PSH User Instructions

Scope

This document provides user instructions for the Migrated Post Tropical Cyclone Report Generator (**PSH**) application integrated into AWIPS II and based on a Legacy version (V 1.3 used alongside AWIPS I and II. This document assumes working knowledge of the Legacy PSH program and its associated meteorological data and terms, and of the AWIPS II system.

Most part of this document is updated from **PSH Generator User's Guide** Version 1.3 written by John C. McMichael and Anthony Reynes at WFO Tampa Bay Area, Ruskin FL.

Ownership

Name	Role	Contact
Jun Wu	Author, Project Lead	jun.wu@noaa.gov
Pen Wang	Team Lead	penghai.wang@noaa.gov
Jim Calkins	Government Manager	james.calkins@noaa.gov

Document History

Date	Comments	Reviewer
12/13/2017	Created	
6/23/2021	Update for load user files and storm names	Wen Kwock

Installation

PSH is planned to come out to WFOs with AWIPS2 18.1.1. It is a tool module in D2D perspective under the "**Tools**" menu as "**PSH**". Before running PSH, you may need to import your legacy PSH configuration files and set up a list of storm names for a new PSH season.

Import legacy configuration files

In AWIPS2, PSH configuration is saved in the localization store (SITE level) as XML files. If legacy PSH has been in use at your site and you already have some configuration files, they could be imported into the localization store to let PSH pick them up. Normally, these files are under /data/local/PSH or /data/local/PSH/ConfigureBackup directory, including:

cities_pipe.txt	customized cities file
config_headers.txt	customized headers info
county2.dat	list of counties
fcstr.dat	list of forecasters
marine_stationinfo.txt	list of marine stations
official_stationinfo.txt	list of METAR stations
unofficial_stationinfo.txt	list of non-METAR stations
shapefiles_cwas.txt	list of CWAs

Copy these text files into **/awips2/edex/data/utility/common_static/site/OAX/psh/setup** (replace OAX with your site ID) as a root user. If the directory "psh/setup" does not exist, create it and "cd" to /awips2/edex/data/utility/common_static/site/**OAX** and set privilege as "chown -R awips:fxalpha psh".

Storm Names

Storm names was stored in files **/awips2/edex/data/utility/common_static/base/psh/setup/*/storm_##.txt**. Starting on release

21.4.1, PSH uses storm names in file StormNames.py. File StormNames.py can be found in the localization perspective in the GFE/Utilities folder. There are other AWIPS II application(s) using storm names from file StormNames.py. By using the same source for storm names, PSH is unified and consistent with other AWIPS II applications. Note that there are six (6) lists of storm names for the Atlantic and Eastern Pacific basins in file StormNames.py and they are reused every six years in PSH. Example, list 3 can be used for 2009, 2015, 2021, 2027, etc.

Setup PSH

In CAVE D2D, click “Tools”, then “PSH”. PSH main window shall open up (Figure 1).

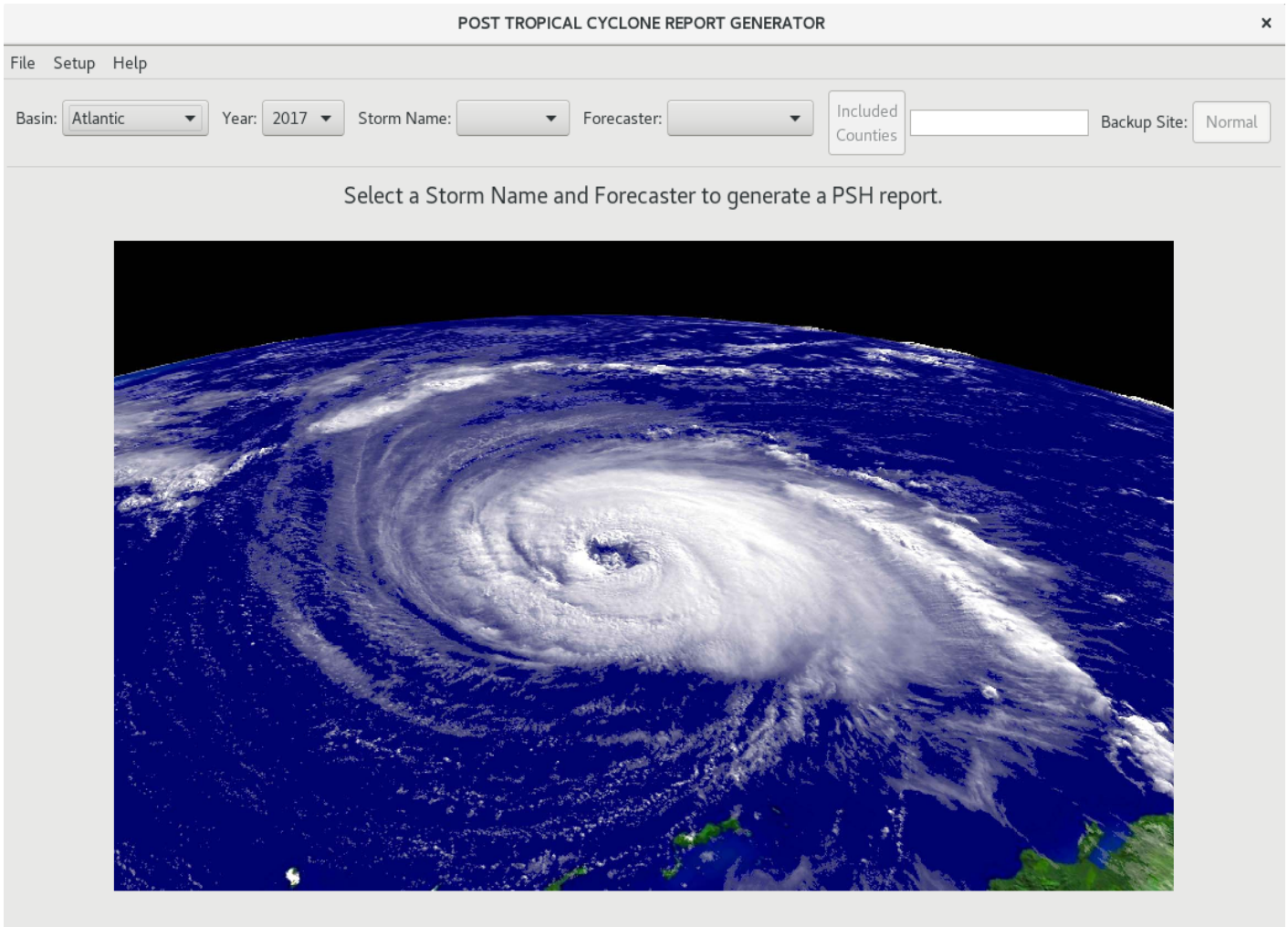


Figure 1 - PSH main window

There are seven setup steps (click “Setup” menu to see them), which must be performed in order to run the PSH Generator properly.

General Setup Functionalities and Procedures

Functionality Buttons

All setup dialogs have a similar set of buttons as below:

- **Add** A new row is created at the bottom for adding a new entry.
- **Delete** Delete the selected rows
- **Save Change** Save the configuration into localization
- **Reset** Reset the GUI by loading from the last-saved configuration.
- **Exit** Close the dialog

Procedures

- Click “**Add**” and a new row will be added at the bottom, type in the name you want to add (CWA, County name, etc). Note that **auto-completion** is implemented using the existing information in AWIPS database. So while you are typing, a list of records that match what you have typed will appear in a drop-down list to assist you. You can **double-click** to pick one from the list.
- Click “**Save Change**” to save or click “**Reset**” to get rid of what you just added (not saved yet).
- For saved ones, you can click the checkbox at the first column to selected them and click “**Delete**” to remove them. A confirmation message dialog will open up for you to authorize the deletion.

Important - The text-based configuration files (legacy configurations, water level stations, etc.) you imported will be loaded only **ONCE** at the very **FIRST** time when a setup dialog (Program Configuration, Counties, Forecasters, etc.) opens. Any “**Save**” will save the configurations into localization as XML files and then the PSH program will read from the saved XML files from then on. If in case you want to start from the legacy configurations again, you need to manually remove the XML file in the localization (see **Installation** section)

Step 1. Program Configuration

The Program Configuration window contains the basic headers,time zone,TC basin settings, LSR Header, WMO Node information etc (see Figure 2).

