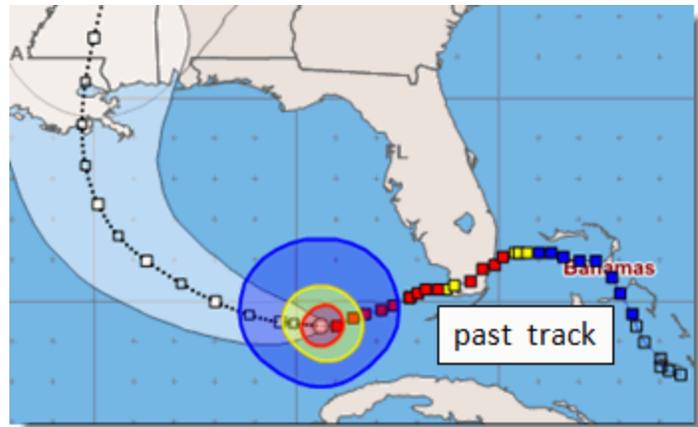
You may wish to turn off the 'Actual Track Ahead' if you are working with forecasts from HURREVAC's archive storms and find it distracting.



Past Track

The storm's *past track* appears as a solid blue line, with colored squares representing the locations of all previous advisories. These are color-coded according to the maximum wind speeds observed at the time of each advisory. The colors indicate:

- Blue - tropical storm-force winds of at least 34kt or 39mph;
- Yellow - strong tropical storm-force winds of at least 50kt or 58mph; and
- Red - hurricane-force winds of at least 64kts or 74mph.

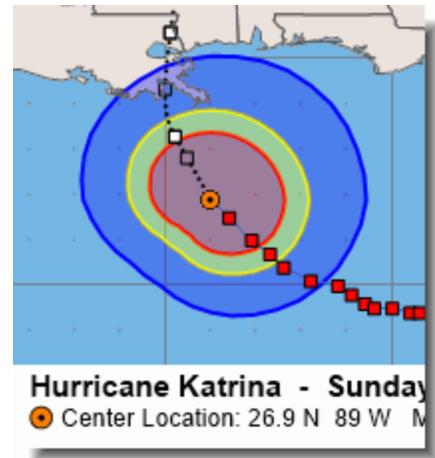


You may wish to turn off the 'Past Track' when preparing briefing materials where the forecast track should be the sole focus.

Center Location

The storm's center position appears on the map as an orange dot with a black center. When turned on, its icon is noted on the legend or in the storm information box.

You may wish to turn off the 'Center Position' if you find it distracting.



Map Annotations

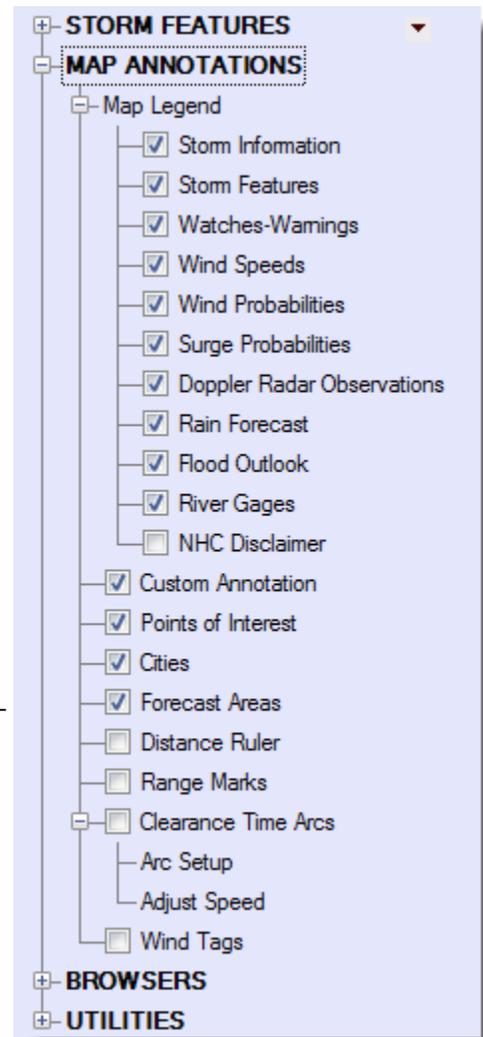
MAP ANNOTATIONS is a collection of map labeling and other annotation options.

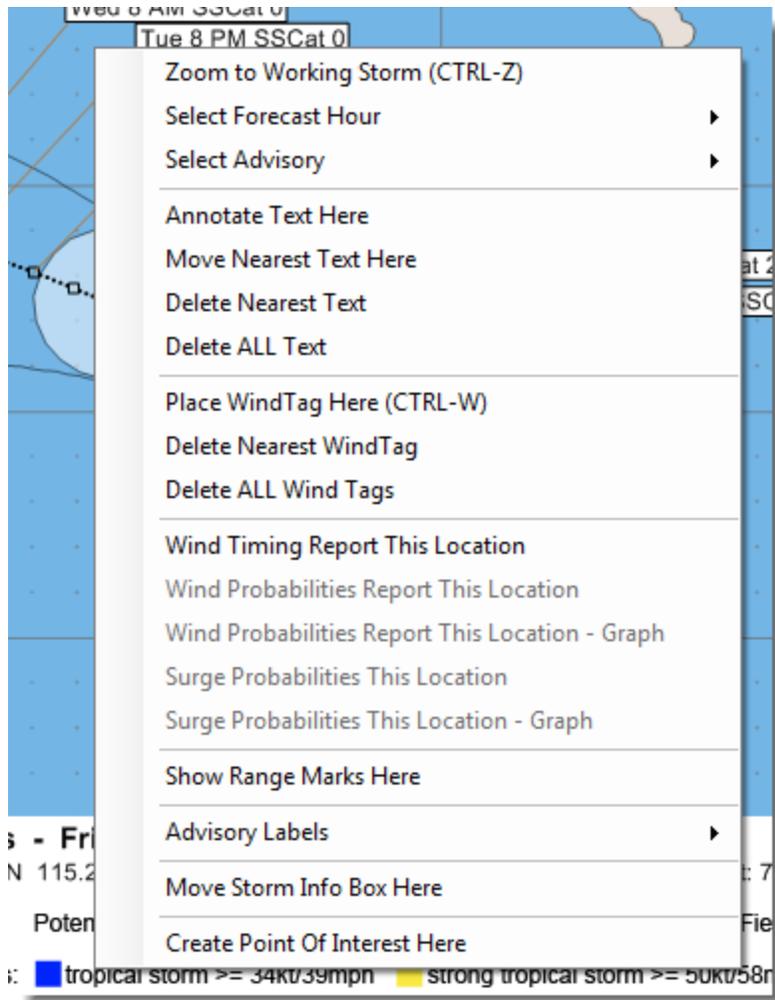
Available Annotations

- [Map Legend](#)
- [Custom Annotation](#)
- [Points of Interest](#)
- [Cities](#)
- [Distance Ruler](#)
- [Range Marks](#)
- [Clearance Time Arcs](#)
- [Wind Tags](#)

When initially loaded, the default map display uses the combination of annotations that are checked in this screenshot. A different combination can be set as the default display for future sessions of the program by right-clicking on the [Reset button](#).

Certain additional map annotation options can also be accessed with a right-click on the map.

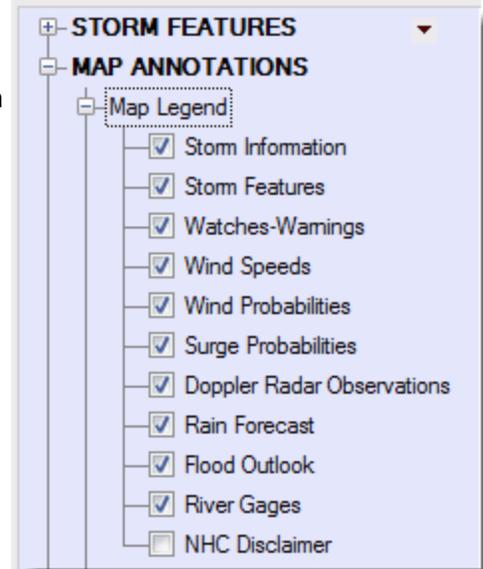




Map Legend

The Map Legend is a collection of explanatory information lines appearing in the white box at the bottom of HURREVAC's tracking map.

Legend items automatically appear and disappear as needed, but can be configured to stay off entirely if unchecked within the Map Legend portion of the toolbox. Map Legend preferences are saved upon exit of the program and utilized in future sessions.



Storm Information

Storm information is provided by default as a title line in the map legend area. Information included in this banner is

- storm name and [advisory](#) number;
- date and time of the storm's currently displayed position;
- latitude and longitude of the storm's currently displayed position;
- maximum winds; and
- [forward speed](#).



An alternate display option for storm information is the floating box style show below. The box will appear if Storm Information is unchecked in the toolbox, or if the option to 'Move Storm Info Box Here' is selected after right-clicking on a map location.



Storm Features

This line of the map legend varies depending on the combination of storm features ([wind ranges](#), [wind swath](#), [error cone](#)) showing on the map. Unless unchecked, it will always be present in some form when working with a storm on the map.



Watches/Warnings

This line of the map legend appears only when there are [watches and/or warnings](#) associated with an advisory.



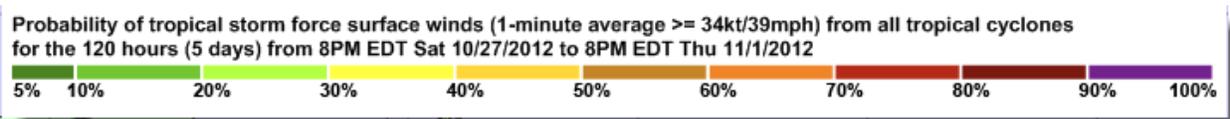
Wind Speeds

This line of the map legend serves as a helpful reminder of the three wind speed thresholds represented throughout the program by blue, yellow, and red. Unless unchecked, it will always be present when working with a storm on the map.



Wind Probabilities

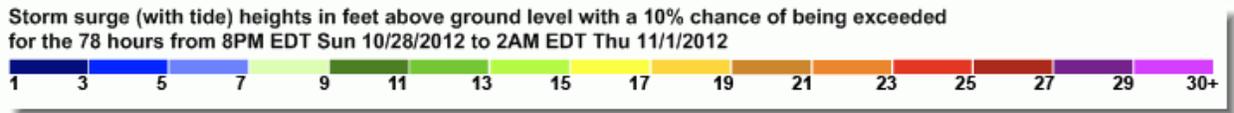
These lines of the map legend appear if gridded [wind probabilities](#) are displayed.



Surge Probabilities

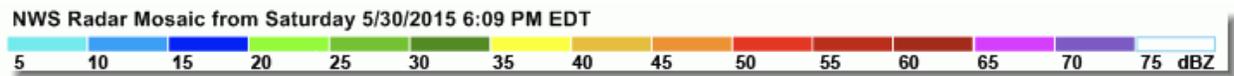
These lines of the map legend appear if gridded [surge probabilities](#) are displayed in one of the following two color scales.





Doppler Radar Observations

These lines of the map legend appear if the [NWS Radar Mosaic](#) is displayed on the Current tab.



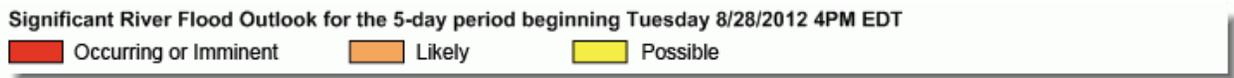
Rain

These lines of the map legend appear if a [QPF Rain Forecast](#) is displayed.



Flood Outlook

These lines of the map legend appear if a [River Flood Outlook](#) is displayed.



River Gauges

This line of the map legend appears if [River Gauges](#) are displayed.



NHC Disclaimer

Although turned off by default, the following disclaimer can be added to the bottom of the map legend if desired:

National Hurricane Center Disclaimer: *Wind range contours show the maximum extent of winds expected in each quadrant. Users are cautioned that winds vary greatly within each quadrant. For quadrants extending over land and water, over-water values are used, which may make the extent of inland winds radii appear unrealistically large.*

Over-forecasting of wind occurs in certain situations with land-falling and closely paralleling storms due to limitations in the level of detail provided on *wind ranges* in the forecast advisory. HURREVAC strictly uses the wind ranges specified by *NHC* , *CPHC* , or *JTWC* in its *advisory* .

These are given only in 4 quadrants: Northeast (NE in advisory), Southeast (SE), Southwest (SW) and Northwest (NW).

With only these wind ranges as input, and even with smoothing of the range changes between quadrants, the wind forecast must show that most or all of the quadrant has the specified wind range from the advisory. Therefore as stated in the NHC Disclaimer, in certain situations a small area of stronger winds at the edge of a quadrant may exist and the advisory must reflect that wind range for the quadrant as a whole.

This situation most frequently occurs on the left side of storms that are moving forward at a decent pace. It is also noted frequently in closely paralleling storm situations. In these situations, it is normal for there to be a marked decrease in wind ranges on the left side (west side for northward moving storms), especially if the storm is moving forward at a significant speed.

But, since there is usually a pronounced drop-off in wind ranges from the right side to left side of the storm in these situations, stronger winds in a small area just inside the left (weaker) quadrant can result in a greater wind range in the advisory for the entire quadrant than actually exists.

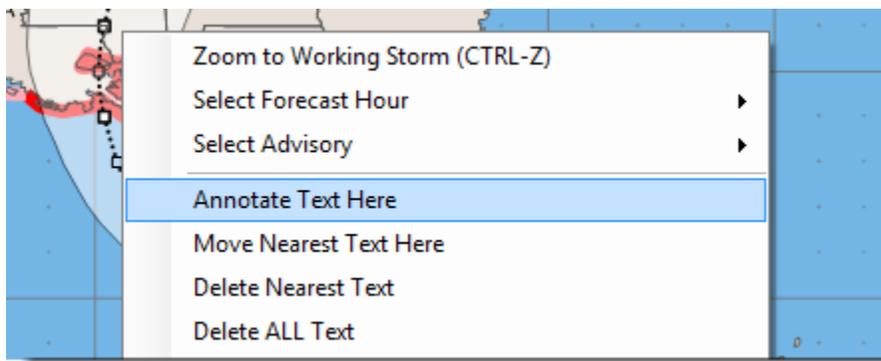
Also, there are certain situations where a small area of stronger winds are located well within a quadrant (perhaps in a small area of heavy showers) but are not reflected in the rest of the quadrant.

Custom Text Annotation

Custom Text Annotations are snippets of text you add to the map display independent of the other labels that HURREVAC automatically generates. Possible uses of these include:

- Prominently labeling a place on the map
- Adding explanatory text to the map

Custom annotations are placed by right-clicking at the desired location and choosing the menu option to 'Annotate Text Here'.



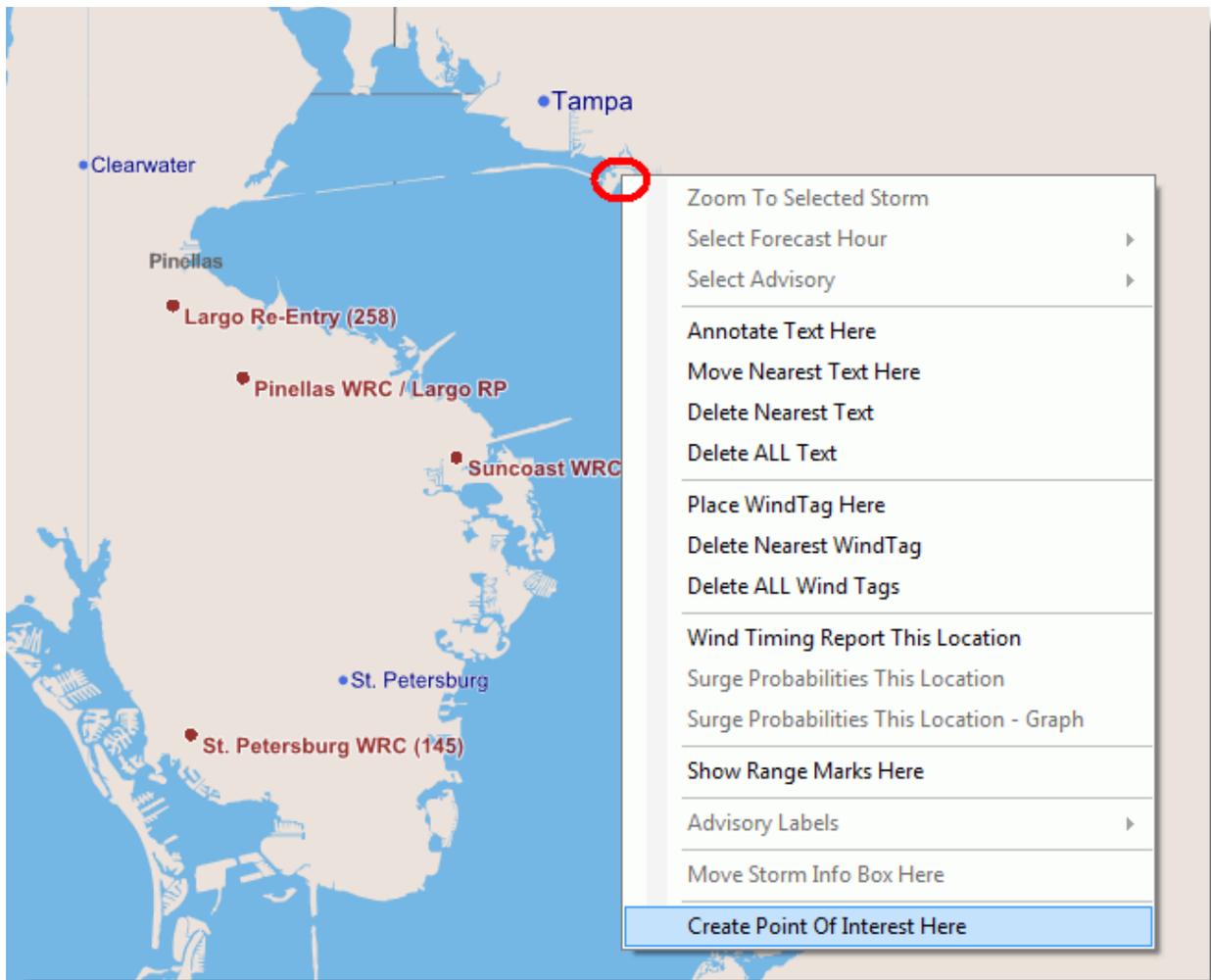
Working with Custom Text Annotation

1. Right-click on the map in a location where you wish to add a text label and select 'Annotate Text Here' from the pop-up menu.
2. In the Text Annotation setup form, select a text size, text color, and bold/regular font. Enter your text in the box and press Annotate.
3. Text can be toggled on and off with the 'Custom Annotation' check box under the MAP ANNOTATIONS heading of the Toolbox. The text will remain in memory for as long as the program is open.
4. Text may be cleared from memory by right-clicking on the map and selecting 'Delete Nearest Text' or 'Delete ALL Text.'

Points of Interest

Points of Interest are user-defined point locations that function both as simple map annotations and as locations available for [REPORTS](#) analysis.

Points are placed by right-clicking at the desired location and choosing the menu option to 'Create Point of Interest Here'. You will then be prompted to add a name for the recorded lat/lon position.



The locations you label will be listed within MAP ANNOTATIONS > Points of Interest. Clicking on the name of any one point within this list recenters the map on that location.

Additional options for adding, editing, and importing points of interest are available under Setup > [Points of Interest](#).

Cities

City labels are a simple [MAP ANNOTATIONS](#) layer that can be toggled on and off in the map display.

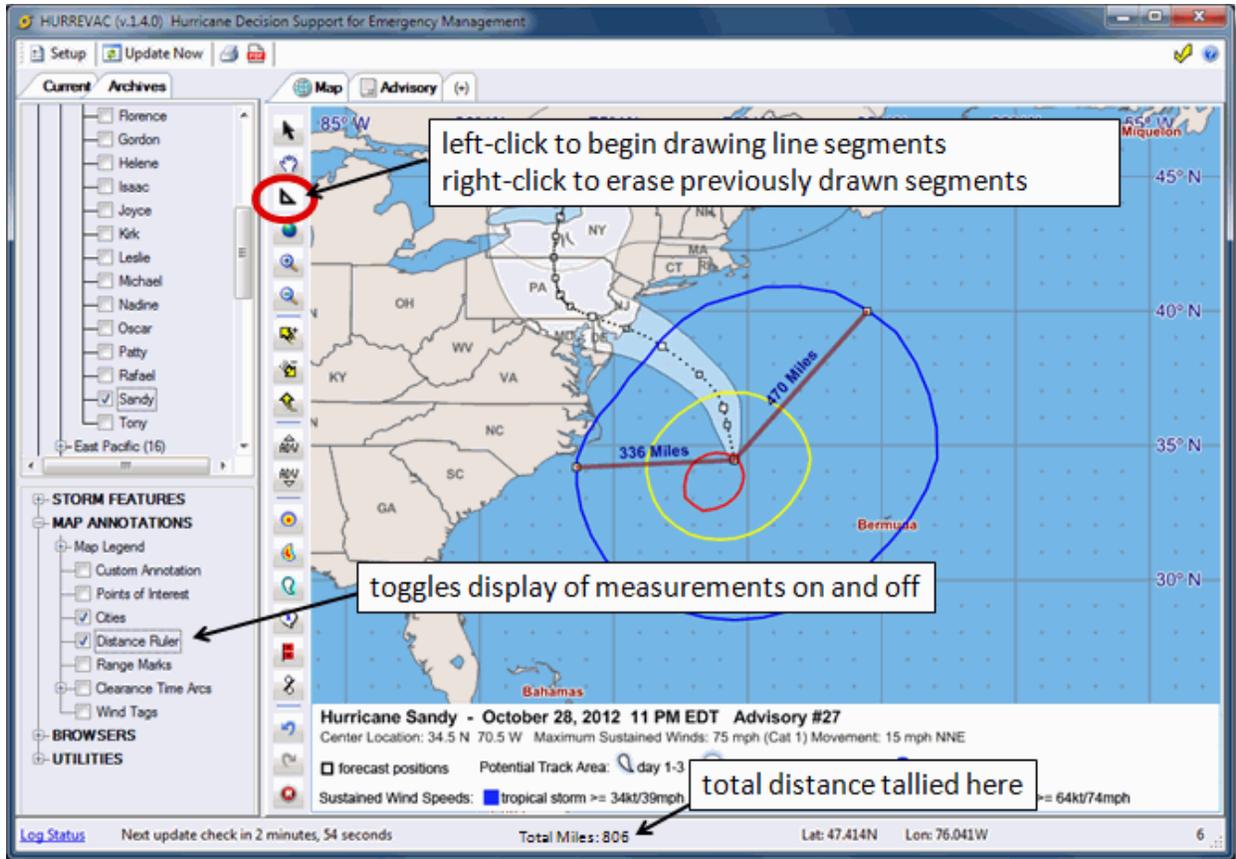
These labels are not editable inside of HURREVAC. Instead, use [Points of Interest](#) to save a collection of your own locations for map display.

Another option for temporary place labeling is [custom text annotation](#).



Distance Ruler Measurements

The distance ruler is a tool for drawing line segments on the map to measure and illustrate distances from point to point.



To begin drawing line segments, left-click on the ruler button in the map toolbar. The mouse cursor changes to crosshairs and left-clicks on the map are then used to mark a succession of beginning and ending points of line segments. Map zooming and panning is still possible while in measurement mode: click and drag to pan the map; use the zoom-in and zoom-out buttons to adjust map scale.

Line segments are labeled with distance in either miles or nautical miles and the total distance of all line segments is tallied at the bottom of Hurrevac's window next to the latitude and longitude readout. To change the units of measurements from miles to nautical miles, go to [Setup > Map Defaults](#).

Range Marks

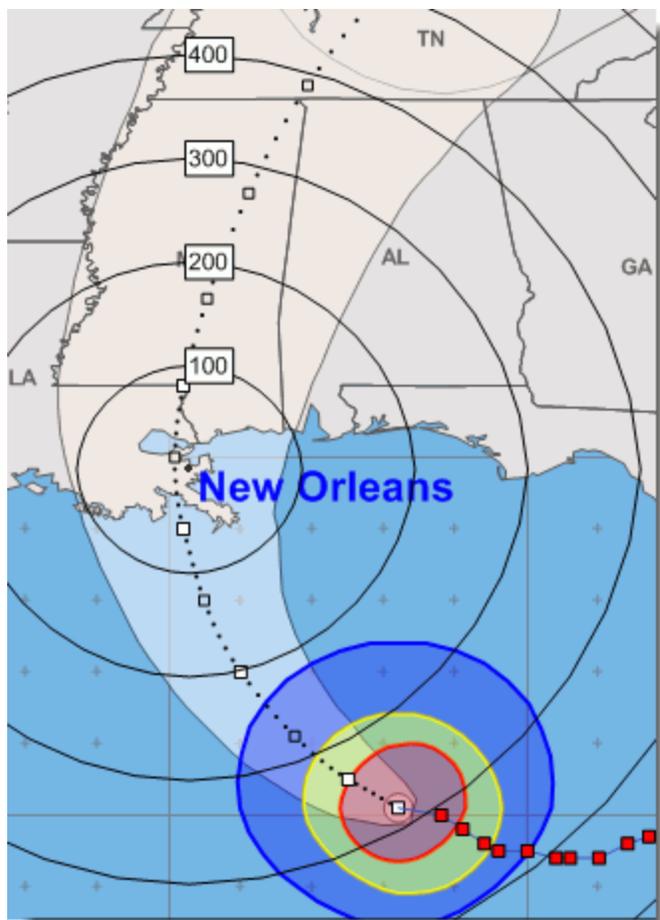
Range marks can be a useful way of illustrating how far away the storm is from a location of interest.

The marks are initially placed by right-clicking on the map at the desired center and choosing the pop-up menu option to 'Show Range Marks Here.'

Working with range marks

Range marks are toggled on and off with the 'Range Marks' check box under the MAP ANNOTATIONS heading of the Toolbox.

The default interval for range marks is 100 statute miles. To change either the type of mile measurement (statute or nautical) or the interval of marks, go to the [Default Map](#) tab of HURREVAC's Setup form.



Clearance Time Arcs

Clearance Time Arcs are graphical illustrations of evacuation timing. In previous versions of HURREVAC, this tool was referred to as Decision Arcs and located under UTILITIES. The setup and display of these arcs is now located under [MAP ANNOTATIONS](#).

The arcs provide a graphical means of showing your *evacuation start time*...essentially duplicating the manual decision arc method that was necessary before the advent of hurricane tracking software programs. In this method, paper tracking maps were overlaid with a series of concentric arcs radiating out from the location of interest. With each new forecast *advisory*, a particular arc would be selected by multiplying the *evacuation clearance time* by the *forward speed* of the hurricane and the storm location would be plotted using a special transparent disk representing the storm center and extent of 34kt winds. Start time was indicated when the storm's 34kt wind ring finally intersected the arc.

The decision arc method has been largely replaced by HURREVAC's [Evacuation Timing Report \(for a single location\)](#), however many emergency managers who are familiar with the method still use this tool in HURREVAC.

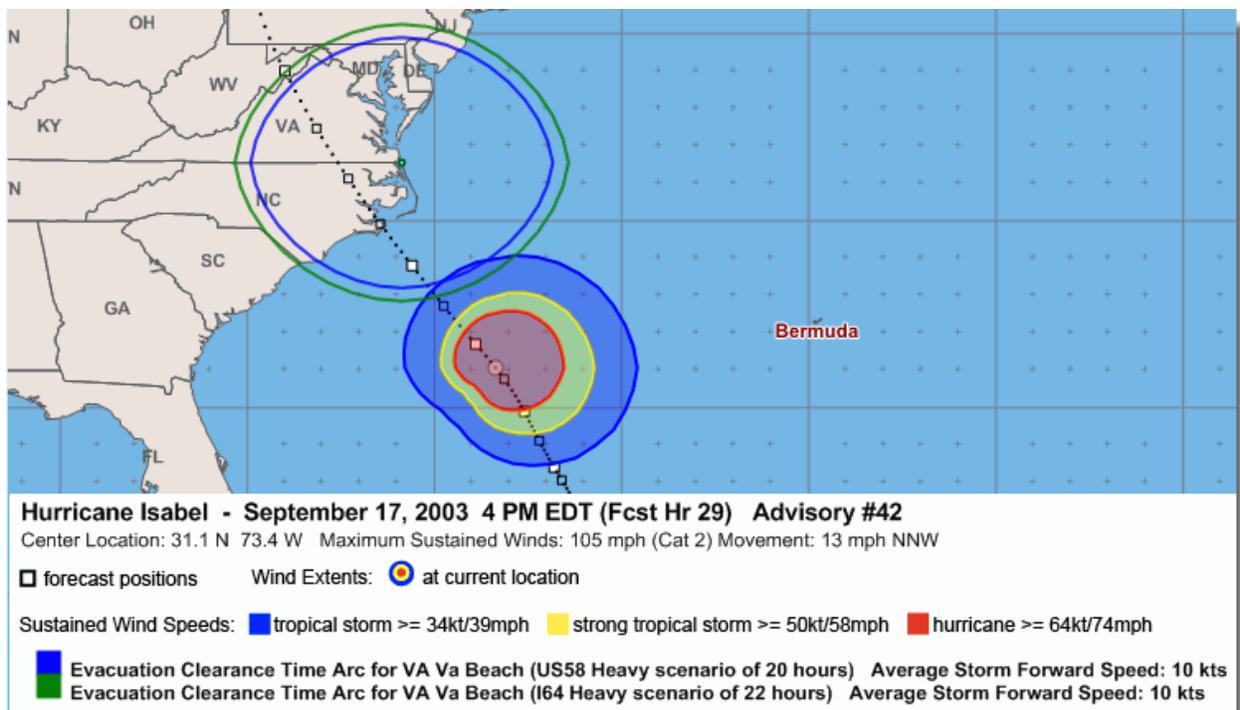
How HURREVAC computes a Clearance Time Arc

1. The user selects up to 10 evacuation scenarios from under 'Arc Setup' of MAP ANNOTATIONS > Clearance Time Arc. The program uses the evacuation clearance time from the available HES and uses the settings (such as Occupancy, Response, Storm Category) set in the [Evacuation Options](#) utility.
2. The program computes how long it would take 34 knot winds to reach the location of interest assuming a direct hit, and uses this to sample the forecast forward speed of the storm for that time period.
3. Using the forward speed and clearance time obtained above, a distance is obtained ($\text{speed} \times \text{time} = \text{distance}$). An arc with this radius is drawn around the location of interest. The exact location of the center of the arc (if you zoom in close, you will see a white circle there) is the nearest corner of the county to the present storm's [initial position](#).

How to use the Clearance Time Arc



Move the storm forward along its forecast track until the outermost ring (the 34knot winds) touches the arc.



Note the time and date indicated in the line of the legend. This is your latest evacuation start time for this storm and this advisory. This does not mean that any action must be taken, (your decision may be to do nothing).....but only means a decision should be made by this time or the evacuation (if any) could be rushed. In general if you are in or near the [Average Error Swath](#), you should be concerned and consider the latest evacuation start time as an important time landmark.

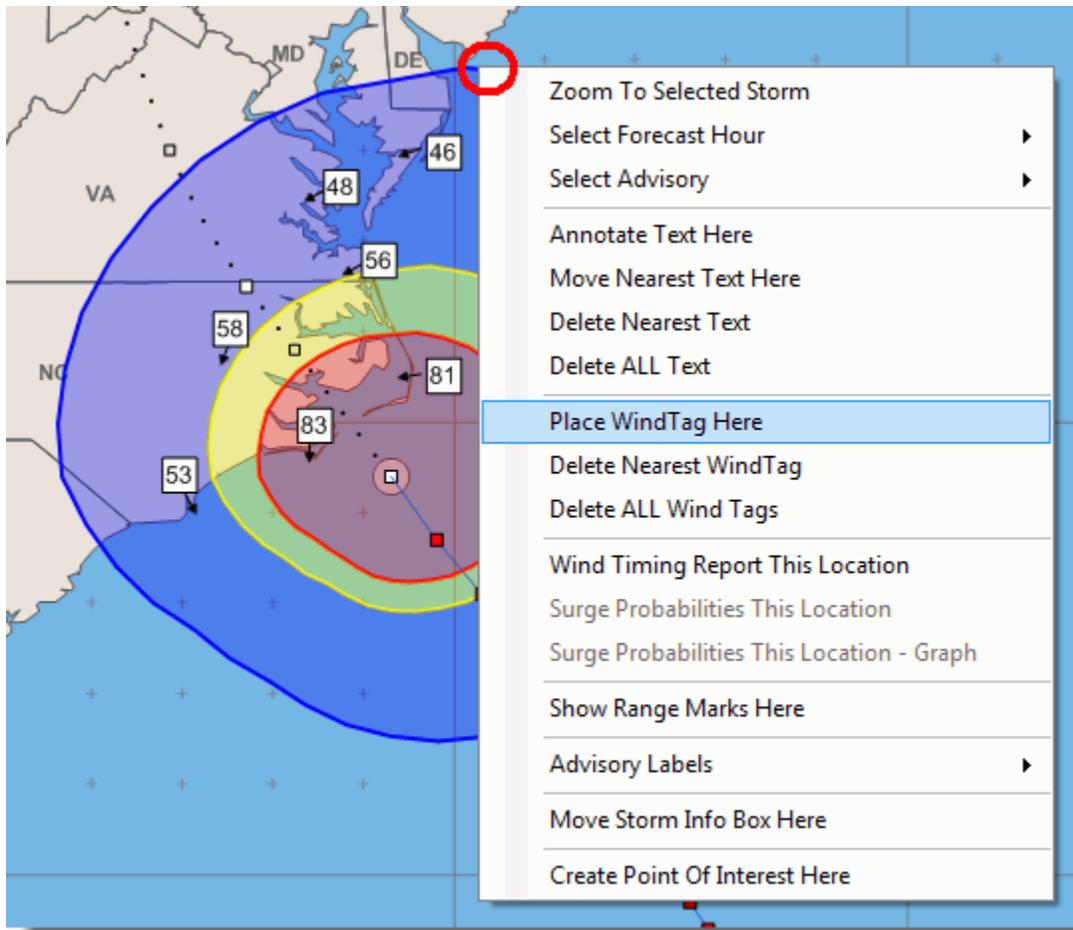
If the 34 knot ring is already within the arc, evacuation start time has already passed. This can easily happen suddenly with a new advisory if the new advisory a) increases the wind range, b) speeds up the storm, or c) increases the storm category (max wind) resulting in a longer evacuation clearance time and wider arc. Moral - don't count on the storm gradually creeping toward the arc, in one advisory the storm could jump toward the arc, or the arc could expand quickly toward the storm (or both could occur).

In reality the forecast is constantly evolving and each new advisory is just a "snapshot" of a fluid, changing atmosphere and its effect on the storm. It is rare indeed to have little or no change from advisory to advisory.

Adjust Speed - This option should be used with care, in adjusting the assumed *forward speed* of the storm. By default, the speed is assumed from the forecast using the speeds averaged from the hours before the arrival of 34 knot winds. Speeding up the storm will cause an earlier *evacuation start time* and slowing it down, will delay it. If you use this, it will only be in effect until you change locations or any other item in [Evacuation Option Settings](#) at which time it will revert to the default forecast speeds.

Wind Tags

Wind Tags are a [MAP ANNOTATIONS](#) item listed in the Toolbox and configured by right-clicking on the map.



Wind tags display wind direction and speed when overtopped by the storm's [hourly wind ranges](#). They are interactive and change as the storm is advanced along its forecast track or an advisory is changed.

Wind direction is implied by the tag's position relative to the storm's center location. An arrow pointing onshore is suggestive of an area being subjected to greater storm surge, while an arrow pointing away from shore can indicate conditions under which winds should lessen or even eliminate storm surge.

The placed tags can be toggled on and off using the Wind Tags check box under the MAP ANNOTATIONS heading of the Toolbox. Wind tag locations are saved on disk between sessions, so you can set them up for an area of concern, and they will be available when you next use the program.

How to Use Wind Tags Ahead of a Land-falling Storm

1. To place a wind tag, right-click on the map at the desired location and choose the pop-up menu option to 'Place Wind Tag Here.' Another convenient way of placing wind tags is by using the keyboard shortcut CTRL-W with the cursor hovering over a desired location.
2. Repeat the first step in other areas within the projected path to add a number of wind tags to the left and right of the forecast track. If needed, you can delete select tags or ALL tags from the right-click map menu
3. Advance the storm along its forecast track (or actual track, if viewing an old advisory). Wind tag direction is influenced even when the storm is still distant. However wind tag speed only displays when the storm is directly over head.

Browsers

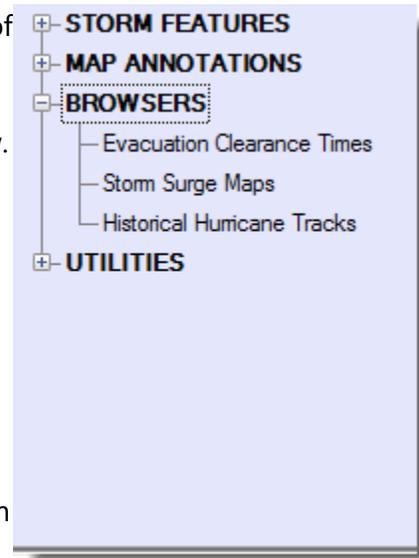
BROWSERS are special viewers used to investigate collections of specific data. The three browser types listed in HURREVAC's toolbox open up as data view tabs. The gauge browsers open up as floating windows that overtop the main program window.

Available Browsers

- [Evacuation Clearance Times](#)
- [Storm Surge Maps](#)
- [Historical Hurricane Tracks](#)

Gauge browsers appear when you turn on either the river gauge layer or tide gauge layer. These layers are accessed from both the Current or Archive Data Tabs.

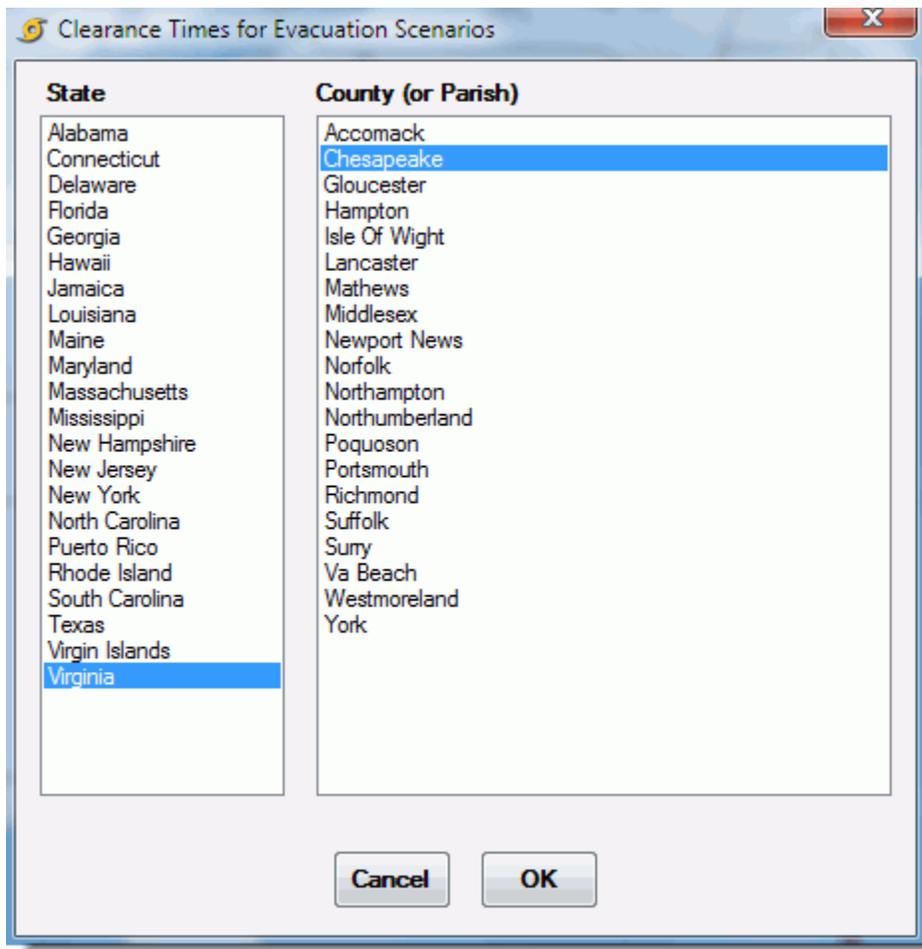
- [River Gauge](#)
- [Tide Gauge](#)



Evacuation Clearance Times

The Evacuation Clearance Time Browser is accessed from the BROWSERS heading of HURREVAC's Toolbox. This browser is used to examine storm category-based *HES evacuation clearance time* data for counties and parishes.

HES data is generally only available for coastal counties of hurricane-prone states. If you don't see your county in the pick list, it is because no study has been done. Check with your state's hurricane planner for information on if/when that might change. This person will also know the age of your HES data and when a restudy might be planned.



After selection from the pick list, a county's clearance times are loaded into one of HURREVAC's view tabs. You can add as many of these county clearance time tabs as desired by returning to the pick list.

Clearance Times (hours) for Chesapeake, Virginia

Note: The data shown below is taken from the local Hurricane Evacuation Study (HES) dated on or before 4/4/2008. Check with your Corps of Engineers District Office for specifics on the HES.

COUNTY: VA Chesapeake

SCENARIO: I64 Northbound Light Traffic

SS CAT OF STORM: 1 Scenario: I64 Light

RESPONSE	OCCUPANCY			
	Low	Med	High	Worst
Immediate	08.40	09.15	09.90	09.90
Rapid	08.40	09.15	09.90	09.90
Medium	08.70	09.45	10.20	10.20
Slow	09.10	09.85	10.60	10.60

SS CAT OF STORM: 2 Scenario: I64 Light

RESPONSE	OCCUPANCY			
	Low	Med	High	Worst
Immediate	18.10	19.20	20.30	20.30
Rapid	18.10	19.20	20.30	20.30
Medium	18.40	19.55	20.70	20.70
Slow	18.80	19.95	21.10	21.10

SS CAT OF STORM: 3 Scenario: I64 Light

RESPONSE	OCCUPANCY			
	Low	Med	High	Worst
Immediate	30.30	31.50	32.70	32.70
Rapid	30.30	31.50	32.70	32.70
Medium	30.70	31.90	33.10	33.10
Slow	31.20	32.40	33.60	33.60

SS CAT OF STORM: 4 Scenario: I64 Light

RESPONSE	OCCUPANCY			
	Low	Med	High	Worst
Immediate	55.40	56.65	57.90	57.90
Rapid	55.40	56.65	57.90	57.90
Medium	56.00	57.25	58.50	58.50
Slow	56.60	57.85	59.10	59.10

SS CAT OF STORM: 5 Scenario: I64 Light

Log Status Next update check in 0 minutes, 59 seconds Lat: 33.367N Lon: 85.559W

About County Clearance Times

Stronger storms threaten a greater portion of the population and therefore require longer evacuation periods. At least one table (or matrix) exists for each *storm category* (1-5. High tourist occupancy (holiday weekend, for instance) and slow response (public apathy) will lead to longer evacuation periods as well.

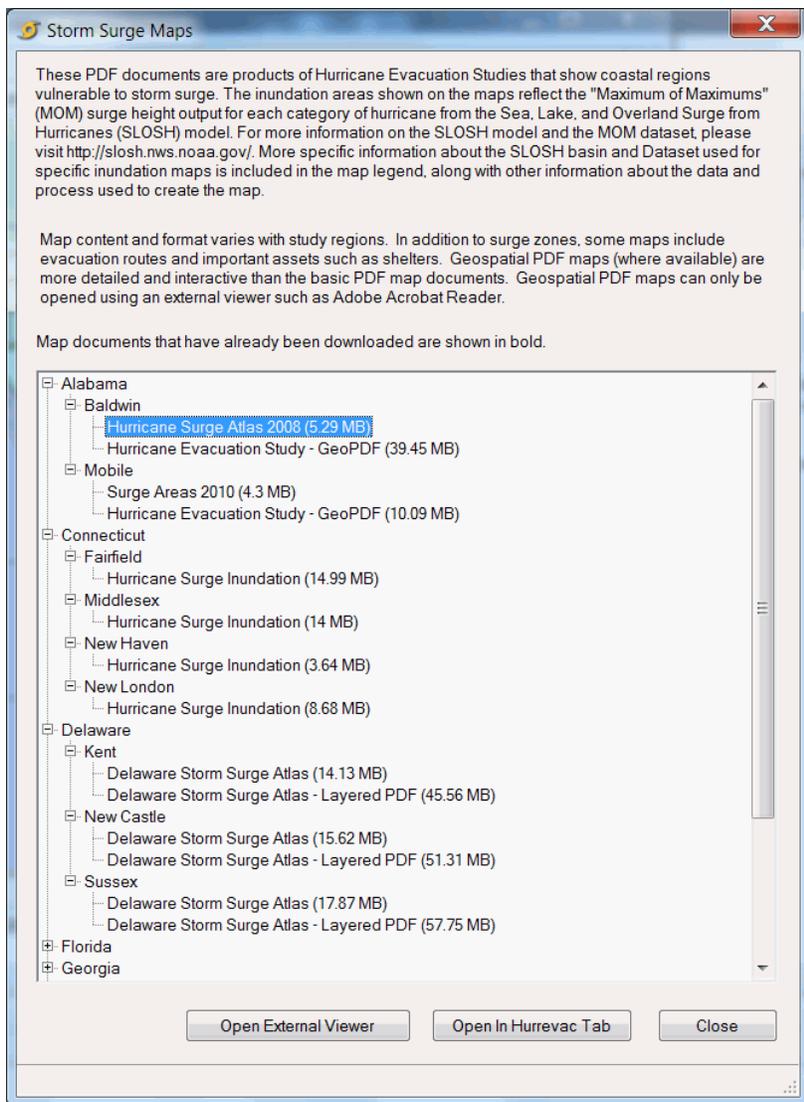
Each county's HES has at least one 'Standard' evacuation scenario, but there may be others as well (In-County versus Out-of-County, for example). The Clearance Time Browser should be used to consider all possible evacuation scenarios, tourist occupancy levels, and response times. Decide which [settings](#) will be used in HURREVAC's [Evacuation Start Timing](#) based upon a review of the HES documentation and discussions with your emergency management colleagues.

Storm Surge Maps

Storm Surge Maps are accessed from the BROWSERS heading of HURREVAC's Toolbox.

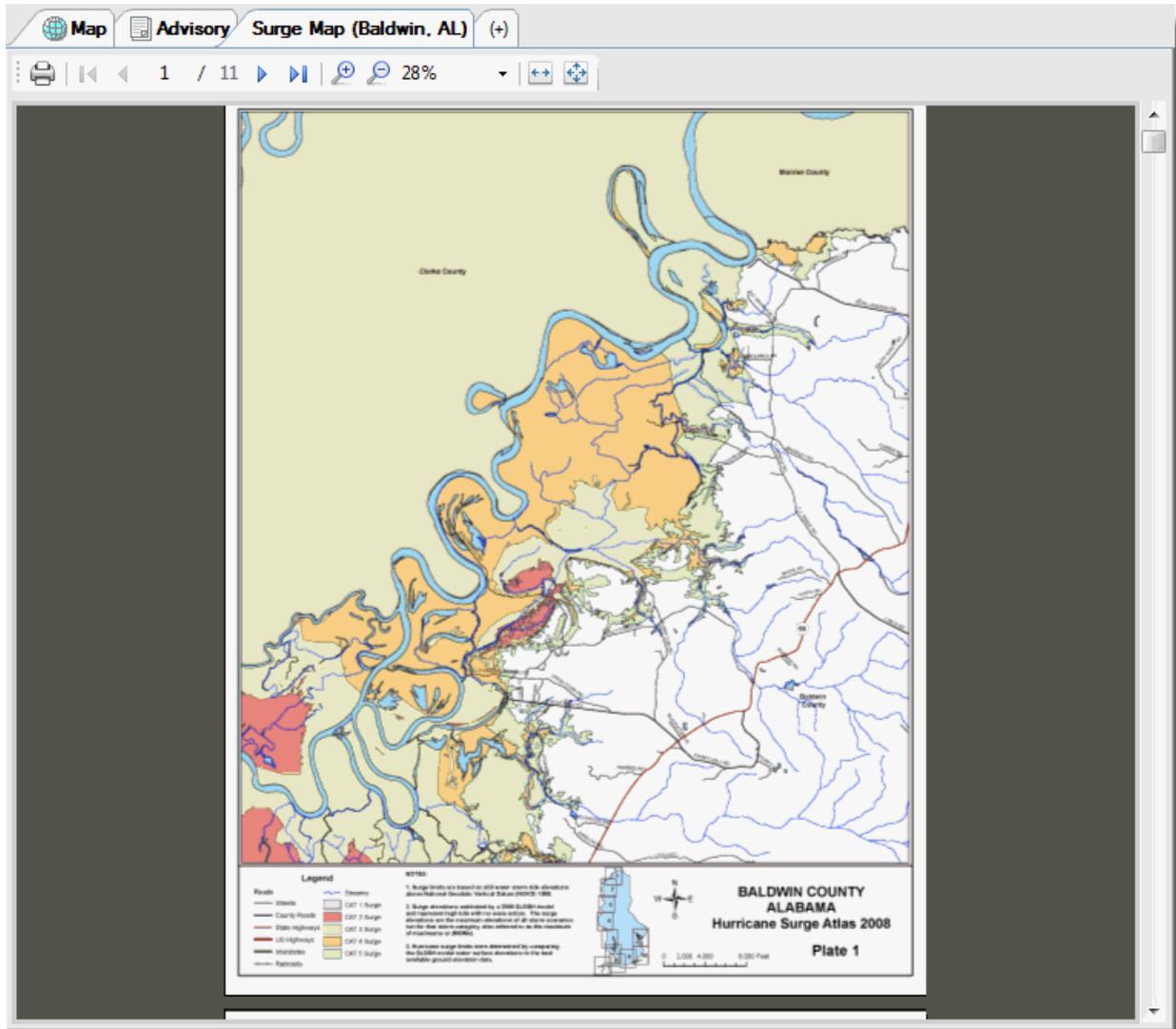
This browser provides access to PDF-based map documents that have been developed as part of regional Hurricane Evacuation Studies (*HES*). The maps vary from one region to the next, but typically represent local surge patterns, evacuation zones, routes, etc. The inundation areas shown on the maps reflect the *MOM* surge height output for each category of hurricane from the Sea, Lake, and Overland Surge from Hurricanes (*SLOSH*) model.

Map availability is organized by state and county, with some locations offering both basic PDF and layered geospatial PDF formats. The browser manages file retrieval from the server at data.hurrevac.com and document loading.



Basic PDF Files

These are flat (single layer) files that can be loaded in either a HURREVAC tab or an external viewer. They are often multi-page map plates designed for print layout. HURREVAC is equipped with a simple tab-based viewer for paging through the map document, zooming, scrolling, and printing. Additional options for manipulating these map documents may be available when opened in an external viewer such as Adobe Acrobat Reader

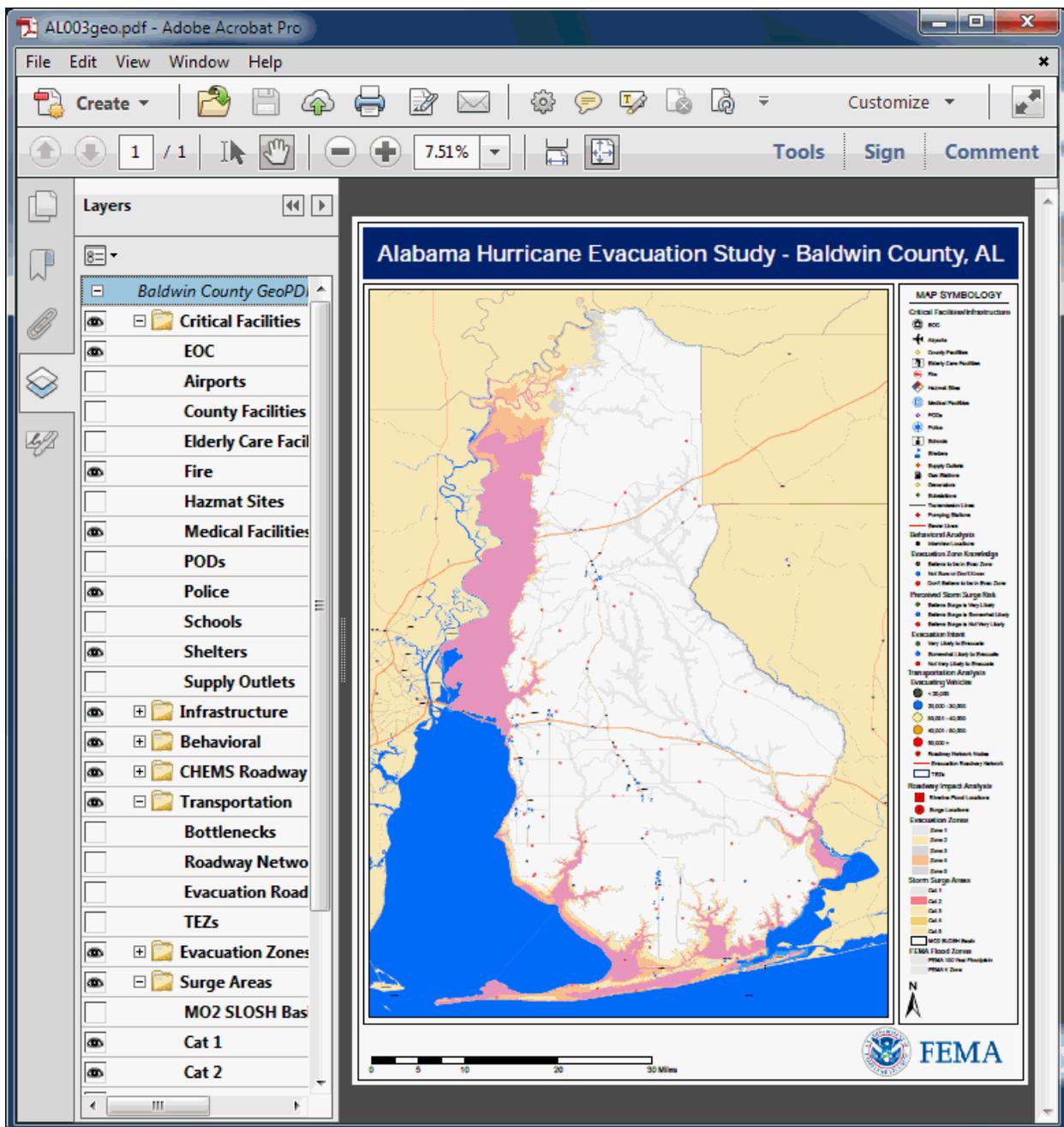


Geospatial PDF Files

These are special PDF documents that contain georeferenced layers of information such as basemap imagery and overlaid (point/line/polygon) vector data. The files can be quite large and require an external viewer such as Adobe Acrobat Reader. The Layers Tab of Acrobat (as shown below) exposes a list of map layers that can then be toggled on and off in the map document. Additional attribute data may be stored within certain individual assets on map

layers--for instance: the name, address, and capacity of a shelter location or the total population living within an evacuation zone.

