JStrack

Version 3.4.0

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Installation and Usage

This is an update of the first cut at real documentation for JStrack, something JStrack has been missing for far too long. It probably isn't complete yet. It's probably got some bugs (most likely things like typos, typesetting errors, etc.) that I haven't caught yet. *PLEASE* send any comments to me via the JStrack e-mail list (see https://www.jstrack.org/jstrack for details).

JStrack users please note: I have gone through two cancers (the first in 2006, and the second in 2011). The first cancer, and its treatment, did some damage to a number of things that impact my memory, typing, reading, and ability to get timely updates out. My typing is the direct result of a tumor in the frontal lobe of my brain, in a part of the brain whose name I'm not likely to remember. I might spell words backwards, mix two different words (e.g., twr woods), and so on. For reading, that was a 2.5 cm tumor in my left occipital lobe, which is the lobe of the brain that processes visual information. So I may read something that LOOKS right, but is, in fact, wrong.

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In working on the updates for this documentation, I am trying to make the updates make sense. But just remember, the Downloads page has instructions, too, and if it says one thing, and this file says another, the Downloads page is almost certainly the correct version. Like I said, sometimes what I read is not what's actually on the page. And yes, it is very annoying.

So please, be patient with me. For what it's worth (which, to me, is a LOT), I am still alive; the two cancers are not.

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1. Installing Tcl/Tk (Required to Run JStrack)

Note that this is a general overview for installing Tcl/Tk for the specific purpose of running JStrack. This useful scripting language has many capabilities and many installation options that are not covered here. Installation details may vary depending on your needs and your system.

1.1 For Windows Users

Windows users, please note that JStrack was not designed for Windows—it was designed to run on Unix systems (e.g., SunOS, Linux, FreeBSD, Mac OS X, and so on). I have done what I can to make using JStrack on Windows as easy as possible, but if you're expecting a single setup.exe, you will be disappointed—it's not quite that simple. The simplest way, in my opinion, is to download the ActiveTcl 8.4.x (8.4.19 is the last of the 8.4.x line) distribution provided on the Downloads page, and work from there. Depending on how long it's been since a major release, you may also have to download and install patches from the Downloads page. Instructions for these will be on the Downloads page. As a general rule, however, just remember that JStrack has a very specific directory structure, and patches are generally just files that replace other files within that directory structure.

1) Download the following from https://www.jstrack.org/jstrack/downloads/, the JStrack downloads page to a directory:
   - EITHER:
     - **ActiveTcl 8.4.15** distribution. This one distribution contains all of the extra packages you will need for JStrack (as of version 3.0.1), minus a few non-Tcl items that are packaged with the JStrack distribution. This is the preferred method, by far.
   - OR
     - The "Windows EXE Files for JStrack". This package contains executable files containing the Tcl/Tk distribution needed to run JStrack. Note that you still need to download JStrack itself (see next item). Also note that this version is extremely old, and will likely have problems. Therefore, while I am not removing it, its use is deprecated.
   - The current JStrack distribution (available as either **.zip** or **.tar.gz**).
2) If you have installed Tcl/Tk from the ActiveTcl distribution, Install Tcl/Tk. Run the **ActiveTcl8.4.x exe** file that you downloaded above. Accept the license

agreement (it's freeware) and install using the defaults. Otherwise, extract the EXE files package into the same directory you will use for JStrack itself.

3) Decide on a location where you want to install JStrack. For example, you might choose **c:/JStrack**. Assuming this is your choice, put the **.rar** (or **.tar.gz**) file in **c:/** and extract it. It will extract into a subdirectory called **JStrack** (with a number of subdirectories under that).

4) Proceed to JStrack Configuration (see the next section).