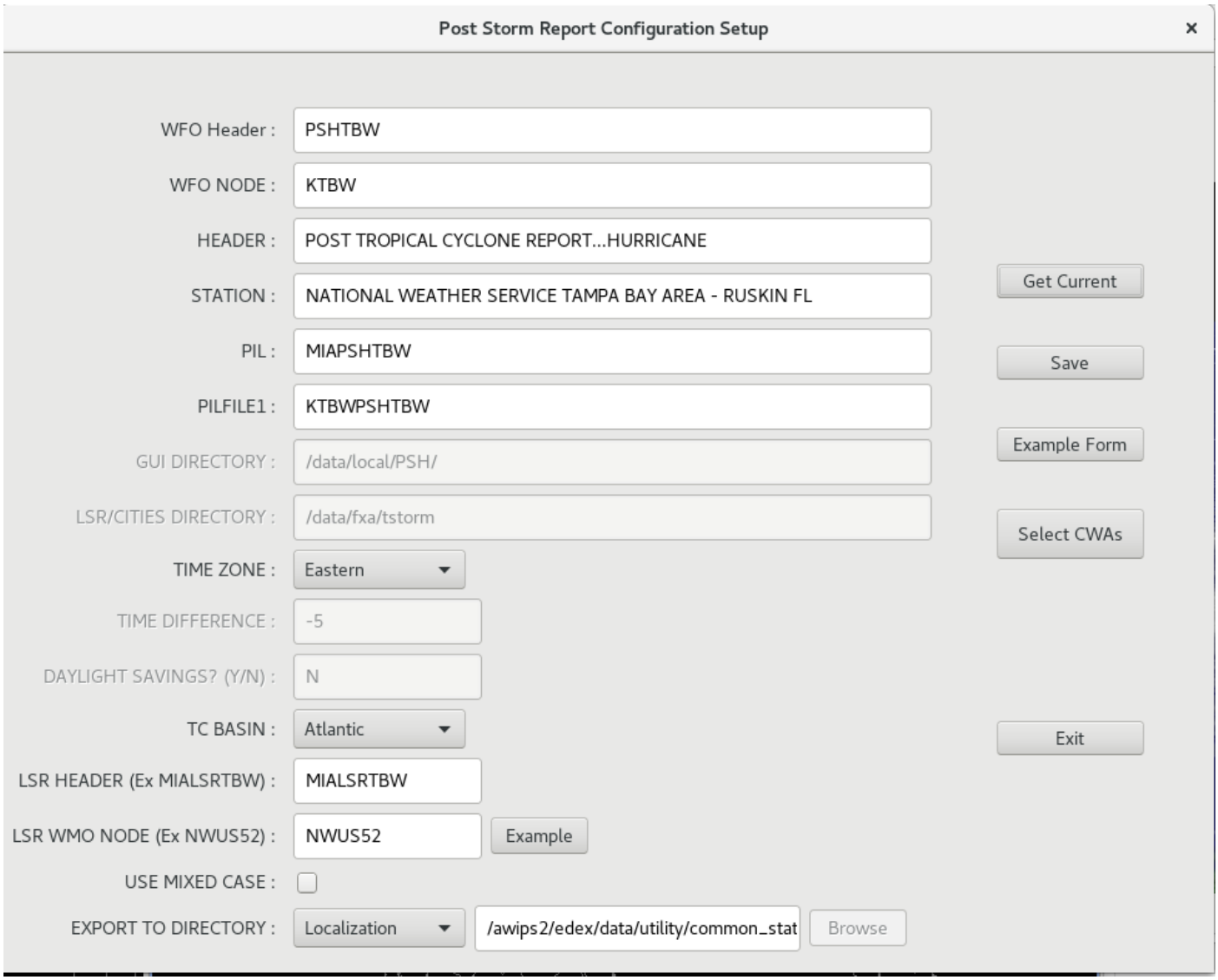
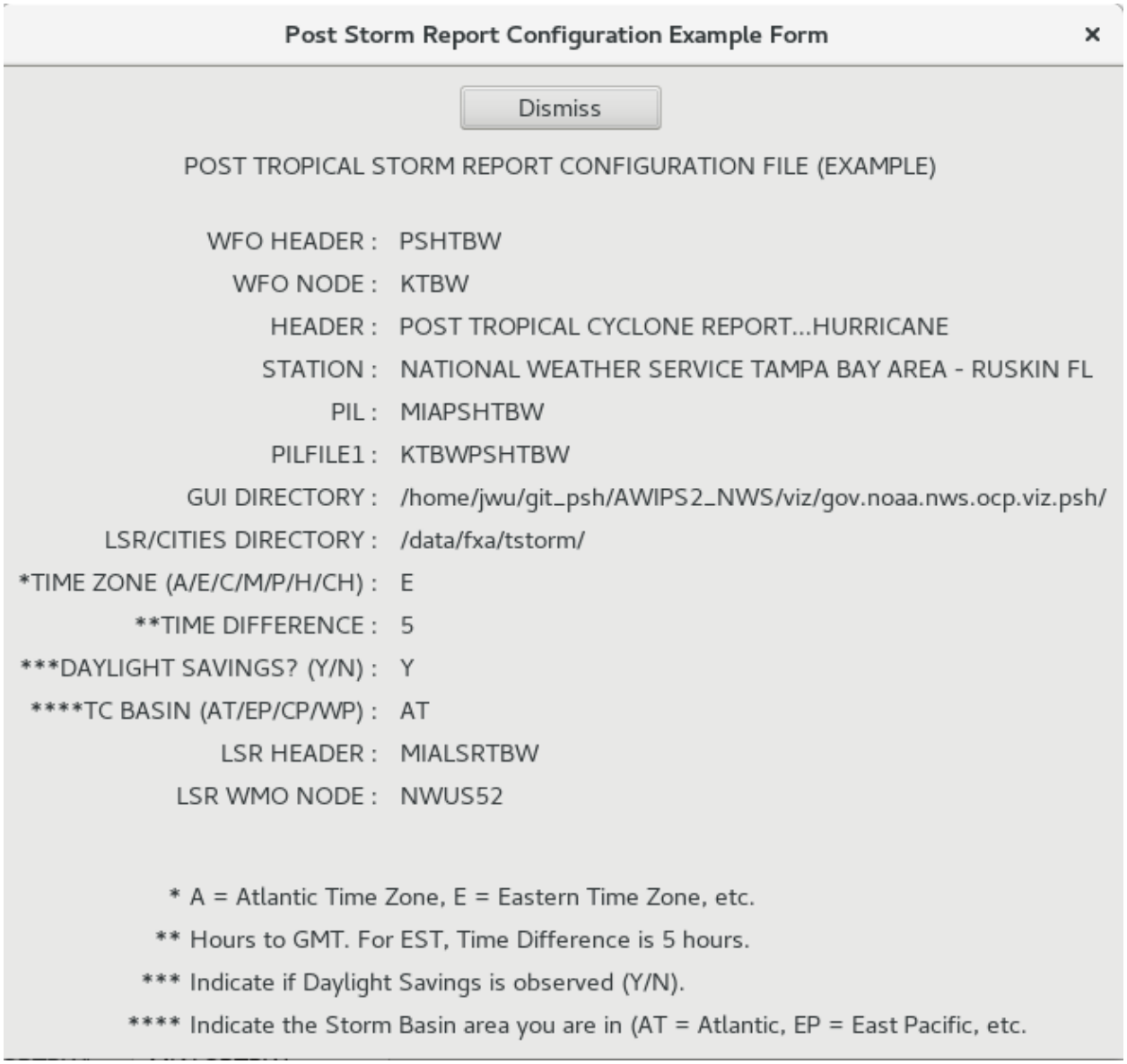


Figure 2 - PSH Program Configuration Dialog

If you have imported/copied your legacy configuration file (config_headers.txt) into localization. It will be loaded and shown in the dialog now.

If you start from fresh, click the "**Example Form**" button at right to see the example configuration for WFO TBW and simply substitute the information with your local WFO equivalents (Figure 3).