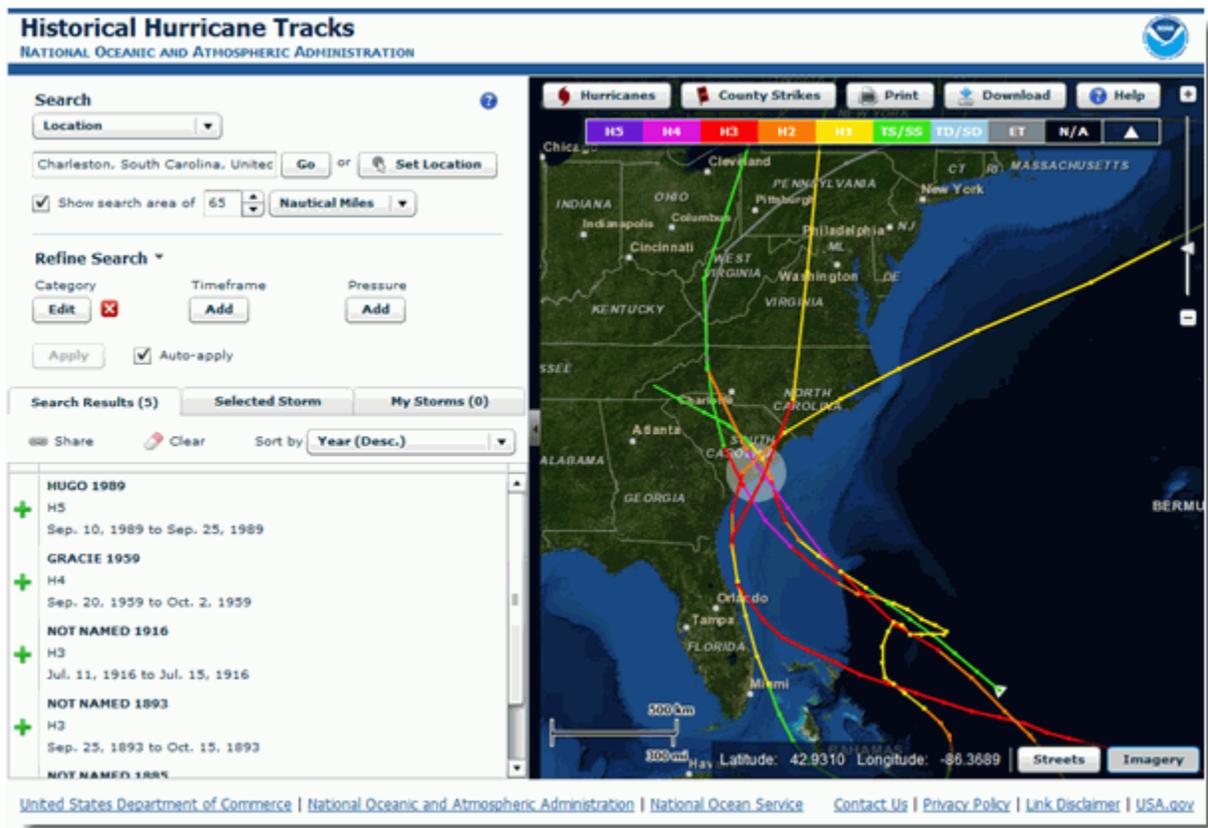
For further assistance working with the special features of these files, refer to the help documentation of your PDF viewing application. TerraGo, developer of the proprietary GeoPDF format, offers a free plugin to Adobe Acrobat Reader to further expand the utility of the documents' geospatial properties. The TerraGo toolbar can be downloaded from <http://www.terragotech.com/products/field-data-collection/terrago-toolbar>.



Historical Hurricane Tracks

This BROWSERS item provides access to the NOAA Coastal Services Center web tool for querying historical storm tracks. More than 6,000 storms dating back to 1851 are available for investigation.

Adobe FLASH is required in order for the tool to operate.



NOTE: The HURDAT historical database is maintained by the forecasters and researchers at the National Hurricane Center and represents Best Track and intensity estimates of tropical cyclones as determined in a post-analysis of all available data. Early storm tracks should not be regarded as having the same degree of accuracy as recent ones. Please refer to documentation from the NHC for a discussion of these limitations to the database.

River Gauges

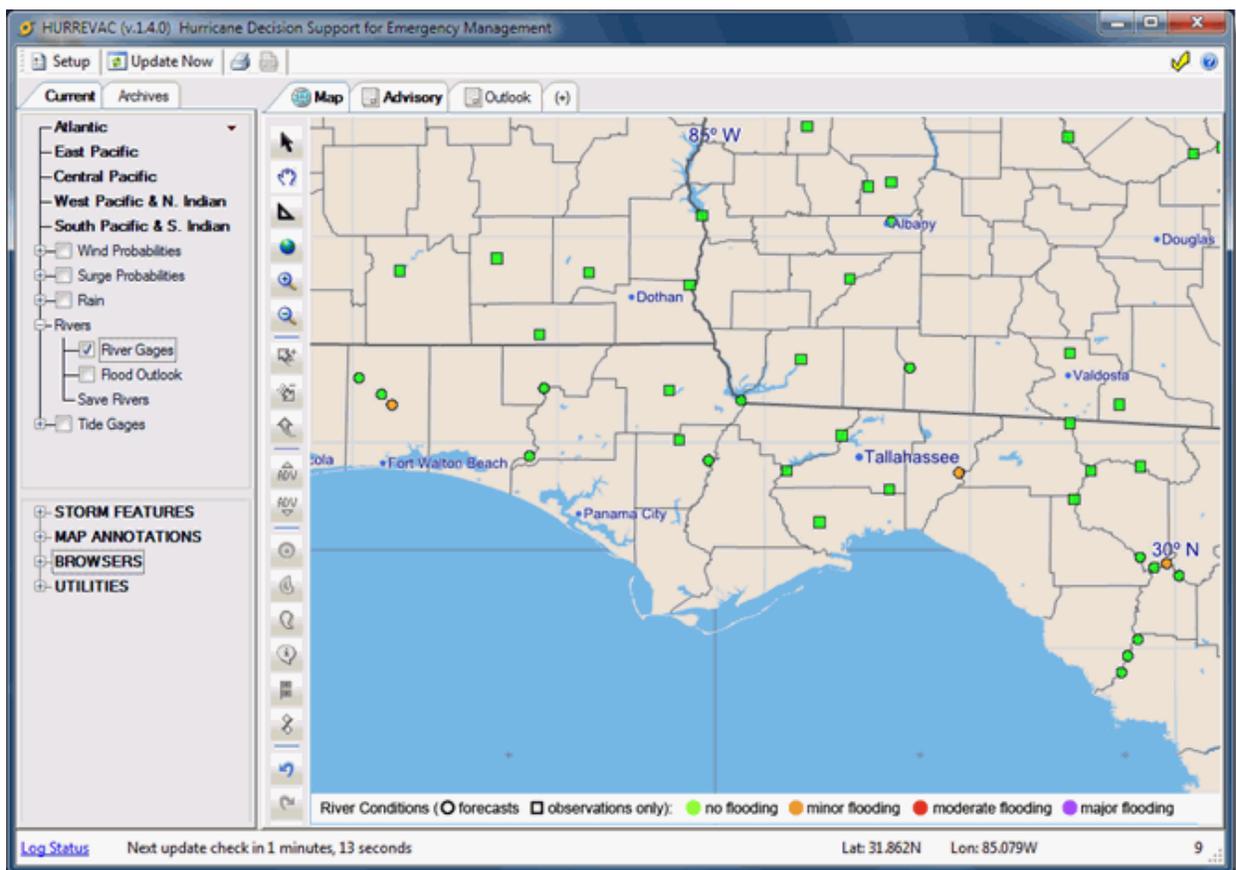
River gauges are an available data layer on the 'Current' data tab under the heading 'Rivers.'

HURREVAC monitors roughly 1100 river gauges in hurricane prone states from Texas to Maine, plus Puerto Rico and Hawaii. The program's River Gauge display is part of a suite of inland flood tools that also include the National River Flood Outlook and the HPC 3-day Rainfall Forecast. Refer to the [Other Weather Data](#) topic for more information on these.

NOAA's Advanced Hydrologic Prediction Service (AHPS) is the source of this river gauge data. The HURREVAC system (*data.hurrevac.com*) receives updated gauge observations and forecasts as often as every hour from AHPS' vast network. Each time you turn on the River Gauge layer under the Rivers heading of the 'Current' data tab, HURREVAC downloads the latest available information from *data.hurrevac.com*. To refresh the gauge display after a number of hours of viewing, simply un-check and then recheck the River Gauge layer.

River Gauges Map Display

River gauges are best seen on the map when zoomed in to a state-wide or tighter view. The gauges then show up as either circles or squares of four different colors.



Shape indicates the type of data available:

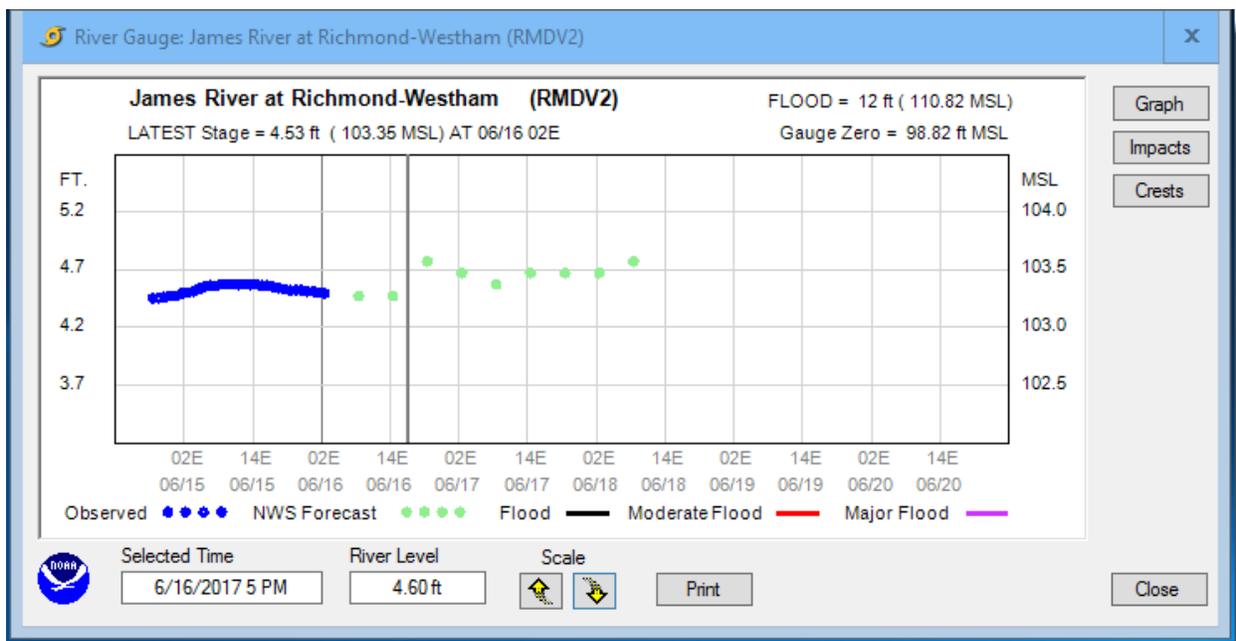
- Gauges marked as **colored circles** have recent data including BOTH OBSERVATIONS and FORECASTS. Typically the observations go back 36 hours from the time of the most recent data and the forecasts go forward in 6-hourly increments to 120 hours or 5 days.
- Gauges marked as **colored squares** have recent data but ONLY OBSERVATIONS and no forecast river conditions. Typically the observations go back 36 hours from the time of the most recent data.
- Gauges marked as **white circles or squares** have only OLD or OUTDATED data (or no data)

Color indicates river stage:

- Green for below flood stage
- Orange for minor flooding
- Red for moderate flooding
- Purple for major flooding

River Gauge Browser

The browser is used to display the data from an individual gauge site. You bring up the browser by clicking on the circle representing the gauge of interest.



Graph of river level and rainfall

The River Gauge browser time frame is different for observation-only display and observation and forecast displays:

- For observation-only displays, the 36 hours of past gauge readings are spread out across the graph for clarity....with the last reading where the heavy vertical line is drawn.
- For observation and forecast displays, the 36 hours of past readings are on the left side of the graph...followed by 120 hours of forecast stages on the right 2/3rds of the display.

The color scheme for the observations and forecasts are noted at the bottom of the browser.

Clicking anywhere within the graph will update the information shown in the 'River Level' box with the corresponding 'Selected Time' at the bottom of the browser. 'Scale' buttons are also provided for controlling the graph display. The Up Button adjusts the graph scale upward to allow view of Flood, Moderate Flood, and Major Flood levels. The Down Button adjusts the graph scale downward to allow viewing of smaller fluctuations.

Other Information available in the browser

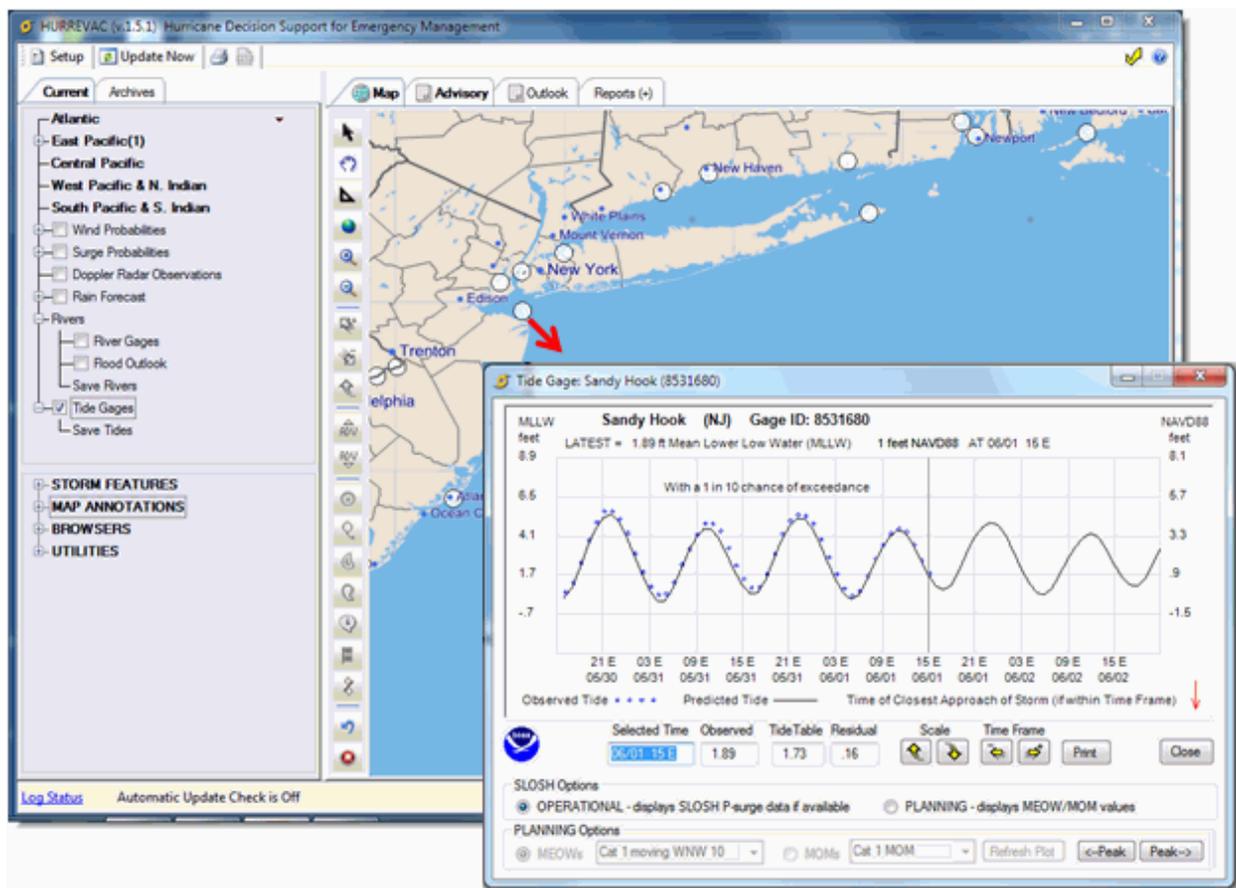
- [Impacts statements](#) (Impacts button) from the USGS describe the effects from past floods of various levels;
- [Historical crests and lows](#) (Crests button) from the USGS with high and low water observations from the past;
- [River Gauge Map](#) shows the area around the gauge that would be inundated by a 100-year flood and by a 500-year flood.

Tide Gauge

The Tide Gauge Browser is accessed from the BROWSER heading of HURREVAC's Toolbox. This browser can also be launched by clicking on a specific tide gauge point on the map. Tide gauges are an available data layer on the 'Current' data tab.

HURREVAC monitors over 150 coastal tide gauges in hurricane prone states from Texas to Maine, plus Hawaii and US territories in the Caribbean and Pacific. The program's Tide Gauge display is an important tool for assessing potential for tidal inundation and storm surge threats from approaching storms. The storm surge components of this browser are detailed in the [SLOSH Display](#) topic.

NOAA's National Ocean Service (NOS) is the source of this tide gauge data. The HURREVAC system (data.hurrevac.com) receives updated gauge observations and forecasts as often as every hour from NOS. Each time you turn on the Tide Gauges layer of the 'Current' data tab, HURREVAC downloads the latest available information from data.hurrevac.com. To refresh the gauge display after a number of hours of viewing, simply un-check and then recheck the Tide Gauges layer.



Working with Tide Gauges

Tide gauges are best displayed on the map when zoomed in to a state-wide or tighter view. The gauges appear as circles along the coast. Click on the circle of interest to bring up the Tide Gauge Browser for that gauge.

The Tide Gauge browser time frame is typically from 48 hours before current time to 30 hours or so beyond the current time. Observations versus predicted heights are available up to the current time and predictions only from current into the future up to 5 days (120 hours). The time frame of the display can be lengthened forward up to 120 hours by using the Time Frame buttons below the graph. The vertical scale of the gauge display can be adjusted using the Scale buttons below the graph.

The heavier gray vertical line represents the latest data and can be moved left or right either by clicking with your mouse or by using the left or right arrows on your key board. The data at the time referenced by the heavy vertical line is displayed in boxes below the graph.

MLLW or Mean Lower Low Water represents the average of the lowest of the tides during the day (typically there are two, one lower than the other). So height MLLW represents the height of the water above this low reference value.

Predicted values are the values computed by using the NOAA Tidal Harmonics algorithms for each gauge (each gauge has a different set).

The Residual shown is the Tidal Anomaly computed by subtracting the Predicted from the Observed reading. Positive numbers represent tide above normal and negative represent tide below normal.

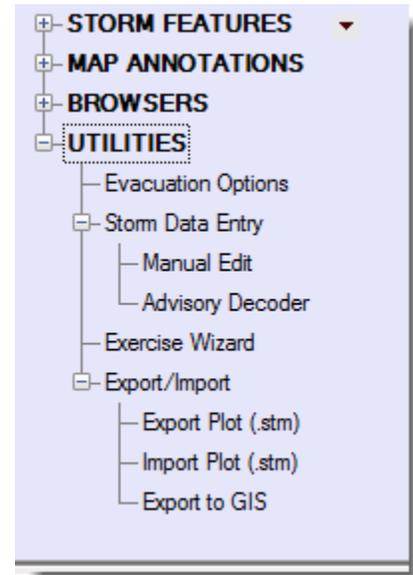
Tide gauge readings are updated at data.hurrevac.com about once an hour but there is some lag to the NOS data, so expect some gauge data to be between 1 and 2 hours old even when just downloaded. The residual or anomaly is the most important data and is usually quite slow to change except as the center of a storm approaches. So, in most cases a fairly good estimate can be made of the current tidal height by using the most recent hour's residual and applying it to the current hour.

Utilities

UTILITIES is a heading within HURREVAC's Toolbox.

Available Utilities

- [Evacuation Option Settings](#)
- [Storm Data Entry](#)
- [Exercise Track Wizard](#)
- [Export/Import](#)



Evacuation Options

Evacuation Options are available under the UTILITIES heading of HURREVAC's Toolbox and can also be accessed directly from [Evacuation Timing Reports](#).

The selections you make are very important. They determine the number of evacuation clearance hours to be used in calculating the time at which actions (if any) should be taken. This affects all the [Evacuation Timing Reports](#) and the map display of [Clearance Time Arcs](#).

NOTE: HURREVAC cannot advise you on which scenario to select or whether to override certain variable settings. These decisions should be made after studying your *HES* document and consulting with local officials as to the best course of action. Coordination with surrounding counties and state EM offices is recommended so that all users of the program are looking at reports based upon the same parameters. If several different scenarios are under consideration, you can employ HURREVAC's view tabs to display multiple reports in the same session.

Evacuation Options are organized on three tabs:

1. **Storm Category Scenarios** - Scenarios based on Saffir/Simpson storm category;
2. **Evacuation Zone Scenarios** - Scenarios based on evacuation zones or other filters unique to particular study areas; and
3. **Manual Clearance Times** - Manual entries input by the user.

NOTE: 'Storm Category Scenarios' were the only type available for use in HURREVAC prior to the 2017 season release.

Storm Category Scenarios

Evacuation Options

Storm Category Scenarios | Evacuation Zone Scenarios | Manual Clearance Times

Location	Scenario	Cat.	Occ.	Resp.	SB	Total Evac Hrs.
AL Baldwin	OutCnty	1	Medium	Medium	0	12
AL Baldwin	RegionalAL	1	Medium	Medium	0	14
AL Baldwin	AL-MS-LA	1	Medium	Medium	0	15
AL Baldwin	AL-FL	1	Medium	Medium	0	19
AL Mobile	MobileOnly	1	Medium	Medium	0	18
AL Mobile	wFLI65no10	1	Medium	Medium	0	19
AL Mobile	wFLI65w10	1	Medium	Medium	0	20

Apply To ALL

Apply To Selected

Note: Forcing SS Cat to other values will be only temporary and will revert when advisory is changed.

Saffir-Simpson Category (defaults to max NHC forecast for this advisory)

SS Cat 1 SS Cat 2 SS Cat 3 SS Cat 4 SS Cat 5

Tourist Occupancy

Low Medium High Worst/Extreme

Response

Immediate Fast Medium Slow

Optional Safety Buffer (SB) in hours

Hours Use Do Not Use

Evacuation Start Time Alerts

On / Off 0 evacuation scenarios selected

The locations/scenarios appearing in the list are only those counties/parishes that have undergone an official HES. Counties/parishes appear more than once in the list if multiple 'scenarios' are provided by the HES. These scenarios account for varying evacuation patterns such as local versus regional evacuations, heavy versus light traffic, and lane reversal options.

For each location/scenario combination, the Evacuation Settings panel presents just one value at a time, based upon selections of the following variables from a matrix (or table) of available clearance times:

- Storm Category (Saffir/Simpson scale) - 1 to 5
- Occupancy - Low, Medium, High and Worst /Extreme
- Response - Immediate, Rapid, Medium and Slow.

NOTE: HURREVAC's [Evacuation Clearance Time Browser](#) can be used to see the complete set of storm category matrices for a location.

Overriding Default Evacuation Settings for Storm Category Scenarios

1. Category of Storm - The default setting is the maximum wind predicted at any one time over the 120-hour forecast period, however if the maximum wind is within 5 knots of the next Saffir/Simpson category, the category is bumped up one step as insurance. You may wish to change this setting if, for example, your EM office has a policy of evacuating for one category higher than forecast as added insurance. Conversely, New England locations considering the threat from a Cat 4 or 5 storm still well south may want to drop the storm category because the storm is forecast to be much less intense once over the cooler waters of the Northeast.
2. Tourist Occupancy - This option defaults to medium, but can be changed if necessary to a setting relevant for your area. This setting tends to be time dependent and not area dependent. For example, a late October weekday would often find all areas with low tourist occupancies, but a Labor Day weekend would find most all areas with very high occupancies.
3. Response - This also defaults to medium when the screen appears for the first time, but should be set to a coordinated setting relevant for your area. A nighttime evacuation would probably evoke a Slow response, as would heavy rain ahead of the storm or weak media treatment of the threat.
4. Optional Safety Buffer (SB) - The default setting is zero, but you can add up to 10 hours to the evacuation clearance times as a safety buffer, or to allow for pre-evacuation duties or preparation. Any amounts selected will be shown in the SB column and added to the total clearance time period that is needed.
5. Apply Settings to the list - You must apply the settings to the list in order to make the new calculations effective. In most cases, you will use the **Apply To All** button to make the settings applicable to all areas. For some users with multi-state configurations, the **Apply To Selected** may be appropriate. If you wish to apply the settings only to certain areas, you may click and drag on the list, or hold down the CTRL button on your keyboard while clicking on multiple areas. You must press the OK button on exit to make the settings active.

Evacuation Zone Scenarios

These are HES scenarios that are organized by geographic zones or various other types of delineation. Whereas under Storm Category Scenarios, HURREVAC attempts to select the most appropriate level of evacuation based on storm severity (the maximum forecast SSCat), here the selection is left entirely up to the user. Depending on the complexity of the particular HES, anywhere from 1 to 5 filters may be needed to drill down to the selection of a single clearance time.

To make one or more 'zone' clearance times available for use in [Evacuation Timing Reports](#) and the map display of [Clearance Time Arcs](#), you must first add the scenario(s) to the list shown below. **It is recommended that you make selections based upon the current storm situation and delete or make adjustments to the list as new storm situations arise.**

Evacuation Options

Storm Category Scenarios | Evacuation Zone Scenarios | Manual Clearance Times

County
MA - Plymouth Select County

Evacuation Filters

Town: Kingston

Scenario: Zone A

Response: Medium Response

Occupancy: Low Occupancy

Total Evacuation Hours: Range of 12.9 hours to 18.6 hours

Add Scenario Delete Scenario

Location	Scenario	Hours
CT Fairfield	Bridgeport/Zone A with NY evacuating simultaneously/Medium Response/High Occupancy	9.4
NC Beaufort	Weak Scenario A/Moderate Response/Medium Occupancy/Regional Out of County Clearance	10.7
NC Beaufort	Scenario A/Moderate Response/Medium Occupancy/Regional Out of County Clearance	17.5

Evacuation Start Time Alerts

On / Off Select Scenarios 2 evacuation scenarios selected Close Save Cancel

These selections are stored in a file called ZoneEvacuationScenarios.xml and can be either exported or imported via the [HURREVAC Setup Form](#).

NOTE: As of the 2017 Season Release of HURREVAC, only a few states' official HES clearance times are available as Evacuation Zone Scenarios. If you don't see your state and county in the pick list, it is because the official HES study data has not yet been republished under this new Evacuation Zone Scenario format. Check with your state's hurricane planner for information on when that might change and/or to make a request for additions to HURREVAC.

Manual Clearance Times

Manual clearance times are scenarios added to the program by the individual user which are simply defined by a name, description, and number of hours. You may wish to use this feature to do evacuation timing for inland counties that lack official HES data. Another use for manual entries is if you wish to use something other than the official HES scenarios and their times that are published in HURREVAC.

The screenshot shows the 'Evacuation Options' window with the 'Manual Clearance Times' tab selected. The window contains the following elements:

- County:** Horry, SC (with a 'Select County' button)
- Scenario Abbreviation (10 characters max):** MyrtleBch
- Scenario Description (50 characters max):** Myrtle Beach Area General Timing
- Total Evacuation Hours:** 36 (with a note '(71 hours maximum)')
- Buttons:** Add Scenario, Delete Scenario, Clear Data
- Table:**

Location	Scenario	Hours
Charleston, SC	Charleston: Charleston Area General Timing	36
Beaufort, SC	Beaufort: Beaufort Area General Timing	24
- Evacuation Start Time Alerts:**
 - On / Off
 - Select Scenarios
 - 0 evacuation scenarios selected
 - Close
 - Save
 - Cancel

These manual entries are stored in a file called UserDefinedEvacuationScenarios.xml and can be either exported or imported via the [HURREVAC Setup Form](#).

Evacuation Start Time Alerts

Refer to the topic [Evacuation Start Time Alert](#) for a description of this additional function of the Evacuation Options.

Storm Data Entry

The Storm Data Entry tools are located under the UTILITIES heading of HURREVAC's Toolbox.

These tools give you the ability to edit or create STM files, HURREVAC's native storm file format. The most common use is for creation of a hypothetical storm from scratch or by modifying an existing STM file. Another possible use would be if you were unable to receive STM file updates from *data.hurrevac.com* and needed to manually enter forecast information into the program.

Manual Data Entry/Edit

This screen is where you enter data manually (by hand) if you do not have access to the Internet but have a printed copy of the *NHC*, *CPHC*, or *JTWC* forecast *advisory* available.

The official National Hurricane Center (NHC), Central Pacific Hurricane Center (CPHC), and Joint Typhoon Warning Center (JTWC) forecast advisories are the sources for all data used by HURREVAC concerning the current storm. This is the most important data the program ingests, and must be done correctly or errors will result in all calculations based on this data. The program does checking of gross errors in input but cannot catch all minor errors that may occur.



Header Information

Disk Filename - In this box, you select the filename for the storm file you wish to work with. All advisories for a storm come within one storm file, so if you just want to select another advisory, choose the Advisory box (see below).

Storm Name - The selected storm's name is printed in this box.

Advisory # - This is the box where you can either select another advisory's data to view, or more commonly, this is where you enter a new advisory number to indicate that you want to enter new advisory data from the latest NHC or CPHC Forecast / Advisory.

Time of Advisory Issuance - When entering a new advisory, remember that you must use the Z or Zulu (also called GMT) issuance time of the advisory. This is the time frame that is used with the Forecast/Advisory and printed at the top of that advisory. Options presented by the Change Date/Time button are to change just the currently displayed advisory, or to shift the time or other advisories in sequence.

Eye Positions				MaxWind*	34 Kt Wind Range (n.m.)				50 Kt Wind Range (n.m.)				64 Kt Wind Range (n.m.)			
Valid Time	Lat.	Lon.		Knots	NE	SE	SW	NW	NE	SE	SW	NW	NE	SE	SW	NW
Initial	21.0	73.4	W	115	125	125	100	125	90	75	50	75	50	40	30	50
8/00Z	20.9	75.2	W	120	125	125	100	125	90	75	50	75	50	40	30	50
8/12Z	21.4	77.6	W	85	130	110	90	120	75	60	45	60	40	30	30	40
9/00Z	22.2	79.9	W	70	120	100	80	110	60	50	40	50	30	25	25	30
9/12Z	23.0	81.8	W	65	110	90	80	100	60	45	40	50	30	20	20	25
10/12Z	24.5	85.0	W	70	120	100	90	110	60	50	50	60	30	25	25	30
11/12Z	26.0	87.5	W	85												
12/12Z	27.0	90.5	W	100												

*Sustained (not gusts)

Advisory Information
 Initial Speed (kts)
 Initial Direction (degrees)
 Central Pressure In Millibars (MB)

Input Boxes - Edit Options

Other Items

Data Entry Boxes

It is best to enter new data by Row rather than by Column, since the data on the Forecast/Advisory is grouped together by time. So begin first with the Row labeled Initial Position and enter as follows:

Initial (and Forecast) Eye Positions - The first row represents the current or initial position of the storm from the Forecast/Advisory text. The following rows represent forecasts valid at the time printed to the left of these boxes. Enter the latitude (Lat) and longitude (Lon) taken from the Advisory.

Maximum Wind - Enter in these boxes the maximum sustained wind (not gusts) from the advisory at the time indicated for that row (on the entry screen, times are at the extreme left of the row).

34-Knot Wind Range - Enter the range of 34 knot winds in each quadrant (NE=northeast) (SE=southeast) (SW=southwest) and (NW=northwest) in nautical miles (n.m.) taken from the advisory lines labeled 34KT at the time indicated for the row (on the entry screen, times are at the extreme left of the row). If none, leave blank.

50-Knot Wind Range - Do the same for the 50 knot winds (labeled 50KT in the advisory) taken from the advisory at the time indicated for the row (on the entry screen, times are at the extreme left of the row). If none leave blank. Auto-Fill Ranges will fill all 50KT boxes with some percentage of the 34KT ranges. The initially suggested ratio is 50%.

64-Knot Wind Range - Do the same for the 64 knot winds (labeled 64KT in the advisory) taken from the advisory at the time indicated for the row (on the entry screen, times are at the extreme left of the row). If none leave blank. Auto-Fill Ranges will fill all 54KT boxes with some percentage of the 34KT ranges. The initially suggested ratio is 25%.

Central Pressure (in millibars MB) - Enter the central pressure found on the advisory at the initial (current time or time of issuance of advisory) This is sometimes given in both inches and millibars, but enter the data label MB or millibars.....this will be a number somewhere in the range 900 to 1020.

Storm File Options

Delete Advisory Button - If you wish to delete the currently shown advisory from the storm file shown, use this option. Use with care...you can always just edit the information if some is bad.

Input Boxes - Edit Options

Clear Boxes - This option clears all of the data input boxes (not the date/time or filename/advisory boxes)...To allow you to start with a clean slate. If you are entering a new advisory...the old advisory data will still be in the input boxes. At that point you can either edit that data or use this option to start anew. If you use this option you can restore the previous data by clicking on the Restore button. (See below)

Restore Boxes - This button restores the data which was in the boxes before the last Clear or Fill In Boxes option.

Fill Rest of Blank Boxes with Last - This option is handy for filling in boxes when there is little or no change from the previous forecast valid time(s) on the advisory. The program fills in the boxes below (later times) with information from the previous boxes, if the previous box had any values. From there, you can edit in any changes needed to reflect the Forecast/Advisory data.

Other Items

Warnings - The Enter-Edit Warnings button brings up a screen where you can select areas of watches and warnings for display with the active advisory in the program.

Watches and Warnings For IKE # 26
✕

Areas

US Coast
 US Bays + Sounds
 Bahamas + Caribbean
 Mexico + Central and S. America
 East Pacific
 Central Pacific

Type

Hurricane Warning
 Hurricane Watch
 Trop.Storm Warning
 Trop.Storm Watch

From	To
Brownsville TX	Brownsville TX
Port Mansfield TX	Port Mansfield TX
Baffin Bay TX	Baffin Bay TX
Corpus Christi TX	Corpus Christi TX
Port Aransas TX	Port Aransas TX
Port Oconnor TX	Port Oconnor TX
Matagorda TX	Matagorda TX
Sargent TX	Sargent TX
Freeport TX	Freeport TX
San Luis Pass TX	San Luis Pass TX
High Island TX	High Island TX

List of Watches and Warnings :

Trop.Storm WARNING Haiti N Border w/DomRep to.. Gonlaves Haiti

Hurricane WARNING Turks and Caicos to.. Central Bahamas

Hurricane WARNING Guantanamo Cuba to.. Ciego de Avila Cuba

Trop.Storm WARNING Cayman Islands to.. Cayman Islands

Hurricane WARNING Guantanamo Cuba to.. Cienfuegos Cuba

Hurricane Watch Matanzas Cuba to.. La Habana Cuba

Hurricane Watch Dry Tortugas FL to.. Ocean Reef FL

Add to List >>>>

Delete Selected Item

Delete All Items

Restore Original Items

Use Previous Advy

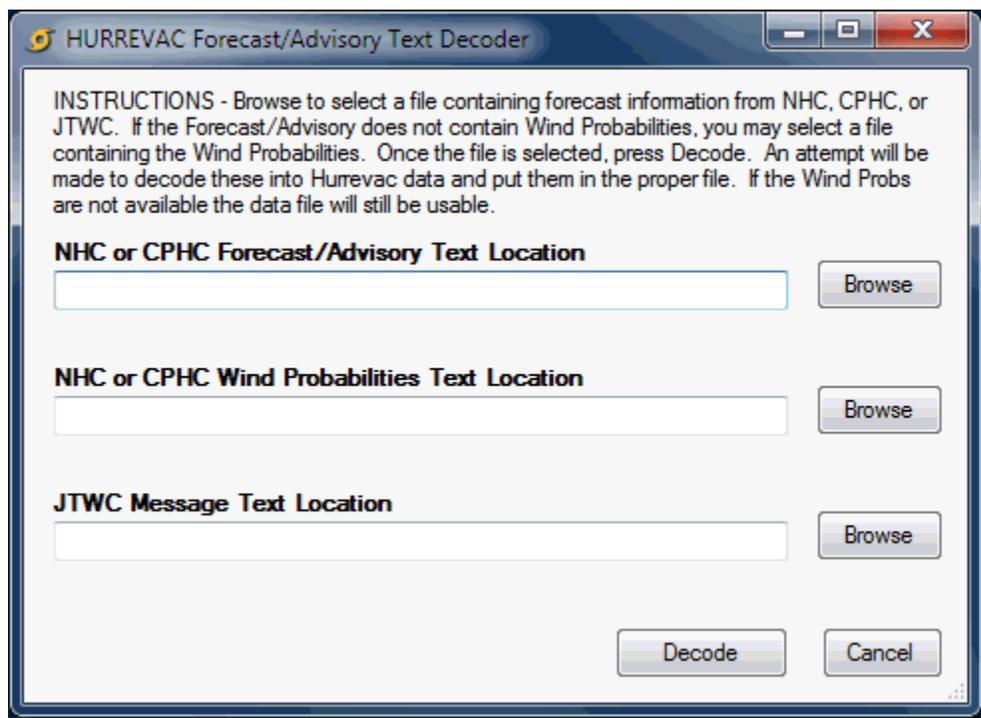
Note - In case of overlapping areas... highest category in area will show

Cancel

OK / Save

Advisory Text Decoder

This tool allows you to decode an ascii (text) file of the NHC, CPHC, or JTWC Forecast/Advisory into an .STM file. Follow the instructions and specify where the forecast advisory and the NHC Wind Probabilities files reside on your system and a data file will be created, or added to, as appropriate.



Exercise Track Wizard

The Exercise Track Wizard is located under the UTILITIES heading of HURREVAC's Toolbox. This tool leads you through steps necessary to create an *STM file* of your own for an exercise. STM files are HURREVAC's native file format for storing all the forecast advisories from a single storm.

The Exercise Track Wizard leads you through a sequence of 5 steps. You can use the **Previous Step** button to backtrack at any point, but keep in mind that any work you have done on later steps will be overwritten.

1. Set the beginning location and time for storm. LST/LDT stands for Local Standard Time/Local Daylight Time.

The screenshot shows the 'Exercise Track Creation Wizard (Step 1)' dialog box. It is titled 'STEP 1 - Pick the Date / Time of the FIRST Advisory'. On the left, there are dropdown menus for the month (May), day (18), and year (2014), along with a time selector set to '04 LST / 05 LDT'. On the right, under 'Select the Location of Storm at FIRST Advisory', there are input fields for Latitude (22.3) and Longitude (66.9). A 'Cancel Wizard' button is on the bottom left, and a 'Next Step' button is on the bottom right.

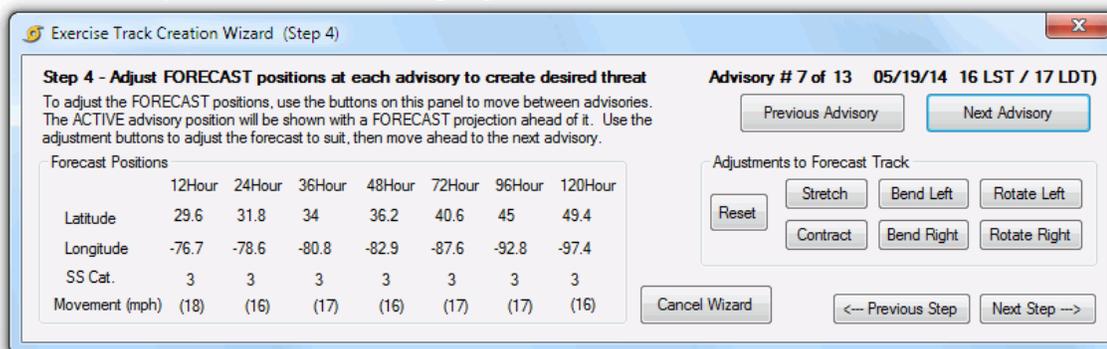
2. Set the ending location and time for storm. The correct number of 6-hourly advisories will be created along a straight-line track when you complete this step.

The screenshot shows the 'Exercise Track Creation Wizard (Step 2)' dialog box. It is titled 'STEP 2 - Pick the Date / Time of the LAST Advisory'. On the left, there are dropdown menus for the month (May), day (21), and year (2014), along with a time selector set to '04 LST / 05 LDT'. On the right, under 'Select the Location of Storm at LAST Advisory', there are input fields for Latitude (33.7) and Longitude (82.7). A 'Cancel Wizard' button is on the bottom left, and 'Previous Step' and 'Next Step' buttons are on the bottom right.

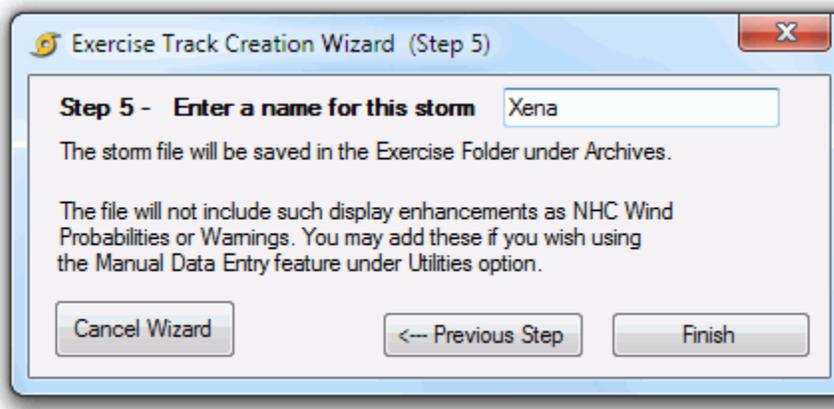
3. Next, work with the initial location of each advisory, adjusting its location and [storm category](#) (SS CAT) to suit. Pay close attention to the movement speed and place advisory locations closer together if speed seem unrealistically high. By default the Wizard escalates the storm's intensity up to the final advisory. If your final advisory is well inland, be sure to drop the storm category to a realistic intensity.

The screenshot shows the 'Exercise Track Creation Wizard (Step 3)' dialog box. It is titled 'Step 3 - Adjust advisory positions to create desired track of storm, and enter storm strength (Saffir-Simpson Category) at each position'. The left side contains instructions: 'The advisories needed during the time frame you specified are shown on the map. They are spaced along a straight-line track at 6-hourly intervals. You may adjust track as desired. To adjust the track, use the buttons on this panel to move between advisories. The ACTIVE advisory position will be shown as a point with a circle around it. LEFT-CLICK on the map where you want the new position to be. Set the SS Category for position, then move to next advisory.' On the right, it shows 'Advisory # 7 of 13 05/19/14 16 LST / 17 LDT'. There are 'Previous Advisory' and 'Next Advisory' buttons. Below these are input fields for LAT. (28), LON. (-74.8), and SS CAT (3). A note indicates 'Movement speed between Advy 6 and 7: 17 mph'. At the bottom, there are 'Cancel Wizard', 'Previous Step', and 'Next Step' buttons.

4. In this step, modify the forecast track of each advisory as desired. The wizard creates forecast tracks that are very similar in intensity and speed to the later advisory positions. It positions the track slightly to the left.



5. Finally, name the storm. The filename will be saved as Xx_yyyy.stm (example XA_2002.stm for Allison from 2002), so as to prevent an overwrite by real storms during the season. The name inside the file however will be whatever name you gave it in the Name box and when you load the Xx file the name you gave it will appear within the program as usual. Your storm will be saved in a special *ExerciseSTMFiles* data directory and is accessible in the program through the [Exercise heading of the Archives Tab](#)

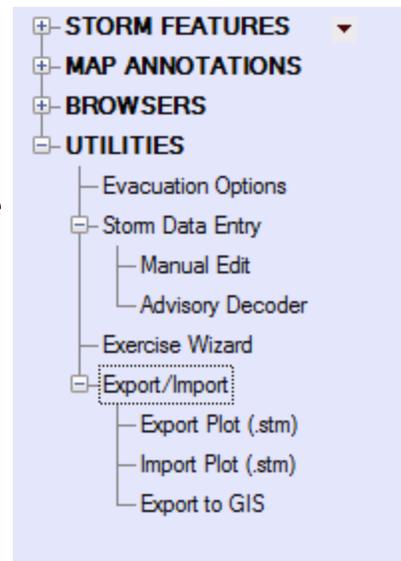


NOTE: Standard wind ranges are assumed by the Track Wizard initially. You can make fine-tuning adjustments to the *wind ranges* and add *watch / warning* locations by using [Storm Data Entry... Manual Edit](#) utility.

Export/Import

Export/Import Tools are located under the UTILITIES heading of HURREVAC's Toolbox.

The Export and Import Plot tools copy STM files in and out of the *STMFiles* data directories. Imported storms are placed in a special *ExerciseSTMFiles* data directory and appear in the program under the Exercise heading of the Archive Tab.



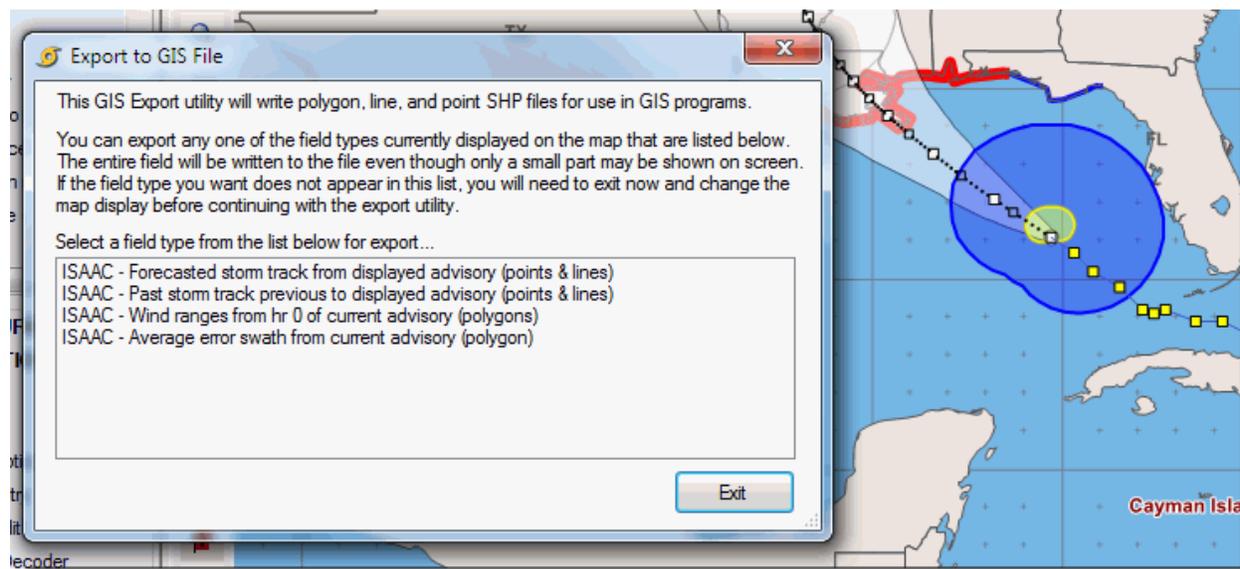
Export to GIS

The GIS Export Tool generates shapefiles from HURREVAC's storm tracking display that can be loaded into outside mapping programs.

Shapefile is a widely adopted vector data format for describing geospatial points, lines, and polygons along with their associated tabular attribute data. ESRI developed the format with open specifications, and therefore many Geographic Information System software programs have incorporated the ability to read and write shapefile data.

The shapefile (with an ".shp" extension) stores geometry of either points, lines, or polygons. It must be accompanied by two supporting files of the same name—an ".shx" file containing an index to the geometry, and a ".dbf" storing a database of attributes associated with the geometric shapes. A number of other files having the same name but different extensions may also accompany the .shp file. Most notable of these are the ".prj" file that stores the geographic coordinate system, or projection, and the ".shp.xml" that stores metadata.

HURREVAC's GIS Export Tool creates .shp, .shx, .dbf, and .lyr files for each shapefile.



Available Layers

The number and types of fields available for export will vary based upon what is currently displayed on the Storm Map. The following fields may be available and are described here.

1. A [forecast track](#) from the current advisory as points and lines. Separate files are created for the two shape types and are differentiated by "_p" and "_l" tacked on to the end of the filenames. Nodes (in the line file) and points (in the points file) represent the 0, 12, 24, 36, 48, 72, 96, and 120-hour forecasted positions for the current advisory. Points are attributed with a date/time field and a maximum wind speed field.
2. A [past track](#) as points and lines. Separate files are created for the two shape types and are differentiated by "_p" and "_l" tacked on to the end of the filenames. Nodes (in the line file) and points (in the points file) represent the initial positions of each advisory for the past track. Points are attributed with a date/time field and a maximum wind speed field.
3. The [wind ranges](#) from any forecast hour (0-72) as polygons. Up to three rings with values of 39, 58, and 74 mph may be output.
4. Wind swath through hour 72 of current advisory as polygons. Up to three polygons with values of 39, 58, and 74 mph may be output.
5. Error swath or error swath plus winds as polygons -- Up to three polygons with a single attribute field indicating 72-hour average error (72), extended forecast average error (120), and average error plus winds (0).
6. Error ellipse (with or without winds) from any forecast hour (0-120) as polygons. One polygon (attribute value of 72 or 120) for the error ellipse and a larger wind ellipse (attribute value of 0).
7. [MEOW \(wind\)](#) for specified region and storm conditions as polygons. Polygons are attributed with 39, 58, 74, 92, 109, and 127 mph to indicate the maximum wind possible for the region.
8. HPC rainfall isopleths for specified day (1-3) as polygons. Polygons have attribute values to indicate a regions expected rainfall in 100th of inches.
9. [NWS](#) river flood outlook as polygons. Polygons have attribute values to indicate whether the likelihood of flooding in a region is possible (1), likely (2), or imminent or occurring (3).

Additional Notes

By default, the polygons overlay each other. In other words, with the 3 wind ranges surrounding a hurricane the 64kt (74mph) wind ring will overlay the 50kt(58mph) wind polygon, which will in turn overlay the 34kt(39mph) polygon. If the higher 2 wind polygons are then turned off in the GIS program display, what will remain is a polygon representing winds >34kt (39mph). In other words, you do not have "doughnuts" representing wind >34kt and <50kt. The wind swaths, error swaths, and HPC rainfall isopleths also export in this manner.

For help in creating unique "doughnut" polygons, refer to the "GIS Issues" page of the support website at www.hurrevac.com. Legend (.AVL) and layer (.LYR) files are also available on the web site to assist you in illustrating exported shapes in Arcview 3.x and ArcGIS 8.x as they appear in

HURREVAC Users Manual

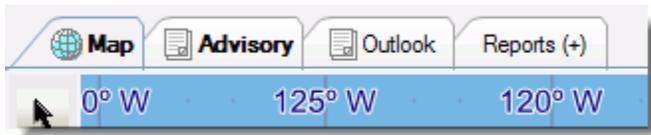
HURREVAC. Experience in GIS is recommended, as the manipulation of these exported files may not be easy for the casual user of HURREVAC.