1.2 For Unix

You will need the following (all but netpbm available from the JStrack downloads page—filenames given are from the JStrack site):

- Tcl 8.4.x: **tcl8.4.15-src.tar.gz** (if Tcl 8.4.x is not already installed and is not available in packages, etc..)
- Tk 8.4.x: **tk8.4.15-src.tar.gz** (if Tk 8.4.x is not already installed and is not available in packages, etc..)
- The standard Tcl/Tk library: (tcllib 1.19 now included in JStrack)
- The Img package: (img 1.2.4 now included in JStrack)

1) Build and install Tcl, if needed. Refer to the installation instructions (typically README and/or INSTALL). Normally, configuration and installation is a simple matter of three commands (the last typically requiring root access); note that the '$' and '#' are prompts:

   - $ ./configure
   - $ make
   - (su to root)
   - # make install

   It may not be that simple, however, for your system (but that would be very, very strange!).

2) Repeat instructions/comments from the previous step to install Tk, again, if needed.

3) Decide on a location where you want to install JStrack. For example, you might choose $HOME/jstrack. Assuming this is your choice, put the .tar.gz file in $HOME and extract it:

- $ zcat jstrack-a.b.c.tar.gz | tar xvf -
  - OR
- $ gzcat jstrack-a.b.c.tar.gz | tar xvf -
  - OR
- $ gunzip -c -d jstrack-a.b.x.tar.gz | tar xvf -

where a.b.c is the version number for JStrack. It will extract into a subdirectory called JStrack-a.b.c (with a number of subdirectories under that).

4) Proceed to JStrack Configuration (see the next section).

2. Installing JStrack

1) The structure of the configuration files has changed. The location where some variables is no longer the same (some moved to **paths.tcl**).
2) There is now a configuration script. It's not perfect...far from it, in fact, but it's a good start.
3) *Very Important*: If you are upgrading from a previous version (3.0.1 or beyond) and have edited the list of city names to display, you should make a backup of your city definition files before doing the update. The updates are, by default, written into a different directory (by version number), but if you override that, or move files around, without backing up your changes, you will lose them.
4) *Windows Users*: It has come to my attention that file and directory permissions are now used. As a result, before you can run anything you must make sure the file permissions for the main script files (the ones you run directly) are set for at least read and execute, and all directories are set for read, write, and execute permission.

2.1 Installation Steps

First, cd into the JStrack directory. You will see several files and directories (e.g., **filt**, **tracker**, **autoconfig.tcl**, **HISTORY**, etc.). For Windows, you can use Windows Explorer (not to be confused with MS Internet Explorer) to get there.

2.1.1 autoconfig.tcl

Run **autoconfig.tcl**. Unix users and Windows users can both run it from a shell prompt, but the command for the Tcl (text-only) shell and the Tcl/Tk (graphical) shell will probably be different. These are the typical commands:

- Unix (text-only): **tclsh8.4**
- Windows (text-only): **tclsh84**
- Unix (graphics): **wish8.4**
- Windows (graphics): **wish84**

Note that the difference between the Unix and Windows version of each is the missing '.' from the Windows command ("84" instead of "8.4").

When you run **autoconfig.tcl** from a shell prompt, you'd run it as shown (replacing **command** with the appropriate command from above (for a text-only or graphical interface). As before, the "$" is your prompt:

$ **command** autoconfig.tcl

Windows users can also run **autoconfig.tcl** from Windows Explorer.

Double-click on **autoconfig.tcl**. If Windows asks you to select what program to run it with, select "Wish Application" and select the option to use this application every time for this type of file. If "Wish Application" doesn't show up, click on Browse and find **C:/Tcl/bin/wish84.exe** and select it. Again, select the option to run **.tcl** files with **wish84** every time.

You may also do the same as above by right-clocking on **autoconfig.tcl** and using "Open With..." and selecting "Wish".

2.1.2 Setting JStrack Options

If you're using the normal (graphical) interface for JStrack (**tracker/jstrack.tcl**), just run JStrack and check the various options to see if you want to change anything. For configuring the plotting (or not) of city names, see the instructions below.