- **Get Current** Retrieve the current headers.
- **Save** Save configuration into localization store (config_headers.xml)
- **Example Form** Open up a dialog showing example configuration for TBW
- **Select CWAs** Opens up a dialog to select/add CWAs (Figure 4)
- **Exit** Close dialog

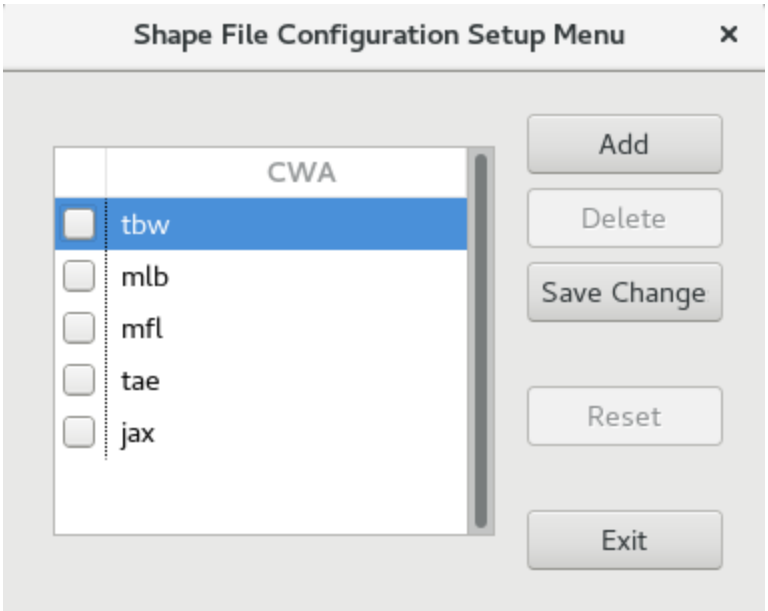


Figure 4 - PSH CWA Selection Dialog

Note: CWAs are used to determine geographical positions and reference cities using latitude/longitude coordinates. They are loaded from the AWIPS2 database table. Add up to 5 CWA names and click “Save”. These CWA‟s will be your primary backup, secondary backup, etc. once the backup capabilities are implemented in the future.

Step 2. Setup Counties

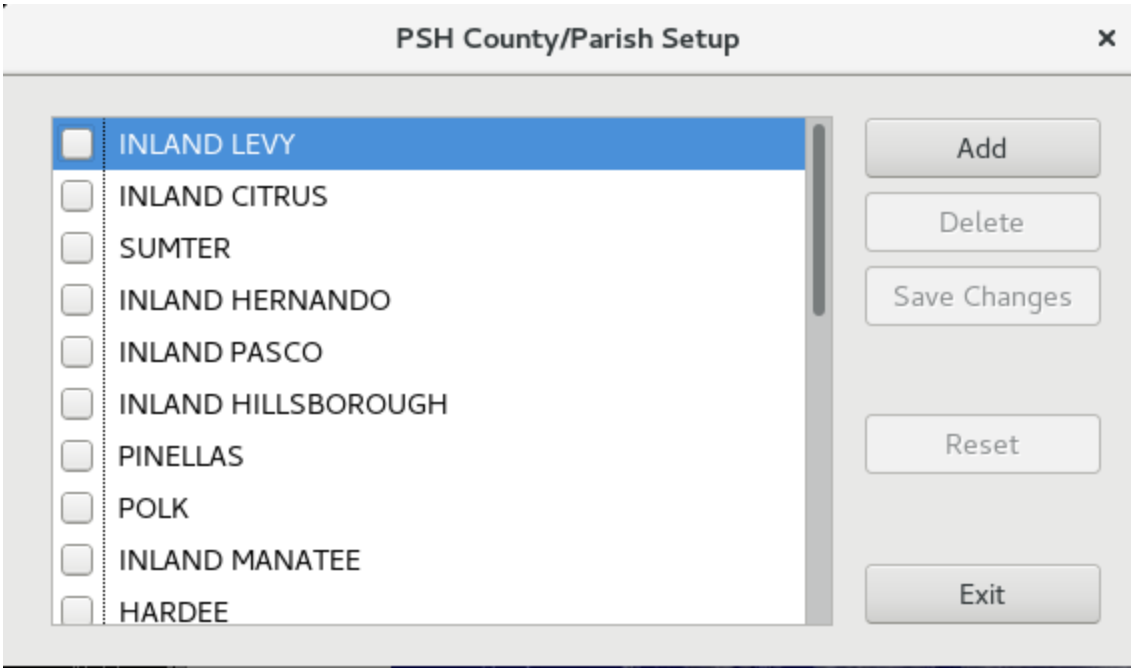


Figure 4 - PSH County Setup Dialog

When you manually add a new county, the counties in AWIPS2 **mapdata.county** table are used for auto-completion.

Step 3. Setup Forecasters

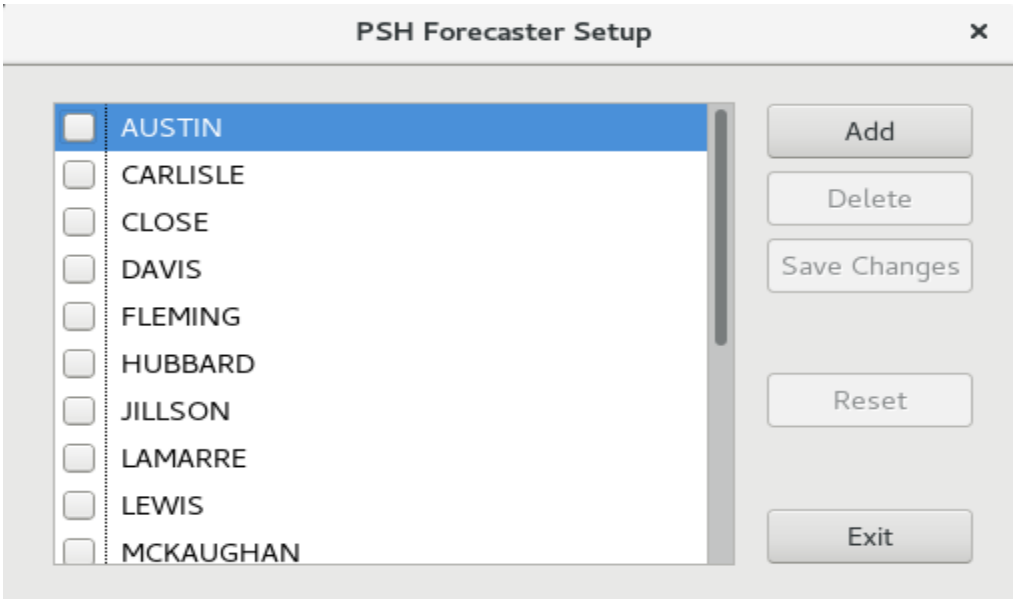


Figure 5 - PSH Forecaster Setup Dialog

In general, only the last name is required here.