Reports

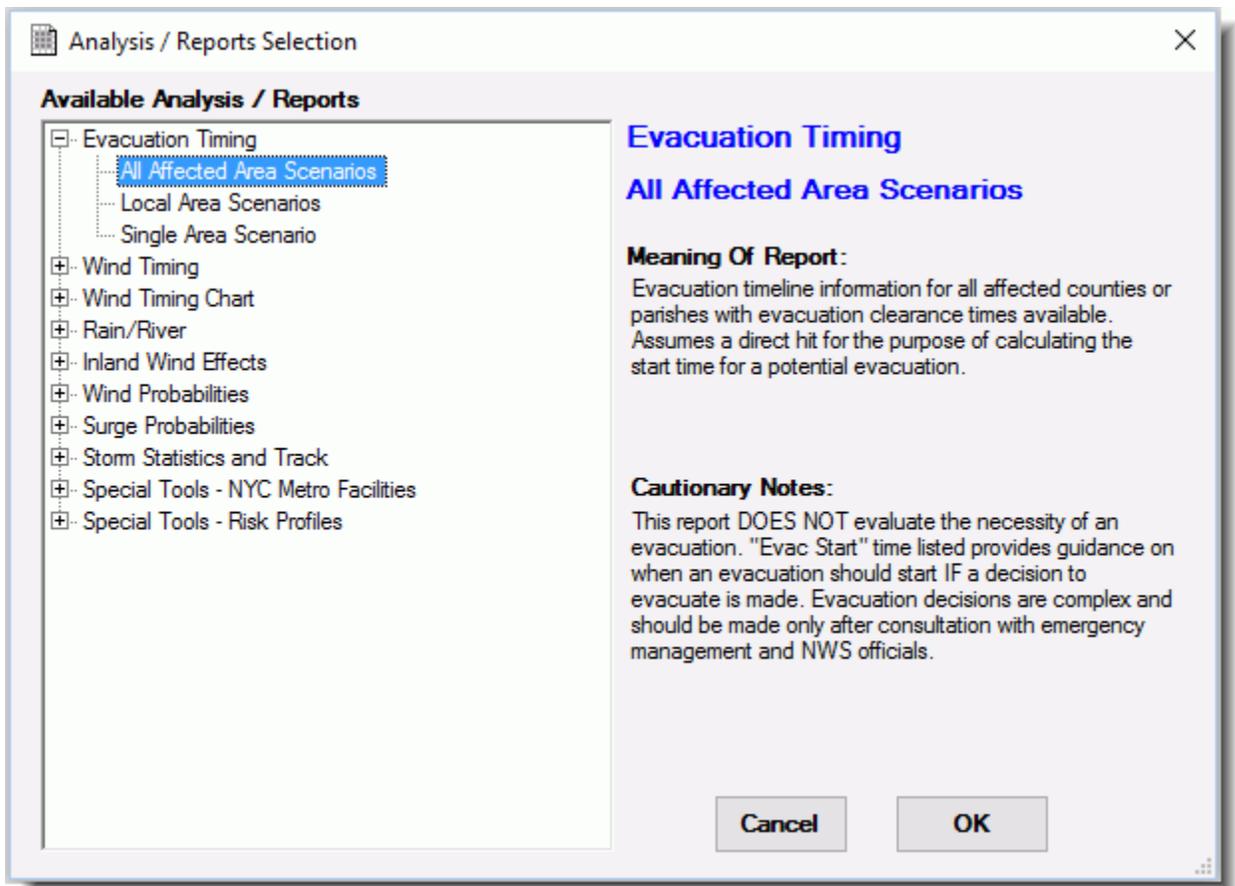
REPORT tabs hold analysis made on a particular forecast *advisory* or other data layer. Results of the analysis can be presented in the form of a spreadsheet-type table, a graph, or special chart.

To generate a storm-specific report, you must first highlight the desired storm on the map by clicking on its name in the list.

The 'Analysis/Reports Selection' form is called when you click on the Reports [+] tab to add a new data view to the program.



To guide your selection, each report is accompanied by a description (or 'Meaning of Report') and 'Cautionary Notes.'



Standard Available Reports

- [Evacuation Timing](#)
- [Wind Timing and Charting](#)
- [Rainfall](#)
- [River Flood Outlook](#)
- [Storm Statistics](#)
- [Wind Decay](#)
- [Wind Probabilities](#)
- [Surge Probabilities](#)
- [Closest Approach](#)
- [Error Swath](#)

Special Reports

The following reports are [special state-specific tools](#).

- [NYC Metro Facilities](#)
- [Risk Profiles](#)

Evacuation Timing Report

Evacuation Timing Reports are available for counties with Hurricane Evacuation Study clearance times installed.

The purpose of [Evacuation Timing](#) is to determine how long you can afford to wait before beginning an evacuation. The advantage of delaying this evacuation start for as long as possible is so that your decisions are based on the most accurate storm forecast, while still allowing enough time for preparations to be completed if needed.

Note that all the computations done to arrive at the information here assume a direct hit on the area for the purposes of timing actions (a worst case scenario and one you must consider if in or near the threat area).

To [print or save](#) the report data to a text file, click the Print button within the [Program Header](#) or choose 'Export Report to Excel' after right-clicking on the tab name.

Single Area Scenario

The Evacuation Timing > Single Area Scenario report consists of an hour-by-hour timeline of actions for a selected county. The time frame ranges from hour 0 (the hour of the forecast) to hour 72 (the limit of the wind forecast). Rows of the tabular report are colored according to activity: gray if pre-*evacuation start time* or post-storm time, green if active evacuation time, blue if within tropical storm force (34kt or 39mph), yellow if within 50kt or 58mph, and red if within hurricane force (64kt or 74mph) conditions.

In the final column, the hours in daylight and dark are noted - an important consideration when deciding on the best time to begin an evacuation.

Map Advisory Evac Timing (Orleans, LA) (+)

Report for Hurricane Katrina
Based on Advisory 15 Issued 8/26/2005 11 PM EDT (Old Advisory)

Evac Timing (Assume DIRECT HIT) for LA Orleans Fast OffPk

Meaning Of Report:
 Evacuation timeline information for a single county or parish, from hour 0 (the hour of the forecast) to hour 72 (the limit of the forecast for wind extents). Assumes a direct hit for the timing calculation.

Cautionary Note:
 This report DOES NOT evaluate the necessity of an evacuation. "Evac Start" time listed provides guidance on when an evacuation should start. If a decision to evacuate is made, Evacuation decisions are complex and should

Date/Time (hr)	Possible Action	Hrs Left	to 34kt(39)	to 50kt(58)	to 64kt(74)	to Eye	Day/Night
08/26/05 23EDT	Preparation/Planning	10 to Evac	429 miles	444 miles	456 miles	467 miles	DARK
08/27/05 00EDT	Preparation/Planning	9 to Evac	421 miles	437 miles	449 miles	461 miles	DARK
08/27/05 01EDT	Preparation/Planning	8 to Evac	414 miles	430 miles	443 miles	455 miles	DARK
08/27/05 02EDT	Preparation/Planning	7 to Evac	406 miles	423 miles	436 miles	449 miles	DARK
08/27/05 03EDT	Preparation/Planning	6 to Evac	399 miles	416 miles	430 miles	443 miles	DARK
08/27/05 04EDT	Preparation/Planning	5 to Evac	391 miles	409 miles	423 miles	437 miles	DARK
08/27/05 05EDT	Preparation/Planning	4 to Evac	384 miles	402 miles	417 miles	431 miles	DARK
08/27/05 06EDT	Preparation/Planning	3 to Evac	376 miles	395 miles	410 miles	425 miles	Daylight
08/27/05 07EDT	Preparation/Planning	2 to Evac	369 miles	388 miles	404 miles	419 miles	Daylight
08/27/05 08EDT	Preparation/Planning	1 to Evac	361 miles	381 miles	397 miles	413 miles	Daylight
08/27/05 09EDT	EVAC START TIME	38 to Hazards	353 miles	373 miles	390 miles	406 miles	Daylight
08/27/05 10EDT	Evacuation(if needed)	37 to Hazards	345 miles	365 miles	383 miles	399 miles	Daylight
08/27/05 11EDT	Evacuation(if needed)	36 to Hazards	338 miles	358 miles	376 miles	392 miles	Daylight
08/27/05 12EDT	Evacuation(if needed)	35 to Hazards	330 miles	350 miles	369 miles	385 miles	Daylight
08/27/05 13EDT	Evacuation(if needed)	34 to Hazards	322 miles	342 miles	362 miles	378 miles	Daylight
08/27/05 14EDT	Evacuation(if needed)	33 to Hazards	314 miles	335 miles	355 miles	371 miles	Daylight
08/27/05 15EDT	Evacuation(if needed)	32 to Hazards	306 miles	327 miles	348 miles	364 miles	Daylight
08/27/05 16EDT	Evacuation(if needed)	31 to Hazards	298 miles	319 miles	341 miles	357 miles	Daylight

SS Category: 4 Occupancy: Medium Response: Medium

All Affected Area Scenarios or Local Affected Area Scenarios

The Evacuation Timing...All Affected Areas report consists of evacuation timeline information for all locations with HES clearance times available that are within the [Error Cone and surrounding fringe wind area](#).

The report's data is initially sorted by earliest evacuation start time. To sort by a different item, click on its heading once for ascending order, twice for descending order. Items in the report are:

- Evacuation Type - as determined by the selected scenario in the Hurricane Evacuation Study
- Evac Start - Date/Time of [evacuation start time](#) . [Past] indicates that the evacuation should already be underway if needed.
- Duration - the clearance time, or number of hours, needed to complete the evacuation
- Category/Occupancy/Response - HURREVAC defaults to medium occupancy, medium response, and the max storm category forecasted.
- Arrival times of 34kt (tropical storm-force) and 64kt (hurricane-force) winds, plus the eye of the storm

- 'Nearest' refers to how close the actual forecast comes to the county. This is the only data item that is based on the actual forecast rather than the worst-case, direct hit scenario.

Map Advisory Evac Timing (Orleans, LA) Evac Timing All (+)

Report for Hurricane Katrina

Based on Advisory 15 Issued 8/26/2005 11 PM EDT (Old Advisory)

Evacuation Timing All Affected Areas (92 Items)

Meaning Of Report
Evacuation timeline information for all affected counties or parishes with evacuation clearance times available. Assumes a direct hit for the purpose of calculating the start time for a potential evacuation.

Cautionary Note:
This report DOES NOT evaluate the necessity of an evacuation. "Evac Start" time listed provides guidance on when an evacuation should start. IF a decision to evacuate is made. Evacuation decisions are complex and should

Location	Evac. Type	Evac Start	Dur.	Dirk	Cat./Oc/Re	>34kt(39)	>64kt(74)	Eye	Nearest
MS Jackson	MS&LA	08/26 16E[Past]	51	17	4 / M / M	08/28 19E	08/29 02E	08/29 05E	40 mi.
LA Plaquemines	Slow Peak	08/26 17E[Past]	47	17	4 / M / M	08/28 16E	08/28 23E	08/29 02E	21 mi.
MS Hanson	MS&LA	08/26 18E[Past]	51	17	4 / M / M	08/28 21E	08/29 05E	08/29 07E	10 mi.
MS Hancock	MS&LA	08/26 19E[Past]	51	18	4 / M / M	08/28 22E	08/29 06E	08/29 08E	1 mi.
LA Plaquemines	Slow OffPk	08/26 21E[Past]	43	17	4 / M / M	08/28 16E	08/28 23E	08/29 02E	21 mi.
LA St Bernard	Slow Peak	08/26 22E[Past]	47	17	4 / M / M	08/28 21E	08/29 04E	08/29 07E	1 mi.
LA Plaquemines	Fast Peak	08/26 22E[Past]	42	17	4 / M / M	08/28 16E	08/28 23E	08/29 02E	21 mi.
LA Jefferson	Slow Peak	08/26 23E[Past]	47	17	4 / M / M	08/28 22E	08/29 05E	08/29 08E	22 mi.
LA Orleans	Slow Peak	08/27 00E	47	17	4 / M / M	08/28 23E	08/29 06E	08/29 09E	6 mi.
LA St Tammany	Slow Peak	08/27 00E	47	17	4 / M / M	08/28 23E	08/29 06E	08/29 09E	2 mi.
AL Baldwin	wFLI65w10	08/27 01E	39	14	4 / M / M	08/28 16E	08/28 23E	08/29 02E	93 mi.
LA St Bernard	Slow OffPk	08/27 02E	43	13	4 / M / M	08/28 21E	08/29 04E	08/29 07E	1 mi.
LA Plaquemines	Fast OffPk	08/27 02E	38	13	4 / M / M	08/28 16E	08/28 23E	08/29 02E	21 mi.
AL Mobile	wFLI65w10	08/27 03E	39	12	4 / M / M	08/28 18E	08/29 01E	08/29 04E	63 mi.
AL Baldwin	wFLI65no10	08/27 03E	37	12	4 / M / M	08/28 16E	08/28 23E	08/29 02E	93 mi.
LA St Bernard	Fast Peak	08/27 03E	42	12	4 / M / M	08/28 21E	08/29 04E	08/29 07E	1 mi.
LA Jefferson	Slow OffPk	08/27 03E	43	13	4 / M / M	08/28 22E	08/29 05E	08/29 08E	22 mi.

Earliest Closest Alphabetical All Items In Error Cone Evac Options Refresh

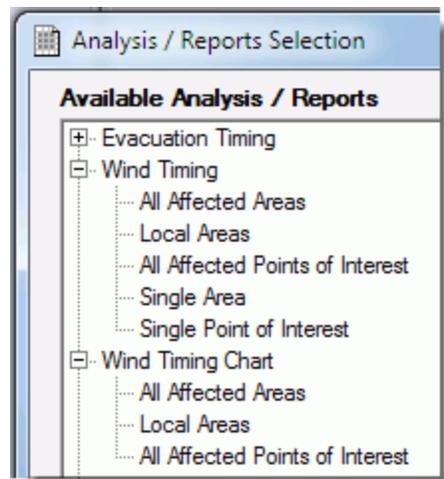
In Error Cone limits the list to those within just the Average Error Cone, and not the fringe winds area. **All Items** is the default and produces a list that includes counties in the fringe winds.

Wind Timing Reports and Charts

The Wind Timing Reports and Charts are accessed through the [Analysis/Reports Selection panel](#).

Note that all the computations done to arrive at the information here use the *advisory* forecast's [wind swath](#) as a basis. This is more specific information (subject to forecast error) which should not be utilized until the last few advisories before landfall.

To [print or save](#) the report data to a text file, click the Print button within the [Program Header](#) or choose 'Export Report to Excel' after right-clicking on the tab name.



Single Location Reports

The Wind Timing > Single location reports consists of hour-by-hour wind detail information for a selected county or user-defined [Point of Interest](#). The time frame ranges from hour 0 (the hour of the forecast) to hour 72 (the limit of the wind swath). Each row of the tabular report is colored according to the wind intensity - gray if under threshold for tropical storm force winds, blue if tropical storm force (34kt or 39mph), yellow if 50kt or 58mph, and red if hurricane force (64kt or 74mph).

Map Advisory **Wind Timing (Orleans, LA)** Wind Timing All Reports (+)

Report for Hurricane Katrina
Based on Advisory 22 Issued 8/28/2005 8 AM EDT (Old Advisory)

Wind Forecast Details - Single County/Parish (LA Orleans)

Meaning Of Report
 This list represents wind detail information for a single location. The time frame ranges from the forecast issuance(hour 0) to the limit of the forecast (hour 72).

Cautionary Note:
 This information is quite specific and is subject to large forecast errors. You should NOT use these wind forecasts until just before landfall, and then only as a general indication of the expected wind patterns.

Date/Time (hr)	Wind Speed	From Direction	34kt distance	50kt distance	64kt distance	Eye distance	Hour
08/28/05 20EDT	less than 34kt	(050)	35 miles	82 miles	107 miles	182 miles	12
08/28/05 21EDT	less than 34kt	(050)	25 miles	73 miles	97 miles	172 miles	13
08/28/05 22EDT	less than 34kt	(050)	15 miles	63 miles	87 miles	162 miles	14
08/28/05 23EDT	less than 34kt	(050)	5 miles	52 miles	77 miles	152 miles	15
08/29/05 00EDT	35kt (40mph)	(050)	0 miles	42 miles	67 miles	142 miles	16
08/29/05 01EDT	39kt (44mph)	(050)	0 miles	32 miles	57 miles	131 miles	17
08/29/05 02EDT	42kt (48mph)	(050)	0 miles	22 miles	47 miles	121 miles	18
08/29/05 03EDT	46kt (52mph)	(050)	0 miles	12 miles	37 miles	111 miles	19
08/29/05 04EDT	49kt (56mph)	(050)	0 miles	2 miles	27 miles	101 miles	20
08/29/05 05EDT	54kt (62mph)	(050)	0 miles	0 miles	17 miles	91 miles	21
08/29/05 06EDT	60kt (69mph)	(050)	0 miles	0 miles	7 miles	81 miles	22
08/29/05 07EDT	67kt (77mph)	(050)	0 miles	0 miles	0 miles	71 miles	23
08/29/05 08EDT	77kt (88mph)	(050)	0 miles	0 miles	0 miles	61 miles	24
08/29/05 09EDT	87kt (100mph)	(050)	0 miles	0 miles	0 miles	51 miles	25
08/29/05 10EDT	97kt (111mph)	(040)	0 miles	0 miles	0 miles	41 miles	26
08/29/05 11EDT	107kt (123mph)	(030)	0 miles	0 miles	0 miles	31 miles	27
08/29/05 12EDT	117kt (134mph)	(020)	0 miles	0 miles	0 miles	22 miles	28
08/29/05 13EDT	121kt (139mph)	(360)	0 miles	0 miles	0 miles	14 miles	29

Timeline (OFF) Refresh

All Affected Locations Reports

Wind Timing > All Affected locations reports consists of information for all counties or user-defined [Point of Interests](#) within the wind swath of the advisory forecast. The forecasted arrival time and ending time is given for each of the three categories of wind. Duration of winds equal to or greater than the category appear in parentheses after the ending times. Time of peak winds (storm's closest approach) is reported in the final column.

Map Advisory Wind Timing (Orleans, LA) **Wind Timing All** Reports (+)

Report for Hurricane Katrina

Based on Advisory 22 Issued 8/28/2005 8 AM EDT (Old Advisory)

Wind Timing All Affected Areas (276 items)

Meaning Of Report
 This list represents wind arrival and departure details for all locations that are currently forecast to have tropical storm or greater winds during the next 72 hours.

Cautionary Note:
 This information is quite specific and is subject to large forecast errors. You should NOT use these wind forecasts until just before landfall, and then only as a general indication of the expected wind patterns.

Location	34kt(39mph)	50kt(58mph)	64kt(74mph)	64ktEND(dur)	50ktEND(dur)	34ktEND(dur)	Peak Wind
LA Ascension	08/29 03E	08/29 07E	08/29 10E	08/29 15E [05]	08/29 18E [11]	08/29 21E [18]	79kt (91mph) 08/29 12E
LA Assumption	08/29 02E	08/29 07E	08/29 12E	08/29 13E [01]	08/29 16E [09]	08/29 20E [18]	65kt (75mph) 08/29 12E
LA Avoyelles	08/29 14E					08/29 15E [01]	35kt (40mph) 08/29 14E
LA Concordia	08/29 12E					08/29 18E [06]	38kt (44mph) 08/29 12E
LA E Baton Rouge	08/29 05E	08/29 10E			08/29 18E [08]	08/29 22E [17]	62kt (71mph) 08/29 12E
LA E Feliciana	08/29 07E	08/29 11E			08/29 14E [03]	08/29 23E [16]	55kt (63mph) 08/29 12E
LA Iberia	08/29 05E	08/29 10E			08/29 14E [04]	08/29 19E [14]	54kt (62mph) 08/29 12E
LA Iberville	08/29 04E	08/29 10E			08/29 16E [06]	08/29 20E [16]	58kt (67mph) 08/29 12E
LA Jefferson	08/28 21E	08/29 02E	08/29 04E	08/29 18E [14]	08/29 19E [17]	08/29 22E [25]	121kt (139mph) 08/29 10E
LA Lafayette	08/29 10E					08/29 16E [06]	37kt (43mph) 08/29 11E
LA Lafourche	08/28 20E	08/29 01E	08/29 03E	08/29 16E [13]	08/29 18E [17]	08/29 21E [25]	119kt (137mph) 08/29 10E
LA Livingston	08/29 03E	08/29 08E	08/29 10E	08/29 17E [07]	08/29 20E [12]	08/29 23E [20]	84kt (97mph) 08/29 12E
LA Orleans	08/29 00E	08/29 05E	08/29 07E	08/29 19E [12]	08/29 21E [16]	08/29 23E [23]	139kt (155mph) 08/29 14E
LA Plaquemines	08/28 17E	08/28 22E	08/29 01E	08/29 18E [17]	08/29 19E [21]	08/29 22E [29]	140kt (161mph) 08/29 09E
LA Pointe Coupee	08/29 08E					08/29 20E [12]	47kt (54mph) 08/29 12E
LA St Bernard	08/28 21E	08/29 02E	08/29 05E	08/29 19E [14]	08/29 21E [19]	08/29 23E [26]	140kt (161mph) 08/29 12E
LA St Charles	08/28 23E	08/29 04E	08/29 07E	08/29 17E [10]	08/29 19E [15]	08/29 22E [23]	112kt (129mph) 08/29 12E
LA St Helena	08/29 05E	08/29 10E			08/29 21E [11]	08/30 00E [19]	63kt (72mph) 08/29 12E

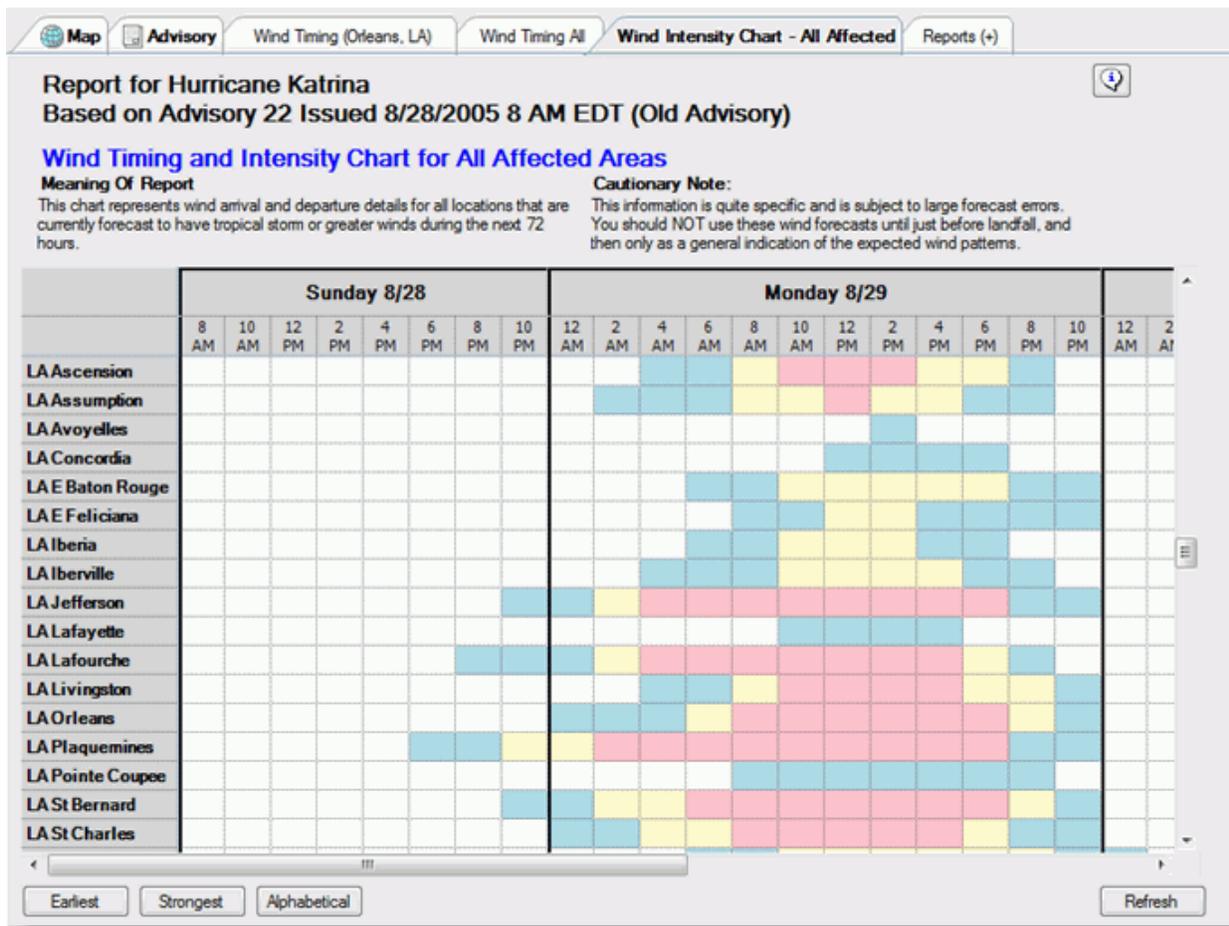
Earliest Strongest Alphabetical Refresh

The report's data is shown here sorted alphabetically by state and county. To sort by a different item, click on its heading once for ascending order, twice for descending order. Each row of the tabular report is colored according to the maximum wind intensity forecast for that county - blue if tropical storm force (34kt or 39mph), yellow if 50kt or 58mph, and red if hurricane force (64kt or 74mph).

You can also run this Wind Timing analysis for [Local Areas](#) for a more selective county-based report.

Wind Timing Charts

Wind Timing Chart > All Affected locations provides wind timing and intensity information identical to what is reported in the detailed Single location reports. The advantage of this chart-based layout is that you can more easily visualize possible wind conditions over time for multiple locations.



Rainfall Forecast

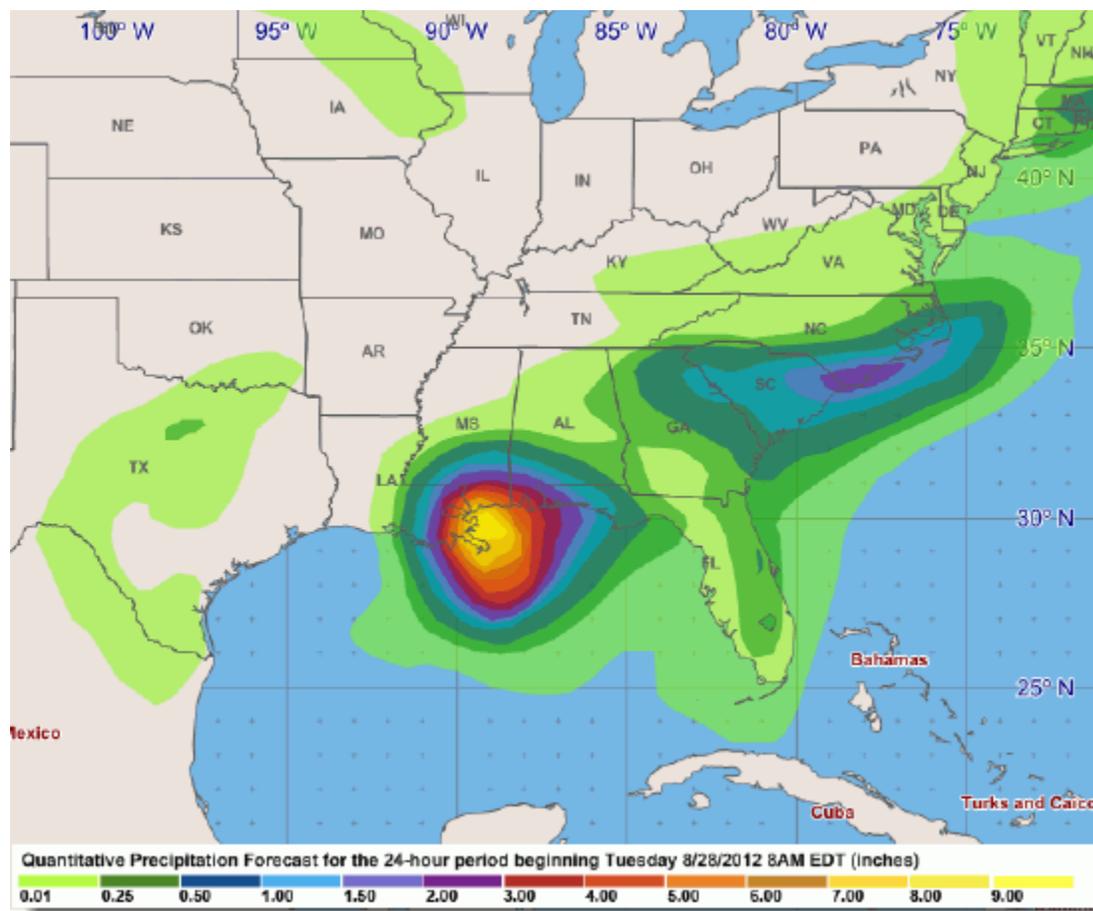
The 3-day Quantitative Precipitation Forecast is one of several [Other Weather Data](#) products that can be helpful to consider when weighing the flooding threat from an approaching storm. This information can be displayed on the map and in a report of affected locations.

The source of this data is the *WPC*, or *NOAA* Weather Prediction Center, which compiles generalized precipitation forecasts for the continental US. These forecasts are for three successive days and are issued twice a day, around 8am and 8pm Eastern (12Z and 0Z).

Each 24-hour cumulative rainfall forecast takes the form of isopleths (polygons) of rainfall amount, with the higher amounts of rain nested within the lower amounts. The amounts are in hundredths of an inch, with 0.25 = 1/4 inch, 1.50 = 1-1/2 inch, etc.

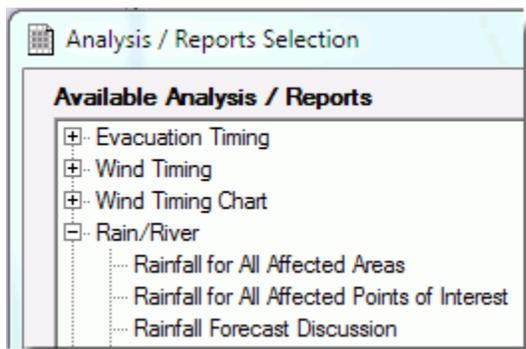
Map View

Days 1, 2, and 3 can be cycled through using the radio buttons under the Rain Forecast heading of the Current data tab.



Report View

Rainfall reports are accessed through the [Analysis/Reports Selection panel](#). These reports tally forecasted rainfall amounts for all affected counties or user-defined [Points of Interests](#). There is also a Rainfall Forecast Discussion which consists of a text description of the forecast and affected regions.



Map Advisory Rainfall (+)

Rainfall Forecast in inches issued 8 AM 08/28/2012 for 24 hour periods ending at times shown

Rainfall Report (1,386 Items)

Meaning Of Report
This rainfall forecast for days 1 to 3 is from the NWS Weather Prediction Center and provides 24 hour forecast totals for each of the days.

Cautionary Note:
As with any forecast, accuracy decreases with time. Day 1 forecast is most accurate and Days 2 and 3 forecast should be considered only a general indication of amounts.

Location	Day 1 - 8 AM 08/29/12	Day 2 - 8 AM 08/30/12	Day 3 - 8 AM 08/31/12	Total Days 1-3
AL Autauga	0.25 to 0.50 Inches	0.50 to 1.00 Inches	0.50 to 1.00 Inches	1.25 Inches or more
AL Baldwin	5.00 to 6.00 Inches	3.00 to 4.00 Inches	1.00 to 1.50 Inches	9.00 Inches or more
AL Barbour	0.25 to 0.50 Inches	0.50 to 1.00 Inches	0.25 to 0.50 Inches	1.00 Inches or more
AL Bibb	0.01 to 0.25 Inches	0.50 to 1.00 Inches	0.50 to 1.00 Inches	1.01 Inches or more
AL Blount	0.01 to 0.25 Inches	0.01 to 0.25 Inches	0.25 to 0.50 Inches	0.27 Inches or more
AL Bullock	0.25 to 0.50 Inches	0.50 to 1.00 Inches	0.25 to 0.50 Inches	1.00 Inches or more
AL Butler	0.25 to 0.50 Inches	0.50 to 1.00 Inches	0.25 to 0.50 Inches	1.00 Inches or more
AL Calhoun	0.25 to 0.50 Inches	0.01 to 0.25 Inches	0.25 to 0.50 Inches	0.51 Inches or more
AL Chambers	0.25 to 0.50 Inches	0.25 to 0.50 Inches	0.25 to 0.50 Inches	0.75 Inches or more
AL Cherokee	0.25 to 0.50 Inches	0.01 to 0.25 Inches	0.25 to 0.50 Inches	0.51 Inches or more
AL Chilton	0.01 to 0.25 Inches	0.50 to 1.00 Inches	0.50 to 1.00 Inches	1.01 Inches or more
AL Choctaw	0.50 to 1.00 Inches	1.50 to 2.00 Inches	0.50 to 1.00 Inches	2.50 Inches or more
AL Clarke	2.00 to 3.00 Inches	3.00 to 4.00 Inches	0.50 to 1.00 Inches	5.50 Inches or more
AL Clay	0.01 to 0.25 Inches	0.25 to 0.50 Inches	0.25 to 0.50 Inches	0.51 Inches or more
AL Ceburne	0.25 to 0.50 Inches	0.25 to 0.50 Inches	0.25 to 0.50 Inches	0.75 Inches or more
AL Coffee	0.50 to 1.00 Inches	0.50 to 1.00 Inches	0.50 to 1.00 Inches	1.50 Inches or more
AL Colbert	0.00 Inches	0.01 to 0.25 Inches	0.25 to 0.50 Inches	0.26 Inches or more
AL Conecuh	1.50 to 2.00 Inches	1.00 to 1.50 Inches	0.50 to 1.00 Inches	3.00 Inches or more

Most Rain Alphabetical All Items Locals Only Refresh

The report's data can be sorted by any of the column headings. Click on a heading once for ascending order, twice for descending order...or you can sort by the Most Rain and Alphabetical

buttons at the bottom of the report. Each row of the tabular report is colored according to the 3-day total rainfall forecast.

In county-based reports, the data can be filtered by '[Locals Only](#).' or restored to All Items. The Refresh button should be used if you wish to update the report after a new HPC rainfall forecast is downloaded.

To [print or save](#) the report data to a text file, click the Print button within the [Program Header](#) or choose 'Export Report to Excel' after right-clicking on the tab name.

IMPORTANT NOTES

These forecasts from WPC are currently issued every 12 hours and the NHC issues advisories on hurricanes at least every 6 hours. Therefore by the time the latest advisory from NHC is issued...the WPC rain forecast can easily be several hours old and therefore may not reflect the latest forecast storm track from NHC.

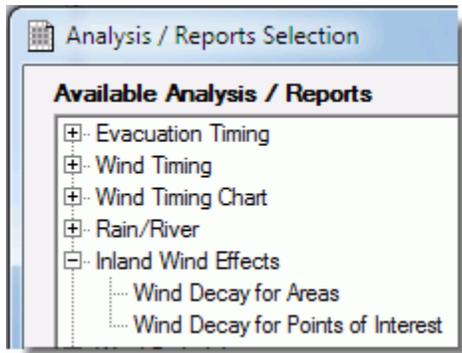
Also, these rainfall forecasts are smoothed and averaged amounts, while actual rain amounts, especially in the warm months, are not usually distributed as evenly, and tend to fluctuate widely over an area.

Therefore, as in hurricane forecasting, think of the forecast rain amounts as "educated guesses" that help you to zero in on the most vulnerable areas. Also as in hurricane forecasting, the rain amount error increases dramatically as the forecast goes to Day 2 and especially Day 3.

Always check with your local Weather Service office for the latest updates on the rainfall situation and the latest river stages. These forecasts are constantly being revised and the WPC forecast shown in HURREVAC can be several hours old.

Wind Decay Report

The Wind Decay Report, formerly referred to as the MEOW or Maximum Envelope of Winds, describes the maximum distance certain categories of wind can penetrate inland, given the storm strength and forward speed. These wind decay models are particularly important for determining winds over areas far inland from the coastline, and for planning purposes. In the last few hours before landfall, the specific [NHC Wind Swath](#) and [Wind Timing Report](#) should be used instead of the wind decay models.



Map Advisory **Wind Decay** (+)

Report for Hurricane Katrina
Based on Advisory 22 Issued 8/28/2005 8 AM EDT (Old Advisory)

Wind Decay Affected Areas GULF Wind 144mph Motion 20mph (19 Items)

Meaning Of Report: This is a list of counties/parishes affected by Inland Winds from the NHC Wind Decay Model. Gives the maximum wind expected at inland locations assuming a direct hit, using chosen categories of wind speed and forward motion.

Cautionary Note: You should consider these realistic ONLY if the storm is near landfall, AND your location is under the Error swath.

Location	Category of Wind Implied by MEOW
LA Plaquemines	>=110 knots (127mph)
LA St Bernard	>=110 knots (127mph)
LA Orleans	>=110 knots (127mph)
LA Jefferson	>=110 knots (127mph)
LA Lafourche	>=110 knots (127mph)
LA Terrebonne	>=110 knots (127mph)
LA St Charles	>=110 knots (127mph)
LA St John Baptist	>=110 knots (127mph)
LA St Tammany	>=110 knots (127mph)
LA Tangipahoa	>=110 knots (127mph)
LA Livingston	>=110 knots (127mph)
LA Iberville	>=095 knots (109mph) and <110 knots (127mph)
LA St James	>=095 knots (109mph) and <110 knots (127mph)
LA Assumption	>=095 knots (109mph) and <110 knots (127mph)
LA Washington	>=095 knots (109mph) and <110 knots (127mph)
LA Ascension	>=095 knots (109mph) and <110 knots (127mph)
LA E Baton Rouge	>=095 knots (109mph) and <110 knots (127mph)
LA E Feliciana	>=080 knots (92mph) and <95 knots (109mph)

Strongest Alphabetical In Error Cone All Items Locals Only Refresh

If no decay model is currently selected, a selection panel will appear, asking you to choose one. The default model selected is one determined from the Max Wind forecast by the NHC for that advisory at any time out to 72 hours....and the forecast forward speed of the storm over the next 36 hours. You can choose any model you wish or leave the selection as is.

HURREVAC initially generates a report for **In Error Cone** rather than an entire region (Northeast, Southeast, or Gulf Coast). This filter can be removed by pressing **All Items**, however the list for the entire region will be very long and likely includes many counties that are well away from the forecast track. To limit the report length you could also choose **Locals Only**.

The report's data is initially sorted alphabetically by location. To sort by the category of wind, click on its heading once for ascending order, twice for descending order. There is no timing involved with this report, just the strength of winds that could occur in an area, given a perfect strike on the area at a selected storm strength and selected *forward speed*. Each row of the tabular report is colored according to the wind intensity - blue if tropical storm force (34kt or 39mph), yellow if 50kt or 58mph, and red if hurricane force (64kt or 74mph).

To [print or save](#) the report data to a text file, click the Print button within the [Program Header](#) or choose 'Export Report to Excel' after right-clicking on the tab name.

Background Information

The NHC Wind Decay Model (DeMaria and Kaplan 1996) predicts how far inland certain categories of wind will penetrate, assuming a) a *direct hit* b) specified maximum sustained winds of the storm and c) specified *forward speed* of the storm.

There are 3 regions which were computed in the decay model, necessitated by the different behavior of storms in these 3 areas.

- Gulf Of Mexico land-falling storms (includes the west coast of Florida)
- Southeast Coast land-falling storms (from Key West to the NC/VA border)
- Mid Atlantic and New England storms (north of NC/VA border) - this separate area necessitated by the faster forward speeds typical there.

Wind Probabilities

Tropical cyclone wind speed probabilities are important because they communicate forecast uncertainties not immediately apparent from the deterministic wind projections presented in HURREVAC's [wind timing](#) and [evacuation decision timing](#) analyses. They answer questions such as '*What is possibility that tropical storm force winds will begin earlier than estimated and how many hours earlier should I begin preparations because of that uncertainty?*' and '*How likely is it that my community will experience hurricane-force winds from this storm?*'

Data Sources

Probabilities for 34kt, 50kt, and 64kt tropical cyclone wind speeds are derived from the Monte Carlo method of randomly sampling alternative tracks and intensities from a large set of plausible forecasts that fall within the average error swath of the official forecast track. A climatology and persistence model (CLIPER) is used to forecast wind extents (size of the three wind radii) for each alternate track. The Tropical Prediction Center (TPC), together with NHC, is responsible for computing wind probabilities for storms that occur in the Atlantic basin, the Eastern Pacific basin, the Central Pacific basin, and the Western Pacific basin.

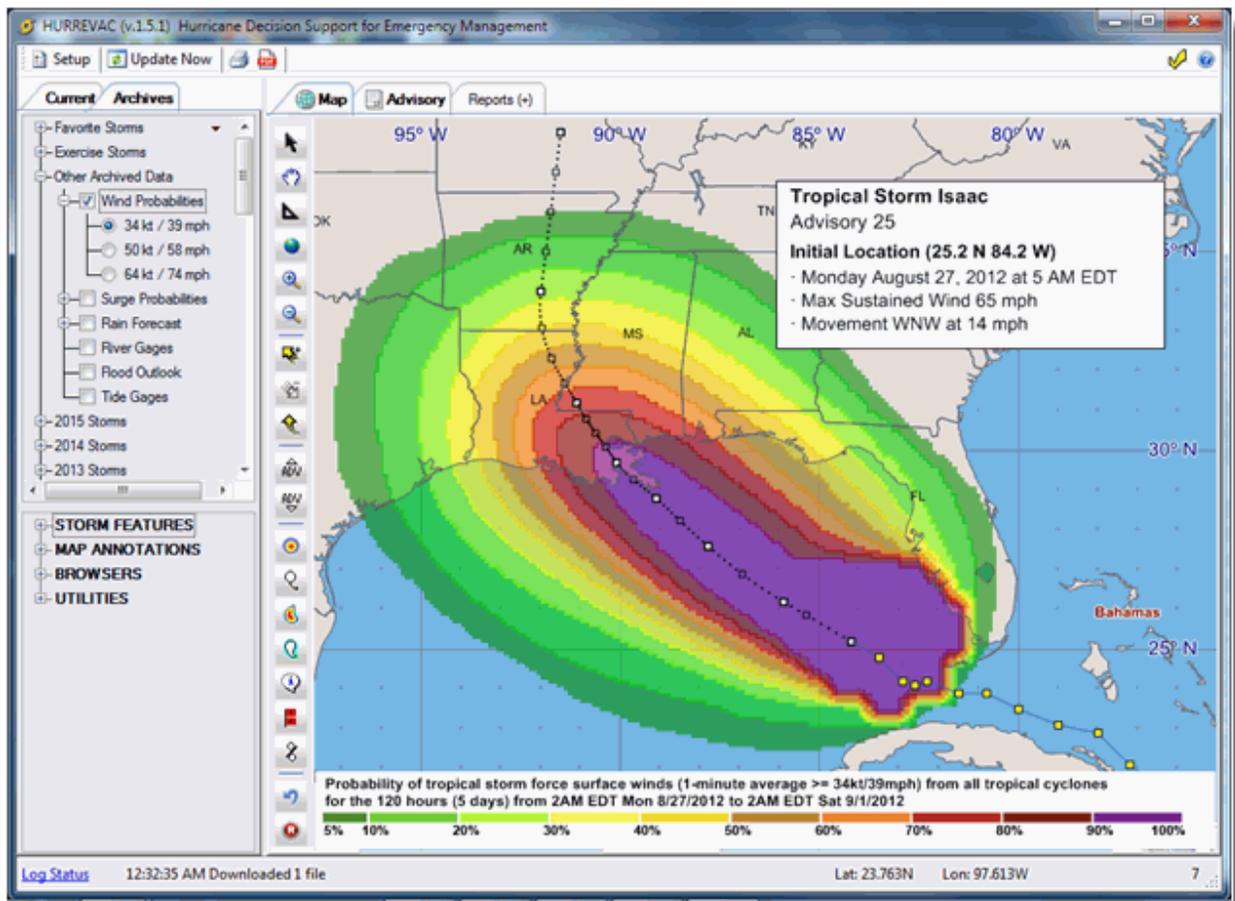
HURREVAC contains several resources for evaluating the wind probabilities generated by an approaching storm:

- [Wind Prob Locations](#) (values for selected city point locations) sourced from the Wind Speed Probabilities text product include by NHC and CPHC in single storm advisory packages; and
- **Gridded Wind Probabilities** from all tropical cyclones (values at a resolution of every half-degree of latitude and longitude across the entire Northern Hemisphere) sourced from the National Digital Forecast Database (NDFD).

Gridded wind probability product release follows the same 6-hour cycle as tropical cyclone advisories, however the NDFD version is typically not available until shortly after the 5am, 11am, 5pm, and 11pm Eastern time advisory issuance hours due to its composite nature. This is a large and versatile data set which HURREVAC utilizes in map view and in various reports of affected counties/parishes.

Map View

A Wind Probabilities data layer is available on the Current map display and under 'Other Archived Data' of the Archives tab. Values shown on the map are the 5-day (cumulative) probabilities of winds occurring that meet either tropical storm, 50kt (strong tropical storm), or hurricane threshold. Within the map presentation, values of 5% and greater are shown according to the color scheme indicated in the legend.



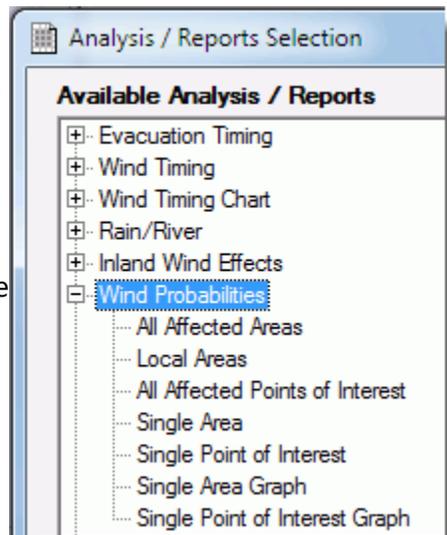
Report View

Reports and graphs offer the ability to further investigate the likelihood of winds meeting these three thresholds through successive time intervals from 6 to 120 hours. Probabilities for 34kt and 50 kt winds are reported for given locations when the 5-day cumulative probability is at least 3%. Probabilities for 64kt are reported when the 5-day cumulative probability is at least 1%. X indicates probabilities are less than 1%.

Single Location

This report represents the chances of sustained (1-minute average) wind speeds of at least 34kt, 50kt, and 64kt within a single county. Probabilities are given as IP(CP) where

- **Individual Probability** is the probability of the event beginning during an individual time period (*i.e. between forecast hours 48 and 54*)



- **Cumulative Probability** is the probability of the event occurring any time up to a forecast hour (i.e. between forecast hours 0 and 54)

The time frame ranges from hour 0, the hour of the model run, to hour 120 (5 days). Columns of the tabular report are colored according to the wind intensity - blue if tropical storm force (34kt or 39mph), yellow if 50kt or 58mph, and red if hurricane force (64kt or 74mph). Individual 34kt and 50kt time periods that meet a 3% minimum are emphasized in cells with brighter background colors. Individual 64kt time periods that meet a 1% minimum are also emphasized with brighter background. The effect of this coloring is to draw the user's attention to the blocks of time where chances are highest.

Tropical Cyclone Wind Speed Probabilities for the 120 hours (5 days) from 2 AM Mon 8/27/2012 to 2 AM Sat 9/1/2012

Percent Probabilities for Orleans, Louisiana

Meaning Of Report: Chances of sustained (1-minute average) wind speeds of at least 34kt, 50kt, and 64kt for a single location. Report includes both individual and cumulative probabilities for time periods from 0 to 120 hours.

Cautionary Note: Probabilities values reported outside of parentheses are for individual time periods. Onset of winds is most likely to begin within the time period or periods of highest value. X indicates probabilities are less than 1 percent.

Date/Time (hr)	34k Winds	50k Winds	64k Winds	Individual Time Period	(Cumulative Time Period)
8/27/2012 08EDT	X (X)	X (X)	X (X)	From 2 AM Mon to 8 AM Mon	From 2 AM Mon to 8 AM Mon (6 hrs)
8/27/2012 14EDT	X (X)	X (X)	X (X)	From 8 AM Mon to 2 PM Mon	From 2 AM Mon to 2 PM Mon (12 hrs)
8/27/2012 20EDT	9 (9)	X (X)	X (X)	From 2 PM Mon to 8 PM Mon	From 2 AM Mon to 8 PM Mon (18 hrs)
8/28/2012 02EDT	20 (29)	X (X)	X (X)	From 8 PM Mon to 2 AM Tue	From 2 AM Mon to 2 AM Tue (24 hrs)
8/28/2012 08EDT	19 (48)	5 (5)	X (X)	From 2 AM Tue to 8 AM Tue	From 2 AM Mon to 8 AM Tue (30 hrs)
8/28/2012 14EDT	23 (71)	20 (25)	3 (3)	From 8 AM Tue to 2 PM Tue	From 2 AM Mon to 2 PM Tue (36 hrs)
8/28/2012 20EDT	12 (83)	22 (47)	12 (15)	From 2 PM Tue to 8 PM Tue	From 2 AM Mon to 8 PM Tue (42 hrs)
8/29/2012 02EDT	5 (88)	9 (56)	9 (24)	From 8 PM Tue to 2 AM Wed	From 2 AM Mon to 2 AM Wed (48 hrs)
8/29/2012 08EDT	3 (91)	3 (59)	2 (26)	From 2 AM Wed to 8 AM Wed	From 2 AM Mon to 8 AM Wed (54 hrs)
8/29/2012 14EDT	X (91)	1 (60)	1 (27)	From 8 AM Wed to 2 PM Wed	From 2 AM Mon to 2 PM Wed (60 hrs)
8/29/2012 20EDT	1 (92)	1 (61)	X (27)	From 2 PM Wed to 8 PM Wed	From 2 AM Mon to 8 PM Wed (66 hrs)
8/30/2012 02EDT	X (92)	X (61)	1 (28)	From 8 PM Wed to 2 AM Thu	From 2 AM Mon to 2 AM Thu (72 hrs)
8/30/2012 08EDT	X (92)	X (61)	X (28)	From 2 AM Thu to 8 AM Thu	From 2 AM Mon to 8 AM Thu (78 hrs)
8/30/2012 14EDT	X (92)	X (61)	X (28)	From 8 AM Thu to 2 PM Thu	From 2 AM Mon to 2 PM Thu (84 hrs)
8/30/2012 20EDT	X (92)	X (61)	X (28)	From 2 PM Thu to 8 PM Thu	From 2 AM Mon to 8 PM Thu (90 hrs)
8/31/2012 02EDT	X (92)	X (61)	X (28)	From 8 PM Thu to 2 AM Fri	From 2 AM Mon to 2 AM Fri (96 hrs)
8/31/2012 08EDT	X (92)	X (61)	X (28)	From 2 AM Fri to 8 AM Fri	From 2 AM Mon to 8 AM Fri (102 hrs)
8/31/2012 14EDT	X (92)	X (61)	X (28)	From 8 AM Fri to 2 PM Fri	From 2 AM Mon to 2 PM Fri (108 hrs)

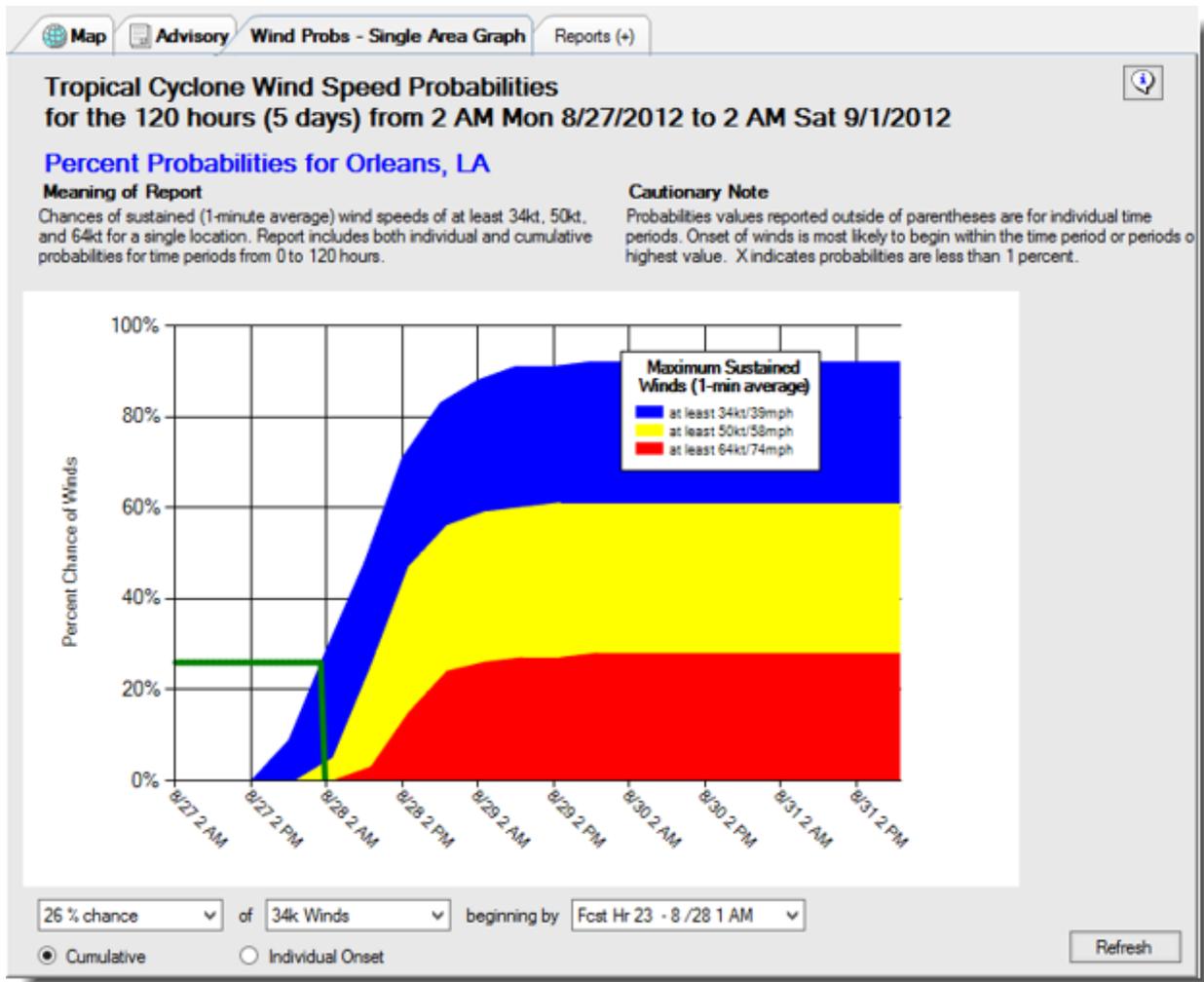
Refresh

To [print or save](#) the report data to a text file, click the Print button within the [Program Header](#) or choose 'Export Report to Excel' after right-clicking on the tab name.