If, on the other hand, you're using JStrack's text-only interface (**tracker/jstrack-text_only.tcl**), edit **sysconfig.tcl** and **options.tcl** (both under the **tracker** directory) just like you had to before. Note that the text-only interface has not been updated since, ummmmm, well, a long, long time ago. But then, there hasn't really been much to add to it, so.....

2.1.3 Support for Windows Systems

I no longer have access to anything other than Linux Mint (a Unix variant). My last Windows system finally ate itself. As a result, my ability to support Windows systems is now somewhat limited. I did, a long time ago, create a .exe package to start JStrack, but as it is very old, and very definitely outdated, its use is deprecated. Windows users should install Tcl/Tk 8.4.x or 8.5.x (JStrack will run fine under either of those).

2.2 Configuring the Display of City/Location Names

This is a very new feature, and is very much in its infancy. However, I think it's helpful to have these, so I'm including what I've got. You can turn it off by commenting out everything in **config_user_citylist.tcl** (in the **tracker** directory).

If you want to display a given city/location name, find its entry (if there is one) in this file, and if it's commented out, uncomment it (remove the leading "# ").

If you want to display a city/location that is *not* already in this file, you will first need to determine its lat/long coordinates. Note that JStrack uses positive numbers only for both (e.g., for Pensacola, FL: 30.47 and 87.20). Then, you will need to edit the file, **config_citydefs.tcl**, in the **tracker** directory and add the location name and coordinates. The format for this file is explained at the top of the file. Then you'll need to edit **config_user_citylist.tcl** (also in the tracker directory, and also explained in comments at the top of the file) to add the location to those plotted.

To plot/refresh city names, or to remove them from the chart, use the appropriate options in the Options menu. Note that these changes are *not* saved to your config file. If you want more permanent changes, make changes to the **config_user_citylist.tcl** file.

When you make changes to **config_user_citylist.tcl**, you do *not* have to exit and restart JStrack. Just reload the city names via the Options menu.

Plotted locations for city/location names *should* be correct (I got most of them from the NHC's breakpoints file, i.e., their coordinates). But this was a big file, requiring some reformatting to get it into JStrack, so the possibility is always there that I messed something up somewhere. If you find any such problems, please let me know so I can fix them.... Thanks.

3. Using JStrack

3.1 JStrack's Different Parts

(at least, those you care about as a user)

JStrack has many different parts. Normally, you'll only need to worry about the tracking part. But first, you need to get a few things set up, and knowing what's in the various directories in the distribution.

The first directory is the top-level directory (by default, **jstrack**). In this directory, you'll find (for now, at least) the older versions of the installation docs, the **HISTORY** file, etc., along with a couple of Tcl/Tk (**.tcl**) files and a few subdirectories.

By now, you've already seen and run **autoconfig.tcl**. What you may or may not know is that it made updates to another file in that directory called **paths.tcl** (as well as a number of other **.tcl** files that we'll get to in a bit). The **paths.tcl** file tells JStrack's programs where to find things they need.

There are two key parts to JStrack: the filter script and the tracking program itself.

3.1.1 The "filt.tcl" Filter Script

In order to run, JStrack must (obviously) have data on the storms that are out there. This data comes from the National Hurricane Center/Tropical Prediction Center (NHC/TPC, or simply NHC). JStrack gets its data from the following NHC/TPC products:

- the "Marine Forecast" (aka "Forecast/Advisory")
- the "Public Advisory" (aka "Advisory")
- the "Discussion"

The Marine Forecast is where JStrack gets its most critical data. Without this data, you're stuck with entering it by hand...and JStrack's manual data entry isn't pretty.

These products are "read" by the filter script (in the **filt** directory) called **filt.tcl** (which, in turn, uses another script in that same diretory). The data is extracted and formatted for JStrack. This filter gets its data from any of four sources:

- via direct, automatic data feed using the WX-ATLAN e-mail list
- via JStrack's POP3 client, and from there, the automatic feed listed above
- by hand from within JStrack...definitely not the greatest....