Step 4. Setup Cities/Water Level Stations

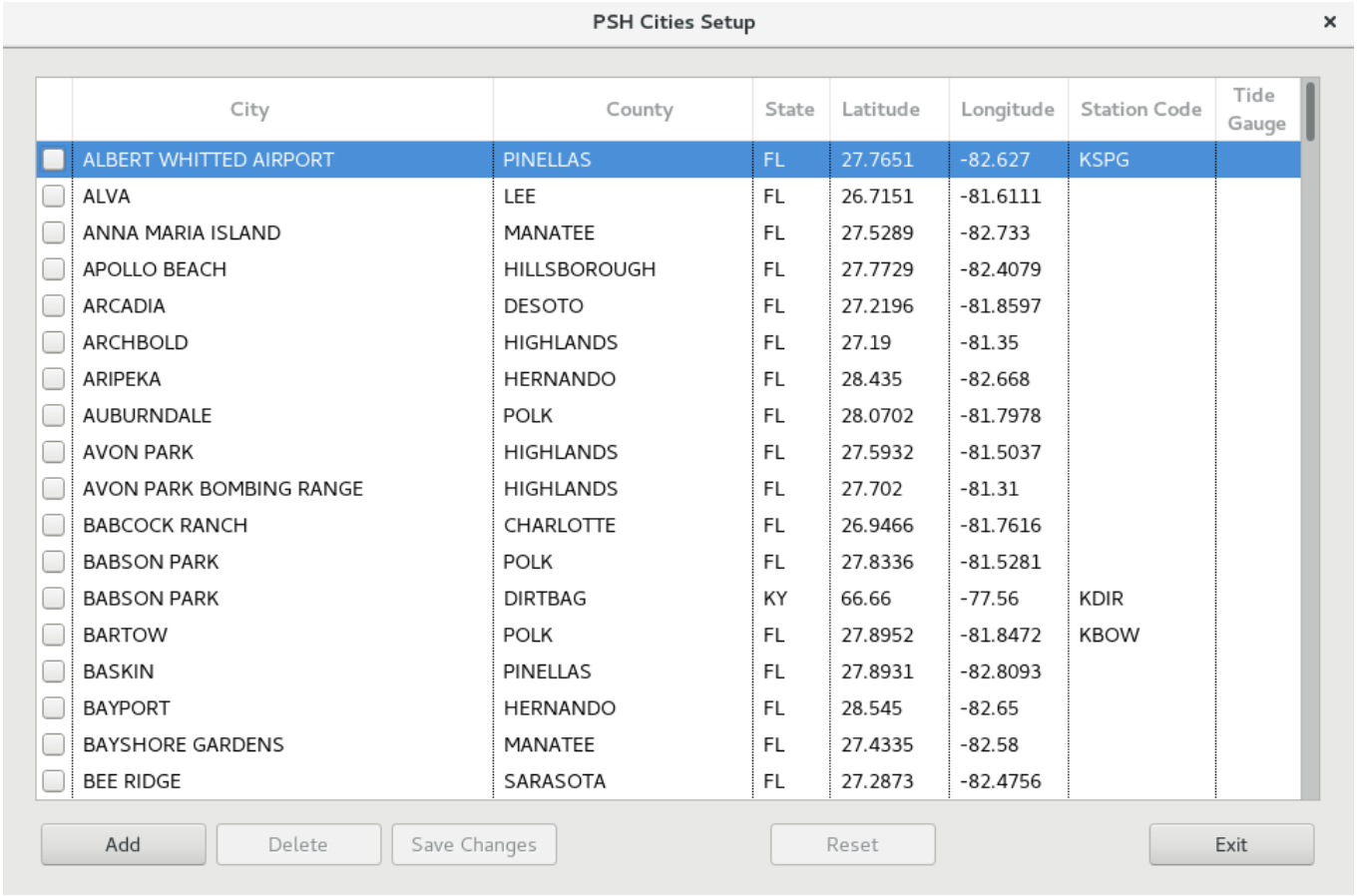


Figure 6 - PSH Cities and Water Level Stations Setup Dialog

When you manually add a new city, the cities in AWIPS2 **mapdata.city** table are used for auto-completion.

LSR Cities

PSH use the same file used by the Local Storm Report (LSR) program to identify cities in you CWA and their latitude/longitude coordinates (LSRcities.txt) and it could be found in “/data/fxa/tstorm” for most WFOs. Also consult your IT or AWIPS focal point to see if you have a locally customized one. Make a copy of this file, rename it as cities_pipe.txt and copy it into PSH

localization (see **Installation**) before you start configuring and save any changes from this dialog. The cities listed in that file will be shown at the top of this dialog.

Water Level Stations

Water level stations is a new requirement implemented in AWIPS2 PSH. It is used to create a new “Water Level” section in the PSH report to replace the “Tide/Surge” section in the legacy PSH report.

A file called “Water_Level_Stations.txt” is delivered with BASE level PSH. It has the same format as LSR cities and contains all water level stations. The stations are appended to the end of the dialog (denoted “G” as Tide/Gauge stations). Through this dialog, you can delete and only keep those you need to shorten the list.

Step 5. Setup Metar Stations

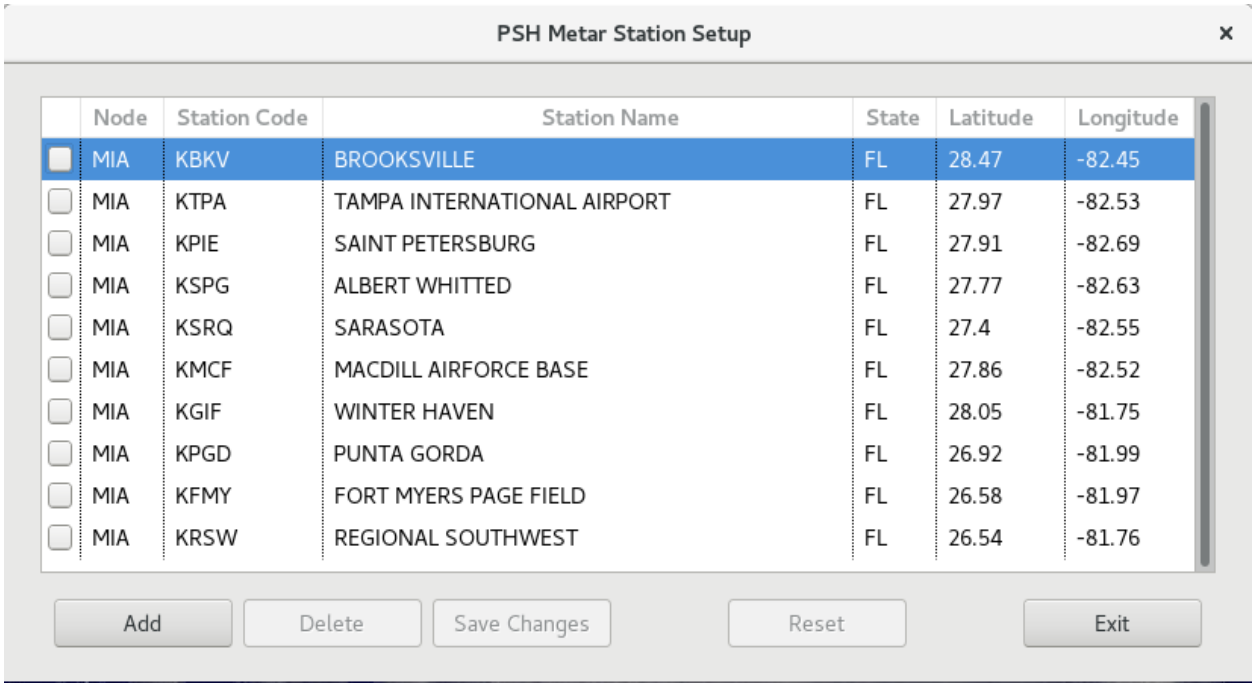


Figure 7 - PSH Metar Station Setup Dialog

When you manually add a new METAR station, the US stations with ICAO and SAO identifiers are used for auto-completion.

Step 6. Setup non-Metar Stations

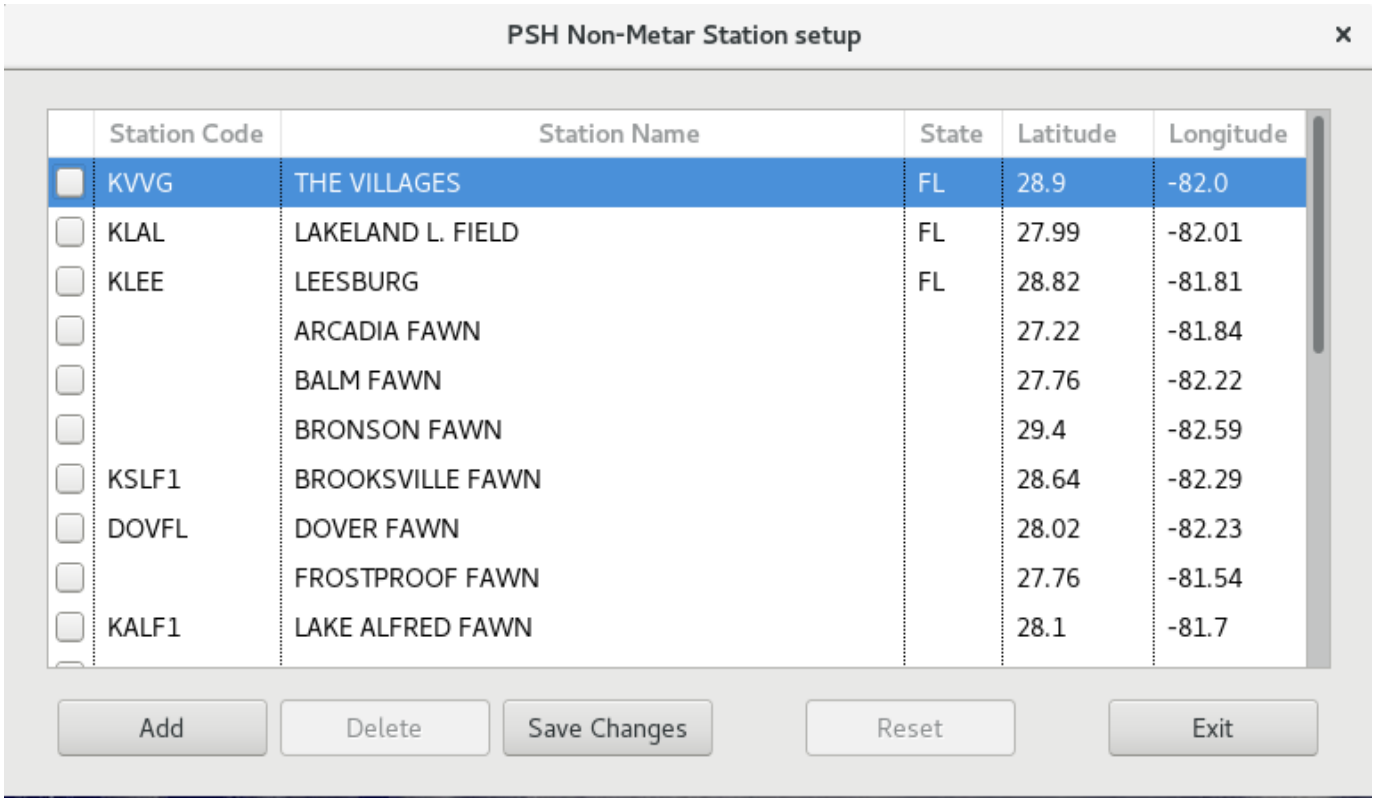


Figure 8 - PSH Non-Metar Stations Setup Dialog

When you manually add a new non-METAR station, all US Metar stations, plus stations with WFO, WMO, and Mesonet identifiers are used for auto-completion.