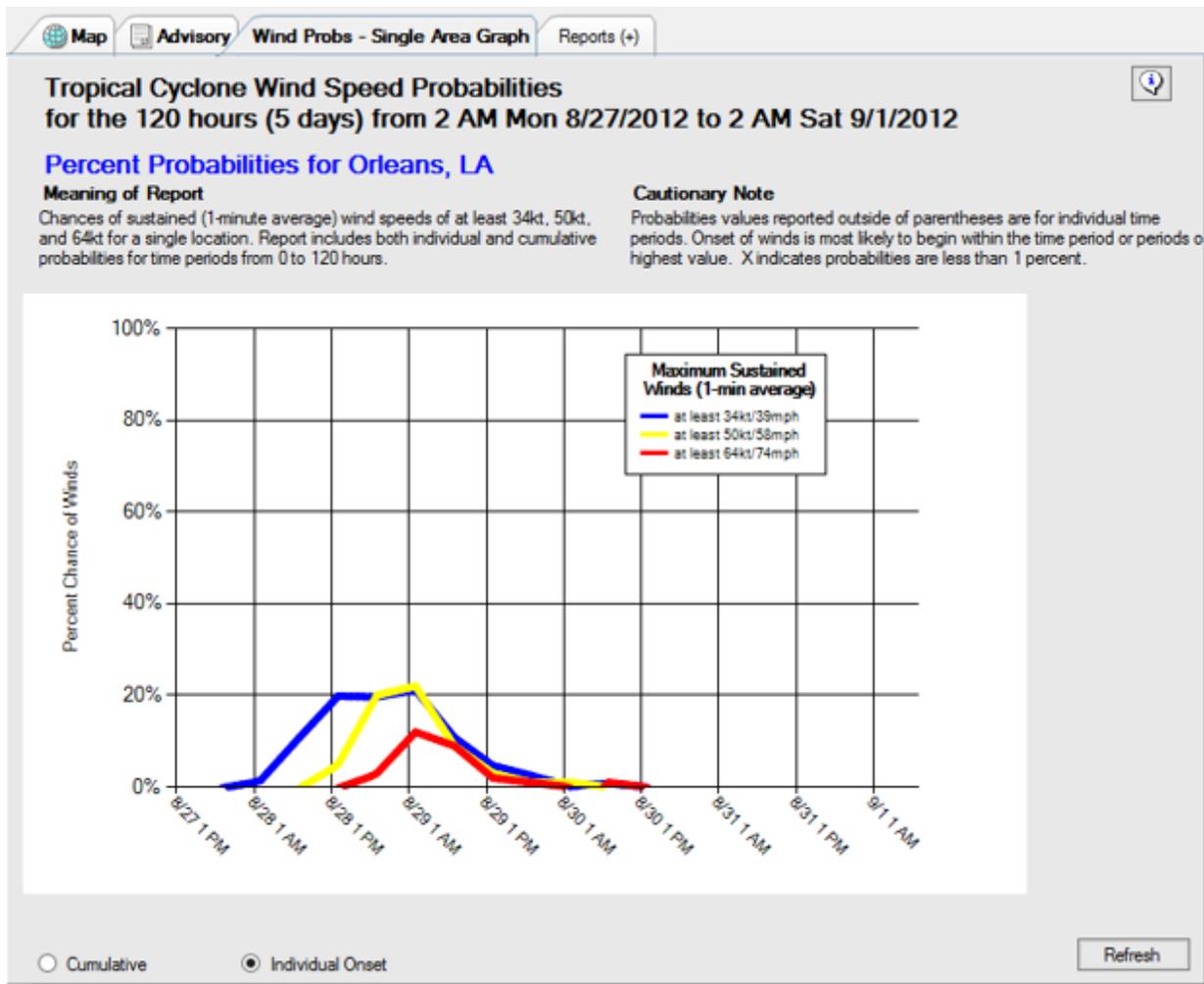
Single Location Graph

An additional option is available within the 'Analysis/Reports' selection to display wind probabilities for a single location in graph form. Radio buttons across the bottom are used to switch the display type between cumulative and individual onset probabilities.

The cumulative probability graph represents the likelihood that winds will begin by certain hours. Below the graph is a tool for selecting a specific % chance (vertical y-axis) or time (horizontal x-axis) and looking up the corresponding value on the other axis. Green lines on the graph connect the two axes at the specified wind threshold.



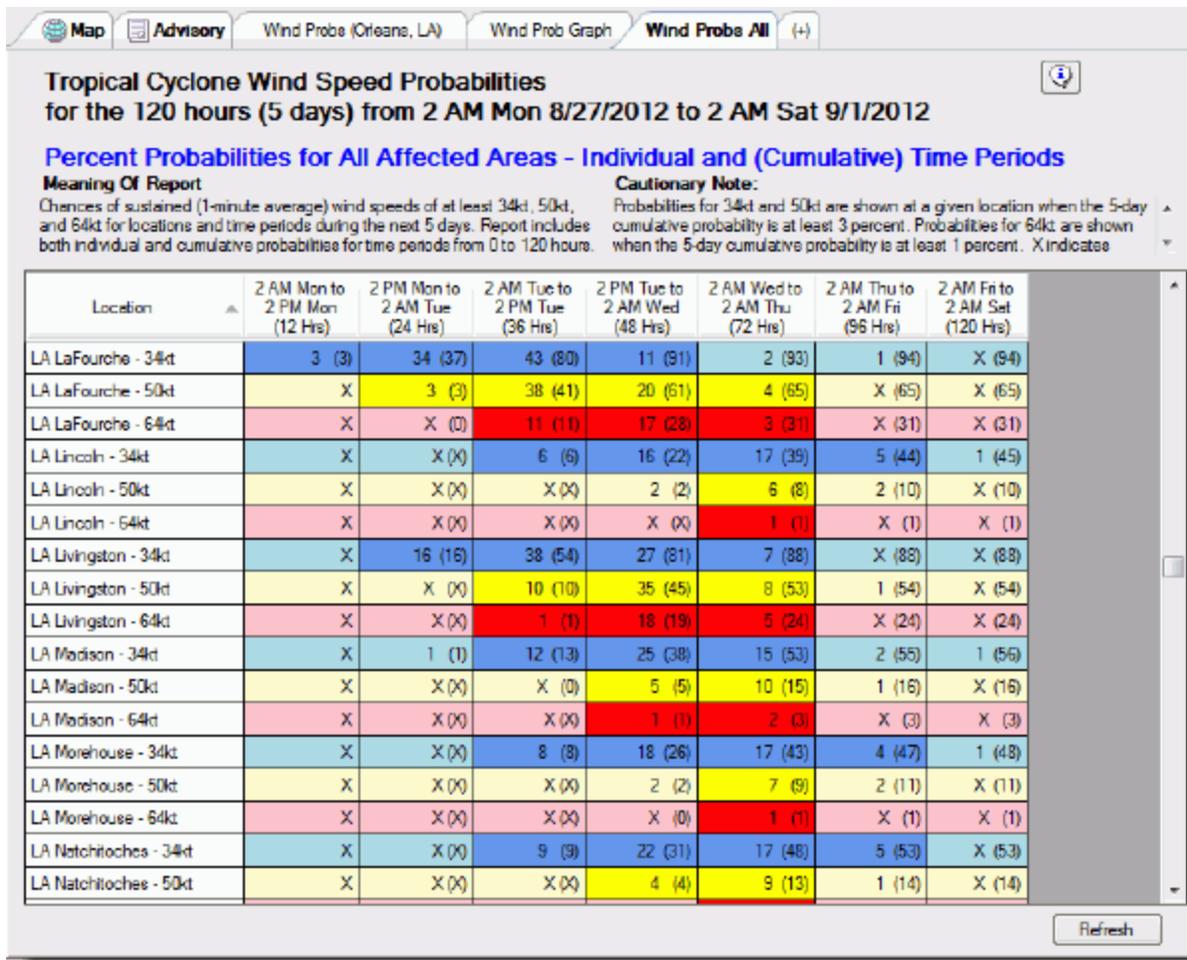
On the individual probability graph, step rises and peaks in the plot highlight the discrete periods of time when the onset of winds is most likely.



To [print or save](#) the graph as an image file, click the Print button within the [Program Header](#).

All Locations or Local Areas

This report consists of information for all counties meeting the 3% minimum for 34kt and 50kt/1% minimum for 64kt. It is similar in format to the NHC wind probabilities text product, however HURREVAC's version reports the highest probability with a county rather than at a point location. Time intervals match those in the NHC text product: 12, 24, 36, 48, 72, 96, and 120 hours. Individual 34kt and 50kt time periods that meet a 3% minimum are emphasized in cells with brighter background colors. Individual 64kt time periods that meet a 1% minimum are also emphasized with brighter background. The effect of this coloring is to draw the user's attention to the blocks of time where chances are highest.



This report can be run for either all areas (meeting the 3% minimum for 34kt winds) or for local areas only. The All Areas analysis involves intensive computation and may take a few minutes to be produced. For optimum speed, it's recommended that [Local Areas](#) be defined and this more limited wind probabilities report run.

To [print or save](#) the report data to a text file, click the Print button within the [Program Header](#) or choose 'Export Report to Excel' after right-clicking on the tab name.

Surge Probabilities

Probabilistic storm surge (P-Surge) is an important new forecast product for assessing potential storm surge flooding threats from an approaching storm. It is one of several flood-related data types included in HURREVAC and described under the topic [Other Forecast Data](#).

The source of this data is NHC's P-Surge 2.5--an operational product beginning with the 2016 hurricane season. P-Surge 2.5 is probabilistic surge (with tide) from a *SLOSH* ensemble model of possible forecast tracks and intensities. The information is reported in HURREVAC as **water depths above ground level with a 1 in 10 chance of being exceeded**.

The range of geographic coverage for this layer is the coastal area from Texas to Maine that could experience flooding, or inundation, from an advancing tropical cyclone pushing ocean water high enough to overtop lower elevation land. The timeframe for the data is 78 hours, although the SLOSH model runs are not typically begun until a storm is within 48 hours of landfall and watches/warnings are issued.

P-Surge product release follows the same 6-hour cycle as tropical cyclone advisories. However due to the time needed for processing, the P-Surge information may possibly be delayed by as much as 45 minutes following advisory issuance hours of 5am, 11am, 5pm, and 11pm Eastern daylight time.

Visit the National Hurricane Center website at www.nws.noaa.gov for further information on P-Surge and the *SLOSH* model.

Map View

In live storm situations, the Surge Probabilities data layer is accessed on the Current map display. HURREVAC's installation also includes a few sample datasets that can be accessed under 'Other Archived Data' of the Archives tab.

Once loaded, the map view initially shows 78-hour (cumulative) P-Surge values, meaning that they represent the greatest amount of inundation possible (with a 1 in 10 chance) over the entire timeframe simulated by the SLOSH model. Storm surge tools are provided in the program header so that you can investigate the expected build-up and dissipation of surge over time, as well as note the tidal fluctuations. Data from the model is in 6 hour increments.

HURREVAC (v.1.6.1) Hurricane Decision Support for Emergency Management

Setup Update Now Surge Timing: [Back] [Forward] [Animate] [Reset]

Current Archives

- Favorite Storms
- Exercise Storms
- Other Archived Data
 - Wind Probabilities
 - Surge Probabilities
 - NHC 4-Color Scale
 - P-Surge 20-Color Scale
 - Rain Forecast
 - River Gauges
 - Flood Outlook
 - Tide Gauges
- 2016 Storms
 - Atlantic (2)
 - East Pacific
 - Central Pacific (1)
 - West Pacific & N. Indian (1)

STORM FEATURES

MAP ANNOTATIONS

- Map Legend
 - Storm Information
 - Storm Features
 - Watches-Warnings
 - Wind Speeds
 - Wind Probabilities
 - Surge Probabilities
 - Rain Forecast
 - Flood Outlook
 - River Gauges
 - NHC Disclaimer
 - Custom Annotation

Hurricane Sandy - Sunday, October 28, 2012 11 PM EDT Advisory #27

Center Location: 34.5 N 70.5 W Maximum Sustained Winds: 75 mph (Cat 1) Movement: 14 mph NNE

forecast positions Surface Wind Field: at current location

Potential storm surge flooding (with tide) in feet above ground level for the 78 hours from 8PM EDT Sun 10/28/2012 to 2AM EDT Thu 11/1/2012

	1 to 3 feet		Greater than 3 feet		Greater than 6 feet		Greater than 9 feet
--	-------------	--	---------------------	--	---------------------	--	---------------------

Log Status 02:02:45 AM Downloaded 1 file(s) Lat: 39.360N Lon: 74.209W 10

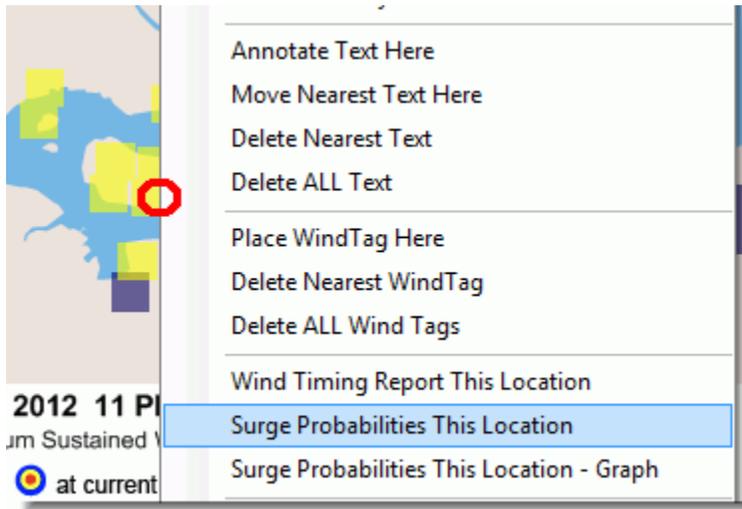
Surge Timing buttons are for viewing the 6-hour incremental surge over time with back/forward/animate. The fourth button in the row is used to reset the display back to 78-hr cumulative surge.

Use these radio buttons to switch back and forth between the two color scales.

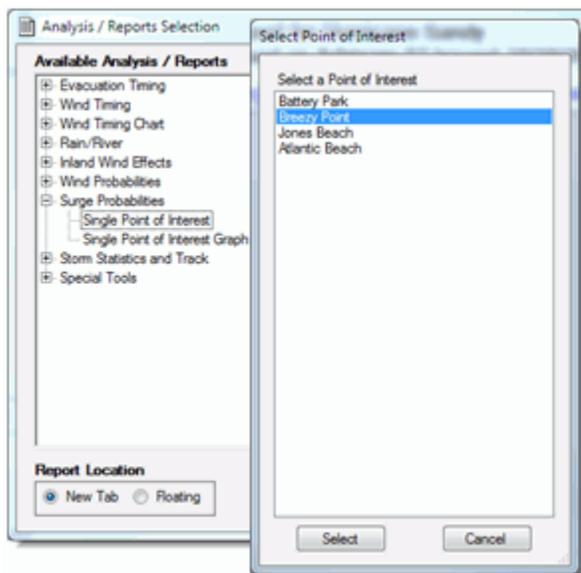
Report View

Surge analysis is based on specific point locations rather than the county-wide 'Area' perspective that is the basis for many of HURREVAC's other report types. There are several means for specifying a point location of interest for storm surge reporting.

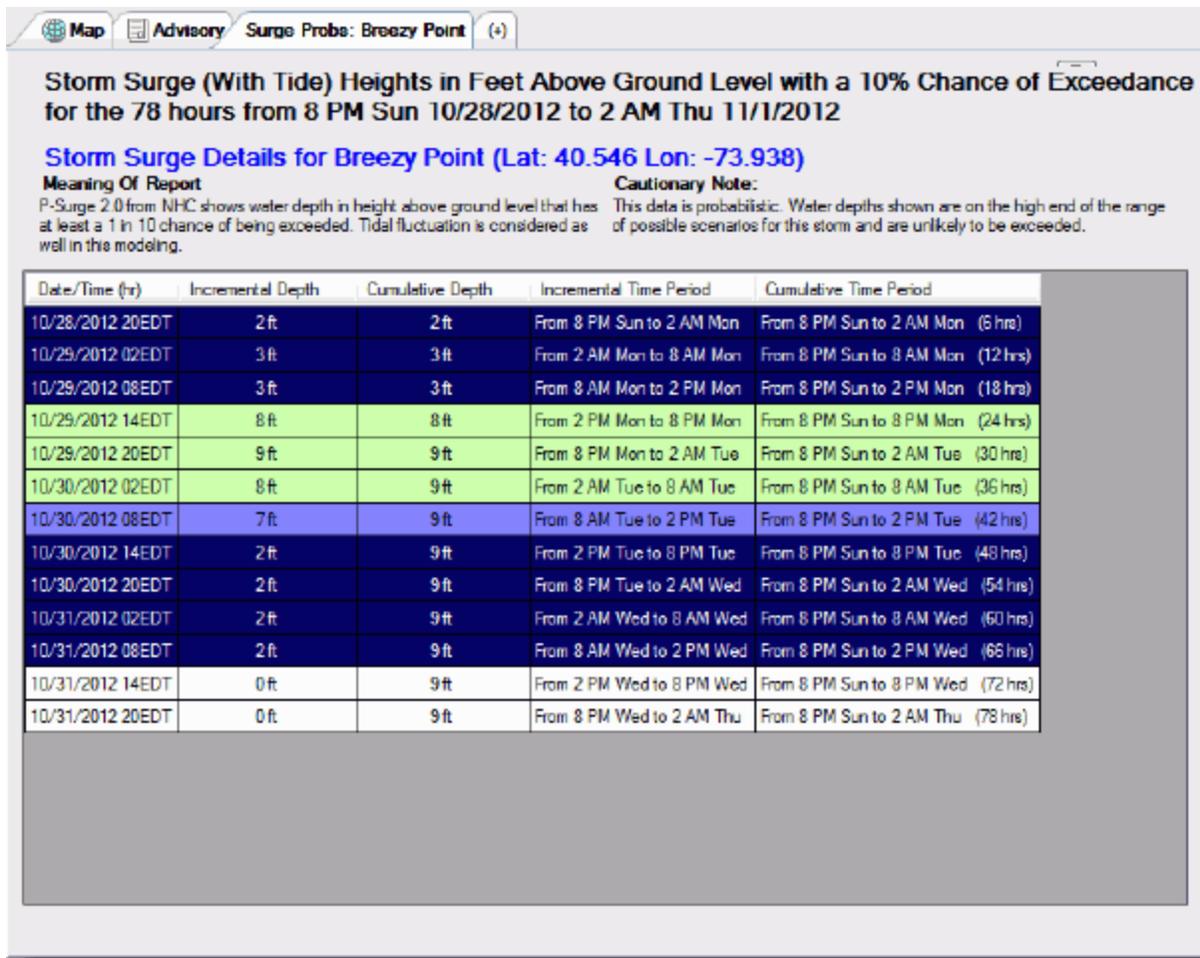
Option 1 - Right-click on the map and select 'Surge Probabilities This Location' to generate a report with specific latitude/longitude coordinates.



Option 2 - Designate [Points of Interest](#) and select one of those when generating a Surge Probabilities > Single Point of Interest report from the +tab



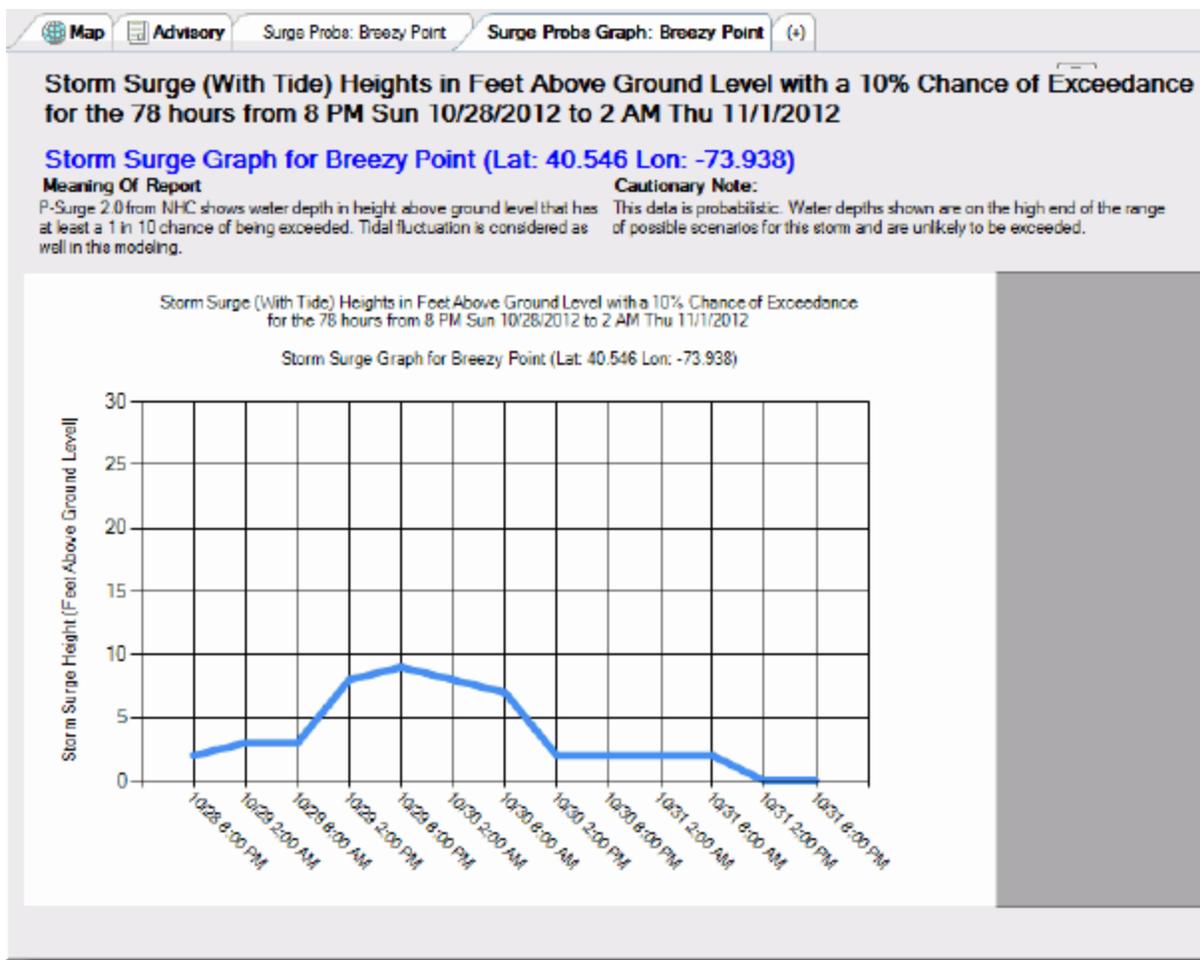
A Single Point of Interest report looks as follows.



To [print or save](#) the report data to a text file, click the Print button within the [Program Header](#) or choose 'Export Report to Excel' after right-clicking on the tab name.

Single Location Graph

Another option is to create a graph of surge probabilities for a single point of interest or latitude/longitude location. Here only the incremental probability values are plotted. Steep rises and peaks in the plot highlight the period of time when the surge is expected to be highest.



To [print or save](#) the graph as an image file, click the Print button within the [Program Header](#).

IMPORTANT CONSIDERATIONS - The P-Surge data shown in HURREVAC does not have as much detail as NHC's new storm surge inundation graphics. Those products have been created using a much finer resolution digital elevation model that requires intensive GIS processing, but produces street-level detail of the areas of potential inundation.

Instead, HURREVAC's display is of the original GRIB2 continental US grid with cell sizes of 625 x 625 meters square. A mean elevation is used for each cell to determine possible inundation and for cells that straddle water and land, water depths above actual ground level are likely to be over estimations.

Storm Statistics Report

The Storm Statistics Report consists of past wind speed, pressure, and *forward speed* during the life of the storm to date, and then forecast of wind speed and *forward speed* out to 120 hours. Each row of the tabular report is colored according to the intensity of the storm at the time of that forecast hour or old advisory - blue if tropical storm force (34kt or 39mph), yellow if 50kt or 58mph, and red if hurricane force (64kt or 74mph).

Report for Hurricane Katrina
Based on Advisory 22 Issued 8/28/2005 8 AM EDT (Old Advisory)

Storm Statistics Report

Meaning Of Report
 This list shows past wind speed, pressure and forward motion during the life of the storm to date, and the forecast of wind speed and forward motion out to 120 hours.

Cautionary Note:
 Pressure is not available at the forecast times.

Date/Time	Data From	Lat	Lon	Implied Speed	Maximum Wind	Pressure
08/23/05 17EDT	Advisory # 1	23.2 N	75.5 W	06.0 kt (06.9 mph)	30 kt (35 mph)	1007 mb.
08/23/05 20EDT	Advisory # 1a	23.3 N	75.8 W	06.0 kt (06.9 mph)	30 kt (35 mph)	1007 mb.
08/23/05 23EDT	Advisory # 2	23.4 N	76.0 W	04.0 kt (04.6 mph)	30 kt (35 mph)	1007 mb.
08/24/05 02EDT	Advisory # 2a	23.6 N	76.0 W	04.0 kt (04.6 mph)	30 kt (35 mph)	1007 mb.
08/24/05 05EDT	Advisory # 3	24.0 N	76.4 W	11.0 kt (12.7 mph)	30 kt (35 mph)	1006 mb.
08/24/05 08EDT	Advisory # 3a	24.4 N	76.6 W	09.0 kt (10.4 mph)	30 kt (35 mph)	1006 mb.
08/24/05 11EDT	Advisory # 4	24.7 N	76.7 W	06.0 kt (06.9 mph)	35 kt (40 mph)	1006 mb.
08/24/05 14EDT	Advisory # 4a	25.2 N	77.0 W	11.0 kt (12.7 mph)	39 kt (45 mph)	1003 mb.
08/24/05 17EDT	Advisory # 5	25.6 N	77.2 W	09.0 kt (10.4 mph)	40 kt (46 mph)	1002 mb.
08/24/05 20EDT	Advisory # 5a	26.0 N	77.6 W	11.0 kt (12.7 mph)	39 kt (45 mph)	1001 mb.
08/24/05 23EDT	Advisory # 6	26.0 N	78.0 W	07.0 kt (08.1 mph)	45 kt (52 mph)	1001 mb.
08/25/05 02EDT	Advisory # 6a	26.1 N	78.4 W	08.0 kt (09.2 mph)	43 kt (49 mph)	1000 mb.
08/25/05 05EDT	Advisory # 7	26.2 N	78.7 W	06.0 kt (06.9 mph)	45 kt (52 mph)	1000 mb.
08/25/05 08EDT	Advisory # 7a	26.2 N	79.0 W	06.0 kt (06.9 mph)	43 kt (49 mph)	999 mb.
08/25/05 11EDT	Advisory # 8	26.2 N	79.3 W	06.0 kt (06.9 mph)	50 kt (58 mph)	997 mb.
08/25/05 13EDT	Advisory # 8a	26.2 N	79.5 W	06.0 kt (06.9 mph)	56 kt (64 mph)	990 mb.
08/25/05 15EDT	Advisory # 8b	26.2 N	79.6 W	03.0 kt (03.5 mph)	61 kt (70 mph)	990 mb.
08/25/05 17EDT	Advisory # 9	26.1 N	79.9 W	09.0 kt (10.4 mph)	65 kt (75 mph)	985 mb.

Refresh

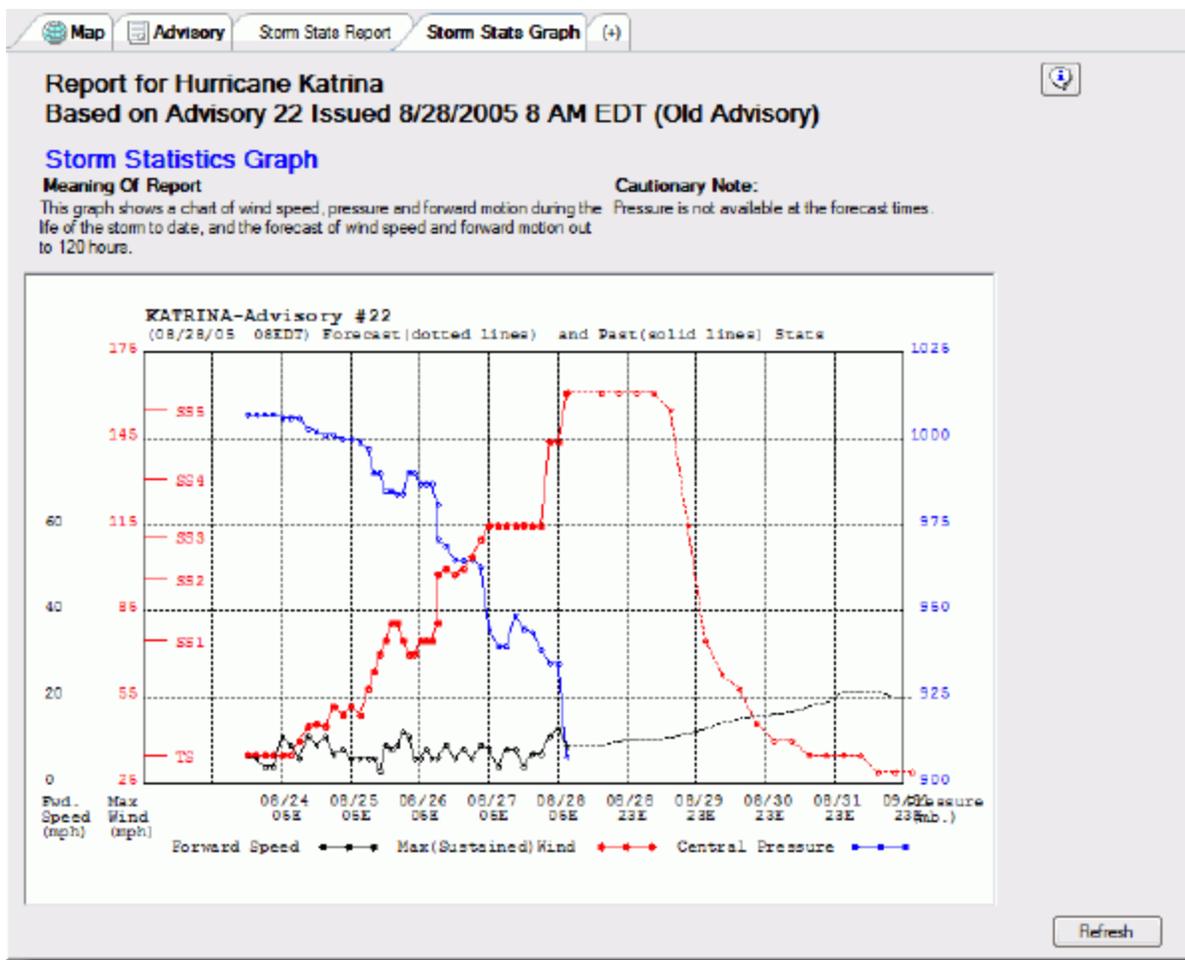
The report's data is initially sorted by Date/Time. To sort by any other item, click on its heading once for ascending order, twice for descending order.

If you have downloaded an advisory update or switched the map display to a different advisory, use the 'Refresh' button to rerun the analysis based upon the changed forecast information.

To [print or save](#) the report data to a text file, click the Print button within the [Program Header](#) or choose 'Export Report to Excel' after right-clicking on the tab name.

Storm Statistics Graph

An additional option is available within the 'Analysis/Reports' selection to display storm statistics in graph form.



The *forward speed* is plotted in black with its scale bar at far left. Maximum sustained winds is plotted in red with a scale bar at near left. Central pressure is plotted in blue with a scale bar on the right edge of the graph. Statistics from old advisories are connected by a solid line. Statistics from the forecast period are connected by a dashed line. The NHC does not provide forecasts of barometric pressure, so the blue line is not plotted for the forecast period.

To [print or save](#) the graph as an image file, click the Print button within the [Program Header](#).

Closest Approach Report

The Closest Approach report shows the closest distance, point in time, and direction that a storm is forecasted to approach each county in the list. The predicted storm track of the current advisory is used to calculate this information.

Report for Hurricane Katrina
Based on Advisory 20 Issued 8/28/2005 2 AM EDT (Old Advisory)

Closest Approach Of Storm Center (64 Items)

Meaning Of Report
 This list shows the closest distance that the center of the storm gets to each county in the database, given the official storm forecast track.

Cautionary Note:
 The official forecast track has an error which grows with time, and can be quite large at 72 hours and beyond. See the error swath to judge the likely error expected.

Location	Closest (Naut. Mi.)	Closest (Stat. Mi.)	Date / Time	Azimuth	Direction
LA Lafourche	12	14	08/29/2005 10E	92 deg.	E
LA Terrebonne	31	36	08/29/2005 10E	85 deg.	E
LA Jefferson	10 or less	10 or less	08/29/2005 11E	In County	In County
LA St Mary	69	79	08/29/2005 12E	89 deg.	E
LA St Charles	18	21	08/29/2005 13E	77 deg.	ENE
LA Plaquemines	10 or less	10 or less	08/29/2005 13E	In County	In County
LA St Bernard	10 or less	10 or less	08/29/2005 14E	In County	In County
LA Calcasieu	167	192	08/29/2005 14E	90 deg.	E
LA Orleans	11	13	08/29/2005 14E	257 deg.	WSW
LA Assumption	55	63	08/29/2005 14E	85 deg.	E
LA Vermilion	113	130	08/29/2005 14E	84 deg.	E
LA Iberia	72	83	08/29/2005 14E	91 deg.	E
LA St Martin	69	79	08/29/2005 14E	77 deg.	ENE
LA Jeff Davis	149	171	08/29/2005 14E	91 deg.	E
LA Lafayette	111	128	08/29/2005 14E	94 deg.	E
LA Ascension	42	48	08/29/2005 15E	87 deg.	E
LA St James	43	49	08/29/2005 15E	85 deg.	E
LA Livingston	32	37	08/29/2005 15E	100 deg.	E

Buttons: Earliest, Closest, Alphabetical, All Items, Locals Only, Refresh

The report's data is initially sorted by Date/Time of closest approach. To sort by a different item, click on its heading once for ascending order, twice for descending order.

To [print or save](#) the report data to a text file, click the Print button within the [Program Header](#) or choose 'Export Report to Excel' after right-clicking on the tab name.

Error Cone / Potential Track Area Report

This report is an analysis of counties or parishes located within the [120-Hour Potential Location](#), or white cone surrounding a storm's *forecast track*. Counties within the error cone or *fringe winds* area bordering the error cone have a chance of eventually being affected by the storm.

Report for Hurricane Katrina
Based on Advisory 20 Issued 8/28/2005 2 AM EDT (Old Advisory)

Error Swath Affected Areas + Winds (55 Items)

Meaning Of Report
 This list shows those counties (or parishes) that are within the official forecast error swath. These are the locations which are likely to be threatened by the storm.

Cautionary Note:
 You should consider taking action if you are within the error swath and your decision criteria is reached.

Location	Time Of Peak	May Be As Early As	OR As Late As	Winds Possible
LA Lafourche	Around 08/29 10E	08/29 02E	08/29 18E	Max Winds (near Eye)
LA Terrebonne	Around 08/29 10E	08/29 02E	08/29 18E	Max Winds (near Eye)
LA Jefferson	Around 08/29 11E	08/29 03E	08/29 19E	Max Winds (near Eye)
LA St Mary	Around 08/29 12E	08/29 04E	08/29 20E	Max Winds (near Eye)
LA St Charles	Around 08/29 13E	08/29 04E	08/29 22E	Max Winds (near Eye)
LA Plaquemines	Around 08/29 13E	08/29 04E	08/29 22E	Max Winds (near Eye)
LA St Bernard	Around 08/29 14E	08/29 05E	08/29 23E	Max Winds (near Eye)
LA Calcasieu	Around 08/29 14E	08/29 05E	08/29 23E	Fringe Winds > 34kt(3S)
LA St James	Around 08/29 14E	08/29 05E	08/29 23E	Max Winds (near Eye)
LA Orleans	Around 08/29 14E	08/29 05E	08/29 23E	Max Winds (near Eye)
LA Assumption	Around 08/29 14E	08/29 05E	08/29 23E	Max Winds (near Eye)
LA Iberville	Around 08/29 14E	08/29 05E	08/29 23E	Max Winds (near Eye)
LA St Martin	Around 08/29 14E	08/29 05E	08/29 23E	Max Winds (near Eye)
LA Vermilion	Around 08/29 14E	08/29 05E	08/29 23E	Fringe Winds > 34kt(3S)
LA Jeff Davis	Around 08/29 14E	08/29 05E	08/29 23E	Fringe Winds > 34kt(3S)
LA Cameron	Around 08/29 14E	08/29 05E	08/29 23E	Fringe Winds > 34kt(3S)
LA Lafayette	Around 08/29 14E	08/29 05E	08/29 23E	Fringe Winds > 34kt(3S)
LA St Landry	Around 08/29 15E	08/29 06E	08/30 00E	Fringe Winds > 34kt(3S)

Buttons: Earliest, Alphabetical, Plus >34kt Winds, All Items, Locals Only, Refresh

For each reported county, an indication is given of how early or how late the center could cross the area, assuming average error late and average error early, as well as the time implied by the *advisory* as the median arrival time. The 'Winds Possible' heading indicates whether the county is within the actual error cone (making Max Winds from the storm's core possible) or within only the tropical storm-force (fringe wind) area .

The report's data is initially sorted by counties affected first ('Time of Peak' heading). To sort by any other item, click on its heading once for ascending order, twice for descending order. Additionally, the list may be filtered for '[Locals Only](#)'.

If you have downloaded an advisory update or switched the map display to a different advisory, use the 'Refresh' button to rerun the analysis based upon the changed forecast information.

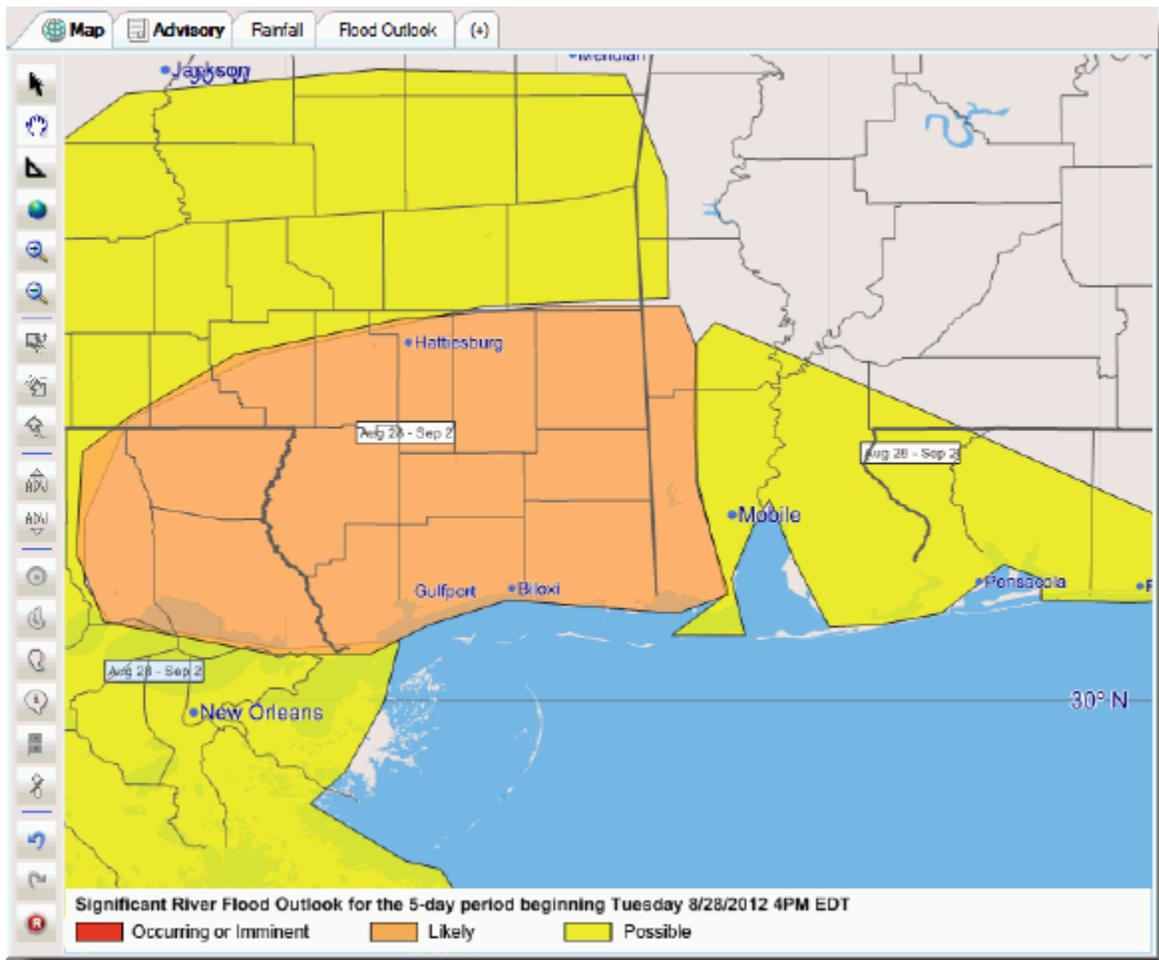
To [print or save](#) the report data to a text file, click the Print button within the [Program Header](#) or choose 'Export Report to Excel' after right-clicking on the tab name.

River Flood Outlook

The National River Flood Outlook is one of several [Other Weather Data](#) products that can be helpful to consider when weighing the flooding threat from an approaching storm. This information is displayed on the map when the Rivers > Flood Outlook heading is checked under the Current data tab.

Map View

The **NOAA** Weather Prediction Center issues a 5-day forecast of freshwater flooding hazards for the continental US using more specific forecasts for each flood basin provided by several regional NWS River Forecast Centers (RFCs) around the country. These outlooks are currently issued once a day around 19Z or 3PM Eastern Daylight Time.

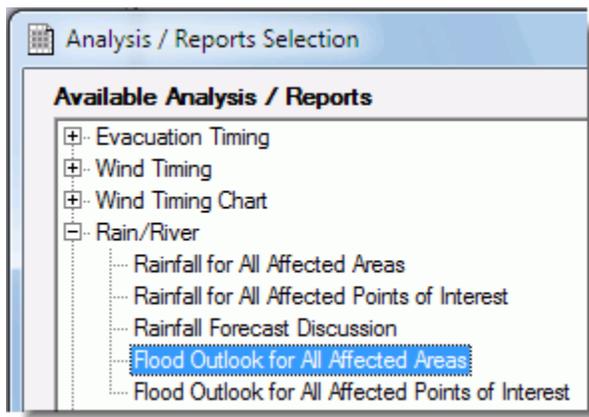


The Flood Outlook takes the form of polygon regions that are color-coded according to the likelihood of flooding. The categories are defined as follows:

- Occurring/Imminent (red) Significant flooding is already occurring or is forecast to occur during the outlook period.
- Likely (blue) hydro meteorological conditions indicate that significant flooding can be expected during the outlook period.
- Possible (black) hydro meteorological conditions indicate that significant flooding could occur. Such flooding is neither certain nor imminent.

Report View

River Flood Outlook reports are accessed through the [Analysis/Reports Selection panel](#). Report options are for all affected counties or for user-defined [Points of Interests](#).



NWS River Flood Outlook (Composite from River Forecast Centers)

NWS Flood Outlook (69 Items)

Meaning Of Report
This is the threat of significant riverine flooding for the next days produced by the NWS Weather Prediction Center.

Cautionary Note:
As with any forecast, accuracy decreases with time. Day 1 forecast is most accurate and subsequent days flooding should be considered only a general indication of threat.

Location	Type of Flood Threat	Time Frame of Threat
LA St Tammany	Significant Flooding Likely	AUG 28 - SEP 1
LA Livingston	Significant Flooding Likely	AUG 28 - SEP 1
LA Tangipahoa	Significant Flooding Likely	AUG 28 - SEP 1
MS Perry	Significant Flooding Likely	AUG 28 - SEP 1
MS Forest	Significant Flooding Likely	AUG 28 - SEP 1
AL Mobile	Significant Flooding Likely	AUG 28 - SEP 1
MS Greene	Significant Flooding Likely	AUG 28 - SEP 1
LA St John Baptist	Significant Flooding Likely	AUG 28 - SEP 1
AL Washington	Significant Flooding Likely	AUG 28 - SEP 1
MS Stone	Significant Flooding Likely	AUG 28 - SEP 1
MS Jackson	Significant Flooding Likely	AUG 28 - SEP 1
MS Hamson	Significant Flooding Likely	AUG 28 - SEP 1
MS Hancock	Significant Flooding Likely	AUG 28 - SEP 1
MS George	Significant Flooding Likely	AUG 28 - SEP 1
MS Pearl River	Significant Flooding Likely	AUG 28 - SEP 1
LA Washington	Significant Flooding Likely	AUG 28 - SEP 1
MS Pke	Significant Flooding Likely	AUG 28 - SEP 1
MS Walthal	Significant Flooding Likely	AUG 28 - SEP 1

The report's data can be sorted by any of the column headings. Click on a heading once for ascending order, twice for descending order...or you can sort by the Greatest Risk and Alphabetical buttons at the bottom of the report.

The report's data can be filtered by '[Locals Only](#).' or restored to All Items. The Refresh button should be used if you wish to update the report after a new HPC rainfall forecast is downloaded.

To [print or save](#) the report data to a text file, click the Print button within the [Program Header](#) or choose 'Export Report to Excel' after right-clicking on the tab name.

IMPORTANT NOTE

This flood outlook is intended to provide a general outlook for significant river flooding. It is not intended to depict all small-scale events such as localized flooding and/or flash flooding. This graphic will not depict minor river flooding as this implies only minimal or no property damage with possibly some public inconvenience. Also, these forecasts are constantly being revised and the HPC forecast shown in HURREVAC can be several hours old. Please refer to products issued by local NWS offices for the latest official river forecasts and warnings.

Other Forms

Setup

HURREVAC's Setup Form is accessed from the top left of the [Program Header](#).

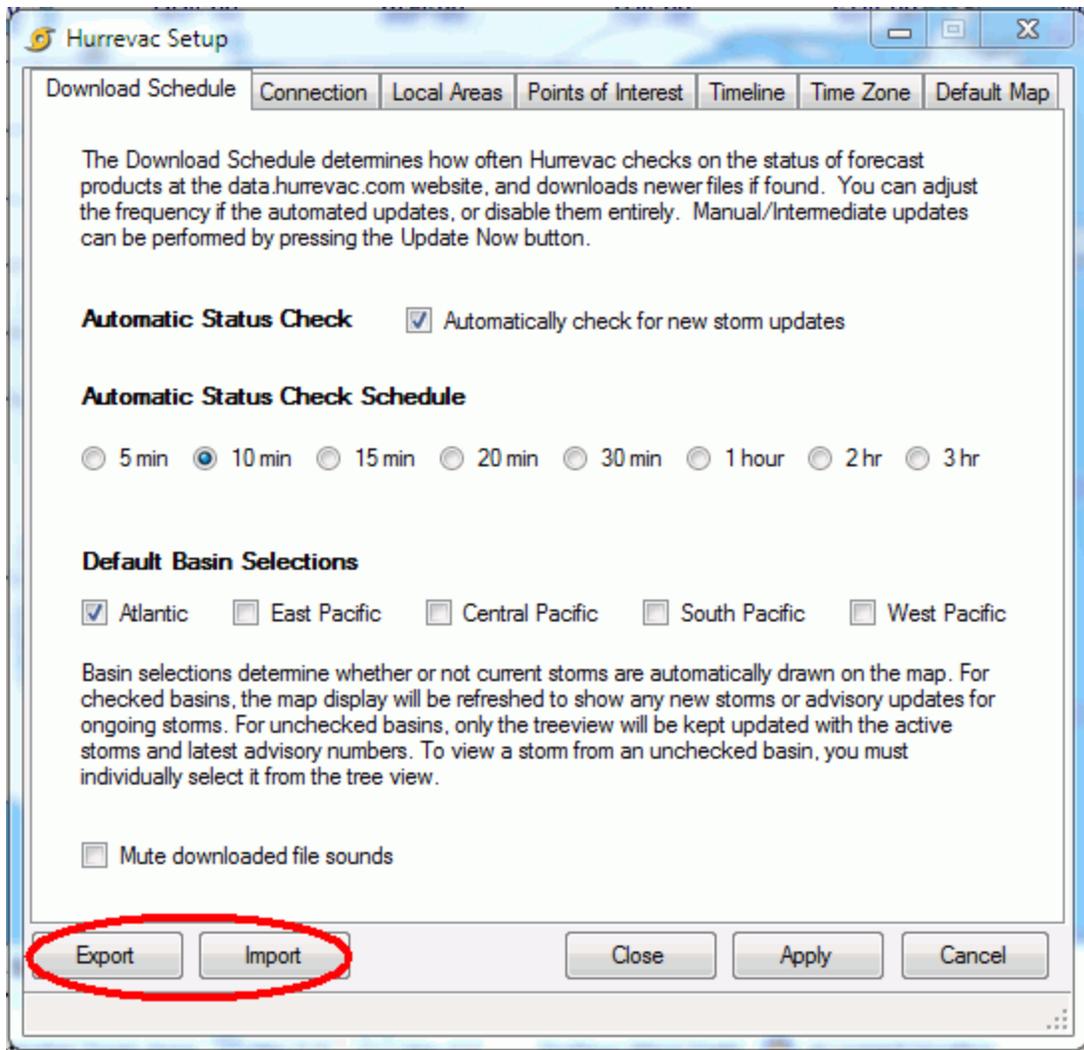


Program settings are organized on various tabs within the Setup Form:

- [Download Schedule](#)
- [Connection](#)
- [Local Areas](#)
- [Points of Interest](#)
- [Timeline](#)
- [Time Zone](#)
- [Default Map](#)

Export and Import of Settings

The Export and Import buttons make it possible to share your HURREVAC setup preferences with other computers via portable XML files. Once settings are imported, the new selections are made visible on each of the tabs.



Working with HURREVAC User Settings

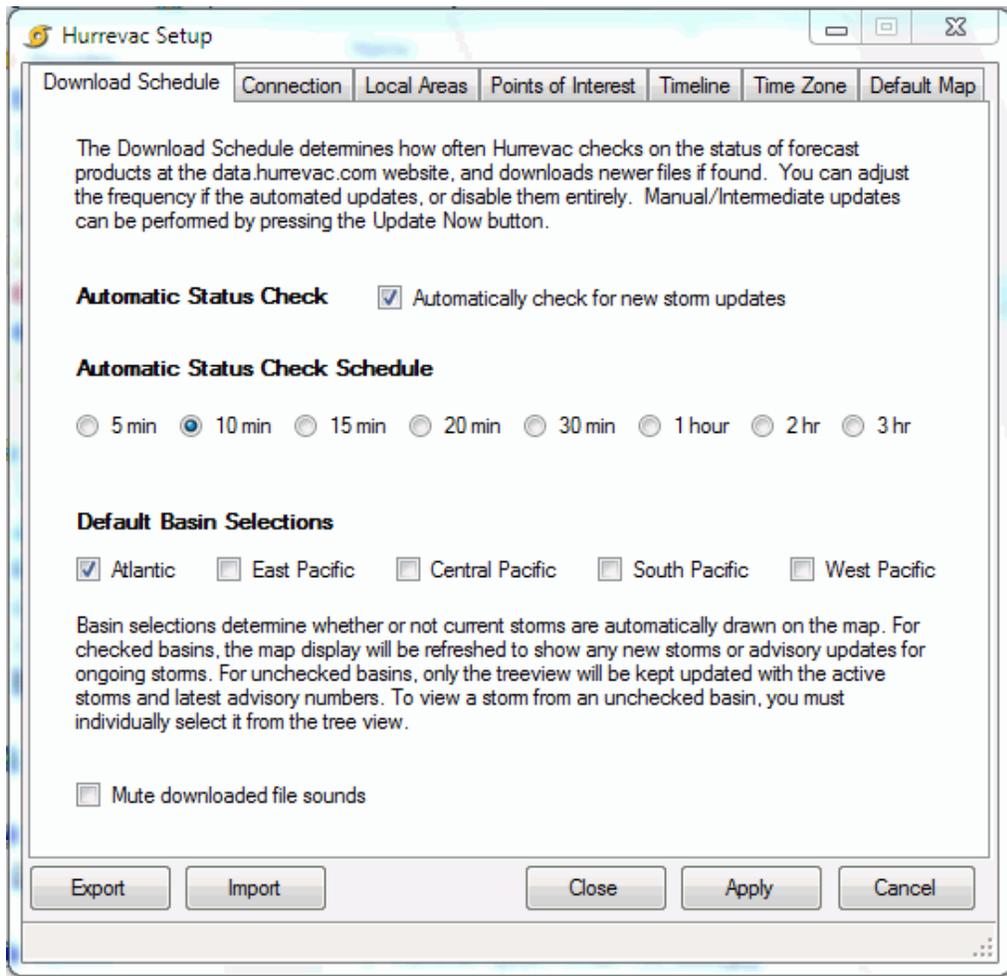
There are potentially as many as four XML files used in HURREVAC's Export and Import: UserSettings.xml, PointsOfInterest.xml, PointsOfInterestStyles.xml and Timeline.xml. During export, you will be offered the option to save all file types. When importing, you can choose any or all types of files. General settings for all Setup tabs except Points of Interest and Timeline are defined in the UserSettings file.

IMPORTANT - Be sure to Export first (to save a back up of your own settings) if you are uncertain about what is being imported or have work you want to save.