The first, via e-mail, relies on the WX-ATLAN e-mail list, which pushes out copies of NHC/TPC products. Unix users then use an e-mail filter program, like procmail, to pipe a copy of the incoming NHC/TPC products to **filt.tcl**. This has the advantage of being completely automatic (you don't even have to be logged in)—when e-mail arrives, it is processed by procmail on its way to your incoming mail according to rules you define. This is, by far, the preferred method, and is how JStrack was originally designed to work. Unix users should use this method (if you don't have procmail, you'll need to install it).

The second method uses a dedicated email account for WX-ATLAN that you will need to provide, a pop3 client (**pop3.tcl**, and **filt.tcl** (same as used above). See the next section for more details on this method.

The third method, grabbing the data via cut/paste (e.g., from a Windows-based e-mail program while reaidng NHC products via WX-ATLAN, from the NHC web page, or whatever). This was what I'd originally hacked together for Windows users to get their data inputs, before I wrote the old FTP (then HTTP after the NHC switched) scripts. This method is now officially deprecated.

3.2 The new POP3 client in the filt directory

I literally came up with this solution in a dream, and it's how I wish I'd thought to do it a long time ago (but, in all fairness, I don't know if a pop3 module was available in tcllib back then, so maybe I have an excuse!).

JStrack now has a POP3 client, pop3.tcl, which will connect to an email server with a *dedicated* email account that you create specifically for WX-ATLAN and *nothing* else. If you attempt to use this account for anything else, pop3.tcl will automatically delete any other messages as it cleans up before shutting down.

To use this, you must first have or create an account on the WX-ATLAN server (see "WX-ATLAN: Getting NHC Advisories via E-mail" under Links on the

JStrack web site for instructions on how to set this up). You will need to configure it with the dedicated email address you configured for WX-ATLAN and not your normal email address.

You will also need to configure the pop3 client using the file, **jstrackpop3.rc** in the **filt** directory. There is a sample file for gmail accounts, where all you need to enter is the username and password for your dedicated WX-ATLAN account. For any other server, you will also need to enter at least the host (the one given for retrieving email via pop3). Unless your email hosting site has some non-standard configuration, you shouldn't ever need to mess with the port, as port 995 is the default for secure (SSL) connections for pop3, and JStrack's pop3.tcl only uses secure connections.

3.3 Scheduling The Email Updates

For Unix users, you'll want to use cron for scheduling. If you are using procmail to filter out the WX-ATLAN messages and pipe them to **filt.tcl**, you'll probably already have this configured to grab new incoming mail every minute or so. If you don't know how to use cron, read the man page for it. It will tell you everything you need to know. If you don't know how to configure procmail, see the JStrack web page under "procmail: Processing NHC Advisories Automatically As They Arrive via E-mail" for instructions on configuring the rules for procmail. If you aren't using procmail, why not? It's a great filter program and, when used as such, it can be a great spam killer.

For Windows users, I looked around, and found a freeware (at least when I looked at it, it was free—if that's changed since writing this, I wouldn't know) program called Z-Cron at https://www.z-cron.com/

Unfortunately, I haven't had a Windows system in literally over a decade, so I'm not going to be any help when it comes to setting Z-Cron up, but it looks like a simple graphical interface, so it shouldn't be too tough. You'll want to use this to check mail using pop3.tcl every minute, 24/7 so JStrack will always have the most recent data. You can also run it manually, if you just don't want to mess with scheduling, but personally, I wouldn't do it that way.

Whether on Unix or Windows, you'll want to have cron or Z-Cron run (JStrack's installation directory)/filt/pop3.tcl.

3.4 Running JStrack

First, if you are running JStrack from a menu (or, for Windows users, an icon), you can probably skip this section as the only thing you're likely to do is select a menu item (or click on an icon).