Step 7. Setup Marine Stations

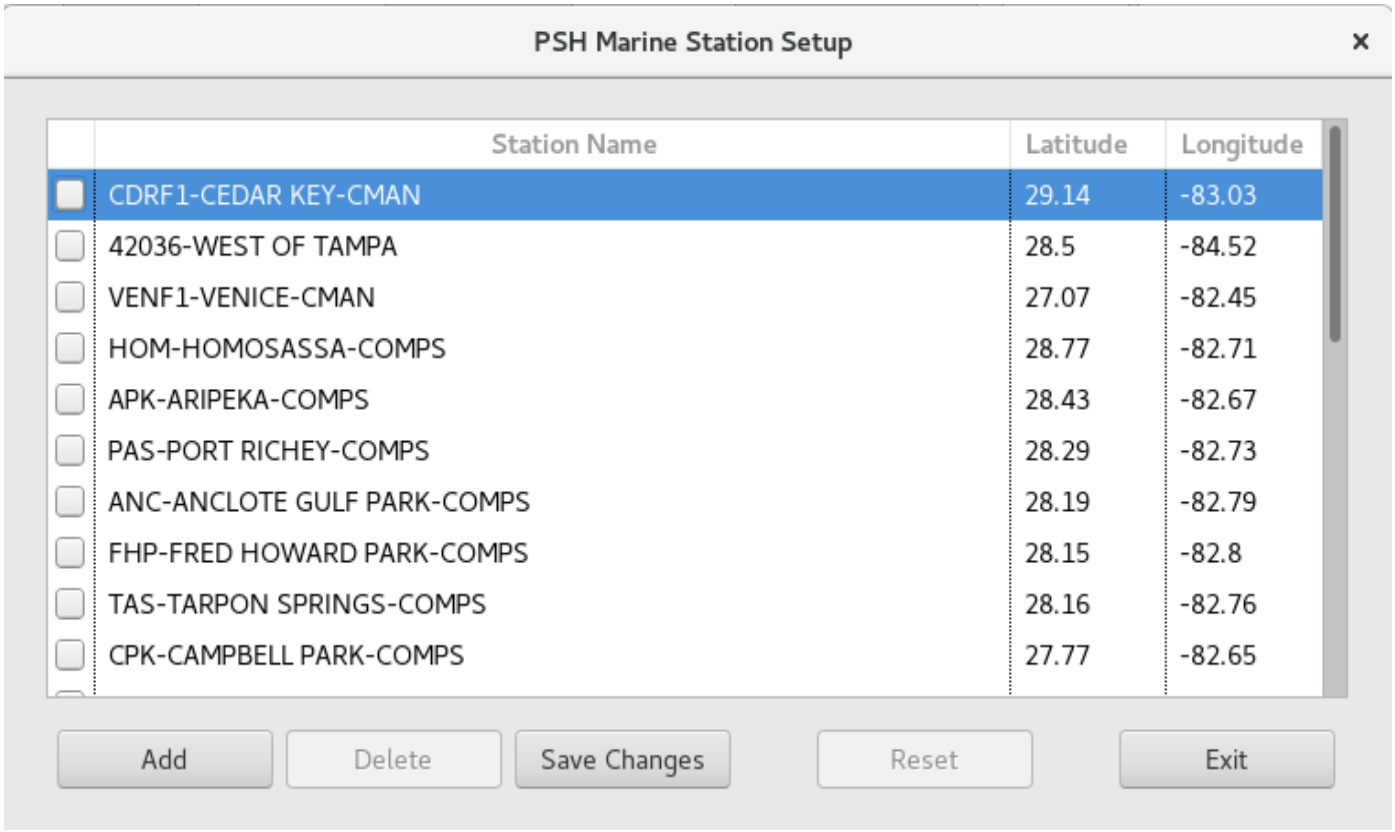


Figure 9 - PSH Marine Stations Setup Dialog

When you manually add a new marine station, stations at drifting buoy, fixed buoy, and coastal marine location identifiers are used for auto-completion.

PSH Generator

Once you are finished with all the configuration steps, the PSH Generator is ready to run.

NOTE: UNLESS THE ROUTE IS SET TO “LOC” or “000”, SELECTING TRANSMIT WILL DISSEMINATE A LIVE PRODUCT!

Accessing the Generator

First select your basin and year from the drop-down list. Then select the storm name . Note that storm names are basin- and year- specific. if no storm names are shown, you need to go back

to the Installation section to set up the storm names. Then select a forecaster. The PSH Generator Dialog switches from entry window to generator window with all data category tabs.

If the storm you pick has been worked before by a different forecaster, a reminder dialog will open (Figure 10). Click “OK” to dismiss it.

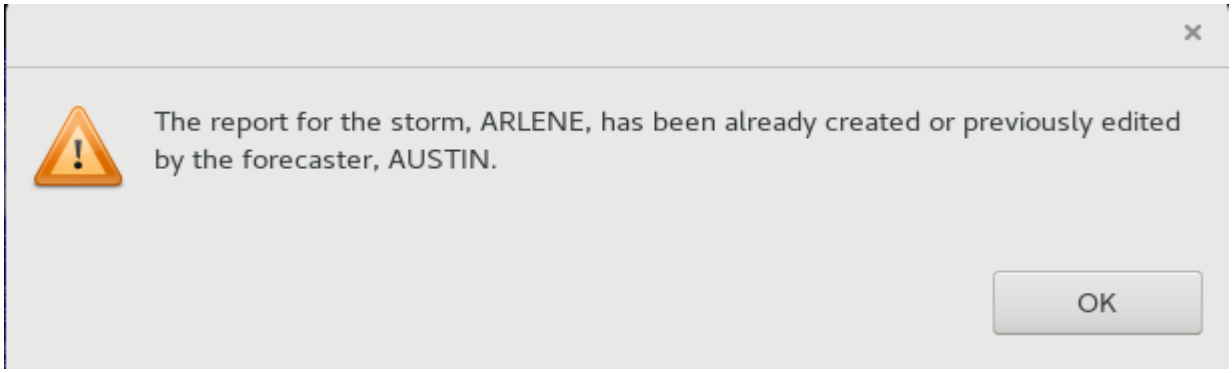


Figure 10 - PSH Storm Selection Reminder Dialog

Select Included Counties

If this is the first time the selected storm is worked on, a warning dialog (Figure 11) opens to remind you to select included counties. The selected counties will appear in the PSH product “COUNTIES INCLUDED” section.

Figure 11 - PSH County Selection Reminder Dialog

Click “**Later**” will dismiss the dialog. You can later perform this task by clicking the **“Included Counties”** button at the right of the “Forecaster” drop-down list to open the county selection dialog.

Click “**Ok**” will bring up the county selection dialog immediately (Figure 12).