A technical note at www.hurrevac.com explains how to merge settings (outside of HURREVAC, using a text editor) if you need to combine portions of lists such as Timeline items and Points of Interest from multiple computers.

Download Schedule

A Download Schedule is configured in HURREVAC's [Setup Form](#).



HURREVAC will routinely poll for new storm advisories and other forecast data if you select 'Automatic Status Check' in the Download Schedule. When HURREVAC is left running on your desktop in this auto mode, a small status.txt file is downloaded from data.hurrevac.com at the interval you have specified. If files described in the status.txt file are new or different that what already exists, the program will download updates to your computer.

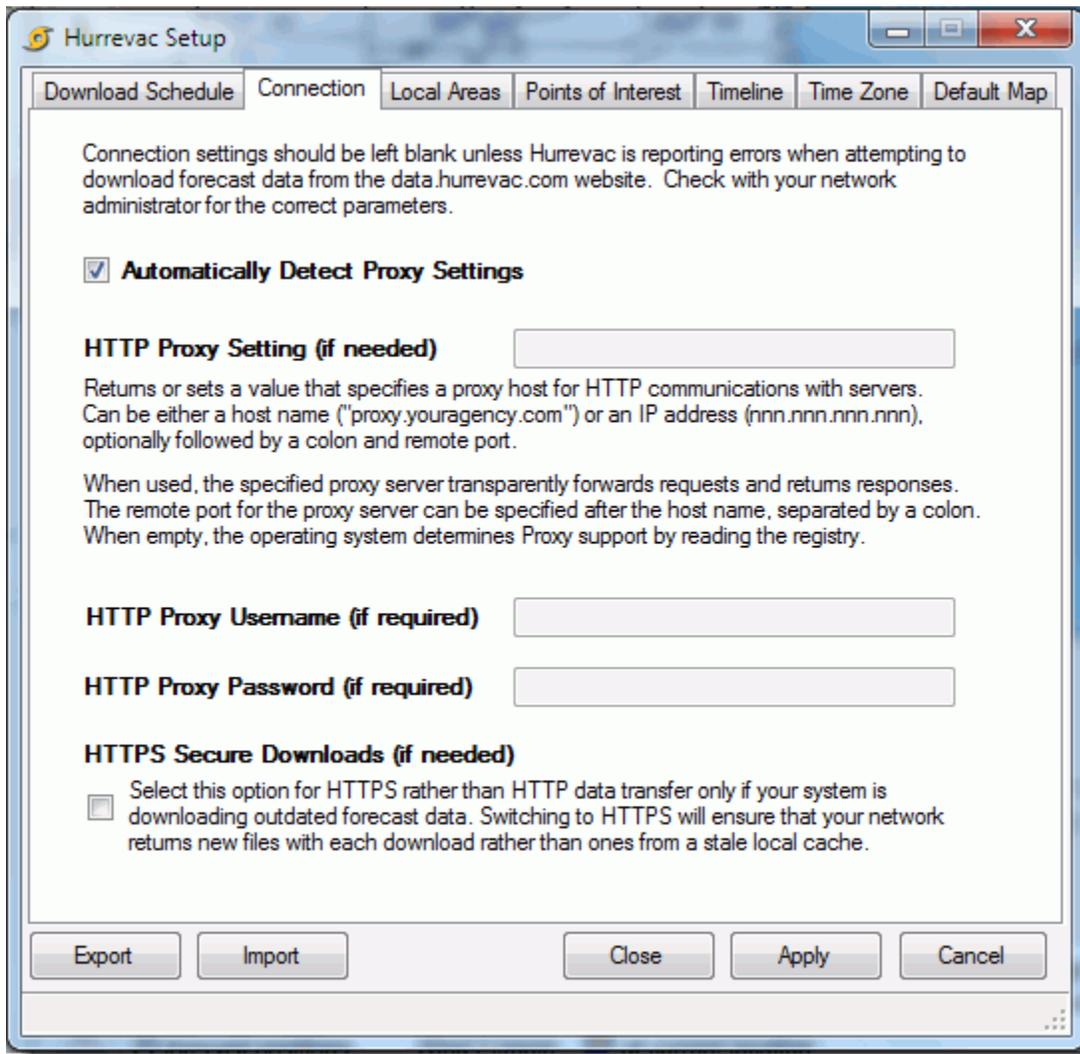
For more information about the program's download and monitoring functions, refer to the [Program Header](#) topic.

Default Basin Selections

HURREVAC tracks tropical cyclones worldwide, however most people will find that they prefer to focus on a single basin...typically the Atlantic only...and not be interrupted by map refreshes for storms elsewhere. Basin selections determine how the program handles new storm data that it has downloaded. Only those storms in checked basins will automatically be drawn on the map.

Connection Settings

Connection Settings are handled by HURREVAC's [Setup Form](#).



HTTP Proxy Settings may be left blank under normal situations. However, if the program gives you a message about not being able to connect to the internet site, then try to access <http://data.hurrevac.com> using your web browser. If you are able to connect in the web browser but not in HURREVAC, you may need to duplicate the proxy settings from the browser here. Contact your network administrator if you have trouble finding these settings.

Local Areas

Local Areas selections are made in HURREVAC's [Setup Form](#).

Hurrevac Setup

Download Schedule | Connection | **Local Areas** | Points of Interest | Timeline | Time Zone | Default Map

Local selections marked below are applied when you generate a report for 'Local Areas Only', or filter an existing report with the LOCALS ONLY button.

State - (selections)

- Alabama (0)
- American Samoa (0)
- Arizona (0)
- Arkansas (0)
- Bermuda (0)
- California (0)
- Connecticut (0)
- Delaware (0)
- Florida (0)
- Georgia (0)
- Hawaii (4)**
- Jamaica (0)
- Kentucky (0)
- Louisiana (0)
- Maine (0)
- Maryland (0)
- Massachusetts (0)
- Mississippi (0)
- Nevada (0)
- New Hampshire (0)
- New Jersey (0)
- New Mexico (0)
- New York (0)

Hawaii COUNTIES / PARISHES Select

- Hawaii
- Honolulu
- Kauai
- Maui

Check All This State

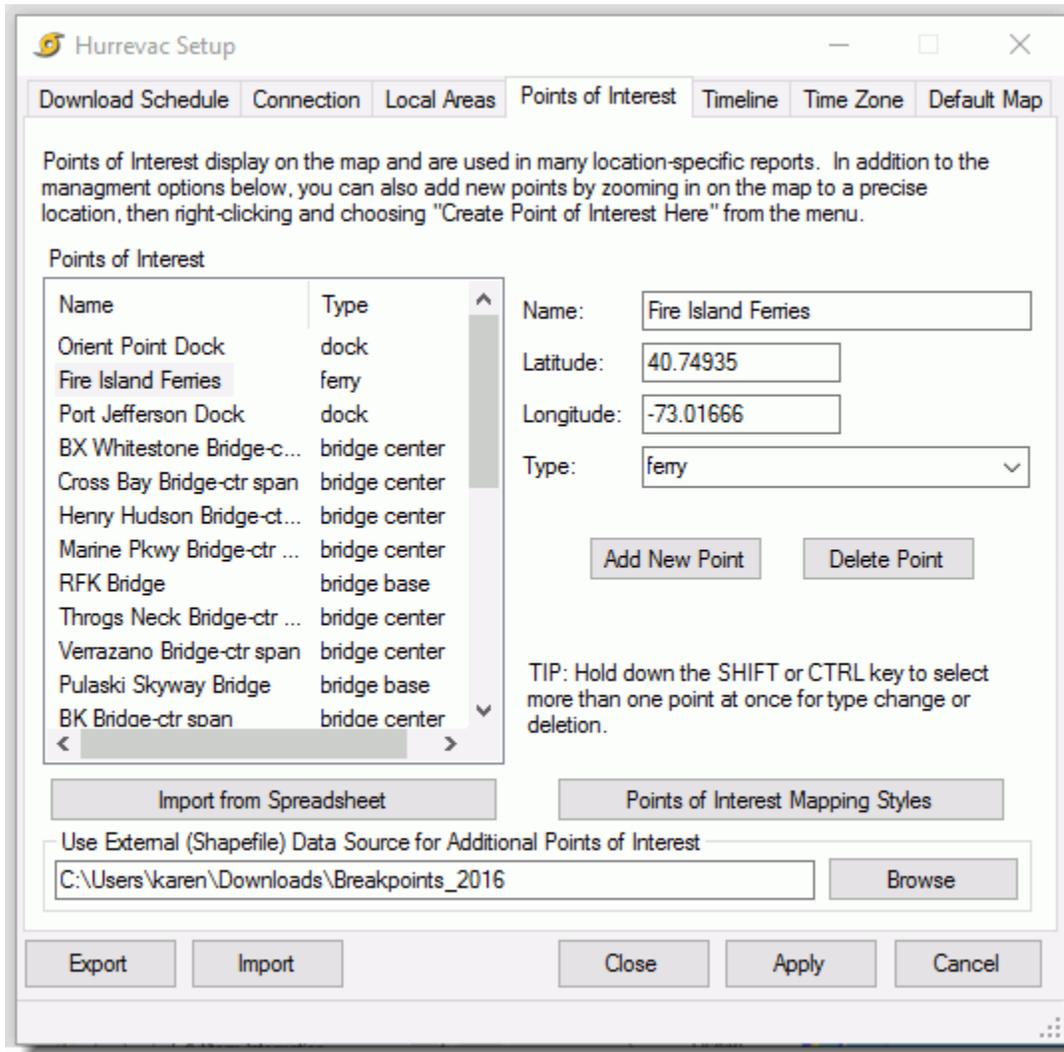
Clear All This State

Export | Import | Close | **Apply** | Cancel

On this Setup tab, mark the counties/parishes of interest to you. Many of HURREVAC's reports contain information on a large number of localities. Specifying a local area of interest will give you the ability to limit the report size if desired.

Points of Interest

[Points of Interest](#) are managed from within HURREVAC's [Setup Form](#).



Points of Interest appearing in the list are managed within HURREVAC and stored in a file called `PointsOfInterest.xml`. You can share your entries, along with a collection of other user preferences through the Export/Import options at bottom left of [HURREVAC SETUP](#). **CAUTION: Importing a new `PointsOfInterest.xml` file will overwrite any points that are already entered within this screen.**

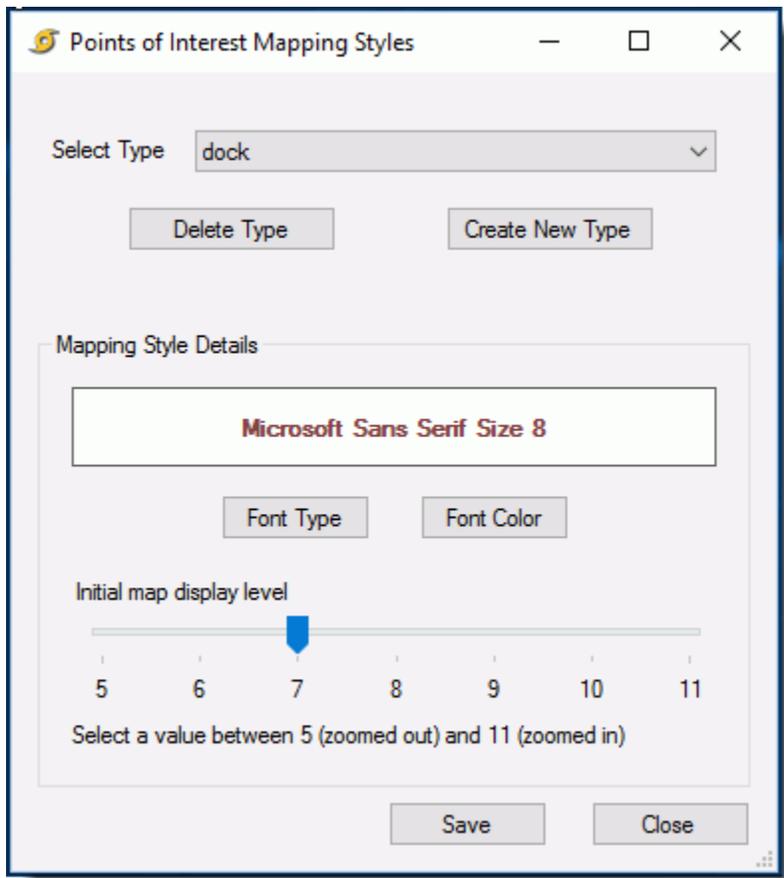
To take actions on a group of points at once, hold down either CTRL or SHIFT on the keyboard to make multiple selections. Then press the 'Delete Point(s)' button or enter a new type

A batch of additional points can be added to the existing list using the 'Import from Spreadsheet' button. The program can read .xls and .xlsx file formats and will attempt to import the first three columns of each spreadsheet within the file. The data in these columns should be ordered as Name | Latitude | Longitude | Type, either with or without a header row.

Points can also be externally sourced from shapefiles. Click 'Browse' to locate a directory on your computer or a local network drive where shapefiles are stored. The program will attempt to read from all point-based shapefiles that are located within the directory. The first attribute field within the shapefile(s) will be used as the point's Name within HURREVAC. **NOTE: Points within the shapefile(s) are read-only and must be managed using another GIS program. They appear on the map and in reports, but not within SETUP.**

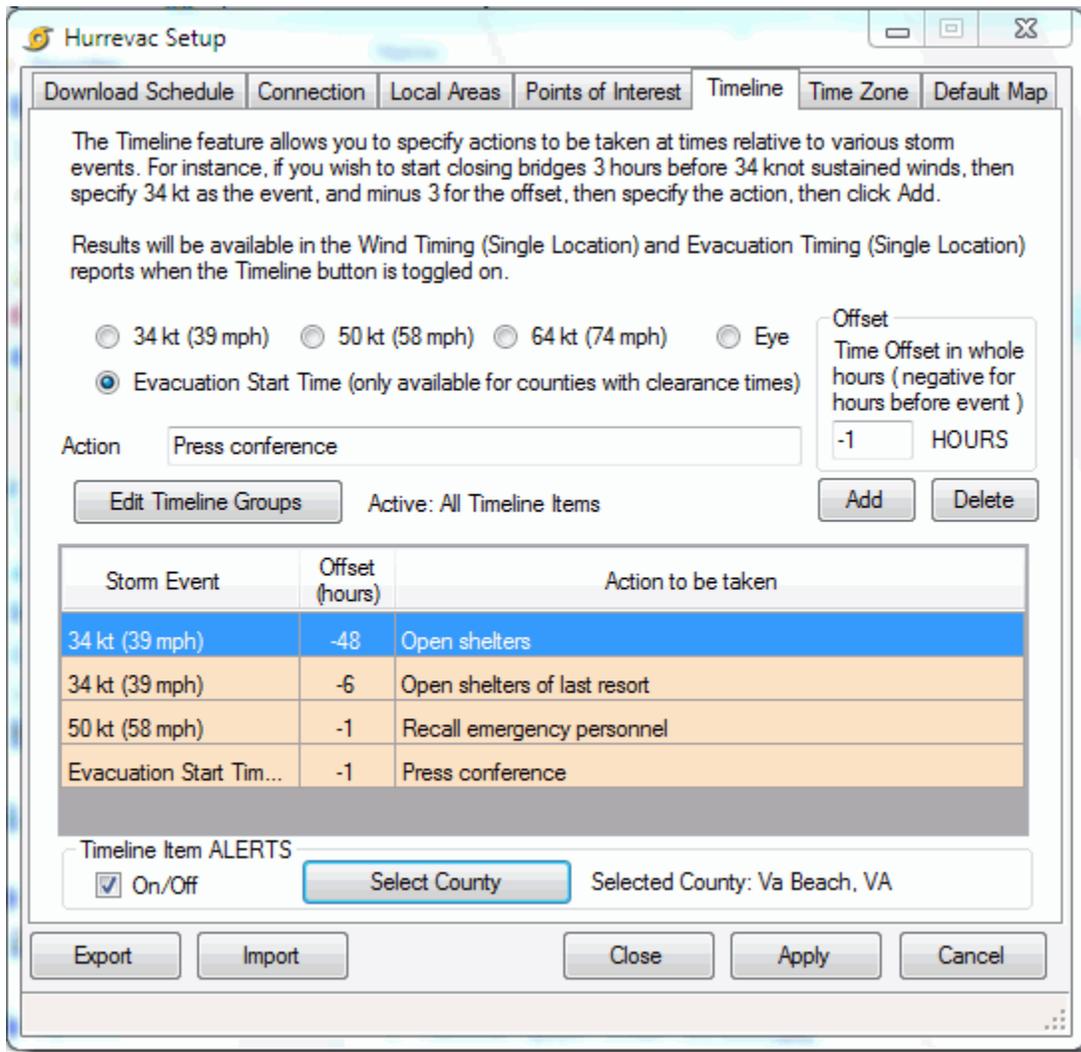
Points of Interest Mapping Styles

This screen is used to define that mapping styles which will dictate how points are drawn on the map in terms of font color, font type, size, and zoom level for initial appearance. Types can also be added or deleted here. If deleting a Type that has associated points, those points will be assigned a new Type of 'other'.



Timeline

Timeline items are configured in HURREVAC's [Setup Form](#).



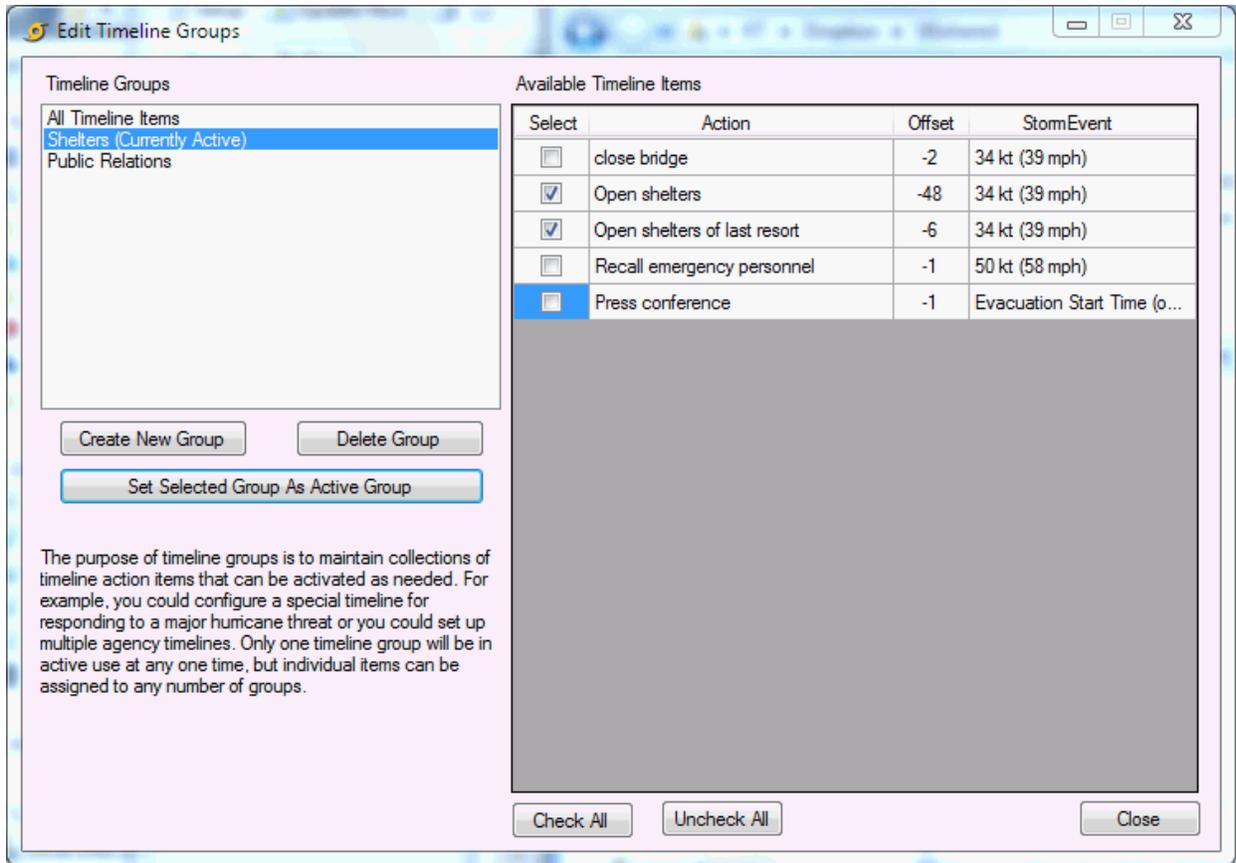
The Timeline feature allows you to specify Standard Operating Procedure-type actions to be taken at times relative to any of the following storm events:

- arrival of the 34kt winds
- arrival of the 50kt winds
- arrival of the 64kt winds
- time of eye's closest approach
- [evacuation start time](#) (available only for counties with [HES](#) clearance times)

Results will be available in the [Wind Timing](#) (single area) and [Evacuation Timing](#) (single scenario) reports when the Timeline Option button on the report is toggled on.

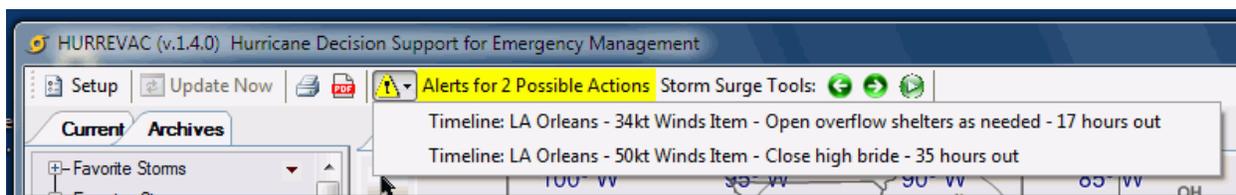
Timeline Groups

The purpose of timeline groups is to maintain collections of timeline action items that can be activated as needed. Only one timeline group will be in active use at any one time, but individual items can be assigned to any number of groups.



Timeline Item Alerts

You can also monitor timeline-associated actions while tracking the progress of a storm from one advisory to the next using HURREVAC's system for [Evacuation Timing Alerts](#). In order for timeline items to be included, a single county of interest must be specified. The alerts on timeline-specific items then begin when the county falls inside of the [72-hour forecast wind swath](#).

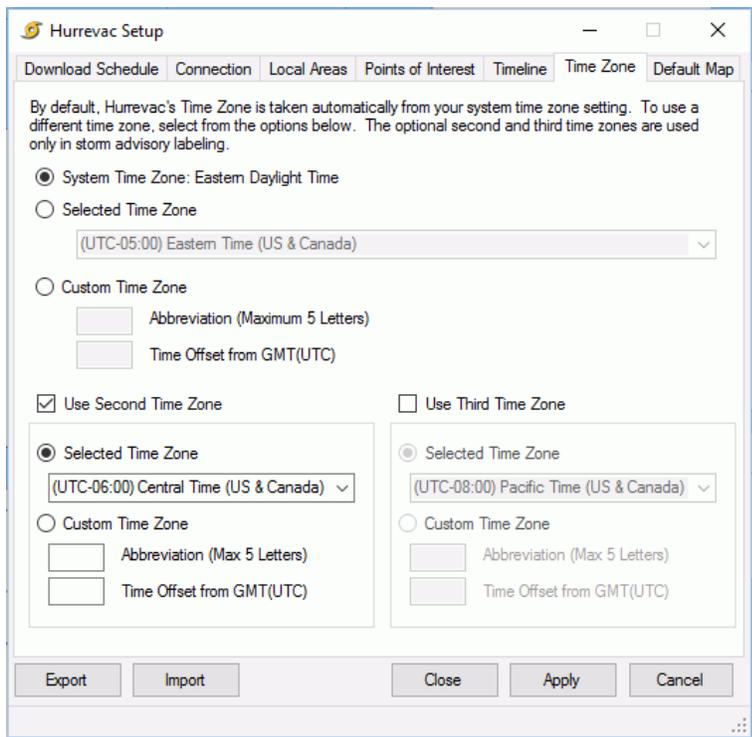


Clicking on the item in the Alert dropdown menu, you are then presented with the [Wind Timing > Single Area report](#) for that county.

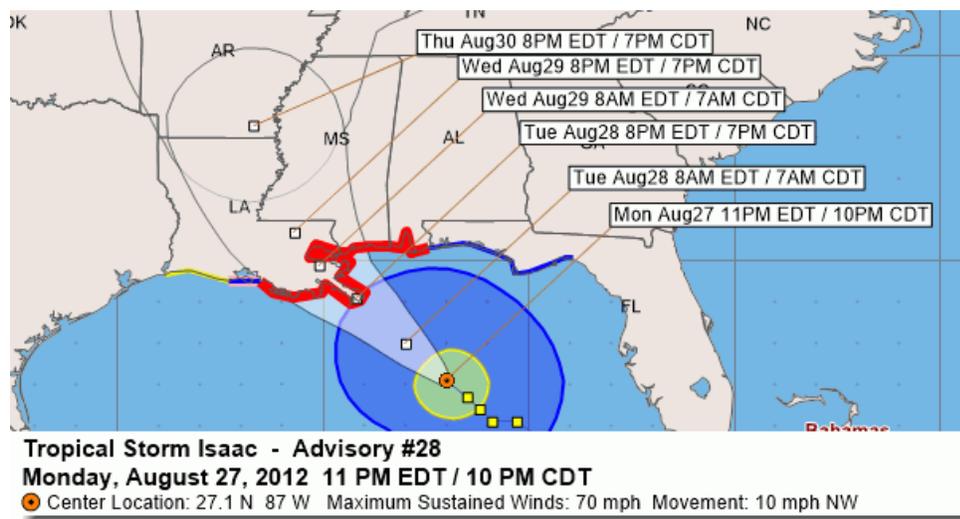
Time Zone

Time Zone is a tab on HURREVAC's [Setup Form](#).

Under most conditions, you will not need to touch this setting because the time zone setting in HURREVAC matches your computer clock. This option is here in case you are preparing a map or report for a distant location and want to use the local time zone without changing your computer's setting.



The optional second and third time zones are used only in the labeling of storm advisories on the map and in the legend as shown below.



Default Map Settings

Set Map Defaults is a tab on HURREVAC's [Setup Form](#).

Use this to set your preferences for a Default FULL SIZE Map and a Default LOCAL Map. Your selections will be saved upon exit of the program. You can easily access these maps through left and right clicks to the Globe button near the top of the [Map Toolbar](#).

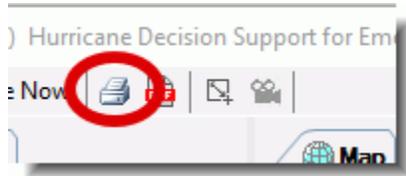
The screenshot shows the 'Hurrevac Setup' dialog box with the 'Default Map' tab selected. The dialog has a title bar with standard window controls and a tabbed interface. The 'Default Map' tab contains the following settings:

- Default Map Settings:** A text box explaining that these settings determine the behavior of the Map Extent button and that users should adjust the map location and zoom level, then press 'Set to Current Display'.
- Set Full Extent Map Default:** A section with two text boxes: 'Upper Left: 67.00, -140.00' and 'Lower Right: -34.00, -10.00'. Below them is a 'Set to Current Display' button.
- Instructions:** A text box stating: 'To access the Full Extent map, left-click on the  button on the Hurrevec toolbar.'
- Set Local Map Default:** A section with two text boxes: 'Upper Left: 40.00, -97.00' and 'Lower Right: 16.00, -66.00'. Below them is a 'Set to Current Display' button.
- Instructions:** A text box stating: 'To access the Local map, right-click on the  button on the Hurrevac toolbar.'
- Wind Speed Setting:** A section with two radio buttons: 'M. P. H.' (selected) and 'Knots'.
- Range Marks and Distance Measurement:** A section with a text box 'Interval in Miles' containing the value '100', and two radio buttons: 'Statute' (selected) and 'Nautical'.

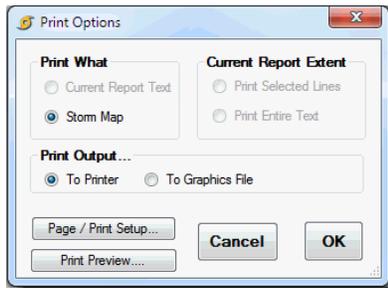
At the bottom of the dialog are five buttons: 'Export', 'Import', 'Close', 'Apply', and 'Cancel'.

Printing

HURREVAC's Print Options are accessed through a button within the [Program Header](#).



HURREVAC's Print Options are used both for printing to a printer and for exporting maps and data ('Print to File')



Print Item

Report Text - If you have an active report or text advisory showing, HURREVAC assumes that you want to print the report. If you want to print such a report you must generate it first and leave it showing on the screen. *Caution: Some of these lists (especially the Wind Decay affected list) can be quite long and you may want to select lines first for printing (see below).*

Storm Map - This item is set automatically if there is no report showing. This prints the map only, including any annotations thereon.

Current Report Extent

Selected Lines - If you have selected lines in the report showing on screen, this option is set automatically. You must select lines in the report (click and drag over the ones you want) in order to use this option.

Entire List - If you have not selected lines in the current affected list showing on screen, then it is assumed you want to print out the entire list.

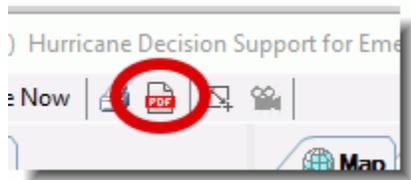
Print Output

Printer - Sends the printout to the current printer.

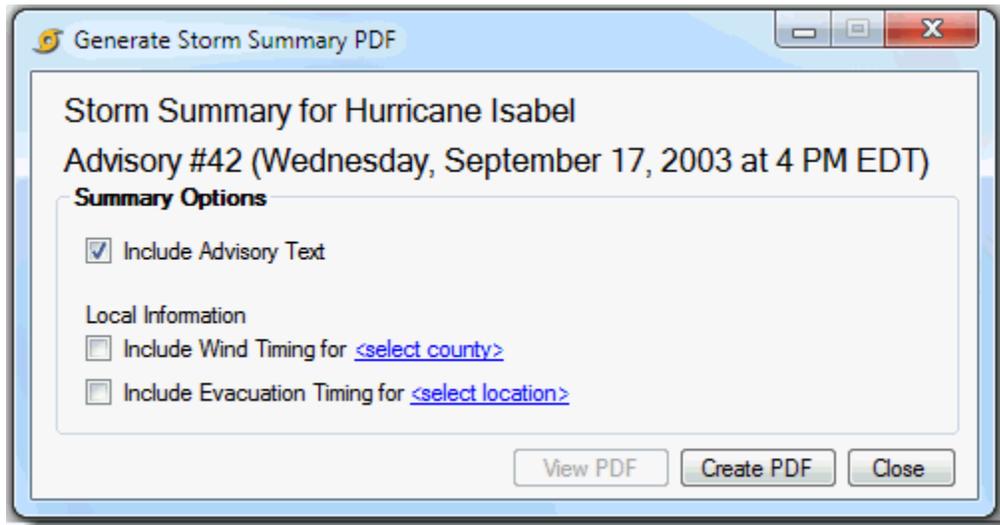
File - Sends the printout to a file of your choice with a default destination of 'My Documents.' Graphics files can be saved in several different formats. Reports are saved as plain text files which may be imported into a spreadsheet as 'space delimited' data.

Storm Summary PDF

To generate a PDF document containing summary information from the currently displayed storm and advisory, click the Storm Summary PDF button within the [Program Header](#).



Choose what contents are desired for inclusion in the Storm Summary PDF. A basic summary will include several paragraphs of information concerning the storm's strength and current location, plus a screen capture from the current map display. The forecast center's official advisory text products (public advisory plus forecast discussion) are appended to the end of the summary unless the box for this option is unchecked.



Local Information

Use these options to also include a synopsis of wind timing and/or evacuation timing for a single location. Note that this information can only be reported if the forecast track projects winds at that location within 72 hours.

PDF Output

Storm summary items are compiled into a multi-page PDF file. If Adobe Acrobat Reader or some other PDF-capable program is installed on the computer, the 'View PDF' button will launch this program and load the most recently saved file.

Animated GIF Recording

This feature is used to capture snippets of action from HURREVAC. For instance, you could record wind ranges advancing along the forecast track of the storm to illustrate the projected timing of wind hazards and then distribute this GIF file via email, text, or social media.

Use the two buttons located within the [Program Header](#) for GIF recording:

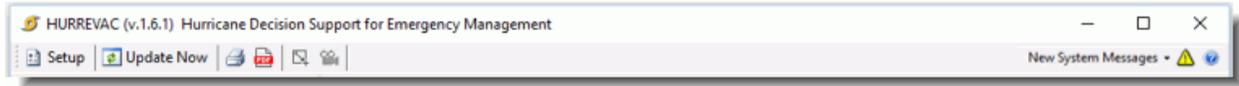
1. First define an area for recording by clicking the left button. The entire screen will wash out slightly until you click and drag a box on the screen to define the record area.
2. To begin recording, click the right button or press CTRL-R. The button will flash red while recording.
3. Use HURREVAC buttons and menus as you normally would during the recording session.
4. Click the right button or CTRL-R again to stop the recording. You will immediately be prompted to save the GIF to the computer's hard drive. GIF recording options are operated using these two buttons



TIP: The animated GIF file type is best suited for capturing a small region of the screen for a short amount of time. It is not intended for full screen, lengthy video recording.

Program Header and Footer

Header



Standard items within the header are as follows (from left to right):

Setup - Access to HURREVAC's [Setup Form](#)

Update Now - Used to IMMEDIATELY check for and download any new data. Right-clicking this button will force a refresh of all current forecast data, regardless of whether or not these items had previously been downloaded. Right-clicking can be useful if a download was interrupted by internet access problems or if files have been returned from a stale cache on the local network. This button is disabled while working on the Archives tab.

Print Button - Access to HURREVAC's [Printing](#) options.

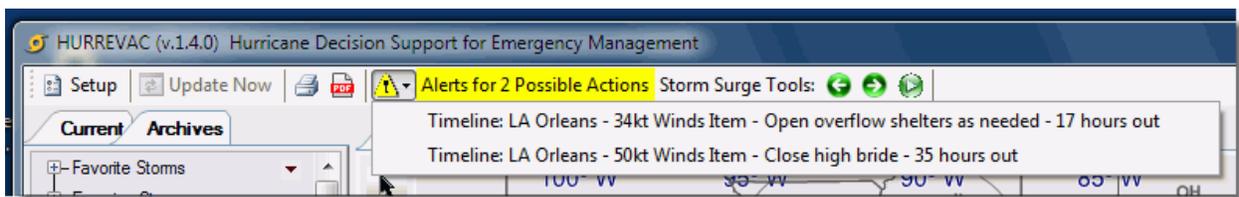
Storm Summary PDF - To export a multi-page [PDF storm summary](#) of information from the current advisory

Animated GIF Recording - To capture snippets of action from HURREVAC in [animated GIF format](#)

System Messages - Signals that you have the latest version of HURREVAC installed and changes to an exclamation mark if a later version is available. You can click on the mark for details. Other types of system messages may appear from time to time when HURREVAC's technical support staff or the National Hurricane Program administrators have important information to share concerning operation of the software.

Help - To access HURREVAC's help system.

Additional items show up in the header as needed for program operation. For instance, [Evacuation Timing Alerts](#) appear when tracking a storm that is nearing your area of concern. Also when [surge probabilities](#) are checked on in the map display, additional buttons appear for animating surge over time.



Footer



Messages and alerts concerning important forecast updates will appear in HURREVAC's footer. If automatic polling is turned on, the footer will alternately show either the status of the last check for new data or the countdown to the next one. The window will flash red when a new storm advisory has been downloaded and stop flashing once you have acknowledged the alert by clicking on the program window.

[Log Status](#) - Click this link to see a text log of recent monitoring and download activity.

[Lat/Lon Position Indicator](#) - These numbers are updated continuously as the cursor is moved around the map.

[Zoom Level Indicator](#) - A number ranging from 5 to 13 that indicates map scale. Its purpose is as a point of reference in program development and in certain technical support inquiries.

Map Toolbar



The Map Toolbar consists of a set of a set of buttons and tools for map and storm plot manipulation.

Items on the toolbar are as follows (from top to bottom):

Zoom Tool - Click-and-Drag zooming on the map.

Pan Tool - Click-and-Drag panning on the map.

Distance Ruler - Left-click to activate and begin marking [measurement](#) starting and ending points. Right-click to erase all segments previously drawn.

Extent Button - Left-click to zoom to full-extent map, right-click to zoom to local map. See UTILITIES...[Map Defaults](#) for configuration instructions.

Zoom IN and OUT Buttons - Zoom in and out by 1 level.

Move Storm AHEAD and BACK Buttons - Advance storm forward or back in forecast hour (1 hour with left-click, 6 hours with right-click).

NEXT and PREVIOUS Advisory Buttons - Advance storm forward or back in advisories (1 advisory with left-click, 3 advisories with right-click).

Hourly Wind Field Button - Action duplicates STORM FEATURES > Hourly Forecast > [Forecast Wind Field](#).

Potential Location Button - Action duplicates STORM FEATURES > Hourly Forecast > [Potential Location](#).

Forecast Wind Swath Button - Action duplicates STORM FEATURES > Entire Forecast > [Forecast Wind Swath](#).

Potential Track Area Button - Action duplicates STORM FEATURES > Entire Forecast > [Potential Track Area](#).

Advisory Labels Button - Action duplicates STORM FEATURES > [Advisory Labels](#).

Watches/Warnings Button - Action duplicates STORM FEATURES > [Watches/Warnings](#).

Wind Prob Locations Button - Action duplicates STORM FEATURES > [Wind Probability Locations](#)

Previous Map Extent Button - Restore the map extent to the previous location and scale. Further clicks of this button with restore earlier and earlier map extents until reaching the initial extent when the program was opened or a new storm was loaded. Right-click to return to a later map extent.

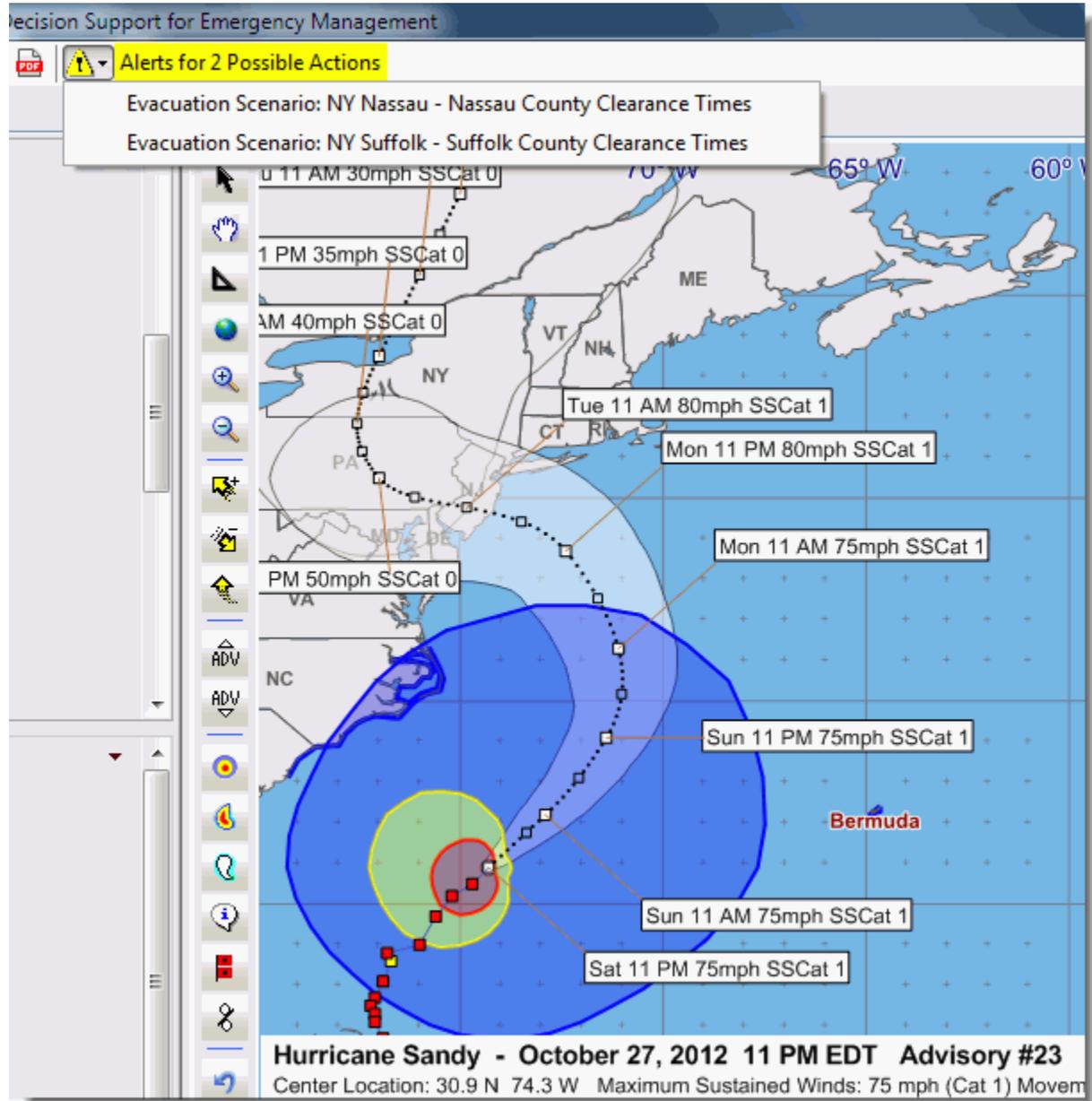
Reset Button - Return the storm to the *initial position* of the forecast advisory and turn off all storm features and map annotations except those set as default. Default is initially configured

to 'declutter' the map and return to HURREVAC's standard presentation of [forecast wind field](#) + [potential track area](#). A right-click to the Reset button will cause HURREVAC to remember the present combination of storm features and map annotations as the new default.

Evacuation Timing Alerts

During the tracking of an approaching storm, the Alert system begins notifications with the first forecast *advisory* that puts the storm within 12 hours of *evacuation start time* for select counties and evacuation scenarios.

A single audible chime will sound along with the flashing yellow alert in the program header:



Since the *NHC*, *CPHC*, and *JTWC* issue new forecast advisories at 6-hour intervals, the alert is intended as advance warning that a decision about starting an evacuation will need to be made based upon the next advisory or two. The appearance of the Alert does not automatically imply

an evacuation is necessary, merely that the time is nearing. See [Evacuation Timing](#) for more information on this topic.

Clicking on the item in the Alert dropdown menu, you are then presented with the calculated Evacuation Start Time and the actual number of hours remaining (Time Left to to Evac Start).

This Alert is for NY NASSAU based on NHC Advisory for SANDY # 23
 Set your county or parish of interest in Utilities | Set Evac Options

THE ABOVE COUNTY / PARISH IS WITHIN + / - 12 HOURS of EVACUATION START TIME for one or more Evacuation Scenarios as calculated using the official NHC Advisory derived Direct Hit arrival time of 34 kt winds and the following official Hurricane Evacuation Study scenario evacuation times listed below.

Definition: EVACUATION START TIME provides guidance on when an evacuation should start IF a decision to evacuate is made. Evacuation decisions are complex and should be made only after consultation with emergency management and NWS officials.

Evacuation Scenario	Direct Hit	34kt Arrival	Clearance Time	Evacuation Start Time (if needed)	Time Left to Evac Start
Standard	6 PM EDT	Sun Oct 28	14 hours	4 AM EDT Sun Oct 28	+ 5 hours

Additional Alert !
 This county is also in the NHC Average Error Cone (relatively high risk)

Current Settings for this county / parish are:
 SS Category: 1
 Response: Medium
 Occupancy: Medium

Note - Evacuation Start Times will fluctuate from one advisory to the next as these parameters change:
 SS Category 34 kt Wind Range and Forecast Forward Speed of the storm.

[Change These Settings](#) Close

Evacuation Time Alerts are configured under the [Evacuation Options](#) UTILITIES within HURREVAC's Toolbox. Up to 10 scenarios can be selected for this alert. This is recommended if you are responsible for multiple counties or are considering multiple scenarios for your county. The scenarios you select will be retained even upon exit of the program.

Evacuation Options

Location	Scenario	Cat.	Occ.	Resp.	SB	Total Evac Hrs.
AL Baldwin	wFLI65no10	1	Medium	Medium	0	19
AL Baldwin	wFLI65w10	1	Medium	Medium	0	20
AL Baldwin	I65Contra	1	Medium	Medium	0	18
AL Mobile	MobileOnly	1	Medium	Medium	0	18

Apply To ALL

Apply To Selected

Use Setup | Plugins to add or remove Options

Cancel OK

Note: Forcing SS Cat to other values will be only temporary and will revert when advisory is changed

Saffir-Simpson Category (defaults to max NHC forecast for this advisory)

SS Cat 1 SS Cat 2 SS Cat 3 SS Cat 4 SS Cat 5

Tourist Occupancy

Low Medium High Worst/Extreme

Response

Immediate Rapid Medium Slow

Optional Safety Buffer (SB) in hours

0 Hours Use Do Not Use

Evacuation Start Time ALERTS

On / Off [Select Scenarios](#) 3 evacuation scenarios selected

Adjustments you make to evacuation options such as SS Category, Tourist Occupancy, and Response will also be reflected in the Evacuation Time Alert, however they will not be retained upon exit of the program.

River Gauges

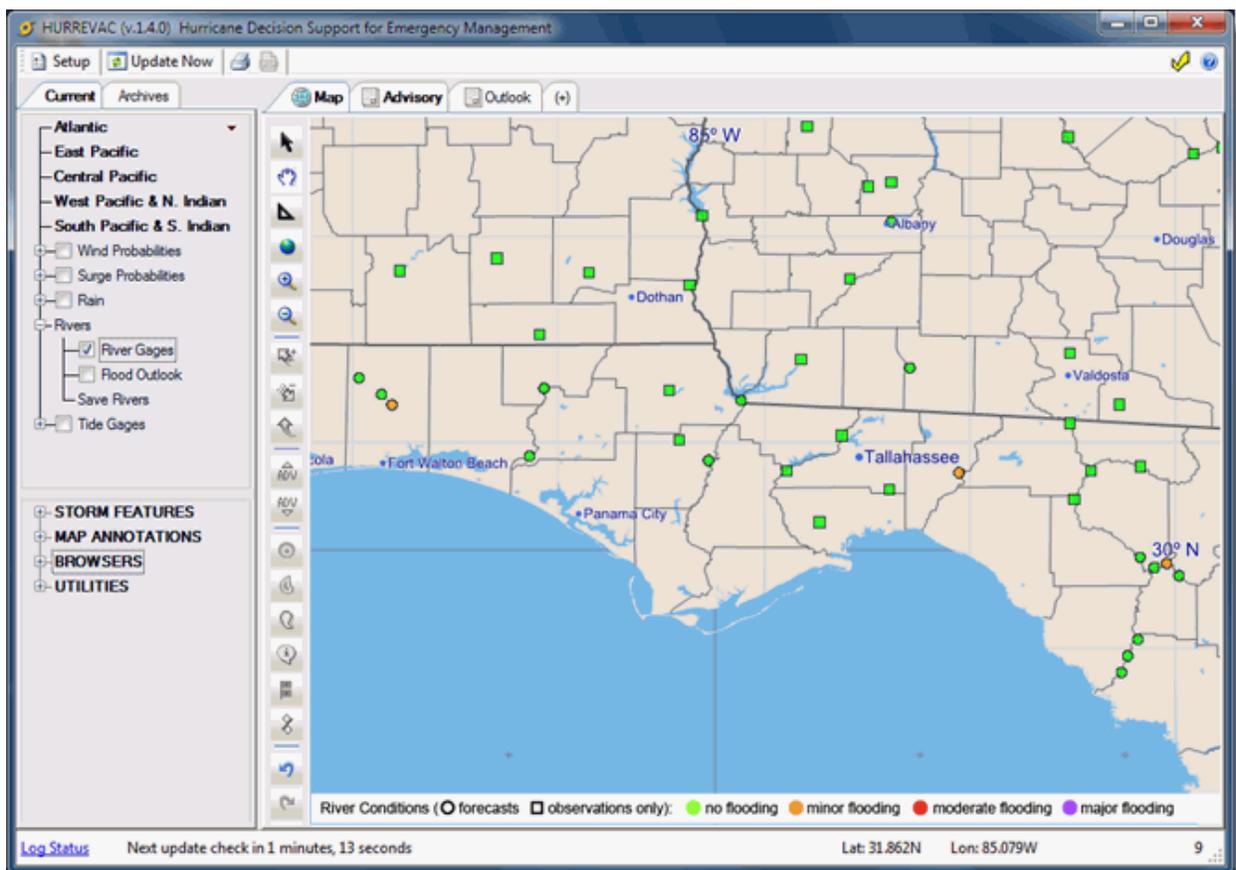
River gauges are an available data layer on the 'Current' data tab under the heading 'Rivers.'

HURREVAC monitors roughly 1100 river gauges in hurricane prone states from Texas to Maine, plus Puerto Rico and Hawaii. The program's River Gauge display is part of a suite of inland flood tools that also include the National River Flood Outlook and the HPC 3-day Rainfall Forecast. Refer to the [Other Weather Data](#) topic for more information on these.

NOAA's Advanced Hydrologic Prediction Service (AHPS) is the source of this river gauge data. The HURREVAC system (*data.hurrevac.com*) receives updated gauge observations and forecasts as often as every hour from AHPS' vast network. Each time you turn on the River Gauge layer under the Rivers heading of the 'Current' data tab, HURREVAC downloads the latest available information from *data.hurrevac.com*. To refresh the gauge display after a number of hours of viewing, simply un-check and then recheck the River Gauge layer.

River Gauges Map Display

River gauges are best seen on the map when zoomed in to a state-wide or tighter view. The gauges then show up as either circles or squares of four different colors.



Shape indicates the type of data available:

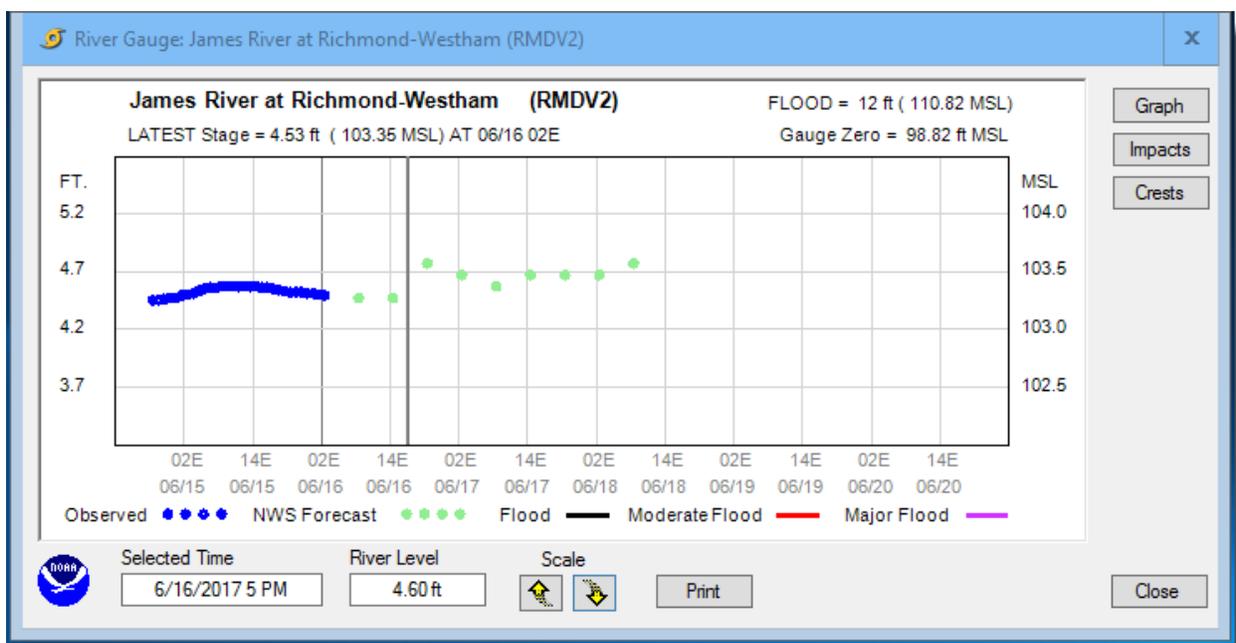
- Gauges marked as **colored circles** have recent data including BOTH OBSERVATIONS and FORECASTS. Typically the observations go back 36 hours from the time of the most recent data and the forecasts go forward in 6-hourly increments to 120 hours or 5 days.
- Gauges marked as **colored squares** have recent data but ONLY OBSERVATIONS and no forecast river conditions. Typically the observations go back 36 hours from the time of the most recent data.
- Gauges marked as **white circles or squares** have only OLD or OUTDATED data (or no data)

Color indicates river stage:

- Green for below flood stage
- Orange for minor flooding
- Red for moderate flooding
- Purple for major flooding

River Gauge Browser

The browser is used to display the data from an individual gauge site. You bring up the browser by clicking on the circle representing the gauge of interest.



Graph of river level and rainfall

The River Gauge browser time frame is different for observation-only display and observation and forecast displays:

- For observation-only displays, the 36 hours of past gauge readings are spread out across the graph for clarity...with the last reading where the heavy vertical line is drawn.
- For observation and forecast displays, the 36 hours of past readings are on the left side of the graph...followed by 120 hours of forecast stages on the right 2/3rds of the display.

The color scheme for the observations and forecasts are noted at the bottom of the browser.

Clicking anywhere within the graph will update the information shown in the 'River Level' box with the corresponding 'Selected Time' at the bottom of the browser. 'Scale' buttons are also provided for controlling the graph display. The Up Button adjusts the graph scale upward to allow view of Flood, Moderate Flood, and Major Flood levels. The Down Button adjusts the graph scale downward to allow viewing of smaller fluctuations.