About Tcl/Tk versions: JStrack runs nicely under Tcl/Tk 8.4.x and 8.5.x. The **jstrack.tcl** as distributed in this release is, for Unix users, set for Tcl/Tk 8.5 (first line: #!/usr/local/bin/wish8.5). If you only have version 8.4 installed, you'll want to change that back to

#!/usr/local/bin/wish8.4

(And obviously fix the path if your Tcl/Tk distribution is anywhere other than /usr/local/bin.) Throughout this documentation, references to Tcl/Tk 8.4 and 8.5 are used interchangeably. Just know that you can choose which to use. If you have Tcl/Tk 8.5, use it, as it is a later release (obviously).

If you're running JStrack from the command line, there are two basic ways you can start it up. For the remainder of this section, we will assume that the '$' is your shell prompt, and the Tcl/Tk **wish** interpreter is **wish8.4** (for Windows users, it will be **wish84**—note "84" instead of "8.4"). We also assume that you have run **autoconfig.tcl**, and that, for Windows users, **.tcl** files have been associated with **wish84.exe** (Unix users don't have to worry about this, as the name and location of **wish8.4** is configured on the first line of each of the executable script files.

To start JStrack without any command line options, you may use either of the following (from the **jstrack/tracker** directory):

- $ wish8.4 jstrack.tcl
  - OR
- $ ./jstrack.tcl

There is no significant difference between these two. From this point forward, we will use the latter notation...but you can always use the former. With that in mind, the command line usage is:

$ ./jstrack.tcl [-map map_name] [storm 1 name] .... [storm n name]

The three maps you may choose from are:

- The "overall" map: map_name is "overall" or "full"
- The "East coast" map: map_name is "east"
- The "Gulf coast" map: map_name is "gulf".
- The "Caribbean" map: map_name is "carib".

Storm names, if used on the command line, are the name (or number, for unnamed tropical depressions) in lower case, e.g.,

- $ ./jstrack.tcl danielle
- $ ./jstrack.tcl danielle erin six seven

If you wish to load a map other than your default map right from startup (for example, I normally startup with the Gulf coast map...but if I'm looking at a storm that I know is not within the area that map covers, I would start right off with a more appropriate map):

- $ ./jstrack.tcl -map overall lisa
- $ ./jstrack.tcl -map east dianne

And as far as the command line goes, that's basically it, at least, that's it as of JStrack version 3.0.1...who knows what I'll add in future releases.....

3.5 Using JStrack

Once you've started JStrack, there are two ways you can control it. You can use the mouse/menu based commands, or you can use the console (which, depending on your OS, will vary in both method of accessing it and in its command line editing capabilities). The command line interface assumes a knowledge of JStrack's internals, so for now, we'll limit the discussion to the "normal" user interface.

3.5.1 The "File" Menu

- Console
- Saffir-Simpson Scale
- Save main window to image
- PostScript output
- Update Storm Data (From File)
- Merge Tropical Depression/Named Storm Data
- Exit

Availability of some of these options (the console, saving the main window to an image file, and PS output) will depend on your system.

The "Console" item is for Windows users, who are not left with a command line after running JStrack (Tcl/Tk under Windows does not drop the user into a command prompt, but instead provides the console window option). This item will only appear on Windows systems.

The next item, "Saffir-Simpson Scale" displays the Saffir-Simpson Scale, with descriptions of each strength (category) hurricane and its ranges of winds, atmospheric pressures, storm surge levels, and a text description of typical damage patterns for each.

The "Save main window to image" item uses the Img extension's capabilities to save the main JStrack window to an image file. After repeated failures when trying to create PNG, JPG, or GIF images (various errors, usually claiming "too

many colors", etc.) I have changed this to only create TIFF images. To convert a TIFF to a PNG, etc., there are a number of options, including using the netpbm utilities which compile cleanly on Unix and Windows systems (and should be available for Windows on the Internet).

The "PostScript output" item uses the Tk canvas widget's PS output capability to produce a PS file from the canvas contents (i.e., the map and displayed track data). Your results may vary.