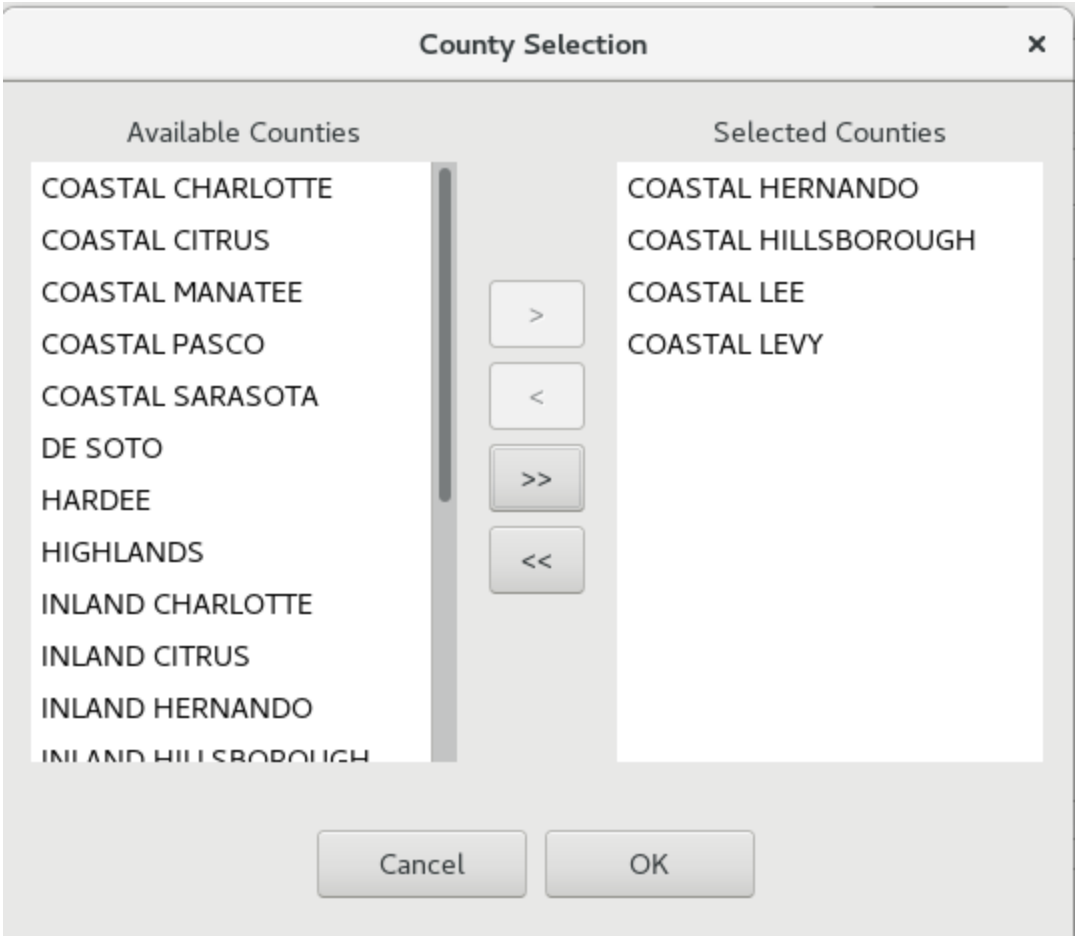


Figure 12 - PSH Included County Selection Dialog

The counties are sorted alphabetically (descending). You can select multiple counties by holding down the “SHIFT” key (select a consecutive block) or “CTRL” key (select in-consecutive items). The selected counties are animated at the right of the “Included Counties” button.

>	Add selected counties to be included in the PSH report.
<	Remove selected counties from included counties in PSH report.
>>	Add ALL counties to be included in the PSH report.
<<	Remove ALL counties from included counties in the PSH report.
OK	Save the selection and exit.
Cancel	Cancel the selection and exit.

General Functionalities

There are seven categories of data you may need to collect or input manually to generate PSH reports. Each type of data is managed within its own tab and it could have multiple data entries, which are managed in a table.

Each data tab has a similar interface, which consists of a data entry area at the top, a “Final Remarks” edit area at lower left, and a Preview area at lower right. A set of similar buttons and the procedures to retrieve/enter data are quite similar as well.

Data Entry Area

This is where the user can add/delete/edit data entries. It consists of a table that lists all data entries (one per row), and buttons like below:

Add Entry	Add a new row at the bottom of the table for a new data entry
Edit	Edit current entry (the row highlighted with blue)
OK	Accept the changes in current entry
Clear	Clear all data in current entry without save
Cancel	Cancel the changes in current entry
Delete	Delete current entry
Save Changes	Save all data changes for current data category (tab)
Revert Changes	Revert data to the last-saved copy
Up/Down Arrows	Move current entry up/down in the table

Final Remarks Area

This is where the final remarks are entered/edited.

Edit Final Remarks	Activate the text field to enter/edit the final remarks
Save Final Remarks	Save the final remarks
Cancel	Cancel the change for final remarks without save

Spell Check Opens AWIPS2 spell checker

Preview Area

The data shown in the data entry table are displayed here in the format how they will appear in the final PSH report. It helps the user to confirm data before clicking “Save Changes”. Note that “Final Remarks” will not be shown here.

METAR Land Obs

This is the first category of PSH data the Generator starts with (Figure 13).

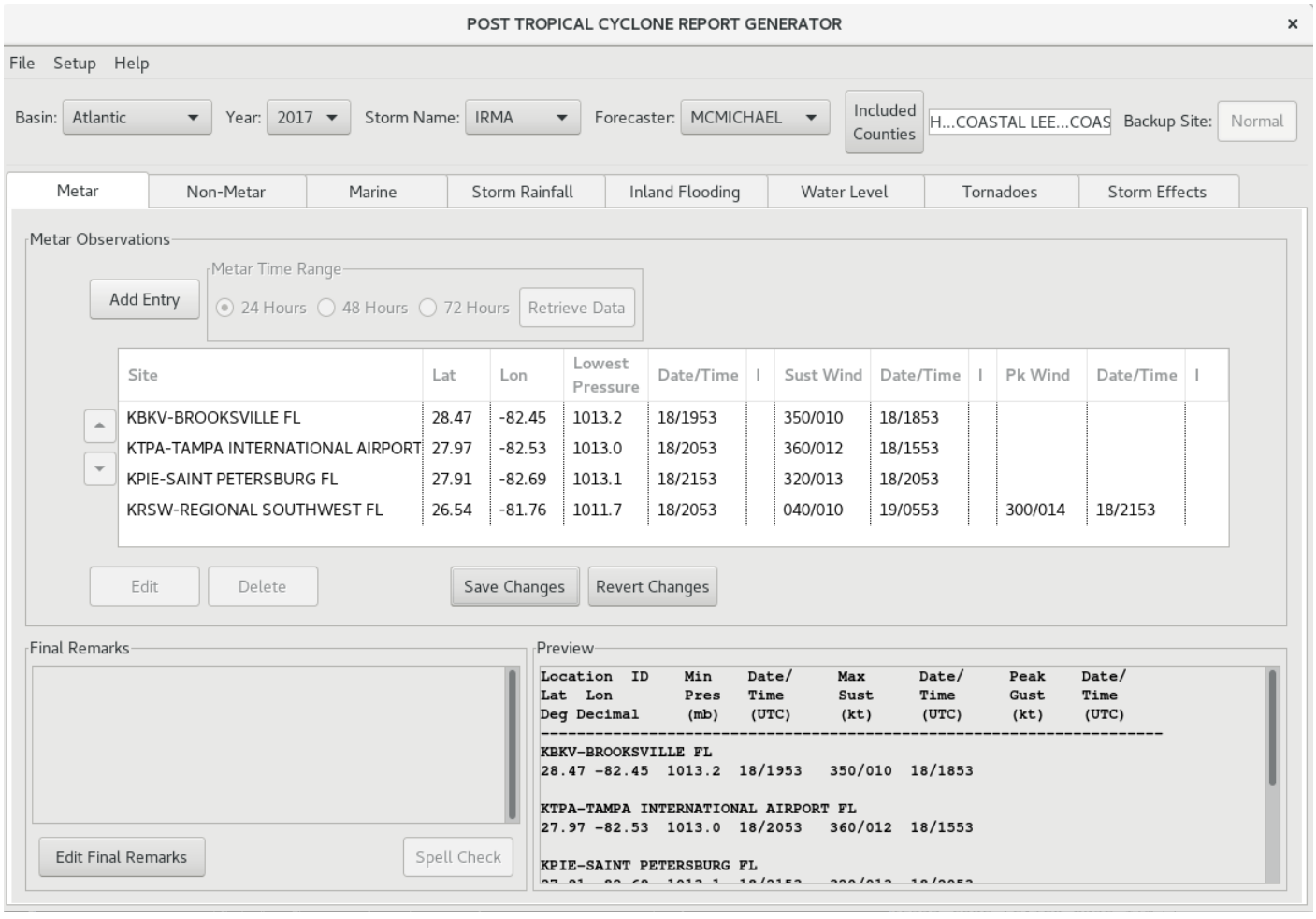


Figure 13 - METAR Data Tab

METAR data is mainly retrieved from the MTR reports in textdb in a few steps (Figure 14):

- Click “Add Entry” to add a new row at the end of table
- Click the drop-down list in the new row’s “Site” column to pick a site
- Select time range (24, 48, or 72 hours).
- Click “Retrieve Data” to obtain the data and could edit them
- Click “Ok” to accept the data
- Click “Save Changes” to save them for final formatting.