Other Information available in the browser

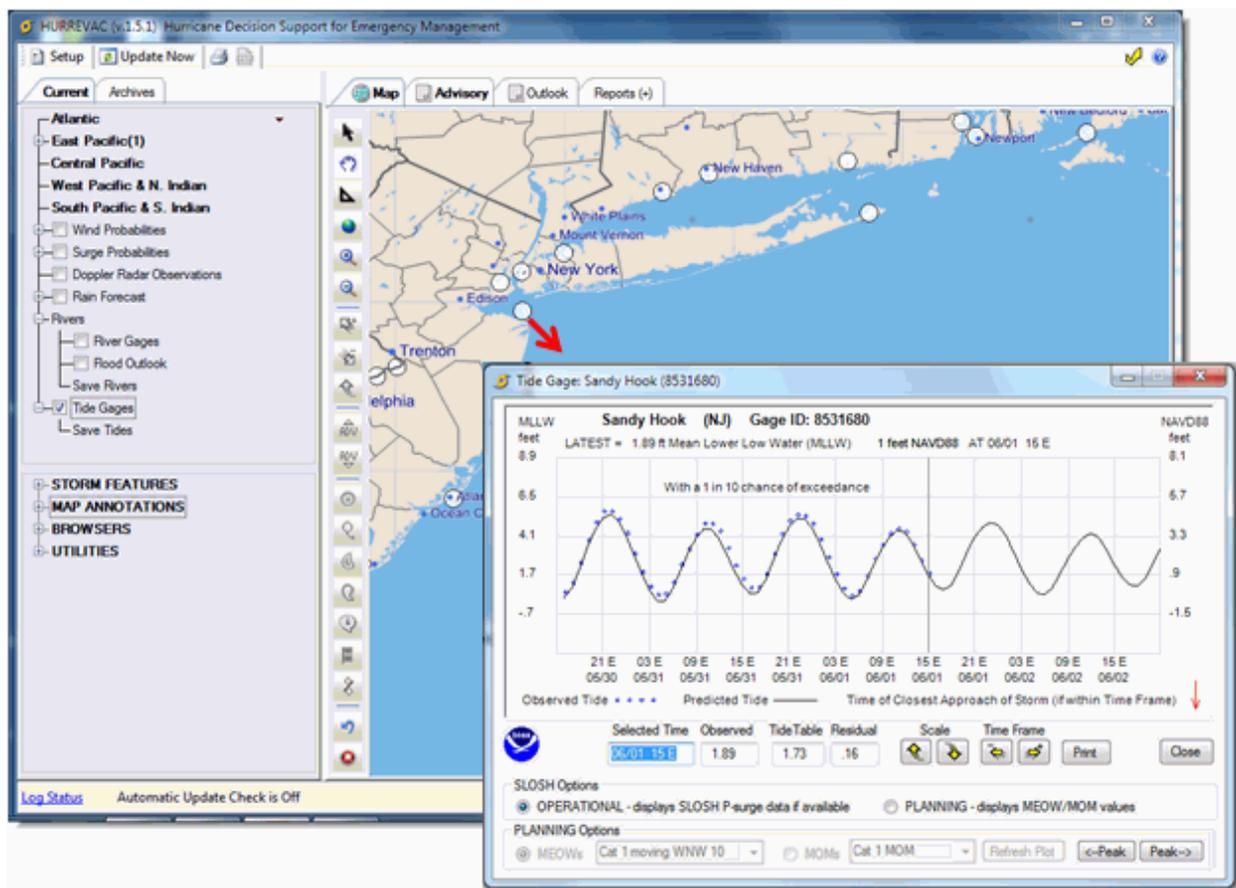
- [Impacts statements](#) (Impacts button) from the USGS describe the effects from past floods of various levels;
- [Historical crests and lows](#) (Crests button) from the USGS with high and low water observations from the past;
- [River Gauge Map](#) shows the area around the gauge that would be inundated by a 100-year flood and by a 500-year flood.

Tide Gauge

The Tide Gauge Browser is accessed from the BROWSER heading of HURREVAC's Toolbox. This browser can also be launched by clicking on a specific tide gauge point on the map. Tide gauges are an available data layer on the 'Current' data tab.

HURREVAC monitors over 150 coastal tide gauges in hurricane prone states from Texas to Maine, plus Hawaii and US territories in the Caribbean and Pacific. The program's Tide Gauge display is an important tool for assessing potential for tidal inundation and storm surge threats from approaching storms. The storm surge components of this browser are detailed in the [SLOSH Display](#) topic.

NOAA's National Ocean Service (NOS) is the source of this tide gauge data. The HURREVAC system (*data.hurrevac.com*) receives updated gauge observations and forecasts as often as every hour from NOS. Each time you turn on the Tide Gauges layer of the 'Current' data tab, HURREVAC downloads the latest available information from *data.hurrevac.com*. To refresh the gauge display after a number of hours of viewing, simply un-check and then recheck the Tide Gauges layer.



Working with Tide Gauges

Tide gauges are best displayed on the map when zoomed in to a state-wide or tighter view. The gauges appear as circles along the coast. Click on the circle of interest to bring up the Tide Gauge Browser for that gauge.

The Tide Gauge browser time frame is typically from 48 hours before current time to 30 hours or so beyond the current time. Observations versus predicted heights are available up to the current time and predictions only from current into the future up to 5 days (120 hours). The time frame of the display can be lengthened forward up to 120 hours by using the Time Frame buttons below the graph. The vertical scale of the gauge display can be adjusted using the Scale buttons below the graph.

The heavier gray vertical line represents the latest data and can be moved left or right either by clicking with your mouse or by using the left or right arrows on your key board. The data at the time referenced by the heavy vertical line is displayed in boxes below the graph.

MLLW or Mean Lower Low Water represents the average of the lowest of the tides during the day (typically there are two, one lower than the other). So height MLLW represents the height of the water above this low reference value.

Predicted values are the values computed by using the NOAA Tidal Harmonics algorithms for each gauge (each gauge has a different set).

The Residual shown is the Tidal Anomaly computed by subtracting the Predicted from the Observed reading. Positive numbers represent tide above normal and negative represent tide below normal.

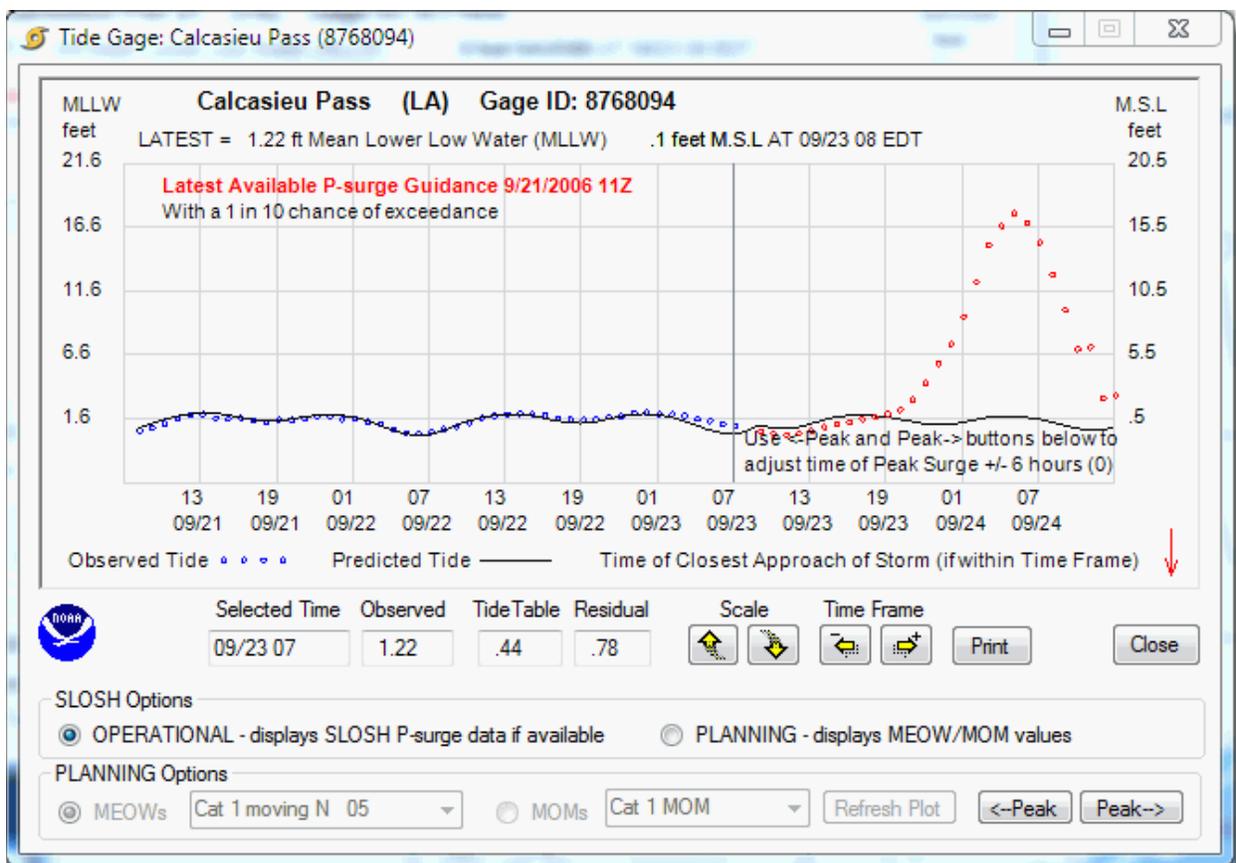
Tide gauge readings are updated at data.hurrevac.com about once an hour but there is some lag to the NOS data, so expect some gauge data to be between 1 and 2 hours old even when just downloaded. The residual or anomaly is the most important data and is usually quite slow to change except as the center of a storm approaches. So, in most cases a fairly good estimate can be made of the current tidal height by using the most recent hour's residual and applying it to the current hour.

SLOSH Display

SLOSH (Sea, Lake, and Overland Surge from Hurricanes) is a computer software model used by the *NHC* to predict potential storm surge for a storm of specific barometric pressure, direction and speed of approach, and wind field size. Geography of the local area (shape of the coastline, depth of the ocean floor) are also critical inputs into the model.

HURREVAC does not do actual SLOSH modeling, but rather ingests SLOSH model output from NHC and superimposes the surge predictions on the [Tide Gauge Browser](#). There are two types of SLOSH display modes available:

1. Normal mode for SLOSH P-surge forecasts



NORMAL mode is for live storms. It displays the usual tide plot PLUS SLOSH P-Surge with a 1 in 10 chance of exceedance. This PSURGE is experimental for 2015 and may be available only 36 hours before projected landfall of a storm.

When real-time SLOSH P-Surge data is available for a gauge, the location will be marked on the map with an **S**. Click on the gauge to display its tide chart. The SLOSH-based P-Surge guidance amounts will be displayed as red circles above the tide table heights on the right side of the graph. You can check the individual values at any point by clicking on the graph at the hour of

your choice. Underneath the graph, in the box labeled **Residual**, is the tide height above normal predicted tide.

The **<-Peak** and **Peak->** buttons at the bottom of the panel allow the user to adjust the arrival time of the Peak Surge forward or backward 6 hours in time. The current setting of this adjustment is displayed on the graph in parentheses () following the Peak surge adjustment explanation.

2. Exercise mode for hypothetical MEOW/MOM values



MEOW or MOM Exercise mode allows the user to choose, for exercise purposes, a Maximum Envelope Of Water (MEOW) storm surge amount or a Maximum of Maximums (MOM) storm surge amount from the drop-down lists shown for this particular tide gauge.

The MEOWs refer to SLOSH surges grouped into categories of Saffir Simpson scale (1 to 5), direction of movement, and speed of movement.

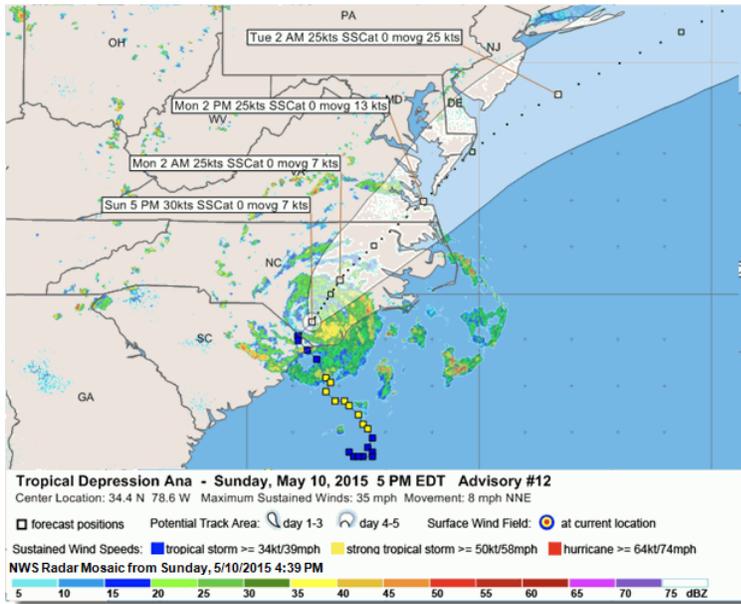
The MOMs refer to the maximum surge amounts for each SS Category, regardless of direction or speed.

Once a MOM or MEOW is selected, a grey line is drawn on the right hand side of the graph, indicating the storm tide amount that could be expected given the tide table height for that hour, and the MEOW or MOM surge height. By clicking on the graph at a specific hour, a red circle is drawn at the projected hypothetical storm tide height. Underneath the graph, in the box labeled **Residual**, is the specific SLOSH value, which is added to the tide table value to obtain the total **Guidance** storm tide level amount.

NWS Radar Mosaic

Doppler Radar Observations is one of the [Other Weather Data](#) layers in HURREVAC. The layer updates every 10 minutes with a new snapshot from the network of NEXRAD stations in the continental United States, Puerto Rico, and Hawaii.

In the context of hurricane tracking, the colors of the radar image provide a useful illustration of the extent of heavy rainfall and severe thunderstorms for a storm near or over land.



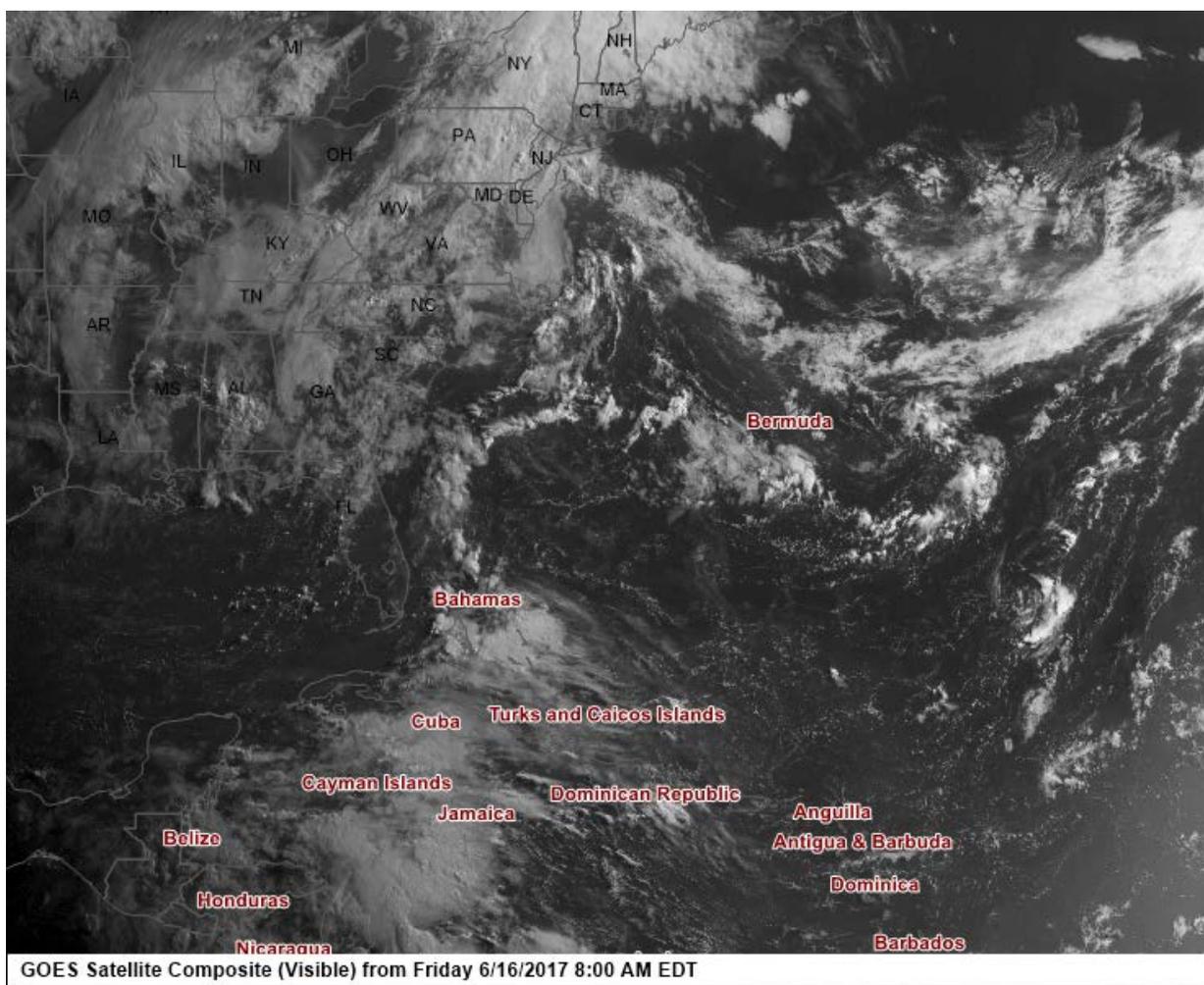
The radar data is reflectivity, or echo intensity, which is measured in dBZ (decibels). The higher the dBZ, the greater the rate of precipitation.

dBZ	R (mm/h)	Rate (in/hr)	Intensity
5	0.07	< 0.01	Hardly noticeable
10	0.15	< 0.01	Light mist
15	0.3	0.01	Mist
20	0.6	0.02	Very light
25	1.3	0.05	Light
30	2.7	0.10	Light to moderate
35	5.6	0.22	Moderate rain
40	11.53	0.45	Moderate rain
45	23.7	0.92	Moderate to heavy
50	48.6	1.90	Heavy
55	100	4	Very heavy/small hail
60	205	8	Extreme/moderate hail
65	421	16.6	Extreme/large hail

GOES Satellite Imagery

GOES Satellite Imagery is one of the [Other Weather Data](#) layers in HURREVAC. The layer updates every 15 minutes with composite imagery from the visible channel of GOES-East and GOES-West: geostationary satellites that together cover North America, Central America, and surrounding Atlantic to Pacific Ocean areas.

The images are gray-scale and depict the reflected solar radiation from clouds in white, contrasting with water and land surfaces in shades of gray or black. In the context of hurricane tracking, the satellite image provides a useful illustration of the extent of storm size and location, especially when the storm is too distant to be picked up by land-based [Doppler radar](#) stations.



Special Tools

Supplementing HURREVAC's standard toolset are a few special tools that handle unique circumstances and locally-tailored analysis for certain states. These special tools are included with HURREVAC's main installation.

Special tools currently available in HURREVAC are as follows:

[NYC Metro Facilities](#) - Reports and special settings that handle complex *HES* clearance time calculations for bridges, tunnels, and other transportation facilities in the New York City metropolitan area.

[Risk Profile](#) - A report that compiles custom threat assessment information for a state and its localities. Risk Profiles are available for the following states:

- [New York \(including northeastern New Jersey\)](#)
- [Virginia \(including northeastern North Carolina\)](#)
- [Florida](#)

NYC Metro Facilities

Last updated: 2-2015

The NYC Metro Facilities tools are special functions within HURREVAC developed specifically to accommodate Hurricane Evacuation Study (*HES*) clearance times for bridges, tunnels, and other transportation facilities in the New York City metropolitan area. The 132 entries that are part of this module were determined by the transportation agency to be the most critical facilities or locations within their transportation network that are vulnerable to a hurricane. Some entries represent multiple facilities or locations.

HURREVAC's report capabilities for facilities are similar to those for counties, but with some extra features to handle the more complicated evacuation/closure scenarios required by facilities. The facility reports also contain filtering options and certain configuration settings not found elsewhere in HURREVAC.

Discrete Action Periods

Instead of a single *evacuation clearance time* as in the case for counties, facilities have 3 time periods for actions that need to be taken before arrival of the hazards (storm surge or wind). Individual times are dependent on a variety of factors including agency ownership and type of facility. The discrete action periods are:

1. **Mobilization Period** - Amount of time needed to organize internal decision making and stage equipment, vehicles, and personnel. Most agencies have designated only a brief mobilization time of 1 to 2 hours, expecting this time to be executed quickly or even concurrently with other emergency time phases. Exceptions are the transit agencies with concerns about redirecting resources/transit cars and buses.
2. **Evacuation Period** - Time frame during which a facility will function to move evacuees. Commuter transit facilities will function like they do in a heavy AM or PM peak period; highway facilities will carry evacuation traffic over time periods defined in the 2011 Metro New York Evacuation Project.
3. **Closure Period** - Amount of time needed to secure and close facilities and redirect employees to safe shelter before hazards arrive.

A facility's clearance time is the sum total of the mobilization, evacuation, and closure periods.

Wind versus Surge-Timed Facilities

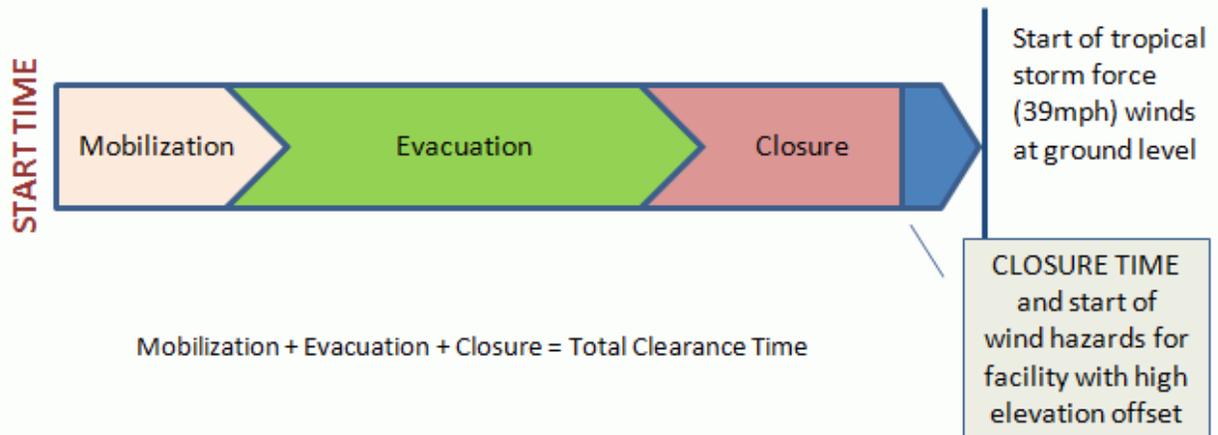
In calculating the hazard arrival time for facilities, HURREVAC must differentiate between two types of facilities:

Wind-Affected Facilities

These facilities are affected primarily by wind hazards, specifically 39mph (34 knot) winds of an approaching storm, and treated much the same as [county evacuation timing](#) in HURREVAC. For tall facilities such as bridges however, an offset (also known as pre-landfall hazard time) of 1, 2,

or 3 hours is placed in front of (ground) forecasted 39 mph wind arrival time to account for the fact that winds are routinely stronger at these high altitudes and the storm effects will be felt sooner at these locations.

Therefore with wind-affected facilities, HURREVAC computes the arrival time of 39 mph winds to the facility, and subtracts the combined times for mobilization, evacuation and closure to arrive at a clearance start time. The calculated start times are essentially deadlines for initiating actions if adequate time is to be allowed for completion before the arrival of potential wind hazards.



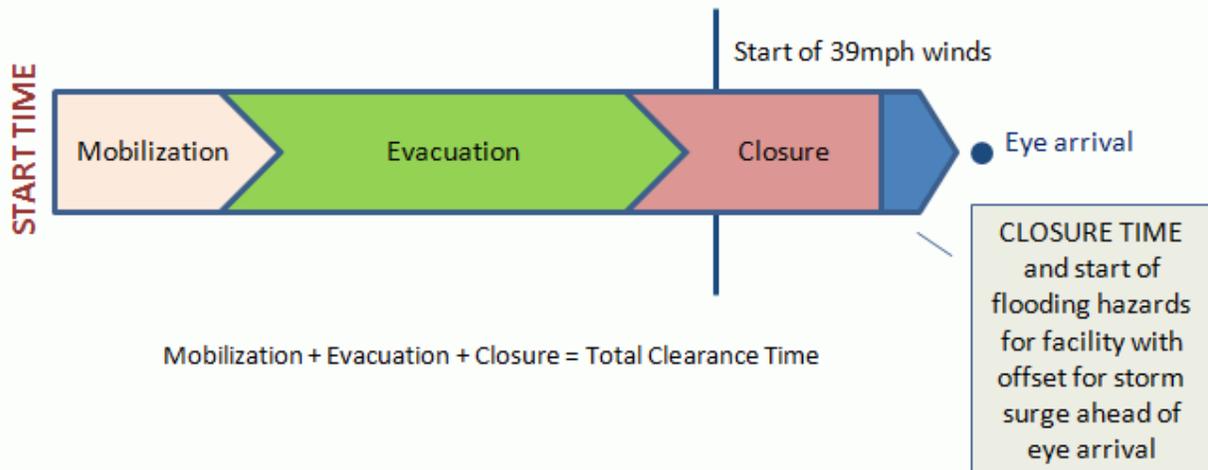
Note: Certain facilities affected primarily by RAINFALL flooding are placed in the wind-affected facilities category because wind and rainfall will begin at about the same time.

Surge-Affected Facilities

These facilities are affected first by flooding, specifically flooding from storm surge as determined by the National Weather Service Sea, Lake, and Overland Surges from Hurricanes (*SLOSH*) model, which predicts flooding that would occur assuming a direct hit or worst case assumption.

The SLOSH model data results in an offset time, in hours, before the arrival of the eye, when flooding would commence at the facility. This may range from 0 hours (flooding arrives only when eye arrives) or as much as 7 hours before the eye for a severe storm approaching from a critical direction. This offset is based on the location and elevation of the facility. In most cases, the flood-affected facilities will have much later start times than the wind-affected ones.

With surge-affected facilities, HURREVAC first computes the closest approach time of the storm's eye or center in the area, and subtracts the pre-landfall flooding time in hours as determined by the SLOSH model for the worst case. After the surge arrival time is determined from the SLOSH model offset, the program then subtracts the combined times for mobilization, evacuation and closure to arrive at a clearance start time. The calculated start times are essentially deadlines for initiating actions if adequate time is to be allowed for completion before the arrival of potential storm surge hazards.



Distinction Between HURREVAC Overall Clearance Time and Facility Evacuation Times

Each of the facilities in HURREVAC's facility timing tools has a different evacuation timeframe, although the City will base evacuation decisions and conduct operations according to the overall time needed for all movements. This is due to the fact that the evacuation times reflect facility operator estimates of time required to process the full, anticipated travel demands on their facilities, rather than the full amount of time their facilities would be in service for an evacuation operation. As such, the facility evacuation time measure helps illustrate relative potential congestion by facility within the total evacuation order period.

Presentation of Facilities Data

The primary presentation of facilities data is within the [Facility Clearance Timing reports](#) which calculate deadlines for mobilization, evacuation, and closure of all 132 wind and surge-affected facilities. This type of facility analysis is available in several report formats: 1) **Clearance Timing for All Facilities** and 2) **Clearance Timing for a Single Facility**.

For the 24 wind-affected facilities in the NYC Metro area, special [Facility Wind Timing reports](#) are also available as follows:

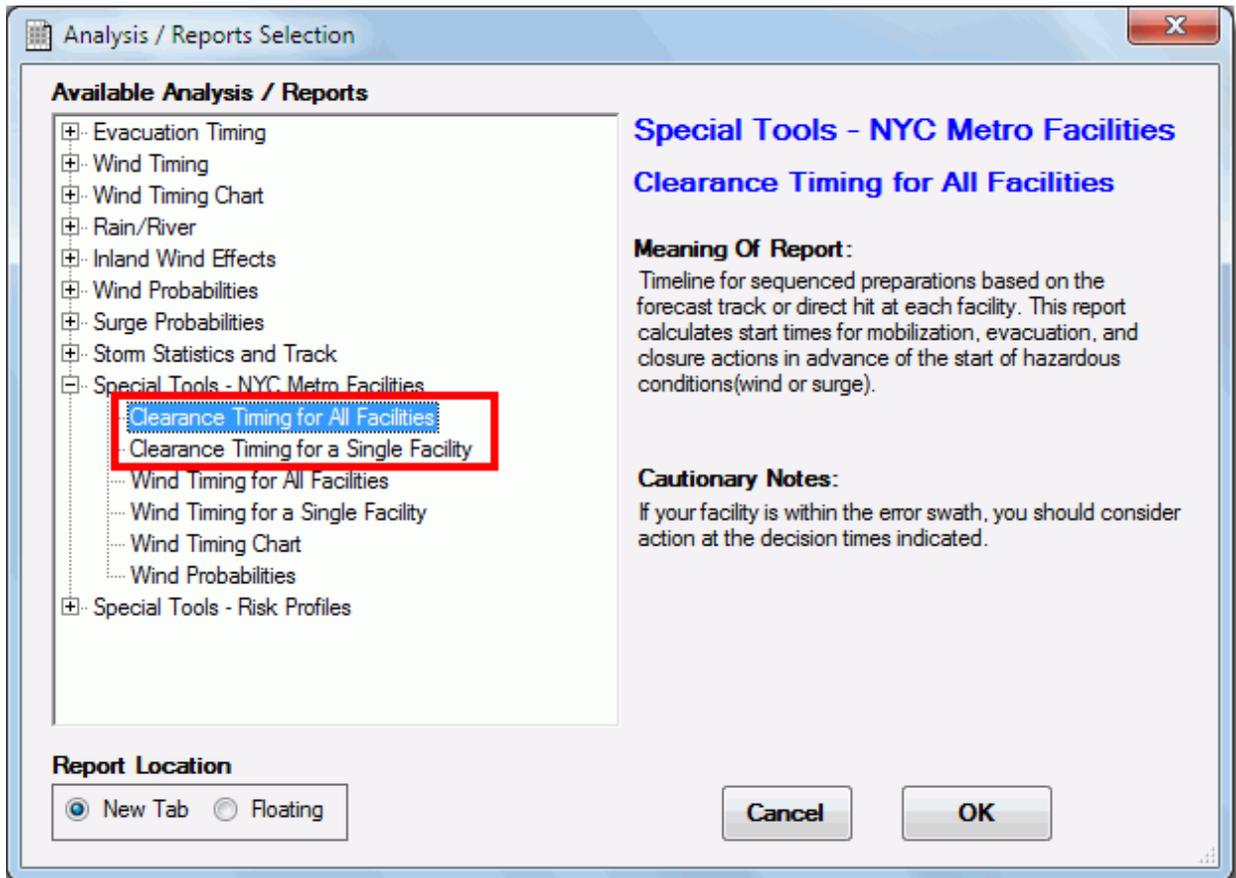
Wind Timing for All Facilities, Wind Timing for a Single Facility, and the **Wind Timing Chart** consist of deterministic wind forecasts appropriate to consider when a storm is near landfall. These reports contain very detailed estimates of hour-by-hour wind intensity and timing at facility locations using NHC's forecast of *wind ranges*.

The **Wind Probabilities** report provides wind timing and intensity information, but in a general assessment that is most appropriate to consider when the storm is distant and the forecast uncertainty is still high.

Facility Clearance Timing

Facility clearance timing functions of HURREVAC's [special toolset for New York City metropolitan area transportation facilities](#) are accessed through the [Analysis/Reports Selection panel](#).

The two types of facility clearance timing reports are highlighted below:



These timing reports are based upon the *deterministic forecast* of storm track and winds from whatever storm advisory is currently displayed in the Map View. *Note: The NHC does not include wind ranges information in the extended forecast from 72 to 120 hours. Therefore, the reporting period for this tool is only from hour 0 (the hour the NHC forecast is issued) to hour 72.*

Clearance Timing for All Facilities

This report calculates timing for all of the 132 transportation facilities that are within the [72-hour wind swath](#).

Report for Hurricane Sandy
Based on Advisory 25 Issued 10/28/2012 11 AM EDT (Old Advisory)

Clearance Timing All Affected NYC Metro Facilities

Meaning Of Report
 Timeline for sequenced preparations based on the forecast track or direct hit at each facility. This report calculates start times for mobilization, evacuation, and closure actions in advance of the start of hazardous conditions(wind or surge).

Cautionary Note:
 If your facility is within the error swath, you should consider action at the decision times indicated.

Facility Location	EvacType	Mobilize (hrs)	Evac. (hrs)	Closure (hrs)	Hazards (hrs)	Closest Approach
Orient Point Dock	Wind	10/28 02E (1)	10/28 03E (14)	10/28 17E (8)	10/29 01E (.5)	10/29 22E
Fire Island Femtes	Wind	10/28 02E (1)	10/28 03E (14)	10/28 17E (8)	10/29 01E (.5)	10/29 23E
Port Jefferson Dock	Wind	10/28 03E (1)	10/28 04E (14)	10/28 18E (8)	10/29 02E (.5)	10/29 23E
Hutchinson Rvr Pkwy-Pelham Pkwy and I 95	Wind	10/28 10E (3)	10/28 13E (7.5)	10/28 21E (6)	10/29 03E (.5)	10/30 01E
Cross BX Expwy-White Plains Rd	Wind	10/28 13E (3)	10/28 16E (5)	10/28 21E (6)	10/29 03E (.5)	10/30 01E
Hutchinson Rvr Pkwy-Exit 9	Wind	10/28 11E (3)	10/28 14E (7.5)	10/28 22E (6)	10/29 04E (.5)	10/30 01E
Pulaski Skyway Bridge	Wind	10/28 10E (3)	10/28 13E (8.5)	10/28 22E (6)	10/29 04E (1)	10/30 01E
Hutchinson Rvr Pkwy-MLK Blvd	Wind	10/28 12E (3)	10/28 15E (7.5)	10/28 23E (6)	10/29 05E (0)	10/30 01E
Cross Bay Bridge-ctr span	Wind	10/28 15E (3)	10/28 18E (7)	10/29 01E (1.25)	10/29 02E (.5)	10/30 01E
Verrazano Bridge-ctr span	Wind	10/28 16E (3)	10/28 19E (6)	10/29 01E (1.25)	10/29 02E (1.5)	10/30 01E
Marine Pkwy Bridge-ctr span	Wind	10/28 16E (3)	10/28 19E (6)	10/29 01E (1.25)	10/29 02E (.5)	10/30 01E
Williamsburg Bridge-ctr span	Wind	10/28 16E (3)	10/28 19E (6)	10/29 01E (2)	10/29 03E (1)	10/30 01E
GW Bridge-ctr span	Wind	10/28 13E (3)	10/28 16E (9)	10/29 01E (2)	10/29 03E (1.5)	10/30 01E
Queensboro Bridge-ctr span	Wind	10/28 16E (3)	10/28 19E (6)	10/29 01E (2)	10/29 03E (1)	10/30 01E
BK Bridge-ctr span	Wind	10/28 17E (3)	10/28 20E (5.4)	10/29 01E (2)	10/29 03E (1)	10/30 01E
MN Bridge-ctr span	Wind	10/28 13E (3)	10/28 16E (8.9)	10/29 01E (2)	10/29 03E (1)	10/30 01E
Outerbridge Crossing-ctr span	Wind	10/28 17E (3)	10/28 20E (6)	10/29 02E (1)	10/29 03E (1)	10/30 02E

Filter (ALL) Facility Options CAT 1 (NHC forecast) Timing: Forecast Track Direct Hit Refresh

Report columns include:

- **Evac Type** - identifies facility as either wind or surge vulnerable.
- **Mobilize (hrs)** - Date/Time to start mobilization with the duration in parentheses. [Past] indicates that the action should already be underway if needed.
- **Evac (hrs)** -Date/Time to start an evacuation with the duration in parentheses. [Past] indicates that the action should already be underway if needed.
- **Closure (hrs)** -Date/Time to start closure with the duration in parentheses. [Past] indicates that the action should already be underway if needed.
- **Hazards (hrs)** - Beginning time for the wind or surge hazards. This calculation includes the hazards offset (in parentheses) which is used to account for earlier winds (at high elevations) or surge in advance of eye arrival.
- **Closest Approach (or Eye Arrives)** - Date/Time when the eye of the storm would pass closest to the facility. If [direct hit](#) timing is selected instead of forecast track, then this column is labeled as the time of eye arrival.
- **Jurisdiction/Owner/Type/Location*** - facility description details which can be used to sort or filter the list. Clicking on any heading will cause the list to sort according to data

in that column. **These columns are not visible in the above screenshot but can be viewed by scrolling to the right in a report.*

Filtering

The facilities list can be filtered by any or all of the following criteria: jurisdiction, owner, facility type, and hazard type. The effect of this filtering is to pare down the long list of facilities to only those of particular interest.

When the facility list is not filtered, the **Filter** button (shown on the lower left of the above screenshot) reads **Filter (ALL)**. When the facility list has some form of filtering applied, this button instead reads **Filter (SOME)**.

Clicking the **Filter** button on the main report brings up the following form for viewing and editing of selections.

Facilities Filter

Filter Choices

List ALL Facilities List SELECTED using filters (below)

Jurisdiction	Owner	Facility Type
<input checked="" type="checkbox"/> CT Fairfield	<input checked="" type="checkbox"/> AMTRAK	<input checked="" type="checkbox"/> Airport
<input checked="" type="checkbox"/> NJ Bergen	<input checked="" type="checkbox"/> Long Island Ferry Operator	<input checked="" type="checkbox"/> Bus Depot
<input checked="" type="checkbox"/> NJ Essex	<input checked="" type="checkbox"/> Long Island Jurisdiction	<input checked="" type="checkbox"/> Ferry
<input checked="" type="checkbox"/> NJ Hudson	<input checked="" type="checkbox"/> MTA Bridges and Tunnels	<input checked="" type="checkbox"/> Highway Bridge
<input checked="" type="checkbox"/> NJ Middlesex	<input checked="" type="checkbox"/> MTA Long Island Railroad	<input checked="" type="checkbox"/> Highway Surface
<input checked="" type="checkbox"/> NJ Monmouth	<input checked="" type="checkbox"/> MTA Metro North	<input checked="" type="checkbox"/> Highway Tunnel
<input checked="" type="checkbox"/> NJ Union	<input checked="" type="checkbox"/> MTA New York City Transit	<input checked="" type="checkbox"/> Rail
<input checked="" type="checkbox"/> NY Bronx	<input checked="" type="checkbox"/> Nassau County	<input checked="" type="checkbox"/> Rail Station
<input checked="" type="checkbox"/> NY Brooklyn	<input checked="" type="checkbox"/> Nassau County Bridge Authority	<input checked="" type="checkbox"/> Rail Tunnel
<input checked="" type="checkbox"/> NY Dutchess	<input checked="" type="checkbox"/> New Jersey DOT	<input checked="" type="checkbox"/> Rail Yard
<input checked="" type="checkbox"/> NY Manhattan	<input checked="" type="checkbox"/> New Jersey Transit	
<input checked="" type="checkbox"/> NY Nassau	<input checked="" type="checkbox"/> New York City DOT	
<input checked="" type="checkbox"/> NY Putnam	<input checked="" type="checkbox"/> NY State DOT Region 10	
<input checked="" type="checkbox"/> NY Queens	<input checked="" type="checkbox"/> NY State DOT Region 11	
<input checked="" type="checkbox"/> NY Staten Island	<input checked="" type="checkbox"/> NY State DOT Region 8	
<input checked="" type="checkbox"/> NY Suffolk	<input checked="" type="checkbox"/> NY State Thruway Authority	
<input checked="" type="checkbox"/> NY Westchester	<input checked="" type="checkbox"/> Port Authority of NY and NJ	
	<input checked="" type="checkbox"/> Suffolk County	
	<input checked="" type="checkbox"/> Westchester County	

Select All NYC Metro Select All Select All

Hazard Type

Wind Affected Surge Affected

Cancel Apply

Facility Options

To view/change the underlying facility clearance time components, press the Set Facility Options button. In the 'Mobilize time', 'Evacuate time', 'Closure time', and 'Total time' columns here, you see the default number of hours required for each category of storm (CAT 1/2/3/4/5*).

**HURREVAC is a global tool that requires inputs for all 5 storm categories. However in this table below, CAT5 is simply a duplicate of CAT4 values since an escalation over CAT4 conditions would be meteorologically unlikely for a storm impacting the NY area.*

To add or subtract hours, enter the value in the box (enter "-" to subtract), and select **Apply**. 'Apply to Selected Facilities' is an option for facilities highlighted in blue using CTRL-click.

Mobilize Time Offset (hrs)
 Evacuation Time Offset (hrs)
 Close Time Offset (hrs)

Facility	Evac. Type	Mobilize time (hrs)	Evacuate time (hrs)	Closure time (hrs)	Total time (hrs)
Yukon Dep	Surge	6 / 6 / 6 / 6 / 6	3 / 4 / 6 / 8 / 8	4 / 4 / 4 / 4 / 4	13 / 14 / 16 / 18 / 18
Yonkers Dep	Surge	6 / 6 / 6 / 6 / 6	3 / 4 / 6 / 8 / 8	4 / 4 / 4 / 4 / 4	13 / 14 / 16 / 18 / 18
Williamsburg Bridge-ctr span	Wind	3 / 3 / 3 / 3 / 3	6 / 6.5 / 6.7 / 7 / 7	2 / 2 / 2 / 2 / 2	11 / 11.5 / 11.7 / 12 / 12
Whitestone Expwy-nb-20th Ave	Surge	3 / 3 / 3 / 3 / 3	10 / 18 / 31 / 33 / 33	6 / 6 / 6 / 6 / 6	19 / 27 / 40 / 42 / 42
W Shore Rd-s of Bayville Bridge	Surge	1 / 1 / 1 / 1 / 1	6 / 8 / 10 / 11 / 11	3 / 3 / 3 / 3 / 3	10 / 12 / 14 / 15 / 15
Verrazano Bridge-ctr span	Wind	3 / 3 / 3 / 3 / 3	6 / 7 / 10 / 12 / 12	1.2 / 1.2 / 1.2 / 1.2 / ...	10.2 / 11.2 / 14.2 / 16.2 / 16.2
Verrazano Bridge-approach	Surge	3 / 3 / 3 / 3 / 3	6 / 7 / 10 / 12 / 12	1.2 / 1.2 / 1.2 / 1.2 / ...	10.2 / 11.2 / 14.2 / 16.2 / 16.2
Van Wyck-Grand Central Pkwy	Surge	3 / 3 / 3 / 3 / 3	10 / 18 / 31 / 33 / 33	6 / 6 / 6 / 6 / 6	19 / 27 / 40 / 42 / 42
Valley Interlocking/Yard	Surge	8 / 8 / 8 / 8 / 8	3 / 4 / 6 / 8 / 8	4 / 4 / 4 / 4 / 4	15 / 16 / 18 / 20 / 20
US 46-MP 69.9	Surge	3 / 3 / 3 / 3 / 3	8.5 / 10.5 / 13.2 / 16.8 / 16.8	6 / 6 / 6 / 6 / 6	17.5 / 19.5 / 22.2 / 25.8 / 25.8
US 1&9 Truck-MP 2.1	Surge	3 / 3 / 3 / 3 / 3	8.5 / 10.5 / 13.2 / 16.8 / 16.8	6 / 6 / 6 / 6 / 6	17.5 / 19.5 / 22.2 / 25.8 / 25.8
Throgs Neck Bridge-ctr span	Wind	3 / 3 / 3 / 3 / 3	8 / 9 / 12 / 14 / 14	1.2 / 1.2 / 1.2 / 1.2 / ...	12.2 / 13.2 / 16.2 / 18.2 / 18.2
Throgs Neck Bridge-Cross Island Pkwy	Surge	3 / 3 / 3 / 3 / 3	6 / 10 / 13 / 15 / 15	6 / 6 / 6 / 6 / 6	15 / 19 / 22 / 24 / 24
Teterboro Airport	Surge	5 / 5 / 5 / 5 / 5	3 / 5 / 8 / 12 / 12	5 / 5 / 5 / 5 / 5	13 / 15 / 18 / 22 / 22

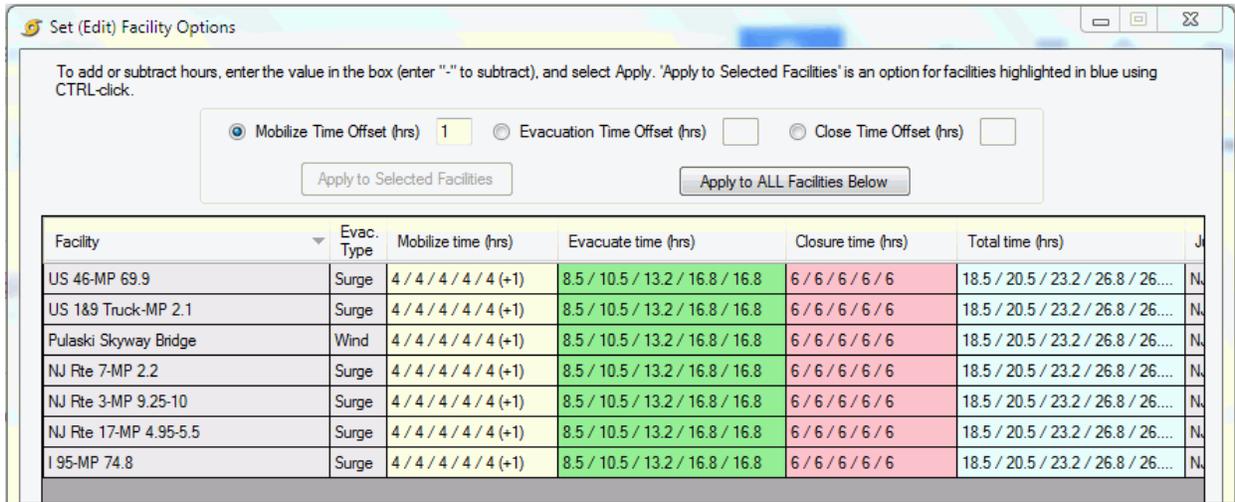
Values in parentheses () = change if any

Modifying Facility Times

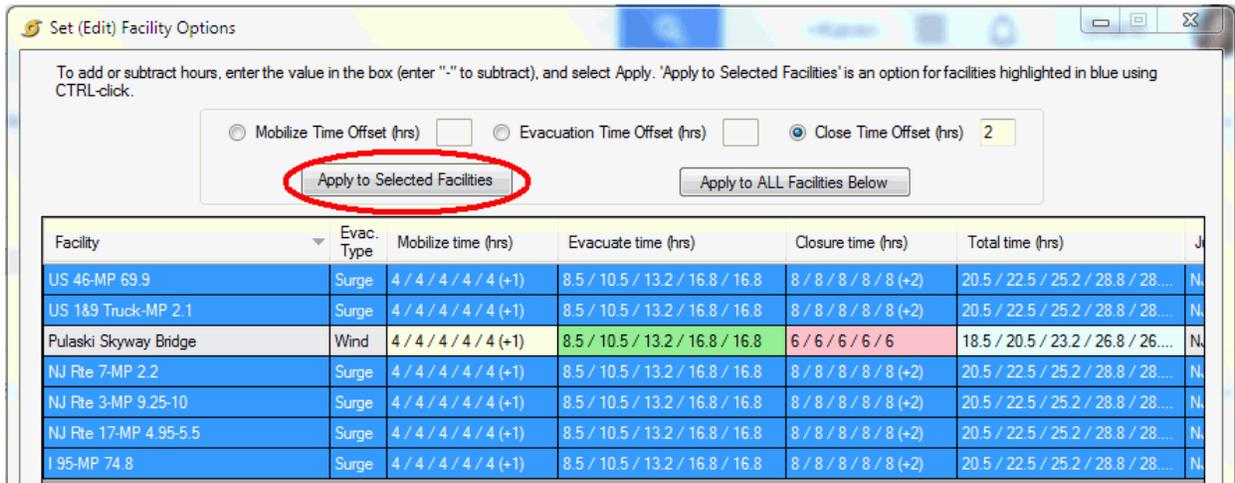
To add or subtract hours from the default values, enter an offset number in the appropriate box (using a minus sign before the number if subtracting) and press one of the two **Apply** buttons. The **Apply to ALL Facilities Below** button makes the change to all facilities shown in the list, while the **Apply to Selected Facilities** button makes the change to only those facilities highlighted. Click on a facility to highlight it in blue and use the CTRL key to make a selection of multiple facilities.

If closed with the **Save/Exit** button, the underlying report will refresh with adjusted times. If closed with the **Cancel** button, the time modifications from this Facility Options session will be discarded. The **Reset to Original** button is used to return to default values, thereby discarding modifications from all sessions.

In the following screen shot, times have been adjusted for NJ DOT facilities. The **Filter** button was first used to limit the list of facilities here and on the main Facility Timing Report to NJ DOT facilities. Next, a Mobilize Time Offset of 1 extra hour was added to all 7 facilities with the **Apply to ALL Facilities Below** button. This change is reflected in the CAT 1/2/3/4/5 values and (+1) notations in both the 'Mobilize time' and 'Total time' columns.

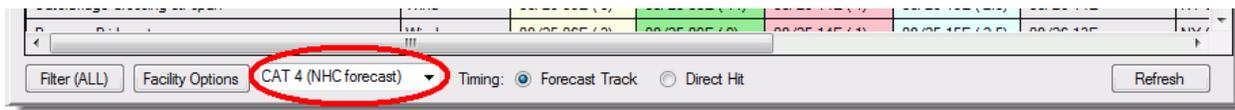


In the following screen shot, 2 hours have also been added to the closure time of surge-affected NJ DOT facilities. The desired facilities were individually selected while holding down the CTRL key and then **Apply to Selected Facilities**. The lone wind-affected facility retains a total offset of just 1 (Mobilize) hour, while the others now have a total offset of 3 hours (1 Mobilize, 2 Closure).



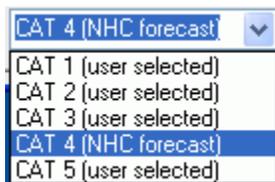
Such an adjustment might perhaps be temporarily warranted by a special condition on the ground, but generally speaking the HES clearance times should be used as is...with greater consideration given to the storm category selection. *Note: Any adjustments made in the Facilities Options will be retained during this program session. After the user exits the program, all adjustments will be lost.*

Storm Category Selection



Storm category is an important consideration in facility action start times. HURREVAC selects the default storm category based on the highest winds predicted over the 72-hour forecast period; however if the maximum wind is within 6 mph (5 knots) of the next Saffir/Simpson category, HURREVAC increases the default selection by one storm category as insurance.

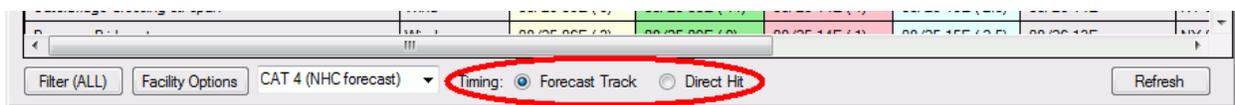
Tip: New York locations considering the threat from a Cat 4 or 5 storm still well south may want to drop the storm category because the storm is forecast to be much less intense once over the cooler waters of the Northeast. For example, after consulting with your local NWS office, you might opt to select 'CAT 2 (user selected)' from the list below where 'CAT 4 (NHC forecast)' was the default for an intense storm still sitting off the coast of Florida.



Press the Refresh button to update the facility report for this advisory. *Note: New advisories will revert back to the default selection since this is an important decision that must be re-evaluated with each new forecast.*

Ideally, the evacuation scenario should match storm intensity at landfall so that you are not evacuating too many or too few people. Storm intensity is difficult to forecast precisely and therefore, as added insurance, emergency managers sometimes elect to prepare for one category higher than what is forecast at landfall.

Forecast Track versus Direct Hit Timing



The Facility Timing report's default procedure is to take a forecast track approach for calculating hazard start time. This differs from the *direct hit* approach that HURREVAC uses in the standard county-based evacuation timing reports. For a curved-track storm such as Hurricane Sandy, forecast track timing suggests start times that are as much as 12 hours later than those suggested by a direct hit track. For relatively straight track storms such as Hurricane Irene, there is little difference between forecast track and direct hit timing.

Forecast track timing may be appropriate to use when there is a high level of confidence in the forecast track of the storm and consideration of the later times that it produces for mobilization,

evacuation, and closure is desirable. In nearly all situations, direct hit timing will produce a more conservative (earlier) timeline for preparations.

Clearance Timing for a Single Facility

This report is a slightly modified version of the standard (county-based) [Evacuation Timing > Single Area](#) report that contains an hour-by-hour breakdown of evacuation actions and storm conditions.

When this report is produced for a facility, the 'Possible Action' column specifically indicates each clearance hour as one of the three types (either mobilization, evacuation, or closure) and the hours after TASK COMPLETE as the type of hazard indicated for that facility (either wind or storm surge).

Report for Hurricane Sandy
Based on Advisory 25 Issued 10/28/2012 11 AM EDT (Old Advisory)

Clearance Timing - Single Facility (Goethals Bridge-ctr span Wind)

Meaning Of Report
 Timeline for sequenced preparations based on the forecast track or direct hit at a single facility. This report calculates start times for mobilization, evacuation, and closure actions in advance of the start of hazardous

Cautionary Note:
 If your facility is within the error swath, you should consider action at the decision times indicated.