The "Update Storm Data (From File)" item is used to update the storm data from a text file containing one of the NHC products (Advisory, Marine Forecast, Discussion, and Probabilities, which the NHC does not appear to use anymore).

The "Merge Tropical Depression/Named Storm Data" item basically does what the **merge** shell script in the **storms** directory does: it takes the track data files for a tropical depression (e.g., **one.trk**) and merges the data with that of the named storm that the tropical depression later evolved into (e.g., **alice.trk**). This avoids having both "TD ONE" and "TS ALICE" appear as if they were two different storms, when in fact they are just one.

Again, this is a duplicate of the functionality of the shell script (merge) in the **storms** directory. It makes no difference which you use.

The "Exit" item exits JStrack.

3.5.2 The "Options" Menu

The "Options" menu contains the following options settings:

- Plot City Names/Update Plotted Names
- Remove City Names
- Default Map
  - Overall picture
  - East coast (north of FL)
  - Gulf of Mexico, etc.
- Miles/MPH
- NM/KT

- Always plot latest wind radii
- Always plot latest forecast positions
- Watch for storm updates in background
- Automatically load NEW storms
- Home Coordinates
- Warnings (for when a storm gets too close)
- Display coordinates of mouse pointer
- Save Config (user-specific)
- Save Config (GLOBAL config)

Plotting and Removing City/Location Names

The first two plot and remove city/location names, respectively. Display (or not) of these names is controlled via two files (which, at present, are edited by hand). WARNING: Keep a backup copy of any changes you make to the city/location name/definition files. Extracting a new version will over-write any existing copy. Backups are good.....

The two files (both in the **tracker** directory) that control the display of city and location names are:

- **config_user_citylist.tcl** - select which names to display
- **config_citydefs.tcl** - defines coordinates for cities/locations

The format for these files is described in each file.

Selecting the Default Map

Thanks to Ron Murphy, NWS Birmingham, many versions ago, JStrack got a nice, new set of maps that drastically improved its appearance. As of way back then, there are three maps to choose from. This option selects the default map to load (assuming you don't override it from the command line) when JStrack starts up. The options are:

- Overall picture

- East coast (north of FL)
- Gulf of Mexico, etc.
- Caribbean

Note that, if a storm's position is off of the current map, a big, fat arrow is displayed pointing (more or less) to its off-display location.

Miles/MPH vs NM/KT: This is a simple either/or selection of which units you want to use for distance and speed.

Yes/No Options:

- Always plot latest wind radii
- Always plot latest forecast positions
- Watch for storm updates in background
- Automatically load NEW storms
- Display coordinates of mouse pointer

Wind radii: The wind radii plot is important, and should not be turned off. Keep in mind that you need to look at more than just the center of the storm—you need to look at the extent of the winds. This is the purpose behind the wind radii. Wind radii information is provided by the NHC in the Forecast/Advisory (aka Marine Forecast).

Forecast positions: Forecast position information is provided by the NHC in the Forecast/Advisory.

Storm updates: Unless you turn this off (not recommended) JStrack will silently watch for updates to the storm track information (**.trk**) files. If new storm data arrives (e.g., via e-mail/procmail, autoupdate, etc.) for a storm that is currently displayed, JStrack will detect this and reload the storm's track.

Auto-load NEW storms: If a NEW storm (i.e., one for which there was no data in the storms directory) appears and this option is set, JStrack will automatically load the new storm's data.

Display coordinates of mouse pointer: If set, will display the coordinates (latitude and longitude) of the location that the mouse is currently pointing at.

Home Coordinates: If you look at the sample images of JStrack, you'll see a big 'X' over NW FL. That's where I live. This is where you enter your home coordinates so that 'X' is over your location instead of mine.

Warnings (for when a storm gets too close): This section allows you to define a set of external programs/commands to run to sound alarms, make lots of noise to wake you up if a storm is in a threatening position, and so on. This can also be used to automatically update a web page (e.g., for continuously displaying the latest plots).