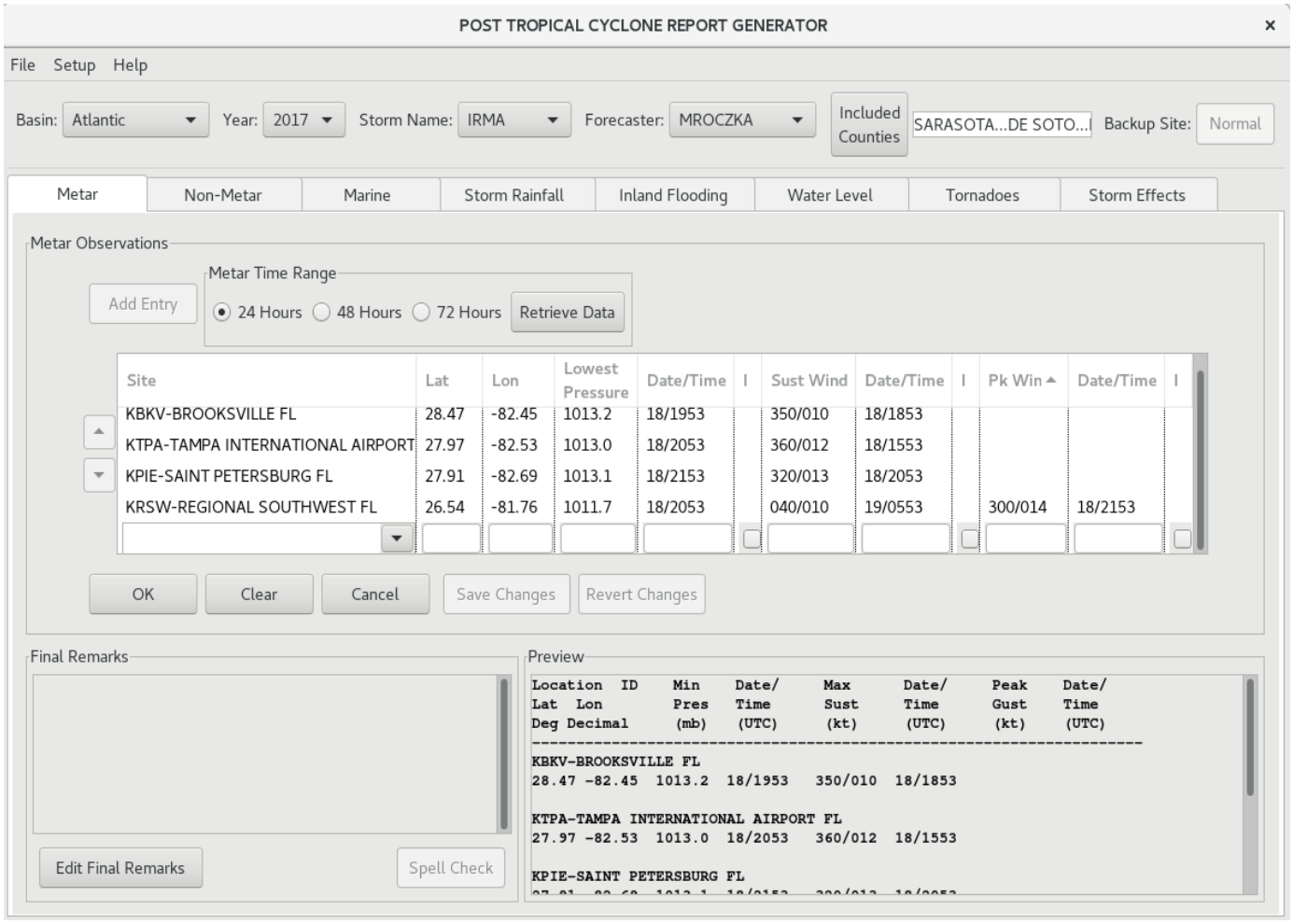


Figure 14 - METAR Data Tab - Add a new entry by retrieving from DB

Note that

- “**I**” after Lowest Pressure, Sust Wind, Pk Wind indicates if the data for that field is incomplete. If checked, an “I” will appear next to that field in the PSH report.

- For 72 hours, a warning message will come up to remind that the data may not be reliable beyond 48 hours.
- Data are formatted in the final PSH product with the same order they appear in the table So if needed, you should use up/down arrows at the left of the table to change the order and save them.
- Also, you can sort the METAR table by a column (Lowest Pressure, Sust Wind, Pk Wind), either in descending or ascending order.
- You can also manually enter a METAR data entry as needed.

Non-METAR Land Obs

Non-METAR data tab is similar to the METAR data tab (Figure 15). Except

- The data needs to be manually entered so no “**Time Range**” or “**Retrieve Data**” buttons.
- “**Pk Wind**” could be “**Estimated**” as indicated by checking the checkbox in column “E”.
- There is an additional field for **Anemometer Height** at the end, which is in units of meter/time in minutes (such as 10/02).
- There is a “Load User Files” button to load Non-METAR data from a file. The button functions similarly to rainfall. It reads from the selected comma-delimited text file and populates data to the table. The file should has one entry per line with “Site, Lat, Lon, Lowest Pressure, Date/Time, Incomplete, Sustain Wind, Date/Time, Incomplete, Peak Wind, Date/Time, Incomplete, Estimated, Anem Height”, e.g.:’"Cdrf-abc, FL/V", 12.3456, 12.432, 123, 22/1225, I, 50, 22/0920, , 100, 22/1234, I, 120, 110’

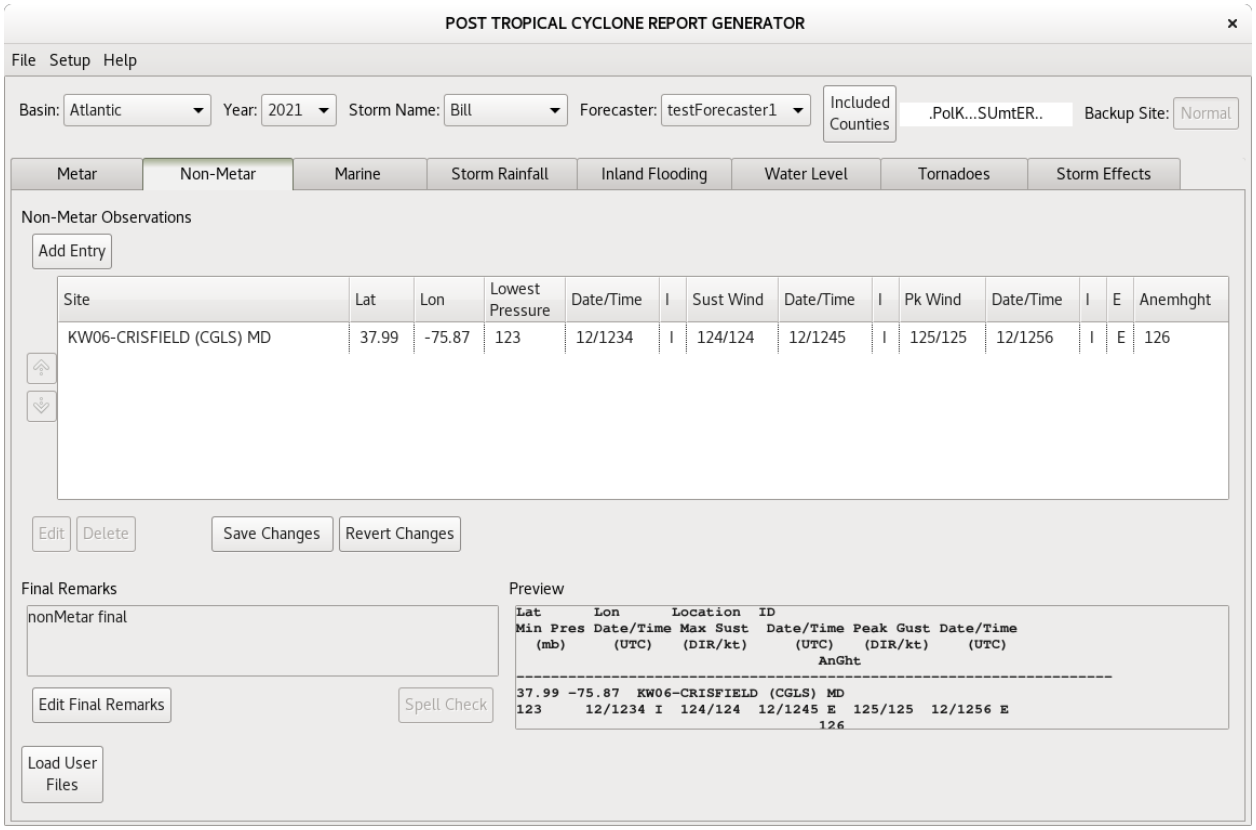


Figure 15 - Non-METAR Data Entry Tab

Marine Observations

Marine data tab is similar to the non-METAR data tab (Figure 16) except there is no “Estimated” field for Pk Wind.