Date/Time (hr)	Possible Action	Hrs Left	to 39 mph (34)	to 58 mph (50)	to 74 mph (64)	to Eye	Day/Night
10/28/12 11EDT	Preparation/Planning	4 to Mobilize	147 miles	409 miles	488 miles	496 miles	Daylight
10/28/12 12EDT	Preparation/Planning	3 to Mobilize	134 miles	397 miles	473 miles	487 miles	Daylight
10/28/12 13EDT	Preparation/Planning	2 to Mobilize	123 miles	386 miles	459 miles	478 miles	Daylight
10/28/12 14EDT	Preparation/Planning	1 to Mobilize	110 miles	375 miles	445 miles	470 miles	Daylight
10/28/12 15EDT	BEGIN MOBILIZE	3 to Evac	98 miles	365 miles	430 miles	461 miles	Daylight
10/28/12 16EDT	Mobilize(if needed)	2 to Evac	107 miles	343 miles	412 miles	453 miles	Daylight
10/28/12 17EDT	Mobilize(if needed)	1 to Evac	94 miles	333 miles	397 miles	445 miles	Daylight
10/28/12 18EDT	BEGIN EVACUATION	9 to Closure	82 miles	323 miles	383 miles	437 miles	Daylight
10/28/12 19EDT	Evacuation(if needed)	8 to Closure	70 miles	314 miles	369 miles	430 miles	DARK
10/28/12 20EDT	Evacuation(if needed)	7 to Closure	58 miles	304 miles	355 miles	423 miles	DARK
10/28/12 21EDT	Evacuation(if needed)	6 to Closure	51 miles	295 miles	346 miles	415 miles	DARK
10/28/12 22EDT	Evacuation(if needed)	5 to Closure	59 miles	277 miles	328 miles	407 miles	DARK
10/28/12 23EDT	Evacuation(if needed)	4 to Closure	50 miles	268 miles	318 miles	398 miles	DARK
10/29/12 00EDT	Evacuation(if needed)	3 to Closure	40 miles	257 miles	308 miles	389 miles	DARK
10/29/12 01EDT	Evacuation(if needed)	2 to Closure	29 miles	245 miles	298 miles	380 miles	DARK
10/29/12 02EDT	Evacuation(if needed)	1 to Closure	17 miles	234 miles	286 miles	370 miles	DARK
10/29/12 03EDT	BEGIN CLOSE	1 to 39mph(34)	6 miles	222 miles	276 miles	360 miles	DARK
10/29/12 04EDT	TASKS COMPLETE		0 miles	209 miles	265 miles	349 miles	DARK

Facility Options: CAT 1 (NHC forecast) Timing: Forecast Track Direct Hit Refresh

Rows of the tabular report are colored according to activity:

- **gray** if a pre-decision or post-action hour
- **yellow** if an active mobilization hour
- **green** if an active evacuation hour
- **red** if an active closure hour

In the 'Day/Night' column, the hours in daylight and dark are noted respectively as yellow or blue.

Additional Tips

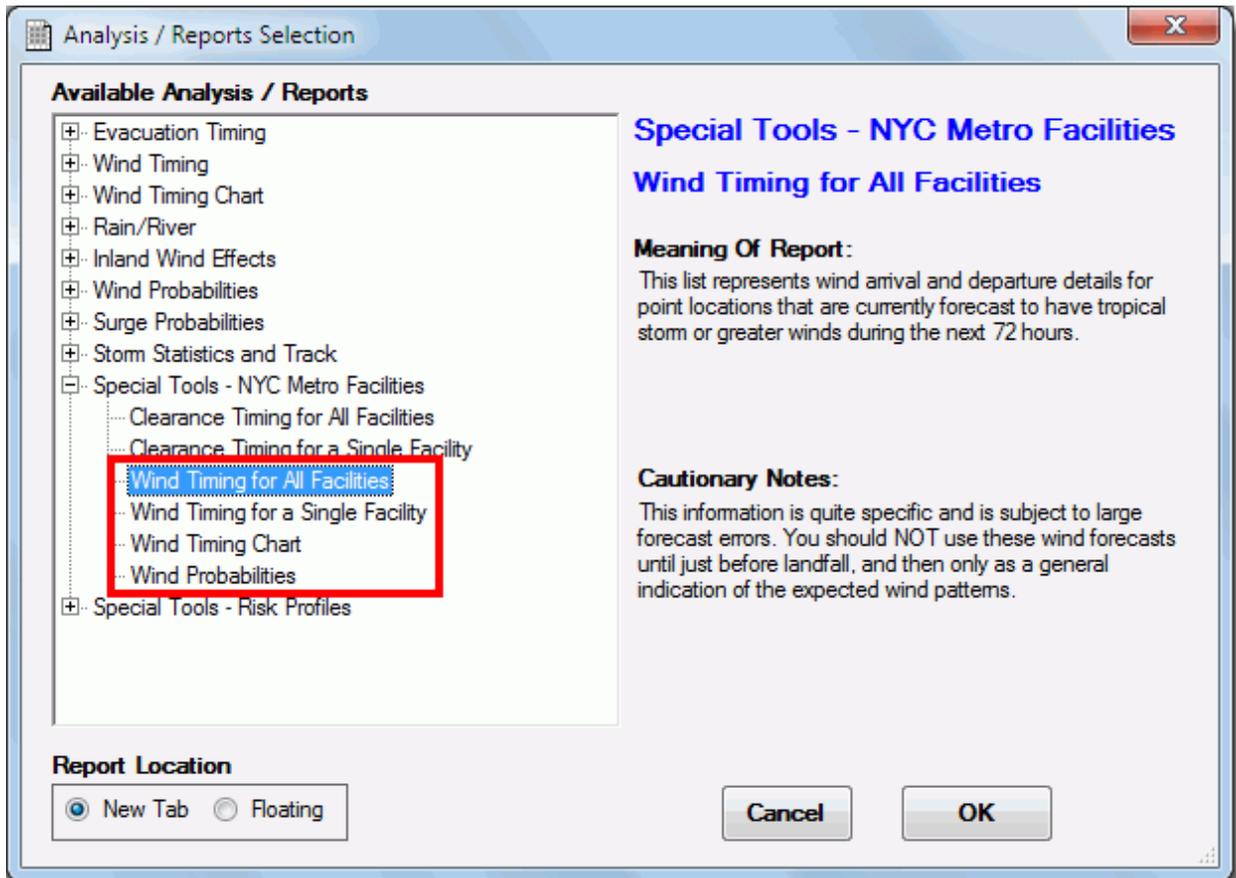
To [print](#) the facility clearance timing report data to a file, click the **Print** button within the [Program Header](#). An 'Export Report to Excel' option is also available by right-clicking on the report tab name.

Use the **Refresh** button at the bottom right to redo the report if you have a new storm or different advisory loaded into the map display. The **Refresh** button can be useful in a live-storm situation in which a new advisory is received by the system and you want to refresh the Facility Timing report with the latest forecast information.

Facility Wind Timing

Facility wind timing functions of HURREVAC's [special toolset for New York City metropolitan area transportation facilities](#) are accessed through the [Analysis/Reports Selection panel](#).

The four types of facility wind timing reports are highlighted below:



The first three timing reports are based upon the *deterministic forecast* of storm track and winds from whatever storm advisory is currently displayed in the Map View. *Note: The NHC does not include **wind ranges** information in the extended forecast from 72 to 120 hours. Therefore, the reporting period for these reports is only from hour 0 (the hour the NHC forecast is issued) to hour 72.*

The final report type (Wind Probabilities) is based on analysis of a separate [gridded wind probability dataset](#) which provides probabilistic information for NHC's entire 120-hour forecast period.

Wind Timing for All Facilities

This report provides wind timing details for all of the 132 transportation facilities that are within the [72-hour wind swath](#). Each row of the report is colored according to the peak wind intensity - **blue** if tropical storm force (39mph/34kt), **yellow** if strong tropical storm (58mph/50kt), and **red** if hurricane force (74mph/64kt).

Report for Hurricane Irene
Based on Advisory 28 Issued 8/27/2011 5 AM EDT (Old Advisory)

Wind Timing All Affected NYC Metro Facilities

Meaning Of Report
This list represents wind arrival and departure details for point locations that are currently forecast to have tropical storm or greater winds during the next 72 hours.

Cautionary Note:
This information is quite specific and is subject to large forecast errors. You should NOT use these wind forecasts until just before landfall, and then only as a general indication of the expected wind patterns.

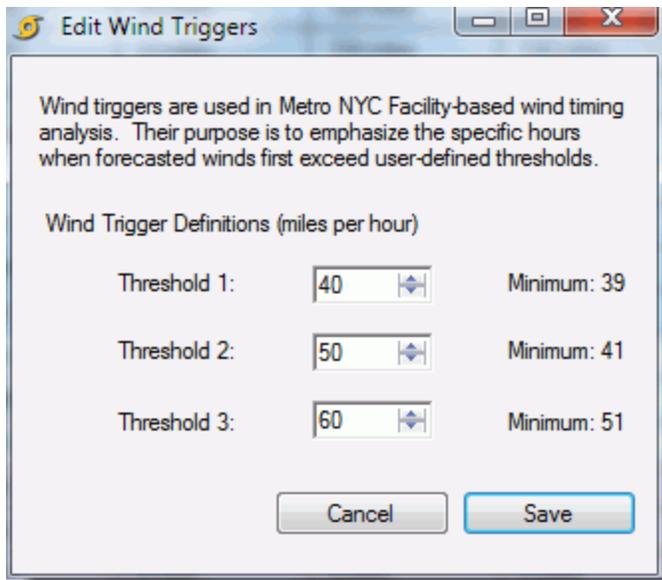
Location	User-Defined Wind Triggers			NHC-Defined Wind Thresholds						Peak Wind
	40mph	50mph	60mph	39mph (34kt)	58mph (50kt)	74mph (64kt)	74mphEND(dur)	58mphEND(dur)	39mphEND(dur)	
NY Cross Bay Bridge-ctr span	08/27 22E	08/28 02E	08/28 04E	08/27 22E	08/28 04E	08/28 07E	08/28 12E [05]	08/28 14E [10]	08/28 16E [18]	77mph (67kt) 08/28 09E
NY Marine Pkwy Bridge-ctr span	08/27 22E	08/28 02E	08/28 04E	08/27 22E	08/28 04E	08/28 07E	08/28 12E [05]	08/28 14E [10]	08/28 16E [18]	77mph (67kt) 08/28 09E
NY Outerbridge Crossing-ctr span	08/27 22E	08/28 02E	08/28 06E	08/27 22E	08/28 04E	08/28 07E	08/28 11E [04]	08/28 13E [09]	08/28 15E [17]	75mph (65kt) 08/28 09E
NY Bayonne Bridge-ctr span	08/27 22E	08/28 02E	08/28 07E	08/27 22E	08/28 04E	08/28 07E	08/28 11E [04]	08/28 14E [10]	08/28 16E [18]	75mph (65kt) 08/28 09E
NY Verrazano Bridge-ctr span	08/27 22E	08/28 02E	08/28 05E	08/27 22E	08/28 04E	08/28 07E	08/28 11E [04]	08/28 14E [10]	08/28 16E [18]	75mph (65kt) 08/28 08E
NY Fire Island Ferries	08/27 23E	08/28 03E	08/28 05E	08/27 23E	08/28 05E	08/28 08E	08/28 14E [06]	08/28 14E [09]	08/28 18E [19]	78mph (68kt) 08/28 10E
NY BX Whitestone Bridge-ctr span	08/27 23E	08/28 03E	08/28 05E	08/27 23E	08/28 05E	08/28 08E	08/28 12E [04]	08/28 14E [09]	08/28 16E [17]	76mph (66kt) 08/28 09E
NY MN Bridge-ctr span	08/27 23E	08/28 03E	08/28 05E	08/27 23E	08/28 05E	08/28 07E	08/28 12E [05]	08/28 14E [09]	08/28 16E [17]	75mph (65kt) 08/28 08E
NY Throgs Neck Bridge-ctr span	08/27 23E	08/28 03E	08/28 06E	08/27 23E	08/28 05E	08/28 07E	08/28 12E [05]	08/28 14E [09]	08/28 16E [17]	76mph (66kt) 08/28 09E
NY Henry Hudson Bridge-ctr span	08/27 23E	08/28 03E	08/28 06E	08/27 23E	08/28 05E	08/28 08E	08/28 12E [04]	08/28 14E [09]	08/28 17E [18]	75mph (65kt) 08/28 09E
NY BK Bridge-ctr span	08/27 23E	08/28 03E	08/28 05E	08/27 23E	08/28 05E	08/28 07E	08/28 12E [05]	08/28 14E [09]	08/28 16E [17]	75mph (65kt) 08/28 08E
NY RFK Bridge	08/27 23E	08/28 02E	08/28 05E	08/27 23E	08/28 05E	08/28 08E	08/28 12E [04]	08/28 14E [09]	08/28 16E [17]	76mph (66kt) 08/28 10E
NY Queensboro Bridge-ctr span	08/27 23E	08/28 02E	08/28 05E	08/27 23E	08/28 05E	08/28 07E	08/28 12E [05]	08/28 14E [09]	08/28 16E [17]	76mph (66kt) 08/28 10E
NY Williamsburg Bridge-ctr span	08/27 23E	08/28 02E	08/28 05E	08/27 23E	08/28 05E	08/28 07E	08/28 12E [05]	08/28 14E [09]	08/28 16E [17]	76mph (66kt) 08/28 10E
NY Cross BX Expwy-White Plains Rd	08/27 23E	08/28 03E	08/28 06E	08/27 23E	08/28 05E	08/28 08E	08/28 12E [04]	08/28 14E [09]	08/28 16E [17]	76mph (66kt) 08/28 10E
NY Hutchinson Rvr Pkwy-Pelham Pkwy and I 95	08/28 00E	08/28 03E	08/28 06E	08/27 23E	08/28 05E	08/28 08E	08/28 12E [04]	08/28 14E [09]	08/28 17E [18]	76mph (66kt) 08/28 10E

Wind Triggers: 40/50/60 mph [Edit](#)

User-Defined Wind Triggers

These first three columns of data are provided for transportation agencies having action plans that are triggered when wind conditions meet or exceed a certain 1-minute maximum sustained speed. Wind trigger definitions are initially set to 40, 50, and 60 mph to match the action plans of Metro NYC bridge facilities; however these thresholds can be changed by clicking on the 'Edit' link at bottom right of the report.

The following screen is used to make edits to the wind trigger definitions. New numbers are retained upon exit of the program and used in future sessions of HURREVAC.



Note: HURREVAC's reporting of the expected 'Wind Trigger' hours is subject to a great deal of forecast uncertainty and large scale precision, and thus should only be taken as general guidance. Where possible, agencies are encouraged to utilize observed wind values (such as from anemometers installed at facilities) and local weather service office forecast products in decision-making.

NHC-Defined Wind Thresholds and Peak Winds

The next seven columns in the report on wind timing use the standard thresholds of 39mph/34kt, 58mph/50kt, and 74mph/64kt 1-minute maximum sustained winds that are provided in *NHC's* forecast advisories. The format and content of the data is similar to that found in the standard county-based [Wind Timing > All Areas](#) report. The forecasted arrival time and ending time is given for each of the three thresholds of wind. Duration of winds equal to or greater than the threshold appears in parentheses after the ending times. Time of peak winds (storm's closest approach) is reported in the final column.

Sorting and Filtering

The report's initial sort order is alphabetical by state and facility name. Buttons are provided at the bottom of the wind timing reports to change this sorting to either earliest wind arrival or strongest maximum winds.

The Filter button provides access to filtering capabilities shared with [Facility Clearance Timing](#). Your filter selections are applied globally, meaning that any newly generated (or refreshed) reports will also contain the same pared-down list of facilities.

Wind Timing for a Single Facility

This is a slightly modified version of the standard (county-based) [Wind Timing > Single Area](#) report that contains an hour-by-hour breakdown of forecasted wind conditions.

A bolded row indicates that this is an hour at which a defined wind trigger is first met or exceeded.

Report for Hurricane Irene
Based on Advisory 28 Issued 8/27/2011 5 AM EDT (Old Advisory)

Wind Timing Details - Single Facility (Cross Bay Bridge-ctr span, NY)

Meaning Of Report
This list represents wind detail information for a single location. The time frame ranges from hour 0(the hour of the forecast) to hour 72(the limit of the forecast).

Cautionary Note:
This information is quite specific and is subject to large forecast errors. You should NOT use these wind forecasts until just before landfall, and then only as a general indication of the expected wind patterns.

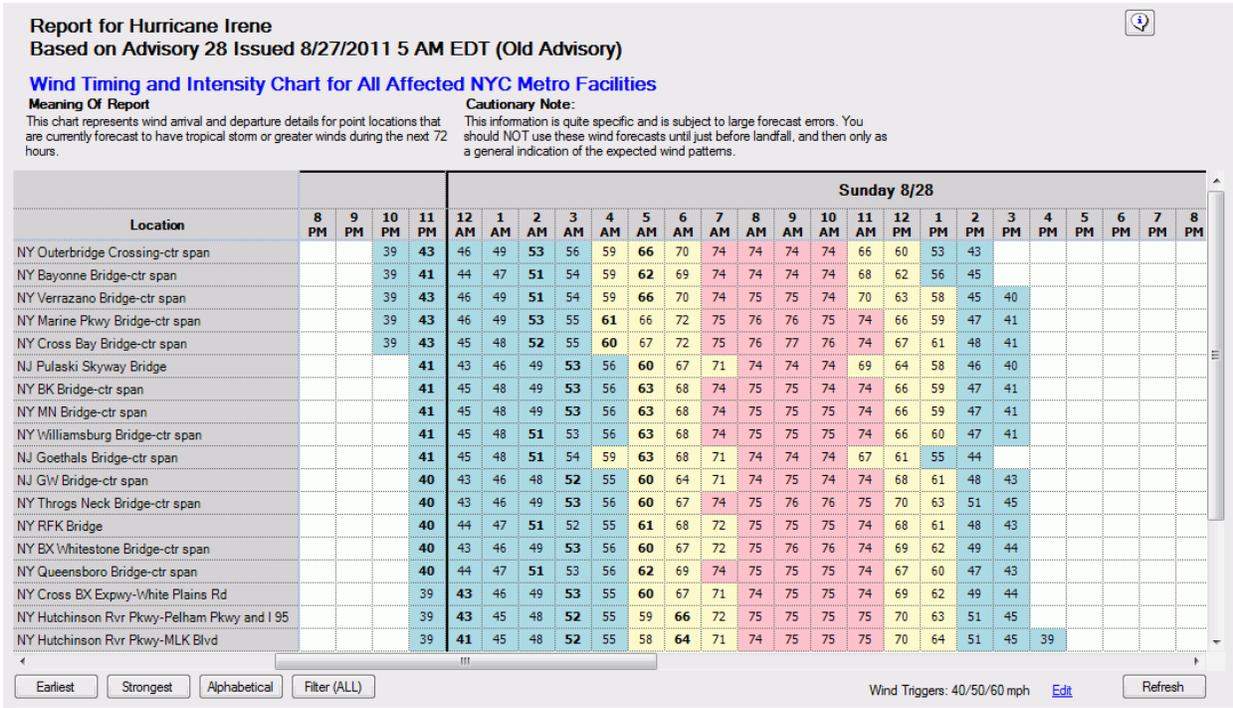
Date/Time (hr)	Wind Speed	From Direction	39mph distance	58mph distance	74mph distance	Eye distance	Hour
08/27/11 20EDT	less than 39mph	(090)	40 miles	130 miles	173 miles	243 miles	15
08/27/11 21EDT	less than 39mph	(090)	25 miles	116 miles	158 miles	228 miles	16
08/27/11 22EDT	less than 39mph	(090)	10 miles	100 miles	143 miles	213 miles	17
08/27/11 23EDT	40mph (35kt)	(090)	0 miles	85 miles	127 miles	197 miles	18
08/28/11 00EDT	43mph (38kt)	(090)	0 miles	69 miles	112 miles	182 miles	19
08/28/11 01EDT	46mph (40kt)	(090)	0 miles	54 miles	96 miles	166 miles	20
08/28/11 02EDT	48mph (42kt)	(080)	0 miles	42 miles	83 miles	150 miles	21
08/28/11 03EDT	51mph (45kt)	(080)	0 miles	26 miles	67 miles	134 miles	22
08/28/11 04EDT	55mph (48kt)	(080)	0 miles	10 miles	51 miles	117 miles	23
08/28/11 05EDT	59mph (52kt)	(080)	0 miles	0 miles	34 miles	100 miles	24
08/28/11 06EDT	66mph (58kt)	(080)	0 miles	0 miles	17 miles	83 miles	25
08/28/11 07EDT	66mph (58kt)	(070)	0 miles	0 miles	4 miles	66 miles	26
08/28/11 08EDT	73mph (64kt)	(060)	0 miles	0 miles	0 miles	50 miles	27
08/28/11 09EDT	74mph (65kt)	(040)	0 miles	0 miles	0 miles	36 miles	28
08/28/11 10EDT	74mph (65kt)	(360)	0 miles	0 miles	0 miles	28 miles	29
08/28/11 11EDT	74mph (65kt)	(330)	0 miles	0 miles	0 miles	33 miles	30
08/28/11 12EDT	70mph (61kt)	(320)	0 miles	0 miles	9 miles	47 miles	31
08/28/11 13EDT	64mph (56kt)	(310)	0 miles	0 miles	27 miles	65 miles	32

Wind Triggers: 40/50/60 mph [Edit](#)

Wind Timing Chart

This chart provides wind timing and intensity information identical to what is reported in the detailed Single Facility reports. The advantage of this chart-based layout is that you can more easily visualize possible wind conditions over time for multiple locations.

The numbers in individual cells represent the forecast wind speed in mph at each hour. A bolded value indicates that this is an hour at which a defined wind trigger is first met or exceeded. Sorting, filtering, and wind trigger edits operate the same as in the Wind Timing for All Facilities report.



Wind Probabilities

This report is identical in format to the standard, county-based [Wind Probabilities > All Areas](#) report. In order to generate this report, you must first load a wind probabilities data layer within either the Current map display or from 'Other Archived Data' of the Archives tab.

The Filter button provides access to filtering capabilities shared with [Facility Clearance Timing](#).

Tropical Cyclone Wind Speed Probabilities for the 120 hours (5 days) from 8 PM Sat 10/28/2012 to 8 PM Fri 11/2/2012							
Percent Probabilities for NYC Metro Facilities - Individual and (Cumulative) Time Periods							
Location	8 PM Sat to 8 AM Sun (12 Hrs)	8 AM Sun to 8 PM Sun (24 Hrs)	8 PM Sun to 8 AM Mon (36 Hrs)	8 AM Mon to 8 PM Mon (48 Hrs)	8 PM Mon to 8 PM Tue (72 Hrs)	8 PM Tue to 8 PM Wed (96 Hrs)	8 PM Wed to 8 PM Thu (120 Hrs)
NJ Goethals Bridge-ctr span - 39 mph	X	X (X)	5 (5)	37 (42)	29 (71)	1 (72)	X (72)
NJ Goethals Bridge-ctr span - 58 mph	X	X (X)	X (X)	7 (7)	22 (29)	1 (30)	X (30)
NJ Goethals Bridge-ctr span - 74 mph	X	X (X)	X (X)	X (X)	9 (9)	X (9)	X (9)
NJ Pulaski Skyway Bridge - 39 mph	X	X (X)	4 (4)	38 (42)	29 (71)	1 (72)	X (72)
NJ Pulaski Skyway Bridge - 58 mph	X	X (X)	X (X)	7 (7)	20 (27)	1 (28)	X (28)
NJ Pulaski Skyway Bridge - 74 mph	X	X (X)	X (X)	X (X)	9 (9)	X (9)	X (9)
NY Bayonne Bridge-ctr span - 39 mph	X	X (X)	5 (5)	38 (43)	29 (72)	1 (73)	X (73)
NY Bayonne Bridge-ctr span - 58 mph	X	X (X)	X (X)	8 (8)	21 (29)	1 (30)	X (30)
NY Bayonne Bridge-ctr span - 74 mph	X	X (X)	X (X)	X (X)	9 (9)	1 (10)	X (10)
NY BK Bridge-ctr span - 39 mph	X	X (X)	5 (5)	38 (43)	29 (72)	X (72)	1 (73)
NY BK Bridge-ctr span - 58 mph	X	X (X)	X (X)	8 (8)	20 (28)	1 (29)	X (29)
NY BK Bridge-ctr span - 74 mph	X	X (X)	X (X)	2 (2)	7 (9)	X (9)	1 (10)
NY BX Whitestone Bridge-ctr span - 39 mph	X	X (X)	5 (5)	39 (44)	27 (71)	1 (72)	X (72)
NY BX Whitestone Bridge-ctr span - 58 mph	X	X (X)	X (X)	8 (8)	18 (26)	1 (27)	X (27)
NY BX Whitestone Bridge-ctr span - 74 mph	X	X (X)	X (X)	2 (2)	6 (8)	1 (9)	X (9)
NY Cross Bay Bridge-ctr span - 39 mph	X	X (X)	6 (6)	40 (46)	28 (74)	X (74)	X (74)
NY Cross Bay Bridge-ctr span - 58 mph	X	X (X)	X (X)	10 (10)	20 (30)	1 (31)	X (31)

Filter (ALL)

Additional Tips

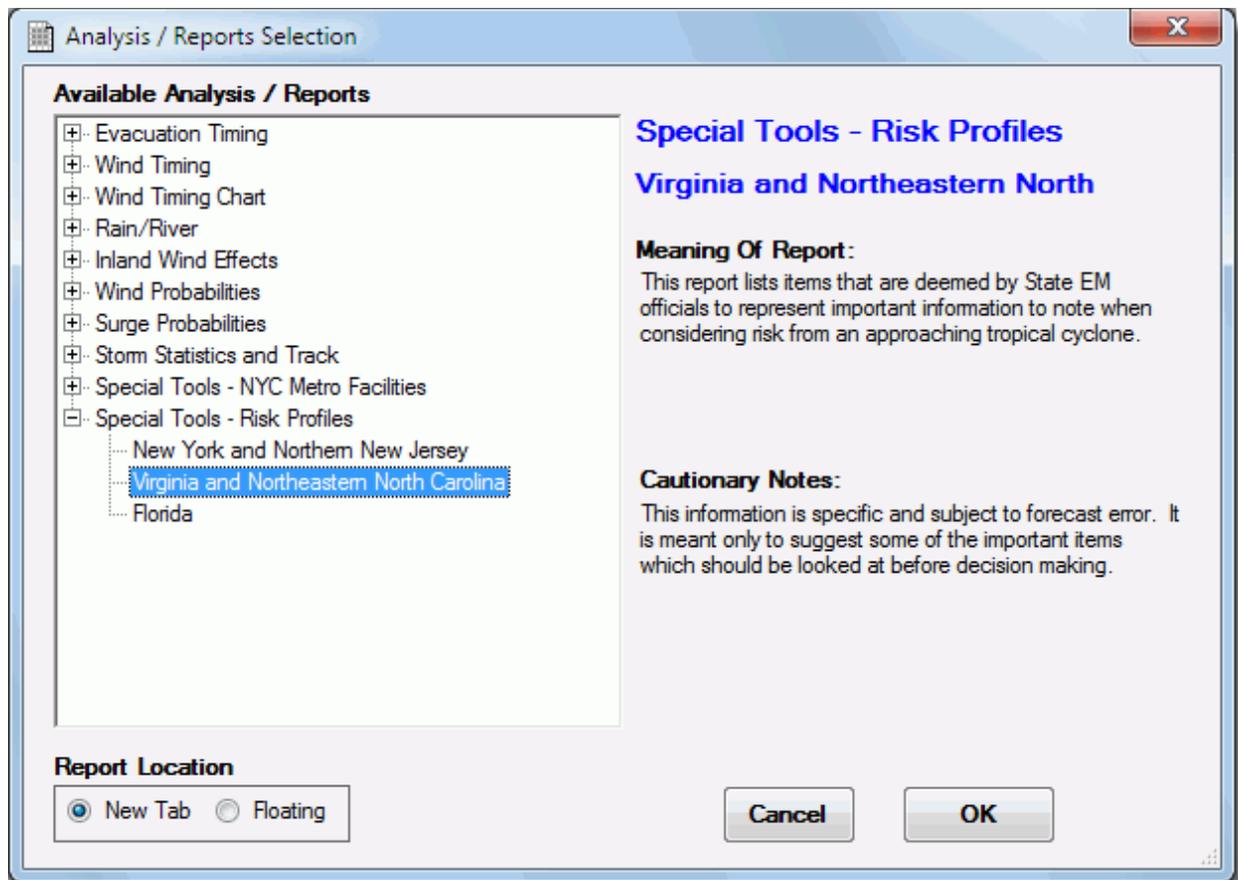
To [print](#) the facility wind timing data to a file, click the **Print** button within the [Program Header](#). An 'Export Report to Excel' option is also available by right-clicking on any of the report tab names.

Use the **Refresh** button at bottom right to redo the report if you have a new storm or different advisory loaded into the map display. The Refresh button can be useful in a live-storm situation in which a new advisory is received by the system and you want to refresh the Facility Timing report with the latest forecast information.

Risk Profiles

The Risk Profile is a [special state-specific tool](#) in HURREVAC which highlights information that is regarded by a state's emergency management agency to be especially important to consider when under a tropical cyclone threat. Risk Profiles are only available for the states of New York, Virginia, and Florida.

The Risk Profile is accessed through the [Analysis/Reports Selection panel](#) and the resulting report is based upon whatever storm advisory is currently displayed in the Map View.



The initial display for the Risk Profile will be something similar to this example below from Virginia.

 The **Critical Indicator** is a yellow triangle with an exclamation mark inside. This means that you should carefully consider the condition of this criterion. It is an important indication of a threat and is a critical one to consider. **

 The **Indicator of Concern** is a white circle with an exclamation mark inside. This means that the condition of the criterion is important, but not quite at the critical level and should be monitored closely. **

*** The New York Risk Profile does not employ these indicators.*

The intention is to lead the emergency manager toward a decision in a logical manner that takes advantage of the information that is available, but which may not be readily apparent to all but the most experienced.

Risk Profile Components

The following controls are used to manipulate the Risk Profile report (i.e. change the type of information displayed within the white box):

Geographic Scope Selection

This list box at top left of the Risk Profile is used to define a geographic scope for the report. Choices are either for an overall (State Profile) perspective or for the (Local) perspective of a single jurisdiction. Some states' Risk Profiles include a few neighboring counties in other states if their evacuation plans are interrelated (i.e. Outer Banks counties of Dare and Currituck, North Carolina would evacuate through the southeastern corner of Virginia).



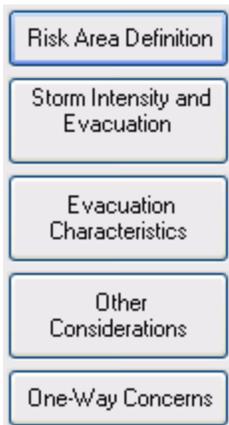
Criteria are often worded differently depending on whether the scope is state-wide or local. For example, a state-wide question about forecast peak winds is phrased "Forecast peak wind in Virginia based on the 72-hr forecast track?" and answered "82 mph in Suffolk" while the county-specific question is phrased "Forecast peak wind in your locality based on the 72-hr forecast track?" and answered with a county-specific wind speed.

In a few cases, criteria may apply to one scope but not the other. For example, since interstate lane reversal is a regional evacuation option, it is only addressed in criteria that appear under the State Profile.

Topics

Criteria are organized and labeled according to topic. These topics are shown on sequentially-lettered (A, B, C, D, etc) screens. The number and types of topics vary according to the custom design of each state's Risk Profile.

The following topics are common to the Virginia and Florida Risk Profiles:



Risk Area Definition - Criteria that lead the user to consider information that is felt necessary to define the geographic region at risk and the change in risk from recent advisories.

Storm Intensity and Evacuation Scenario - Criteria that lead the user toward the correct Saffir-Simpson Category assumption for determining the type and extent of evacuation, should one be needed.

Evacuation Characteristics - Criteria that lead the user toward determining the evacuation start time, based not only on the length of clearance time needed, but on such things as the time of day at which evacuation occurs.

Other Considerations - This topic includes other information which may affect your evacuation, such as time of year, and whether other nearby regions are likely to be evacuating.

One-Way Concerns - This topic is usually available only when the state profile is selected. It considers the problem of whether and when to reverse-lane certain evacuation routes in order to increase capacity.

New York's Risk Profile has criteria arranged in four topics that align closely with New York City OEM's Hurricane Forecast Summary template:



Trajectory and Strength - Criteria that define the geographic region at risk and highlight storm statistics relevant to general situational awareness.

Winds - Criteria that lead the user to closely consider the potential for hazardous winds.

Tide/Rainfall - Criteria that lead the user to closely consider the potential for severe coastal storm surge and/or inland flooding due to heavy rainfall.

Evacuation Decisions - Criteria that lead the user toward determining the evacuation start time and deadlines for other actions.

Summary

A summary screen can be generated of either the state profile or local county topics by clicking on the Summary button. The summary provides a graphical overview of the Risk Profile Indicators for the last 12 advisories. Once the summary screen is displayed, subsequent clicks on the Summary button will toggle between a view of 12 main advisories and a view of main and intermediate advisories.

Report for Tropical Storm Hanna
Based on Advisory 34 Issued 9/5/2008 5 AM EDT (Old Advisory)

Risk Profile VA



Risk Profile Summary (State) for Virginia
 Tropical Cyclone: HANNA Advisory # 34 Date/Time: FRI 09/05/08 05 EDT

Indicator Level: ▲ Critical ⓘ of Concern

Advy	Risk Area						Storm Int.					Evacuation						Other		One Way				R Y G Cr oC				
	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5	6	1	2	1	2	3	4	R	Y	G	Cr	oC
34	▲	ⓘ									*1		ⓘ	ⓘ	▲	▲	▲		▲					7	4	12	5	3
33	▲										*1		ⓘ	ⓘ	ⓘ	▲		▲					4	8	11	3	3	
32	▲										*1		ⓘ	ⓘ	ⓘ	▲		▲					4	8	11	3	3	
31	▲							ⓘ			*1		ⓘ			▲		▲				▲	6	7	10	3	2	
30	ⓘ							ⓘ			*1		ⓘ			▲		▲				▲	6	7	10	2	3	
29	ⓘ		ⓘ					ⓘ			*1		ⓘ			▲		▲				▲	8	6	9	2	4	
28	ⓘ		ⓘ					ⓘ			*1		ⓘ			▲		▲				▲	7	6	10	1	4	
27	ⓘ							ⓘ			*1					▲		▲				▲	5	2	16	1	2	
26	ⓘ		ⓘ					ⓘ			*1		ⓘ			▲		▲		▲		▲	7	5	11	2	4	
25	ⓘ		ⓘ					ⓘ			*1					▲		▲				▲	7	3	13	2	3	
24	ⓘ		ⓘ					ⓘ			*1					▲		▲				▲	6	2	15	1	4	
23	ⓘ							ⓘ			*1					▲		▲				▲	6	2	15	2	2	

NHC Web Site GO Evac Options Refresh

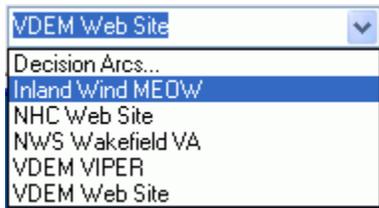
Special Considerations

The Risk Profile is very much a "weight of the evidence" system, designed to light up red when the user's region is threatened in a meaningful way. There are no hard and fast rules for using the system, but over time, users will no doubt develop some rules of thumb, such as a high number of red boxes on the Summary screen.

In looking for trends on the Summary screen, keep in mind that certain criteria, such as the One-Way Concerns, are designed to function more as timing indicators for starting a lane reversal

option. That is, they move to red as the time for lane reversal setup is close and move back to green after the time has passed and the strategy can no longer be considered. Thus, while the other indicators may go to red and stay there as the storm approaches, the One-Way indicators on the State Summary screen will normally light up red only for one or two advisories around the time of One-Way setup.

Resources



The Resources list box at the bottom left highlights additional information (both internal and external to HURREVAC) that could be relevant to the local or state situation. Making a selection in this box and then pressing GO will either launch a web page or open a control within the program.

Additional Tips

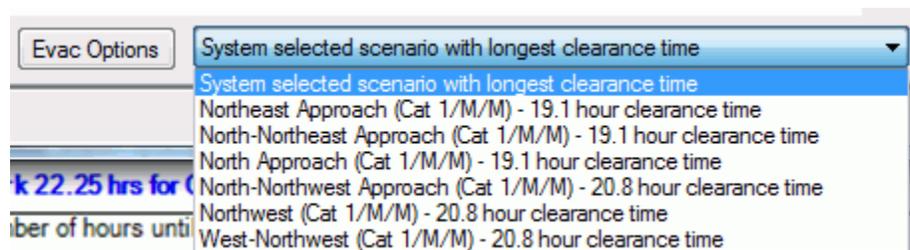
To [print or export](#) the report's data to a file, click the **Print** button within the [Program Header](#).

*** *The New York Risk Profile also offers a spreadsheet export option when the profile scope is set to a local jurisdiction. Information from the profile is export in New York City OEM's Hurricane Forecast Summary format. This option is accessed by right-clicking on the NY Risk Profile tab and choosing 'Export Report to Excel'.*

Use the **Refresh** button at bottom right to redo the report if you have a new storm or different advisory loaded into the Map Display. The Refresh button can be useful in a live-storm situation in which a new advisory is received by the system and you want to refresh the Risk Profile with the latest forecast information.

The **Evac Options** button allows you to view and [change the default HES settings](#) for a county or counties. Changing these settings can have a major effect on the Risk Profile output and should only be manipulated if you are very familiar with the underlying Hurricane Evacuation Study. ****

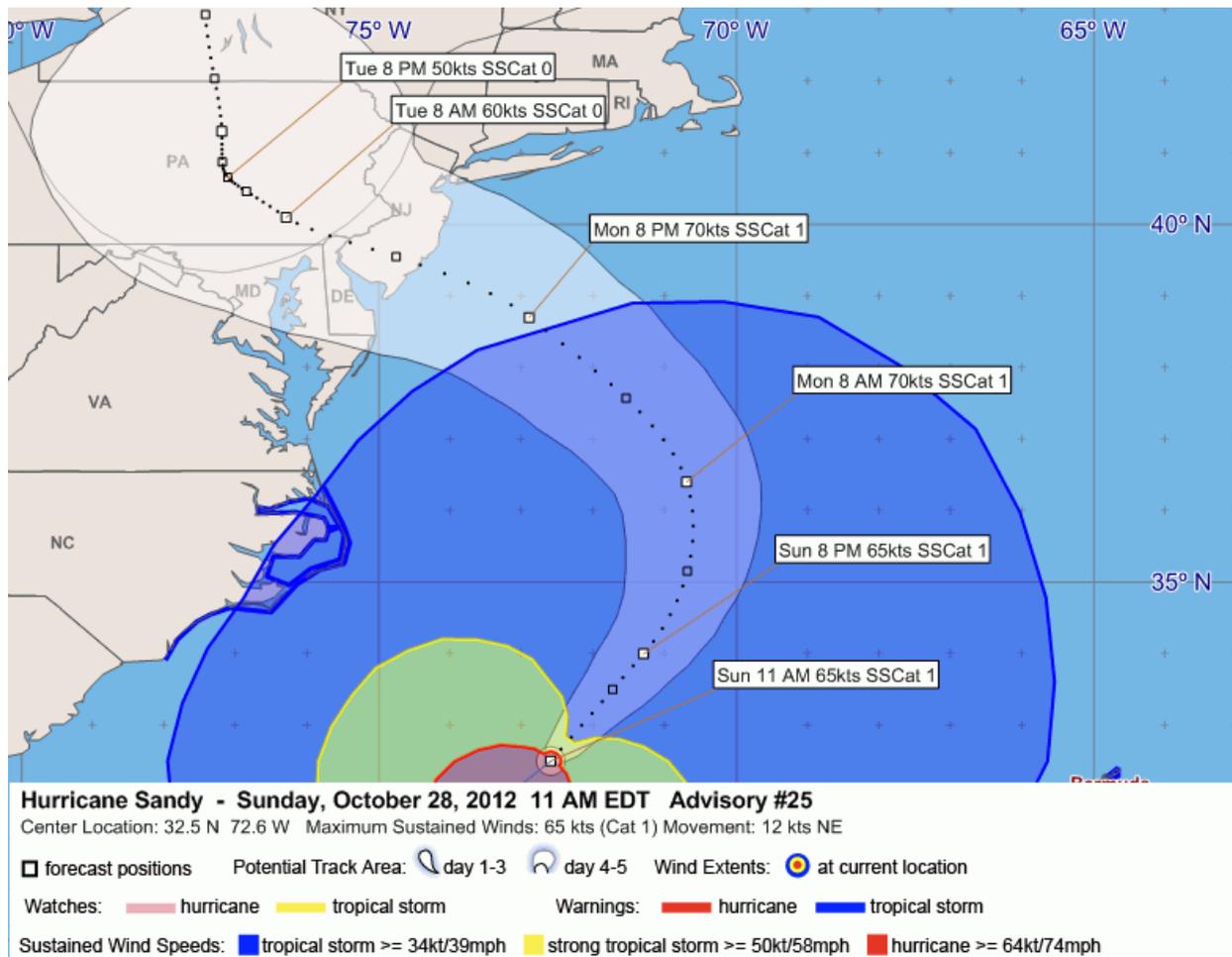
**** *Florida and Virginia profiles for jurisdictions with more than one scenario always utilize the one that produces the longest clearance time. The New York Risk Profile initially defaults to this longest clearance time, but also includes the option to override the scenario selection as shown below.*



New York Risk Profile

Last updated: 2-2015

This series of images shows an example of the [Risk Profile](#) for New York from Hurricane Sandy Advisory #25 (2012). New York-specific criteria and special considerations are discussed.



State and Local Topics

Topic A - Trajectory and Strength

The overall purpose of the 'Trajectory and Strength' topic is to define the geographic region at risk and highlight storm statistics relevant to general situational awareness.

Examples of state and local output for this topic are shown here. The same 5 criteria are used in both the state and local scopes. See below the screen shots for notes describing each criterion and its specific purpose.

Hurricane Risk Profile (State) for New York

Tropical Cyclone: SANDY Advisory # 25 Date/Time: SUN 10/28/12 11 EDT

A - Trajectory and Strength

Severity: ■ High ■ Moderate ■ Low N/A

	Criteria	Conditions	R	Y	G
1	Is a NY/Northern NJ jurisdiction within the NHC 120-hour average forecast error cone? 37 hours	Red= Within 72 hours Yellow= Within 120 hours Green= Within 120 hours but not in error cone	■	■	■
2	Storm's prevailing bearing at closest approach to NY/Northern NJ coastline? NW	Red= WNW/NW/NNW Yellow= N/NNE/NE Green= All other (or N/A)	■	■	■
3	What is the forecast storm intensity at closest approach? Category 1 hurricane	Red= Hurricane Yellow= Tropical Storm Green= Outside of error cone and fringe winds area	■	■	■
4	Difference in central pressure from last advisory? No change 0 millibars (951 mb to 951 mb)	Red= Decrease by more than 5 mb Yellow= Decrease by less than 5 mb or Same Green= Increase	■	■	■
5	Average forward speed over 72-hour forecast period or until closest approach? Average forward speed 12 mph	Red= 40 mph or greater Yellow= 20 to 39 mph Green= Less than 20 mph	■	■	■

Hurricane Risk Profile (Local) for NYC Metro County NY

Tropical Cyclone: SANDY Advisory # 25 Date/Time: SUN 10/28/12 11 EDT

A - Trajectory and Strength

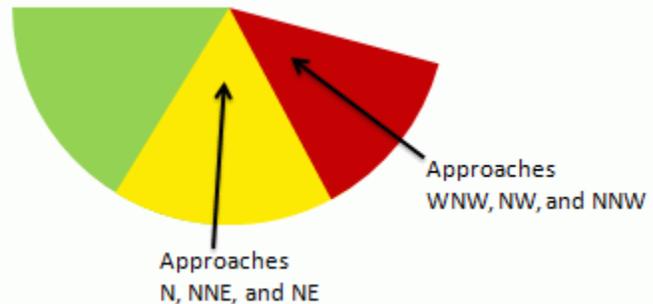
Severity: ■ High ■ Moderate ■ Low N/A

	Criteria	Conditions	R	Y	G
1	Is this jurisdiction within the NHC 120-hour average forecast error cone? 37 hours	Red= Within 72 hours Yellow= Within 120 hours Green= Within 120 hours but not in error cone	■	■	■
2	Storm's prevailing bearing at closest approach to NY/Northern NJ coastline? NW	Red= WNW/NW/NNW Yellow= N/NNE/NE Green= All other (or N/A)	■	■	■
3	What is the forecast storm intensity at closest approach? Category 1 hurricane	Red= Hurricane Yellow= Tropical Storm Green= Outside of error cone and fringe winds area	■	■	■
4	Difference in central pressure from last advisory? No change 0 millibars (951 mb to 951 mb)	Red= Decrease by more than 5 mb Yellow= Decrease by less than 5 mb or Same Green= Increase	■	■	■
5	Average forward speed over 72-hour forecast period or until closest approach? Average forward speed 12 mph	Red= 40 mph or greater Yellow= 20 to 39 mph Green= Less than 20 mph	■	■	■

Notes on the 'Trajectory and Strength' Criteria

1. **Is there a chance that the storm might pass directly over this area?** [Error cones](#) and [hourly ellipses](#) encompass the area in which the storm is most likely to track.

2. **Could there be greater risk due to the direction from which the storm is approaching?** As a general rule, storms having a more perpendicular angle of approach to the Northeast coastline carry greater risk than those that curve along (and parallel) the East Coast. The reason for this is that a paralleling storm is more likely to first make landfall elsewhere (therefore diminishing its intensity before reaching the New York area). Additionally, the angle of approach when combined with local geography can impact the severity of storm surge experienced.



3. **What is the forecasted storm category at the time when the storm is closest?** The storm category at closest approach may be a more appropriate assumption for New York's [Evacuation Options](#) settings than the default choice of the maximum category over the entire forecast period.
4. **Is the storm intensifying?** Central pressure is inversely proportional to storm intensity. A storm observed to drop in pressure or maintain a low pressure over several approaching advisories is cause for concern and may warrant selection of a higher storm category for New York's Evacuation Options than the category forecasted at closest approach.
5. **How fast is the storm tracking toward the area?** Average forward speed over the entire track is meant to provide guidance on potential timing for evacuation operations. Fast tracking means that actions might need to be initiated when the storm is still well to the south.

Since storms typically pick up [forward speed](#) as they move further north, the average speed over the entire forecast may differ significantly from the speed near landfall. Therefore, average speed should not be used as an indicator of hazard conditions at landfall such as the extent of storm surge, rainfall amounts, and duration of winds.

Topic B - Winds

The purpose of this topic is to give guidance on the potential for hazardous winds.

Screen shots of state and local output for this topic are shown here. The same 4 criteria apply to both the state and local scopes. See below for notes describing each criterion and its specific purpose.

Hurricane Risk Profile (State) for New York

Tropical Cyclone: SANDY Advisory # 25 Date/Time: SUN 10/28/12 11 EDT

B - Winds

Severity: ■ High ■ Moderate ■ Low N/A

	Criteria	Conditions	R	Y	G
1	Forecast peak wind in NY/Northern NJ based on the 72-hour forecast track? 76 mph in NYC Metro 10/30/12 3 AM	Red= Hurricane force (>74 mph) Yellow= Between 58 and 74 mph Green= Less than 58 mph	■	■	■
2	Highest coastline NHC 64kt wind probability from Atlantic City NJ to Montauk Point NY? 14%	Red= Significant chance Yellow= Slight chance Green= Less than 1% chance	■	■	■
3	Highest coastline NHC 34kt wind probability from Atlantic City NJ to Montauk Point NY? 84%	Red= Significant chance Yellow= Slight chance Green= Less than 3% chance	■	■	■
4	Increase or decrease of maximum probability since last advisory? Increased 13% to 14%	Red= Increased in percent Yellow= Remained same percent Green= Decreased in percent	■	■	■

Hurricane Risk Profile (Local) for NYC Metro County NY

Tropical Cyclone: SANDY Advisory # 25 Date/Time: SUN 10/28/12 11 EDT

B - Winds

Severity: ■ High ■ Moderate ■ Low N/A

	Criteria	Conditions	R	Y	G
1	Forecast peak wind in your jurisdiction based on the 72-hour forecast track? 76 mph 10/30/12 1 AM	Red= Hurricane force (>74 mph) Yellow= Between 58 and 74 mph Green= Less than 58 mph	■	■	■
2	What is the NHC 74mph wind probability nearest your jurisdiction? 11%	Red= Significant chance Yellow= Slight chance Green= Less than 1% chance	■	■	■
3	What is the NHC 39mph wind probability nearest your jurisdiction? 84%	Red= Significant chance Yellow= Slight chance Green= Less than 3% chance	■	■	■
4	Have the wind probabilities nearest your jurisdiction increased or decreased since the last advisory? Decreased 13% to 11%	Red= Increased in percent Yellow= Remained same percent Green= Decreased in percent	■	■	■

Notes on the 'Winds' Criteria

1. **How high are the winds estimated to get in this area?** Focus on this criterion and its [specific wind forecasts](#) only when a storm is close and threatening (48 hours or less). A storm's precise track and intensity over a longer period has a high degree of uncertainty.
2. **What are the odds of this area experiencing hurricane-force winds?** [Wind probabilities](#) at point locations along the coast quantify the potential for hurricane winds within a 5-day period.
3. **What are the odds of this area experiencing tropical storm-force winds?** [Wind probabilities](#) at point locations along the coast quantify the potential for tropical storm winds within a 5-day period.
4. **Are the odds of hurricane-force winds increasing?** Differences in wind probabilities from one advisory to the next indicate increasing or decreasing risk. Probabilities from

distant storms are typically low due to the high degree of uncertainty and increase as the storm gets closer and continues to threaten.

Topic C - Tide/Rainfall

This topic considers threats posed by heavy rainfall and storm surge brought about by an approaching storm.

Screen shots of state and local output for this topic are shown here. The same three criteria apply to both the state and local scopes, however an additional tide station location is considered in the local scope for item #2. See below for notes describing each criterion and its specific purpose.

Hurricane Risk Profile (State) for New York

Tropical Cyclone: SANDY Advisory # 25 Date/Time: SUN 10/28/12 11 EDT

C - Tide/Rainfall

Severity: ■ High ■ Moderate ■ Low N/A

	Criteria	Conditions	R	Y	G
1	What is the highest astronomical tide predicted within the 24-hour period prior to closest approach? Higher than average	Red= Higher than average (spring tide) Yellow= Near average Green= Lower than average (neap tide)			
2	Timing of storm's closest approach with diurnal tide cycle at Sandy Hook? Closest approach 10/30/12 5 AM High tide 10/30/12 5 AM (2.51 ft)	Red= Near high tide Yellow= Near mid tide Green= Near low tide			
3	Greatest rainfall forecasted for NY/Northern NJ county in the next 72 hours? <i>Data not available for advisory >24 hours old</i>	Red= Greater than 6 inches Yellow= 3 to 6 inches Green= Less than 3 inches (or N/A)			

Hurricane Risk Profile (Local) for NYC Metro County NY

Tropical Cyclone: SANDY Advisory # 25 Date/Time: SUN 10/28/12 11 EDT

C - Tide/Rainfall

Severity: ■ High ■ Moderate ■ Low N/A

	Criteria	Conditions	R	Y	G
1	Are tides higher than normal within the 24-hour period prior to closest approach? Higher than average	Red= Higher than average (spring tide) Yellow= Near average Green= Lower than average (neap tide)			
2	Timing of storm's closest approach with diurnal tide cycle at the Battery? Closest approach 10/30/12 2 AM High tide 10/30/12 2 AM (2.46 ft)	Red= Near high tide Yellow= Near mid tide Green= Near low tide			
3	Timing of storm's closest approach with diurnal tide cycle at Kings Point? Closest approach 10/30/12 1 AM High tide 10/30/12 5 AM (6.06 ft)	Red= Near high tide Yellow= Near mid tide Green= Near low tide			
4	Amount of rainfall forecasted for this jurisdiction in the next 72 hours? <i>Data not available for advisory >24 hours old</i>	Red= Greater than 6 inches Yellow= 3 to 6 inches Green= Less than 3 inches			

Notes on the 'Tide/Rainfall' Criteria

1. **Is this a period of especially low or high tides?** Spring tides are about 20% higher than average. Neap tides are about 20% less than average. A spring tide may exacerbate surge flooding while a neap tide could mitigate.
2. 2(State), 2&3(Local) **Is the storm approach projected to coincide with high tide?** Tide fluctuates as much as 5 feet in the New York area (along the Hudson River and Atlantic Ocean shorelines) and as much as 8 feet in the New York Sound area and can make a difference in the severity of storm surge water levels. However, it is difficult to make a tide timing determination until a storm very close to landfall since only 6 hours of time separate high and low tides.
3. 3(State), 4(Local) **Could this storm generate a large amount of rainfall over the area?** This calculation is made using the [WPC 3-day quantitative rainfall forecast](#). Note that this item cannot be answered for archived storms since there is no rainfall forecast available for the historic period.

Topic D - Evacuation Decisions

This topic considers the [evacuation start time](#) and deadlines for other actions.

Screen shots of state and local output for this topic are shown here. The state and local scopes each have three criteria; however items #2 & #3 differ and are therefore discussed separately in the notes below.