The configuration window for this was (in/before 3.0.0) too big for smaller displays. As of 3.0.1, the code for this is totally revised. (For what it's worth, when I wrote the original, I didn't know any other way).

3.5.3 The "Maps" Menu

From this menu you can change maps, as well as select a version of the maps with a more printer-friendly color set—this doesn't look as nice, but it will save you from wasting a whole ink cartridge (well, ok, perhaps it's not QUITE that bad) on one printout.

3.5.4 The "Storm Data" Menu

The "Storm Data" menu contains the following options settings:

- Load/reload storm(s)
- Remove storm(s) from chart
- Input storm data manually
- History of storm
- Plot all wind radii for storm
- Remove all wind radii for storm
- Clean chart

Load/reload storm(s): From here, you get a list of storms available to load (or reload, e.g., if new data has arrived and you do not have JStrack configured to reload automatically). JStrack is designed to have storm data in the **storms** subdirectory under the **tracker** directory. Storm data for the current year is stored in **storms**.

Storm data for previous years is stored in **storms/old/YYYY** where "YYYY" is the four-digit number for the year. JStrack will sort the data from current to oldest (current data first, old data displayed by year *if* you keep the data arranged in the right format).

The dual-listbox selection works (as of 3.0.1...a typo in the 3.0.0 and earlier versions—exactly how far back, I'm not sure—prevented selected items from being de-selected) this way: available storm names are on the left. Selected storm names are on the right. Click on a name on the left to add it to the selected names on the right. If you decide not to load one of the ones you've added, click on its name in the right window.

Remove storm(s) from chart: This gives you a list of storms currently displayed and asks which ones you want to remove. The dual-listbox selection works as described above.

Input storm data manually: This provides an extremely crude interface for adding new storm data when no network option is available (e.g., you're at a shelter, using your laptop and getting updates via radio, shelter personnel, etc.). It's not pretty, but it works. Some of the entry fields have a '?' button next to them—use this if you aren't sure what format the data should be in for these fields. For example, the '?' for the timestamp will check the current time (using your computer's time) and attempt to guess which NHC update it would most likely be.

All times are given in 24-hour time (so midnight would be 0000, 6 AM would be 0600, noon would be 1200, 6 PM would be 1800, and so on).

Coordinates are entered using decimal degrees (positive numbers only).

Course direction is entered in degrees, with North being 0 degrees and South being 180 degrees. A '?' is provided if you need it.

History of storm: After selecting a storm (as in examples above), you are shown a text display of the storm's (data) history.

Plot all wind radii for storm: Normally, only the current and forecast wind radii are plotted. This lets you plot *all* of the wind radii, past, present, and future.

"Remove all wind radii for storm" removes the wind radii.

Clean chart: Removes all storms from the map.

3.5.5 The "Satellite Imagery" Menu

From this menu, you can select GOES East satellite imagery to view in a window either as a static image, or as an animated GIF, showing the recent progression of the storm as seen from space.

3.6 Position-Based Menus & Displayed Data (mouse/location based)

With your mouse, you can get additional data and options directly from the track display:

- coordinates of the location the mouse is at. This is turned on/off via the options menu.
- mouse-overs: move the mouse over displayed data to get a description of what it is
- left-click on current/previous storm plot point: plot point menu from which you can get:
  - Detailed Info - storm data listing for that update
  - NHC Advisory Data
  - Plot Forecast Positions
  - Plot Wind/Seas Radii
  - Plot Forecast Radii
  - Plot Probabilities (if the data is available)
  - Storm History (as described above)
  - Remove From Map (removes the storm)
- right-click on map area: select from plot points to load menu (selects a region from the screen...if the most recent data point is within that region, it will be identified as such.) This is very useful in cases where a storm is moving

very slowly (or not at all) and you want to select the latest plot point out of a jumble of overlapping data. Just right-click, select the item identified as current, and click on the "Get Selected Data" button (bottom-right).