Hurricane Risk Profile (State) for New York

Tropical Cyclone: SANDY Advisory # 25 Date/Time: SUN 10/28/12 11 EDT

D - Evacuation Decisions

Severity: ■ High ■ Moderate ■ Low N/A

	Criteria	Conditions	R	Y	G
1	Number of hours until onset of tropical storm force winds (39 mph) in NY/Northern NJ based on the forecast track? 14 hrs in Suffolk 10/29/12 1 AM	Red= Within 24 hours Yellow= Between 24 and 36 hours Green= Greater than 36 hours or none			
2	Earliest evacuation start time for jurisdictions based on the forecast track? 6 hours PAST NYC Metro 10/28/12 6 AM	Red= Evac start time has passed Yellow= 12 hours or less to evac start Green= Greater than 12 hours to evac start			
3	Earliest evacuation start time for jurisdictions based on a direct hit track? 13 hours PAST NYC Metro 10/27/12 11 PM	Red= Evac start time has passed Yellow= 12 hours or less to evac start Green= Greater than 12 hours to evac start			

Hurricane Risk Profile (Local) for NYC Metro County NY

Tropical Cyclone: SANDY Advisory # 25 Date/Time: SUN 10/28/12 11 EDT

D - Evacuation Decisions

Severity: ■ High ■ Moderate ■ Low N/A

	Criteria	Conditions	R	Y	G
1	Number of hours until onset of tropical storm force winds (39 mph) on the forecast track? 16 hrs 10/29/12 3 AM	Red= Within 24 hours Yellow= Between 24 and 36 hours Green= Greater than 36 hours			
2	Number of hours before this jurisdiction is within 48 hours of onset of tropical storm force winds (39 mph) based on the forecast track? 32 hours PAST 10/27/12 3 AM	Red= Already within 48 hours Yellow= 12 hours or less to 48-hr start Green= Greater than 12 hours to 48-hr start			
3	Evacuation start time for this jurisdiction based on the forecast track? 5 hours PAST 10/28/12 6 AM North-Northwest Approach (Cat 1/M/M) 20.8 hour clearance time	Red= Evac start time has passed Yellow= 12 hours or less to evac start Green= Greater than 12 hours to evac start			

Notes on the 'Evacuation Decisions' Criteria

1. **Using the official forecast track ([closest point of approach](#)), are tropical storm-force winds forecast in the area and if so, when?** In this calculation, the [Hourly Wind Ranges](#) are advanced along the forecast track and a time is noted when tropical storm-force winds first enter the area.
2. (State) **Of all counties within the [72-hour wind swath](#), which one would first need to consider evacuation action?** Forecast track timing reported in Item #1 is used, along with the county scenario that has the longest clearance times. Remember that by default HURREVAC will use the highest storm category predicted over the forecast period in its selection from the clearance time tables. Storms typically decrease in intensity as they head north and encounter cooler waters, so this may or may not be the most appropriate selection for New York's purposes. The default selections can be adjusted as described in [Evacuation Options](#).

(Local) **If this county is within the [72-hour wind swath](#), what is the timing window for actions that need to be initiated 48 hours before the start of wind hazards?**

Forecast track timing reported in Item #1 is used in this calculation.

3. (State) **Of all counties within the [error swath](#), which one would first need to consider evacuation action?** A worst-case [direct hit](#) is used in this calculation as described in HURREVAC's methods for [Evacuation Start Timing](#). Direct hit timing factors in forecast uncertainty and possible earlier impacts than with official forecast track timing. For storms with a curved forecast track (such as Hurricane Sandy), the timing difference between this and the forecast track calculation used in Item #2 can be as much as 12 hours.

(Local) **If this county is within the [72-hour wind swath](#), how soon might an evacuation need to be initiated?** Forecast track timing reported in Item #1 is used,

along with the county scenario that has the longest clearance times. Remember that by default HURREVAC will use the highest storm category predicted over the forecast period in its selection from the clearance time tables. Storms typically decrease in intensity as they head north and encounter cooler waters, so this may or may not be the most appropriate selection for your county. The default selections can be adjusted as described in [Evacuation Options](#). You can also override HURREVAC's selection of the scenario with the longest clearance times by picking an alternate scenario from the drop-down list for that county.

State and Local Summaries

For more information on summaries, see the description under the general [Risk Profile](#) section.

Risk Profile Summary (State) for New York

Tropical Cyclone: SANDY Advisory # 25 Date/Time: SUN 10/28/12 11 EDT

Severity: ■ High ■ Moderate ■ Low ■ N/A

Advy	Trajectory					Winds				Tides/Rain			Evacuation			R Y G		
	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3	■	■	■
25	High	High	High	Moderate	Low	High	High	High	High	High	High	N/A	High	High	High	12	1	1
24	High	High	High	Moderate	Low	High	High	High	High	High	Moderate	N/A	High	Moderate	High	10	3	1
23	High	High	High	Moderate	Low	High	High	High	High	High	Low	N/A	Moderate	Moderate	High	9	3	2
22	High	High	High	Moderate	Low	Moderate	High	High	High	High	High	N/A	Moderate	Low	Moderate	8	4	2
21	High	Low	High	Moderate	Low	Moderate	High	High	Low	High	High	N/A	Low	Low	Moderate	6	3	5
20	High	High	Moderate	Moderate	Low	Moderate	High	High	High	High	High	N/A	Low	Low	Low	7	3	4
19	Moderate	High	High	Moderate	Low	Low	High	High	High	High	Low	N/A	Low	Low	Low	6	2	6
18	Moderate	Low	High	Moderate	Low	Low	Moderate	Moderate	Low	High	Moderate	N/A	Low	Low	Low	2	5	7
17	Moderate	Low	High	Moderate	Low	Low	High	High	High	High	Low	N/A	Low	Low	Low	5	2	7
16	Moderate	Low	High	Moderate	Low	Low	Moderate	Moderate	Moderate	High	Low	N/A	Low	Low	Low	2	5	7
15	Moderate	High	High	Low	N/A	N/A	Moderate	Moderate	Moderate	High	High	N/A	N/A	N/A	N/A	4	4	1
14	Moderate	High	Moderate	Moderate	N/A	N/A	Moderate	Moderate	High	High	Moderate	N/A	N/A	N/A	N/A	3	6	0

Risk Profile Summary (Local) for NYC Metro County NY

Tropical Cyclone: SANDY Advisory # 25 Date/Time: SUN 10/28/12 11 EDT

Severity: ■ High ■ Moderate ■ Low ■ N/A

Advy	Trajectory					Winds				Tides/Rain				Evacuation			R	Y	G
	1	2	3	4	5	1	2	3	4	1	2	3	4	1	2	3	■	■	■
25	High	High	High	Moderate	Low	High	High	High	Low	High	High	Moderate	N/A	High	High	High	11	2	2
24	High	High	High	Moderate	Low	High	High	High	High	High	Moderate	High	N/A	High	High	Moderate	11	3	1
23	High	High	High	Moderate	Low	High	High	High	High	High	Moderate	High	N/A	Moderate	High	Moderate	10	4	1
22	High	High	High	Moderate	Low	Moderate	High	High	High	High	High	Moderate	N/A	Moderate	High	Low	9	4	2
21	Moderate	Low	High	Moderate	Low	Moderate	High	High	Low	High	Moderate	Low	N/A	Low	High	Low	5	4	6
20	High	High	Low	Moderate	Low	Moderate	High	High	High	High	High	High	N/A	Low	High	Low	9	2	4
19	Moderate	High	High	Moderate	Low	Low	High	High	High	High	Low	Moderate	N/A	Low	High	Low	7	3	5
18	Moderate	Low	High	Moderate	Low	Low	Moderate	High	Low	High	Moderate	High	N/A	Low	High	Low	5	4	6
17	Moderate	Low	High	Moderate	N/A	N/A	High	High	High	High	Low	High	N/A	N/A	High	N/A	7	2	2
16	Moderate	Low	High	Moderate	N/A	N/A	Moderate	High	High	High	Moderate	Moderate	N/A	N/A	High	N/A	5	5	1
15	Moderate	High	High	Low	N/A	N/A	Moderate	High	Low	High	High	Low	N/A	N/A	High	N/A	6	2	3
14	Moderate	High	Low	Moderate	N/A	N/A	Moderate	High	Low	High	High	Low	N/A	N/A	High	N/A	5	3	3

Hurricane Forecast Summary

When the profile scope is set to a local jurisdiction, information for that jurisdiction can be exported in New York City OEM's Hurricane Forecast Summary format. After right-clicking on the NY Risk Profile tab and choosing 'Export Report to Excel', you will be prompted to save a file in .xlsx format.

Note: The map graphic in the example below was manually inserted from a HURREVAC screenshot after the export to spreadsheet operation.

KEY STORM INFORMATION		
Storm name	SANDY	
Advisory #	25	
Advisory date/time	Sunday, 10/28 11:00	
Storm's current strength	Category 1	
Est. time of closest approach	Tuesday, 10/30 02:00	
Zero Hour (forecasted arrival of 39 mph winds)	Monday, 10/29 03:00	
Trajectory and Strength		
NYC in error cone	YES - 72hr cone	
Storm bearing at landfall	NW	
Storm's strength at closest approach to NYC	Category 1	
Storm's central pressure trend	Decreasing (<5mb)	
Average forward speed	12 mph	
Winds		
Forecasted peak wind in NYC	76 mph	
Probability of 74 mph winds	11%	
Probability of 39 mph winds	84%	
Wind probabilities trend	Decreased	
Expected departure of 39 mph winds	Wednesday, 10/31 07:00	
Tide / Rainfall		
Seasonal tide at surge arrival	Higher	
Time of high tide closest to landfall:	Battery	10/30 02:00
	Kings Point	10/30 05:00
Rainfall for next 72 hours	Not available	
EVACUATION DECISIONS		
Hours from advisory to zero hour	16 hours	
Deadline for issuing evacuation recommendation/order:		
CSP evacuation order deadline (48 hrs before zero hr)	Saturday, 10/27 03:00	
Clearance time	20.8 hour clearance time	
Other considerations		
Evacuation Order		
Zone(s) Under Consideration		

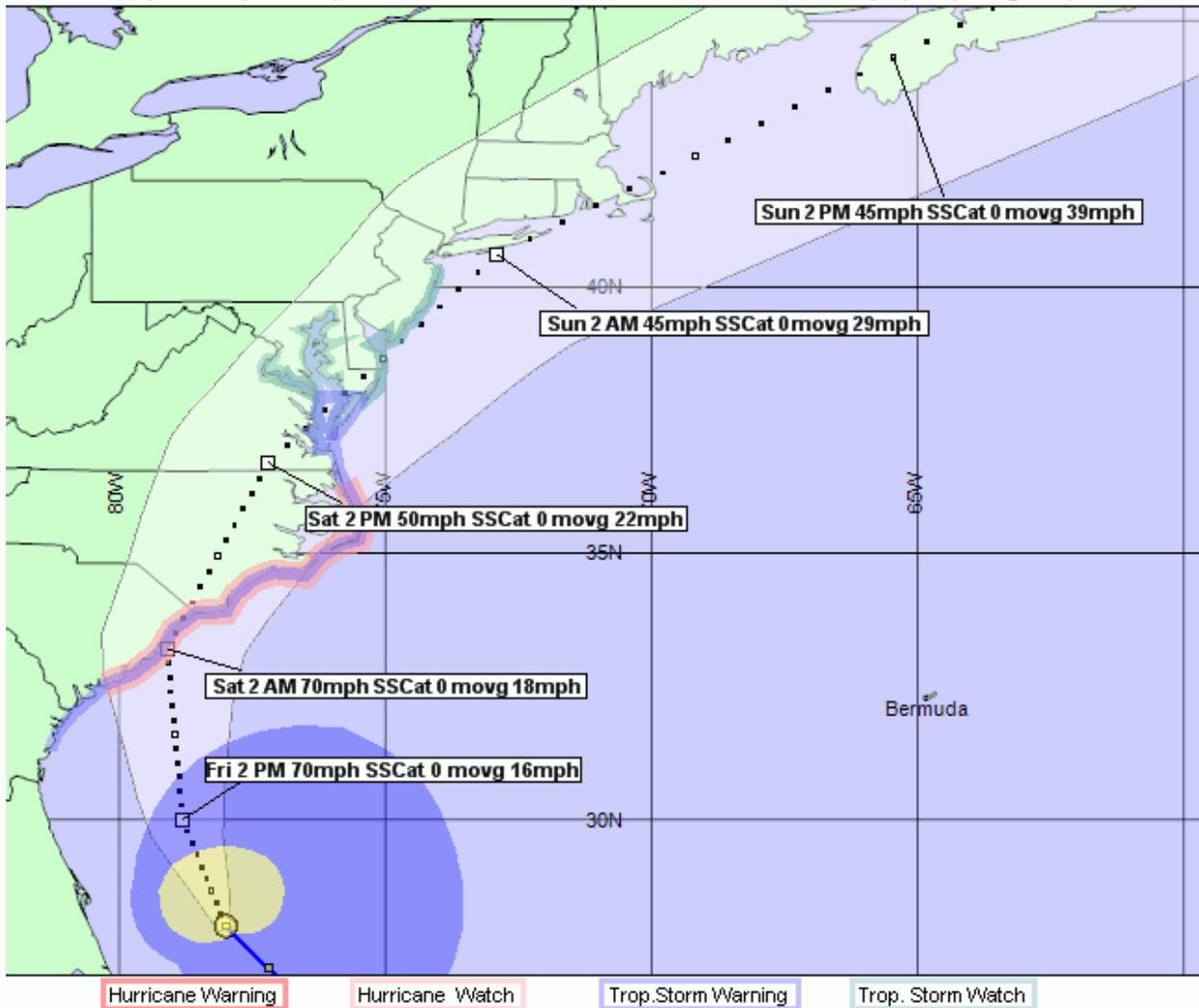
Blue	Tropical storm force winds of at least 34kt (39mph)
Yellow	Winds of at least 50kt (58mph)
Red	Hurricane force winds of at least 64kt (74mph)
White cone	Storm center is most likely to track (72 hours / 3 days)
Transparent cone	Storm center is most likely to track (73 to 120 hours / 5 days)

(HURREVAC NYC Risk Profile Level of Severity: High Moderate Low N/A)

Virginia Risk Profile

This series of images shows an example of the [Risk Profile](#) for Virginia from Tropical Storm Hanna Advisory #34 (2008).

HANNA Advy # 34 .September 5, 2008 5 AM EDT Fri CurrentLocation 28.0 N 78.0 W 65 mph (Cat 0) Movg 20 mph



State and Local Topics

Hurricane Risk Profile (State) for Virginia

Tropical Cyclone: HANNA Advisory # 34 Date/Time: FRI 09/05/08 05 EDT

A - Risk Area Definition

Indicator Level:  Critical  Of Concern

	Criteria	Conditions	R	Y	G
1	Is a Virginia Locality within NHC 72 or 120 hour average forecast error cone? In 28 hr Error Ellipse	Red= Within 48 hours Yellow= Within 96 hours Green= >96 hrs or not in Error Cone			
2	Are NHC Watch or Warnings in effect for Virginia coast? Trop Storm Warning	Red= Hurricane Warning Yellow= TS Warning or Hurricane Watch Green= TS Watch or None			
3	Highest Coastline NHC 64kt wind probability from Cape Lookout NC to Chincoteague VA ? 2% (12% for 50kt , 50% for 34kt)	Red= Greater Than 18% Yellow= 11% to 18% Green= Less Than 11%			
4	Increase or decrease of maximum probability since last advisory? Decreased 3% to 2%	Red= Increased in Percent Yellow= Remained Same Percent Green= Decreased in Percent			
5	Storm's steepest forecast angle of approach to VA coastline 207 degrees / 7 O'clock	Red= 90-140 degs(3 to 4 o'clock) Yellow= 141-180 degs(4 to 6 o'clock) Green= 181-270 degs(or NONE)			
6	Forecast peak wind in Virginia based on the 72 hr forecast track? 56 mph in Southampton	Red= Hurricane Force winds Yellow= Between 58 and 74mph Green= Less than 58mph			

Hurricane Risk Profile (Local) for Va Beach County VA

Tropical Cyclone: HANNA Advisory # 34 Date/Time: FRI 09/05/08 05 EDT

A - Risk Area Definition

Indicator Level:  Critical  Of Concern

	Criteria	Conditions	R	Y	G
1	Is this Locality within NHC 72 or 120 hour average forecast error cone? 30 hours	Red= Within 48 hours Yellow= Within 96 hours Green= >96 hrs or not in Error Cone			
2	Are NHC Watch or Warnings issued for your county OR if inland county.. nearby coast? TS Wrng	Red= Hurricane Warning Yellow= TS Warning or Hurricane Watch Green= TS Watch or None			
3	What is the NHC 64kt wind probability nearest your locality? 2% (12% for 50kt , 50% for 34kt)	Red= Very High Risk >18% Yellow= High Risk 11 to 18% Green= Med or Low Risk <11%			
4	Have the wind probabilities nearest your location increased or decreased since the last advisory? Same 2 --> 2	Red= Increased in Percent Yellow= Remained Same Percent Green= Decreased in Percent or <3%			
5	Storm's steepest forecast angle of approach to VA coastline 207 degrees / 7 O'clock	Red= 90-140 degs(3 to 4 o'clock) Yellow= 141-180 degs(4 to 6 o'clock) Green= 181-270 degs(or NONE)			
6	Forecast peak wind in your locality based on the 72 hr forecast track? 52Mph (45Kt)	Red= Hurricane Force winds Yellow= Between 58 and 74mph Green= Less than 58mph			

Hurricane Risk Profile (State) for Virginia

Tropical Cyclone: HANNA Advisory # 34 Date/Time: FRI 09/05/08 05 EDT

B - Storm Intensity and Evacuation Scenario Indicator Level:  Critical  Of Concern

	Criteria	Conditions	R	Y	G
1	What is the current intensity of the storm? Cat 0 Tropical Storm	Red= Major Hurricane(Cat 3/4/5) Yellow= Hurricane (Cat 1 or 2) Green= Tropical Storm or lower			
2	How is the storm intensity forecast to change before landfall? No Change	Red= Increase in Category Yellow= No Increase in Cat Green= Decrease in Cat			
3	Difference in central pressure from last advisory? 1 millibars (mb) RISE	Red= Decrease by more than 5 mb Yellow= Decrease by less than 5 mb or Same Green= Increase			
4	Number of hours left to intensify before landfall on projected track? 25 hrs	Red= Greater than 72 hours Yellow= 37 to 72 hours Green= 36 hours or less			
5	Planning Assumption for determination of Evacuation Category.. if B2 is Red..use NHC Forecast Cat OR if B3 and B4 are Red Increase One Category from that of B1... No. Evac Category should remain for Cat 0	Red= Assume Evacuation Category higher Yellow= Not used Green= Evacuation Category remains same			

Hurricane Risk Profile (Local) for Va Beach County VA

Tropical Cyclone: HANNA Advisory # 34 Date/Time: FRI 09/05/08 05 EDT

B - Storm Intensity and Evacuation Scenario Indicator Level:  Critical  Of Concern

	Criteria	Conditions	R	Y	G
1	What is the current intensity of the storm? Cat 0 Tropical Storm	Red= Major Hurricane(Cat 3/4/5) Yellow= Hurricane (Cat 1 or 2) Green= Tropical Storm or lower			
2	How is the storm intensity forecast to change before landfall? No Change	Red= Increase in Category Yellow= No Increase in Cat Green= Decrease in Cat			
3	Difference in central pressure from last advisory? 1 millibars (mb) RISE	Red= Decrease by more than 5 mb Yellow= Decrease by less than 5 mb Green= Increase			
4	Number of hours left to intensity until landfall of eye? 25 hrs	Red= Greater than 72 hours Yellow= 37 to 72 hours Green= 36 hours or less			
5	Planning Assumption for determination of Evacuation Category.. if B2 is Red..use NHC Forecast Cat OR if B3 and B4 are Red Increase One Category from that of B1... No..Evac Category should remain for Cat 0	Red= Assume Evacuation one Category higher Yellow= Not used Green= Evacuation Category remains same			

Hurricane Risk Profile (State) for Virginia

Tropical Cyclone: HANNA Advisory # 34 Date/Time: FRI 09/05/08 05 EDT

C - Evacuation Characteristics

Indicator Level:  Critical  Of Concern

	Criteria	Conditions	R	Y	G
1	Predicted forward speed over 72 hour forecast period or until landfall? Avg. Forward Speed To Landfall 18 mph	Red= 25 MPH or greater Yellow= 15 to 25 MPH Green= Less than 15 MPH			
2	Highest Clearance time for Virginia HES Risk Locality within 72 hr average forecast error cone? York 22.25 hrs for Cat 1	Red= Locality with 24hrs or greater Yellow= Locality with 16to23hrs Green= Less than 16 hours		 	
3	Number of hours until onset of Tropical Storm force winds in Virginia based on the forecast track..? 19 hrs in Greensville	Red= Within 24 Hours Yellow= Between 24 and 36 hrs Green= Greater than 36hrs or none			
4	Earliest NHC Forecast Track (CPA) Decision Time for localities within the 72 hr average forecast error cone? PAST DECISION TIME(-2.25hrs) Chesapeake	Red= Decision time has passed Yellow= 12 Hrs or less to Decision time Green= Greater than 12 hrs from Decision time			
5	Earliest Direct-To-Point (DTP) Decision Time for localities within the 72 hr average forecast error cone? PAST DECISION TIME(-2.25hrs) Va Beach	Red= Decision time has passed Yellow= 12 Hrs or less to Decision time Green= Greater than 12 hrs from Decision time			
6	Period of day when Forecast Track Decision Time for the above occurs (Probability of public emergency decisions being received and acted on)? 2 AM Fri	Red= 11PM to 6AM or 9AM to 4PM Mon-Fri Yellow= 4PM to 11PM Green= 6AM to 9AM or 9AM to 4PM Sat-Sun			

Hurricane Risk Profile (Local) for Va Beach County VA

Tropical Cyclone: HANNA Advisory # 34 Date/Time: FRI 09/05/08 05 EDT

C - Evacuation Characteristics

Indicator Level:  Critical  Of Concern

	Criteria	Conditions	R	Y	G
1	Predicted forward speed over 72 hour forecast period or until landfall? Avg. Forward Speed To Landfall 18 mph	Red= 25 MPH or greater Yellow= 15 to 25 MPH Green= Less than 15 MPH			
2	Clearance time for your locality (If non-HES risk locality then standard 6 hrs used) 22.25 hrs for Cat 1 Medium Occ. / Medium Resp.	Red= Locality with 24hrs or greater Yellow= Locality with 16to23hrs Green= Less than 16 hours			
3	Number of hours until onset of Tropical Storm force winds on the forecast track...? 21 hrs	Red= Within 24 Hours Yellow= Between 24 and 36 hrs Green= Greater than 36hrs or none			
4	Assuming a Direct-To-Point (DTP) track..Calculated Decision Time for this locality? PAST DECISION TIME(-2.25hrs)	Red= Decision time has passed Yellow= Within 6 hrs of decision time Green= 12 hrs or greater from decision time			
5	Period of day when Decision Time for your locality occurs? 2 AM Fri	Red= 11PM to 6AM or 9AM to 4PM Mon-Fri Yellow= 4PM to 11PM Green= 6AM to 9AM or 9AM to 4PM Sat-Sun			

Hurricane Risk Profile (State) for Virginia

Tropical Cyclone: HANNA Advisory # 34 Date/Time: FRI 09/05/08 05 EDT

D - Other Considerations

Indicator Level:  Critical  Of Concern

	Criteria	Conditions	R	Y	G
1	Inland extent of hurricane force winds based on MEDW's for forecast intensity and forward speed? (*see References for MEDW) Coastal localities only	Red= Several Inland Localities Yellow= A few Inland Localities affected Green= Coastal Localities only			
2	Special Events or Holiday Weekend Considerations? +/- 1 week of LaborDay	Red= Hurricane occurring within 1 week of July 4 or Labor Day Weekend Yellow= Hurricane occurring after July 4 week and before Labor Day Weekend or local special event Green= No holiday or special event			

Hurricane Risk Profile (Local) for Va Beach County VA

Tropical Cyclone: HANNA Advisory # 34 Date/Time: FRI 09/05/08 05 EDT

D - Other Considerations

Indicator Level:  Critical  Of Concern

	Criteria	Conditions	R	Y	G
1	If your county is within the 72 hr average error cone..what is the peak wind in your county based on MEOw's for max(adjusted) forecast intensity and forward speed? (*see References for MEOw) 50 Kt (58mph)	Red= Hurricane Force..64 knots(74mph)or greater Yellow= 50 knots to 63 knots (58 to 73mph) Green= less than 50 knots(58mph)			
2	Special Events or Holiday Weekend Considerations? +/- 1 week of LaborDay	Red= Hurricane occurring within 1 week of July 4 or Labor Day Weekend Yellow= Hurricane occurring after July 4 week and before Labor Day Weekend or local special event Green= No holiday or special event			
3	Which Virginia Regions are in the 72 hr Average Forecast Error Cone (Heavy coastal evacuation traffic likely)? (2) Coast / Central /	Red= Tidewater/Bay/EShore Yellow= Central Green= Western			

Hurricane Risk Profile (State) for Virginia

Tropical Cyclone: HANNA Advisory # 34 Date/Time: FRI 09/05/08 05 EDT

E - One-Way Concerns

Indicator Level:  Critical  Of Concern

	Criteria	Conditions	R	Y	G
1	Which Virginia Regions are in the 72 hr Average Forecast Error Cone? [2] Coast / Central /	Red= Tidewater/Bay/EShore Yellow= Central Green= Western			
2	Is the hurricane forecast to be a Category 4 or 5 within 72 hrs or before landfall? Forecast Cat 1 or less	Red= Is now or forecast Cat4/5 Yellow= Forecast Cat3..BUT >=48 hrs away so could intensify Green= Forecast only Cat 1/2			
3	Are there enough hours left before Trop Storm Winds to prepare and execute the I-64 Lane Reversal Option? 19 hrs left till TS Winds at 09/06/0812 AM	Red= Yes At least 48 hours Yellow= Maybe if storm slows (36 to 47 hrs) Green= No unless storm slows			
4	Are there at least 12 continuous hours of daylight after 24 hour mobilization and setup time? not enough time for Setup	Red= At least 12 daylight hrs after setup Yellow= Almost..9 to 11 hours Green= No..8 or less hours			

State and Local Summaries

Risk Profile Summary (State) for Virginia

Tropical Cyclone: HANNA Advisory # 34 Date/Time: FRI 09/05/08 05 EDT

Indicator Level:  = Critical  = of Concern

Advy	Risk Area Definitio						Storm Intensity					Evacuation Charac						Other		One-Way C				R	Y	G	Cr	Oc
	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5	6	1	2	1	2	3	4					
34											*													7	4	12	5	3
33											*													4	8	11	3	3
32											*													4	8	11	3	3
31											*													6	7	10	3	2
30											*													7	6	10	3	2
29											*													8	6	9	2	4
28											*													8	6	9	2	4
27											*													6	4	13	1	3
26											*													8	4	11	2	4
25											*													7	4	12	2	3
24											*													6	2	15	1	4
23											*													6	2	15	2	2

Risk Profile Summary (Local) for Va Beach County VA

Tropical Cyclone: HANNA Advisory # 34 Date/Time: FRI 09/05/08 05 EDT

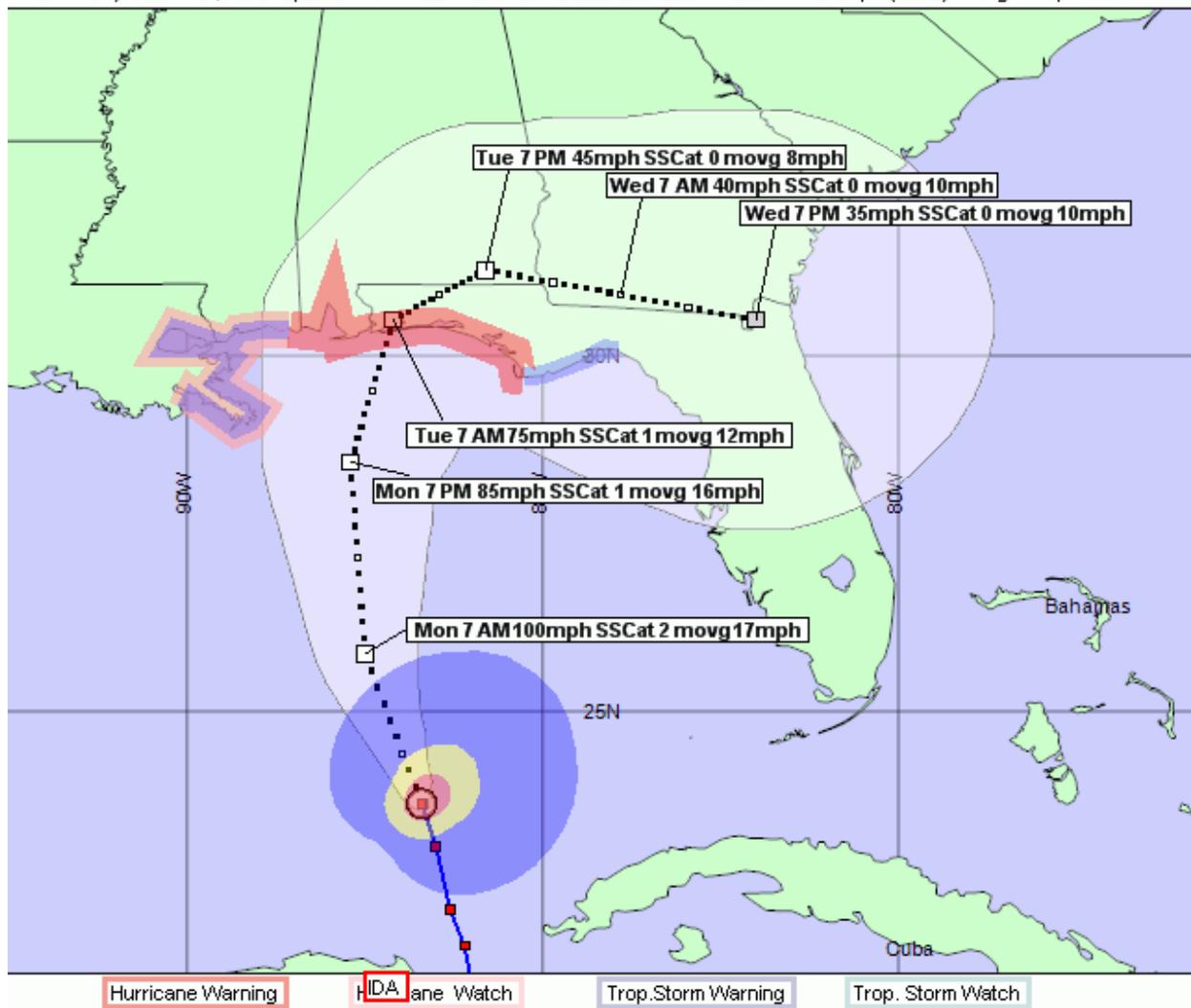
Indicator Level:  = Critical  = of Concern

Advy	Risk Area Definition						Storm Intensity and					Evacuation Charac					Other Cons			R	Y	G	Cr	Oc
	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5	1	2	3					
34											*1									6	5	8	5	3
33											*1									4	7	8	4	2
32											*1									3	10	6	3	3
31												*1								6	6	7	4	2
30												*1								4	8	7	2	4
29												*1								6	7	6	3	4
28												*1								5	8	6	3	3
27												*1								4	5	10	2	3
26												*1								5	6	8	2	5
25												*1								5	7	7	1	6
24												*1								4	2	13	1	3
23												*1								4	3	12	1	3

Florida Risk Profile

This series of images shows an example of the [Risk Profile](#) for Florida from Hurricane Ida Advisory #21 (2009).

IDA Advy # 21 November 8, 2009 10 PM EST Sun CurrentLocation 23.7 N 86.7 W 105 mph (Cat 2) Movg 14 mph



State and Local Topics

Hurricane Risk Profile (State) for Florida

Tropical Cyclone: IDA Advisory # 21 Date/Time: SUN 11/08/09 22 EST

A - Risk Area Definition

Indicator Level:  Critical  Of Concern

	Criteria	Conditions	R	Y	G
1	Where is Florida located with respect to NHC 72hr or 120 hour average forecast error Cone? In 25 hr Error Ellipse	Red= Within 48 hours Yellow= Within 96 hours Green= >96 hrs or not in Error Cone			
2	Are NHC Watch or Warnings issued for Florida? Hurricane Warning	Red= Hurricane Warning Yellow= TS Warning or Hurricane Watch Green= TS Watch or None			
3	Highest NHC 64kt wind probability for the Florida coastline? 18% (45% for 50kt , 86% for 34kt) PENSACOLA FL	Red= Greater Than 18% Yellow= 11% to 18% Green= Less Than 11%			
4	Increase or decrease of maximum probability since last advisory? Increased 14% to 18%	Red= Increased in Percent Yellow= Remained Same Percent Green= Decreased in Percent			
5	What is the forecast peak wind in Florida based on the 72 hour forecast track? 75 mph in Santa Rosa	Red= Hurricane Force winds or greater Yellow= Between 58 mph and 74 mph Green= Less than 58 mph			
6	Compared to the previous 3 advisories..how is the current forecast track..closest point of approach..moving relative to Florida? On.m.-> 0-> 0-> 0	Red= Consistently moving closer to Florida over at least 3 advisories OR consistently close(<50nm) Yellow= Inconsistent trend OR moving closer to Florida last advisory Green= Consistently moving away from county over last 3 advisories			

Hurricane Risk Profile (Local) for Santa Rosa County FL

Tropical Cyclone: IDA Advisory # 21 Date/Time: SUN 11/08/09 22 EST

A - Risk Area Definition

Indicator Level:  Critical  Of Concern

	Criteria	Conditions	R	Y	G
1	Is this county within the NHC 120-hour average forecast error cone? 25 hours	Red= Within 48 hours Yellow= Within 96 hours Green= >96 hrs or not in error cone			
2	Are NHC Watches or Warnings in effect for your county OR if inland county.. nearby coast? Hurricane Warning	Red= Hurricane Warning Yellow= TS Warning or Hurricane Watch Green= TS Watch or None			
3	What is the NHC 64kt wind probability nearest your county? 17% for 64kt [43% for 50kt , 84% for 34kt]	Red= Greater than 18% Yellow= 11% to 18% Green= Less than 11%			
4	Have the wind probabilities nearest your county increased or decreased since the last advisory? Increased 14% to 17%	Red= Increased in percent Yellow= Remained same percent Green= Decreased in percent or <3%			
5	Forecast peak wind in your county based on the 72-hour forecast track? 75 mph [65kt]	Red= Greater than 110 mph Yellow= Between 74 mph and 110 mph Green= Less than 74 mph			
6	Compared to the previous 3 advisories..how is the current forecast track Closest Point of Approach...moving relative to your county's center? 36n.m.--> 26--> 22--> 19	Red= Consistently moving toward county over at least 3 advisories OR consistently close (50nm) Yellow= No Consistent trend Green= Consistently moving away from county over last 3 advisories OR consistently far (>300nm)			

Hurricane Risk Profile (State) for Florida

Tropical Cyclone: IDA Advisory # 21 Date/Time: SUN 11/08/09 22 EST

B - Storm Intensity and Evacuation Scenario Indicator Level:  Critical  Of Concern

	Criteria	Conditions	R	Y	G
1	What is the current intensity of the storm? Cat 2 hurricane	Red= Major hurricane (Cat 3/4/5) Yellow= Hurricane (Cat 1 or 2) Green= Tropical storm or lower			
2	How is the storm intensity forecast to change before landfall? No change	Red= Increase in category Yellow= No increase in category Green= Decrease in category			
3	How close is the storm maximum forecast wind to the next highest Saffir/Simpson category? 7 mph from Cat 3	Red= Within 5 mph of next category Yellow= Within 10 mph of next category Green= 10 mph or more from next category			
4	Number of hours left for storm to intensify before landfall of eye on projected track? 72 hrs	Red= 49 or more hours Yellow= 25 to 48 hours Green= 24 hours or less			
5	Planning assumption for determination of evacuation zones (Any red or yellow boxes in B3 or B4 above)? Yes...Evac Zones Up 1 to Cat 3	Red= Yes...Assume evac zones one category higher Yellow= Not used Green= No...Evac zones remain same			
6	What is the tourist population in the region at risk (counties in the error cone)? Medium	Red= High occupancy Yellow= Medium occupancy Green= Low occupancy			

Hurricane Risk Profile (Local) for Santa Rosa County FL

Tropical Cyclone: IDA Advisory # 21 Date/Time: SUN 11/08/09 22 EST

B - Storm Intensity and Evacuation Scenario Indicator Level:  Critical  Of Concern

	Criteria	Conditions	R	Y	G
1	What is the current intensity of the storm? Cat 2 hurricane	Red= Major hurricane (Cat 3/4/5) Yellow= Hurricane (Cat 1 or 2) Green= Tropical storm or lower			
2	How is the storm intensity forecast to change before landfall? No change	Red= Increase in category Yellow= No increase in category Green= Decrease in category			
3	How close is the storm maximum forecast wind to the next highest Saffir/Simpson category? 7 mph from Cat 3	Red= Within 5 mph of next category Yellow= Within 10 mph of next category Green= 10 mph or more from next category			
4	Number of hours left for storm to intensify before landfall of eye on projected track? 72 hrs	Red= 49 or more hours Yellow= 25 to 48 hours Green= 24 hours or less			
5	Planning assumption for determination of evacuation zones (Any red or yellow boxes in B3 or B4 above)? Yes...Evac Zones Up 1 to Cat 3	Red= Yes...Assume evac zones one category higher Yellow= Not used Green= No...Evac zones remain same			
6	What is the tourist population in county? Medium	Red= High occupancy Yellow= Medium occupancy Green= Low occupancy			

Hurricane Risk Profile (State) for Florida

Tropical Cyclone: IDA Advisory # 21 Date/Time: SUN 11/08/09 22 EST

C - Evacuation Characteristics

Indicator Level:  Critical  Of Concern

	Criteria	Conditions	R	Y	G
1	Is the forward speed of the storm forecast to increase..decrease or stay same? Decrease-5 to average 12 mph before CPA	Red= Increase Yellow= Remain same Green= Decrease			
2	Number of hours until onset of tropical storm force wind (39 mph) in Florida based on the forecast track? 19 hrs in Escambia	Red= Within 24 hours Yellow= Between 24 and 36 hours Green= Greater than 36 hours or none			
3	Maximum clearance time for a Florida county within the NHC 72-hour average error cone? Hillsborough 33.5 hrs for Cat 3	Red= Greater than 24 hours Yellow= Between 12 and 24 hours Green= Less than 12 hours			
4	Earliest NHC Forecast Track (CPA) Decision Time for counties within the 72-hour average forecast error cone? PAST DECISION TIME(-6.2 hrs) Escambia	Red= Decision time has past Yellow= 12 hours or less to decision time Green= Greater than 12 hours to decision time			
5	Earliest Direct Hit Decision Time for counties within the 72-hour average forecast error cone? PAST DECISION TIME(-21.5 hrs) Manatee	Red= Decision time has past Yellow= 12 hours or less to decision time Green= Greater than 12 hours to decision time			
6	For the Florida county with earliest Decision Time..period of day when the decision time occurs? 12 AM Sun	Red= 11PM-6AM or 9AM-4PM Mon-Fri Yellow= 4PM-11PM Green= 6AM-9AM or 9AM-4PM Sat-Sun			

Hurricane Risk Profile (Local) for Santa Rosa County FL

Tropical Cyclone: IDA Advisory # 21 Date/Time: SUN 11/08/09 22 EST

C - Evacuation Characteristics

Indicator Level:  Critical  Of Concern

	Criteria	Conditions	R	Y	G
1	Is the forward speed of the storm forecast to increase..decrease or stay same? Decrease-2 to average 15 mph before CPA	Red= Increase Yellow= Remain same Green= Decrease			
2	Number of hours until onset of tropical storm force winds (39 mph) in county based on the forecast track? 19 hrs	Red= Within 24 hours Yellow= Between 24 and 36 hours Green= Greater than 36 hours or none			
3	Greatest clearance time for county based on the maximum forecast intensity (as adjusted in Topic B)? 9 hrs for Cat 3 Medium Occ. / Medium Resp.	Red= Greater than 24 hours Yellow= Between 12 and 24 hours Green= Less than 12 hours			
4	NHC Forecast Track (CPA) Decision Time for this county if within the 72-hour wind swath (Item 1 minus Item 2)? 10 hrs 11/09/09 7 AM	Red= Decision time has passed Yellow= 12 hours or less to decision time Green= Greater than 12 hours to decision time			
5	Assuming a Direct Hit track...what is the Decision Time for this county? 9 hrs 11/09/09 6 AM	Red= Decision time has passed Yellow= 12 hours or less to decision time Green= Greater than 12 hours to decision time			
6	Period of day when Decision Time for your county occurs? 6 AM Mon	Red= 11PM-6AM or 9AM-4PM Mon-Fri Yellow= 4PM-11PM Green= 6AM-9AM or 9AM-4PM Sat-Sun			

Hurricane Risk Profile (State) for Florida

Tropical Cyclone: IDA Advisory # 21 Date/Time: SUN 11/08/09 22 EST

D - Other Considerations

Indicator Level:  Critical  Of Concern

	Criteria	Conditions	R	Y	G
1	Greatest rainfall forecasted for a Florida county in the next 72 hours? Data not available for advisory >24 hours old	Red= Greater than 6 inches Yellow= 3 to 6 inches Green= Less than 3 inches (or N/A)			
2	What is the maximum clearance time for a Florida county within the 120-hour forecast error cone? Hillsborough 33.5 hrs for Cat 3	Red= Greater than 24 hours Yellow= Between 12 and 24 hours Green= Less than 12 hours			
3	Are there any special events or holiday weekend considerations in evacuation planning? after Oct20 high occupancy S/SW FL	Red= around July 4 / Labor Day / OR Oct 20-Nov 30 S or SW FL Yellow= after July 4 week to Labor Day Green= No holiday or special event			
4	What is the inland extent of hurricane force winds based on MEDW's for (adjusted) forecast intensity and forward speed? Extend to Inland Counties	Red= Exits FL as hurricane Yellow= Extends to inland counties Green= Coastal Counties only			
5	Which Florida RPC Regions are in the 72 hour average forecast error cone? (9) W / Apala / NCent / NE / Withla / ECent / Cent / TPABay / TreaCst /	Red= SW / S / TPA Bay Yellow= TreaCst/ ECent / NW / w Green= Withlaco / NCent / Apalach			
6	Does the state qualify for pre-landfall declaration? Likely.. 13 Counties with hurricane warning	Red= 3 or more counties in error cone and Cat storm major (3/4/5) Yellow= 3 to 6 counties in hurricane warning Green= Less than 3 counties in hurricane warning			

Hurricane Risk Profile (Local) for Santa Rosa County FL

Tropical Cyclone: IDA Advisory # 21 Date/Time: SUN 11/08/09 22 EST

D - Other Considerations

Indicator Level:  Critical  Of Concern

	Criteria	Conditions	R	Y	G
1	Amount of rainfall forecasted for this county in the next 72 hours? Data not available for advisory >24 hours old	Red= Greater than 6 inches Yellow= 3 to 6 inches Green= Less than 3 inches (or N/A)			
2	What is the maximum clearance time for a Florida county within the 120-hour forecast error cone? Hillsborough 34 hrs for Cat 3	Red= Greater than 24 hours Yellow= Between 12 and 24 hours Green= Less than 12 hours			
3	Are there any special events or holiday weekend considerations in evacuation planning? after Oct20 high occupancy S/SW FL	Red= Hurricane occurring within 1 week of July 4 or Labor Day Weekend Yellow= Hurricane occurring after July 4 week..before Labor Day Weekend or local special event Green= No holiday or special event			
4	Do hurricane force winds normally reach this county in a storm with this strength and forward speed? Hurricane force	Red= Hurricane force...64 kts(74 mph) or greater Yellow= 50 to 63 kts (58 to 73 mph) Green= Less than 50 kts (58mph) or not in error cone			
5	Which Florida RPC Regions are in the 72-hour average forecast error cone? (9) W / Apala / NCent / NE / Withla / ECent / Cent / TPABay / TreaCst /	Red= Southwest/South/Tampa Bay Yellow= Treasure Coast/East Central/Northeast/West Green= Withlacoochee/North Central/Apalachee			

Hurricane Risk Profile (State) for Florida

Tropical Cyclone: IDA Advisory # 21 Date/Time: SUN 11/08/09 22 EST

E - One-Way Concerns

Indicator Level:  Critical  Of Concern

	Criteria	Conditions	R	Y	G
1	Is the hurricane forecast to be a Category 4 or 5 within 72 hrs or before landfall? Forecast Cat 2	Red= Is now or forecast Cat 4/5 Yellow= Forecast Cat3..BUT at least 48 hours away so could intensify Green= Forecast only Cat 1/2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Are Southeast..Southwest..Tampa Bay..Northeast or West in 72 hr hurricane Wind Swath? West / (partial)	Red= Yes..entire RPC region or more than one region Yellow= Yes..one region is partially in hurricane wind swath Green= None of the regions are in hurricane wind swath	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Are there enough hours left before tropical storm winds to prepare and execute the One-Way option in Florida? 19 hrs left till TS Winds at 11/09/09 5 PM	Red= Yes At least 37 hours Yellow= Maybe if storm slows (30 to 36 hrs) Green= No unless storm slows	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	Are there at least 12 continuous hours of daylight after 25-hour setup time? not enough time for Setup	Red= Yes..At least 12 daylight hours after setup Yellow= Almost..9 to 11 hours Green= No..less than 9 hours	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	If One-Way setup is to be done WITH 12 HRS DAYLIGHT AFTER 25 hr setup..are we close to the required One-Way decision time? 38 hrs past OneWay Decision time at 11/07/09 8 AM	Red= Yes..within 2 hours of One-Way decision time Yellow= Yes..between 2 and 6 hours of One-Way decision time Green= No..more than 6 hours from One-Way decision time	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

State and Local Summaries

Risk Profile Summary (State) for Florida

Tropical Cyclone: IDA Advisory # 21 Date/Time: SUN 11/08/09 22 EST

Indicator Level:  Critical  of Concern

Advy	Risk Area Def						Evac Consider						Evac Consider						Other Consider						One-Way C					R	Y	G	Cr	oC
	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5					
21												3																16	7	6	8	4		
20												3																12	9	8	6	5		
19												3																10	12	7	5	4		
18												3																12	10	7	5	4		
17												3															12	6	11	5	2			
16												3															11	7	11	5	1			
15												2															12	5	12	4	3			
14												2															10	6	13	3	3			
13												2															10	8	11	3	4			
12												2															7	4	18	2	1			
11												2															6	5	18	2	1			
10												2															7	5	17	3	1			

Risk Profile Summary (Local) for Santa Rosa County FL

Tropical Cyclone: IDA Advisory # 21 Date/Time: SUN 11/08/09 22 EST

Indicator Level:  Critical  of Concern

Adv#	Risk Area Definitio						Evac Consideratio						Evac Consideratio						Other Consider					R	Y	G	Cr	oC					
	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5										
21																													12	8	3	5	5
20																													10	7	6	4	4
19																													7	8	8	3	2
18																													9	5	9	3	2
17																													9	4	10	4	1
16																													8	3	12	3	0
15																													9	3	11	3	1
14																													9	3	11	3	1
13																													8	5	10	3	1
12																													4	3	16	1	1
11																													4	3	16	1	1
10																													4	3	16	1	1

Glossary

A

actual track: A line created from multiple advisories by connecting the storm center's initial position at each old advisory. Also referred to as the 'past track.'

advisory: A collection of various forecast products issued by the tropical cyclone forecast center on a single storm at a single point in time. Advisory packages are sequentially numbered and typically issued at 6 hour intervals. Additional advisories (intermediate A and sometimes A and B) are issued whenever watches or warnings are in effect.

AHPS: Advanced Hydrologic Prediction Service; a National Weather Service clearinghouse for various water forecasts and flood warnings.

B

basins: Oceanographic regions used to describe the general locations of tropical systems. Hurrevac2010 organizes tropical systems into the following basins: Atlantic, East Pacific, Central Pacific, West Pacific and North Indian Ocean, and South Pacific and South Indian Ocean.

basins (SLOSH): Local coastal regions delineated and mapped for storm surge modeling (SLOSH).

C

closest point of approach: This refers to the calculation by HURREVAC of the direction, distance, and time at which the storm will pass closest by a specified county. CPA calculations are based upon the official NHC forecast track. The parameters for your county are presumably near their peak at the Closest Point of Approach.

CPHC: Central Pacific Hurricane Center. This National Weather Service office, located in Honolulu, Hawaii, is responsible for tropical cyclone forecasts from 140 to 180 degrees West. It is the source of Central Pacific advisory data in HURREVAC.

D

deterministic forecast: A forecast presenting a single 'best guess' estimate without any representation of the likelihood of that outcome. The NHC's forecast advisory is deterministic.

direct hit: Scenario in which the storm center passes directly over the area specified. HURREVAC takes a straight-line direct hit approach to evacuation decision timing. That is, from the

time the advisory is issued, the storm is assumed to head straight for your county using the forecast speed from the NHC.

direct to point: see direct hit definition

E

evacuation clearance time: The amount of time (number of hours) it takes to move a vulnerable population to safety. Hurricane Evacuation Studies determine these for an area based on various storm parameters and local conditions.

evacuation start time: The last possible time at which an evacuation of the prescribed scenario should be started to allow sufficient time to complete the relocation of the vulnerable population before tropical storm winds begin.

F

FEMA: Federal Emergency Management Agency

forecast period: Length of forecast. Beginning at synoptic time, tropical cyclone tracks are forecasted to 120 hours (5 days), while wind extents are forecasted only to 72 hours (3 days).

forecast track: A line created for a single advisory by connecting the storm center's initial position with its 12, 24, 36, 48, 72, 96, and 120-hour forecast positions.

forward speed: Speed at which the storm center is moving along either its forecast or actual track.

fringe winds: Winds of 34kts (tropical storm strength) or greater surrounding the storm's core.

G

GIS: Geographic Information System; a class of software programs that manipulate, analyze, and present map-based information. HURREVAC includes a GIS Export Tool for transferring storm related information into GIS programs.

H

HES: Hurricane Evacuation Study; a program of FEMA and USACE to assist local emergency managers in determining who should evacuate when a hurricane threatens and when they should leave.

hurricane: A tropical system with maximum sustained winds greater than 64 knots(74 mph). Term used for systems occurring in the Atlantic, East Pacific, and Central Pacific basins.

I

initial position: Position of the storm center at the time of advisory issuance.

intensity: Synonymous with 'maximum sustained winds' or SS Category.

J

JTWC: Joint Typhoon Warning Center. This US Navy office, located on the Naval Base at Pearl Harbor in Hawaii, is responsible for all tropical cyclone forecasts west of 180 degrees. It is the source of West Pacific, South Pacific, and Indian Ocean advisory data in HURREVAC.

M

MEOW (surge): Maximum Envelope of Water is a SLOSH model output describing the maximum storm surge value produced by parallel tracks of storms with the same forward speed, strength, and angle of approach.

MEOW (wind): Maximum Envelope of Winds is a wind decay model describing the maximum distance certain categories of wind can penetrate inland given the storm strength and forward speed.

MOM: Maximum of Maximums is a SLOSH model output describing the maximum storm surge value produced by storms of a single Safir Simpson category, taking into account all angles of approach and forward speeds.

N

NHC: National Hurricane Center. This National Weather Service office, located in Miami, FL, is responsible for tropical cyclone forecasts for the Atlantic and East Pacific (to 140 degrees West). It is the source of Atlantic and East Pacific advisory data in HURREVAC.

NOAA: National Oceanic and Atmospheric Administration; parent organization to the National Weather Service (NWS).

NWS: National Weather Service; the official US government agency for weather, hydrologic, and climate forecasts.

P

past track: A line created from multiple advisories by connecting the storm center's initial position at each old advisory. Also referred to as the 'actual track.'

probabilistic forecast: A forecast presenting the likelihood of various outcomes. The NHC's Wind Probabilities is probabilistic.

S

SLOSH: Sea, Lake, and Overland Surge from Hurricanes; the official storm surge model of the National Hurricane Center.

state plug-ins: State-specific data necessary for certain HURREVAC operations such as evacuation decision timing. After initial program installation, plug-ins must be added using Hurrevac2010's Setup Panel.

STM file: HURREVAC's native file format for storing all forecast advisory information from a single storm.

storm category: Saffir-Simpson Hurricane Wind Scale, a 1 to 5 ranking of hurricane wind strength where categories 3, 4, and 5 are considered 'major' hurricanes.

synoptic time: Time that data is collected. Weather data is collected around the world at 00 Zulu, 06 Zulu, 12 Zulu, and 18 Zulu. Zulu is also known as GMT or UTC time.

T

tropical cyclone: Generic term for hurricanes and typhoons--tropical systems with maximum sustained winds greater than 64 knots(74 mph). Indian Ocean and South Pacific basin systems are typically referred to as tropical cyclones.

tropical depression: A tropical system with maximum sustained winds of less than 34 knots(39 mph).

tropical storm: A tropical system with maximum sustained winds greater than 34 knots(39 mph) but less than 64 knots(74 mph).

typhoon: A tropical system with maximum sustained winds greater than 64 knots(74 mph). Term used for systems occurring in the West Pacific basin.

U

USACE: Abbreviation for US Army Corps of Engineers

W

warning: A hurricane or tropical storm warning means that those conditions could affect the area within 24 hours.

watch: A hurricane or tropical storm watch means that those conditions could affect the area within 36 hours.

wind ranges: The extent of 34kt, 50kt, and 64kt winds surrounding the storm center. Advisories from NHC, CPHC, and JTWC provide wind extents by quadrant (NE, SE, SW, NW) for the initial position and 12, 24, 36, 48, and 72-hour forecast positions.

WPC: Weather Prediction Center (formerly known as the Hydrometeorological Prediction Center), a National Weather Service office that prepares maps and forecast guidance products related to precipitatio