The Marine tab has a “Load User Files” button to load Marine data from a file. The button functions similarly to rainfall and non-Metar. It reads from the selected comma-delimited text file and populates data to the table. The file should has one entry per line with “Site, Lat, Lon, Lowest Pressure, Date/Time, Incomplete, Sustain Wind, Date/Time, Incomplete, Peak Wind, Date/Time, Incomplete, Anem Height”, e.g.:’"Cdrf-abc, FL/V", 12.3456, 12.432, 123, 22/1225, I, 50, 22/0920, , 100, 22/1234, I, 110’

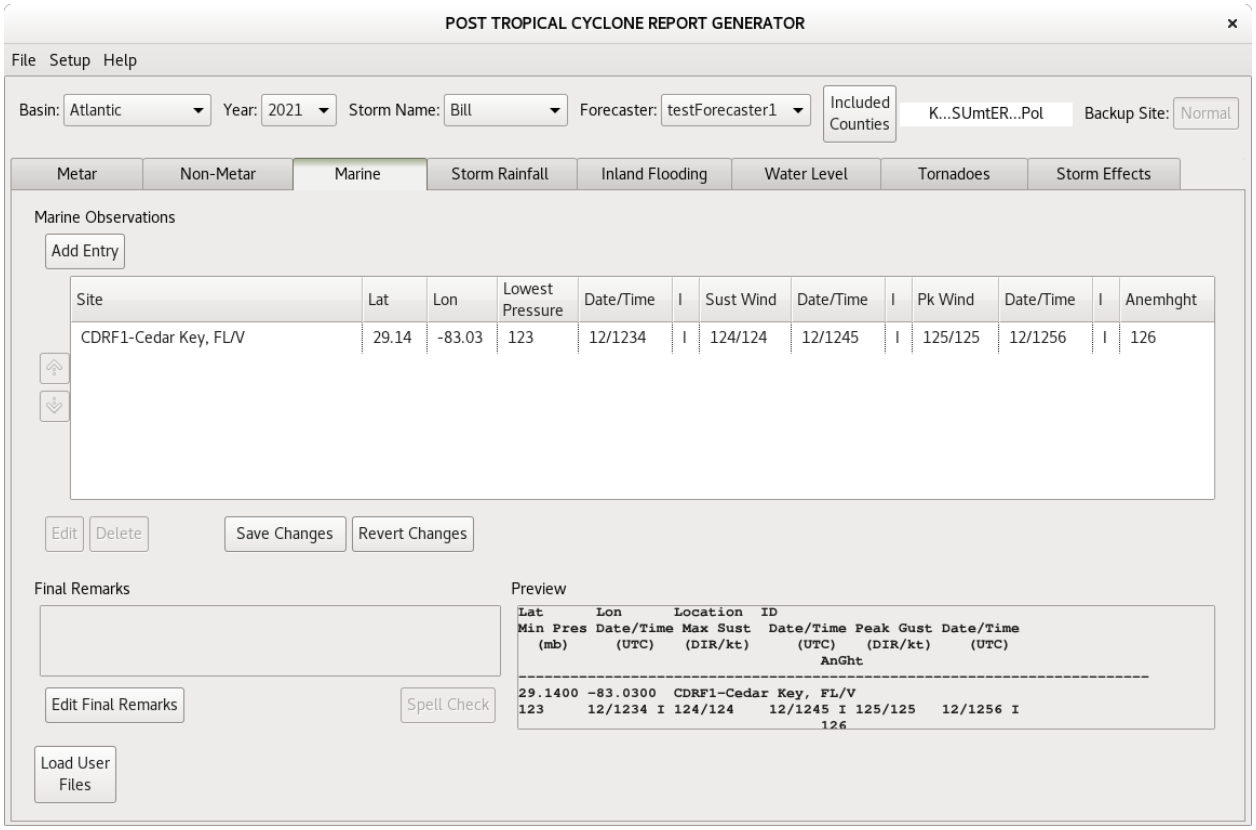


Figure 16 - Marine Data Entry Tab

Storm Rainfall

There are three ways to create a rainfall data entry:

- Retrieve from LSR reports in textdb
- Load from a user-generated text file
- Manually entered by the user

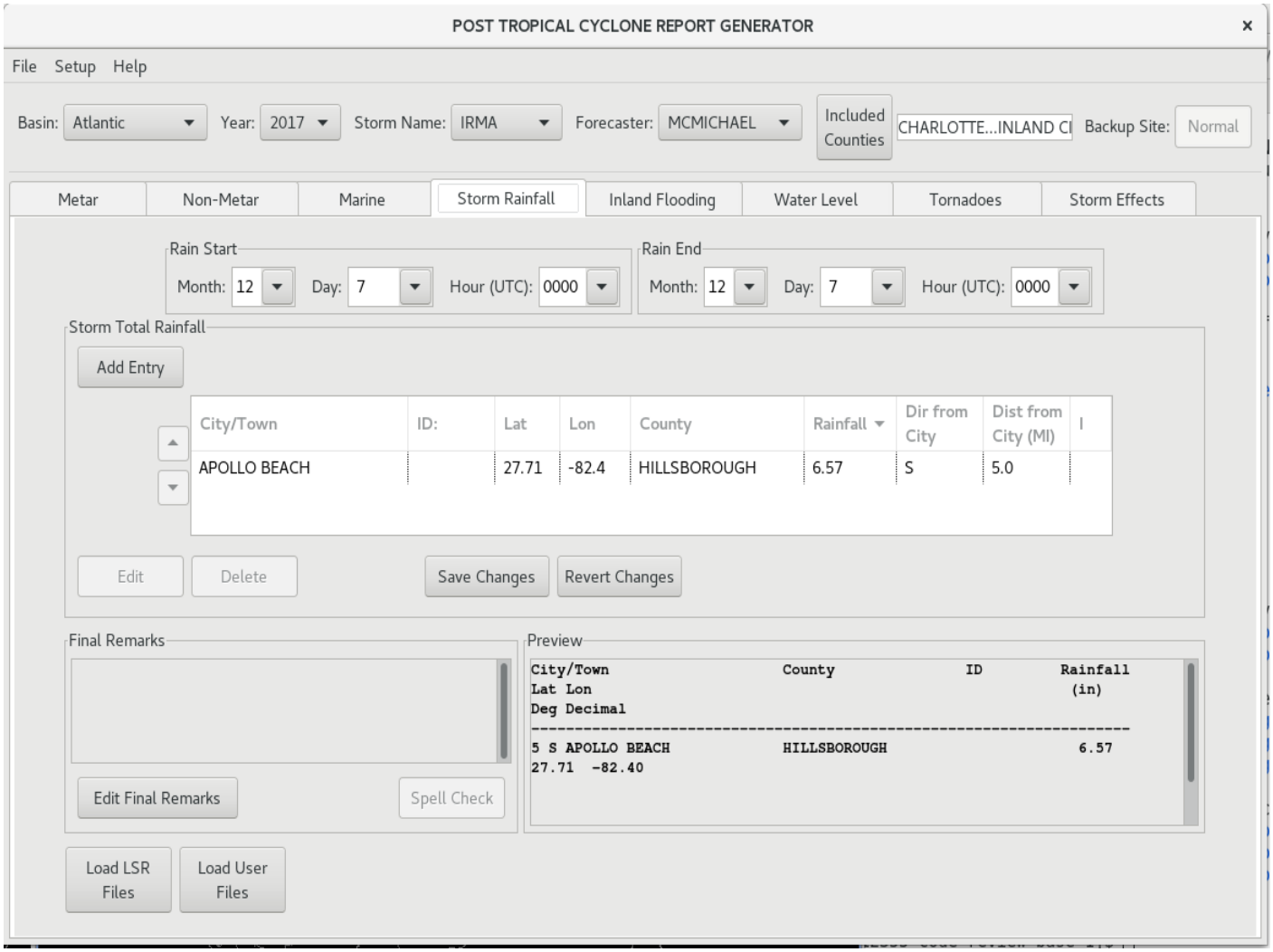


Figure 17 - PSH Rainfall Data Entry Tab

Retrieve Rainfall from LSR Report

- Click the "**Load LSR File**" button at the lower left. "**LSR File Manager**" Dialog opens up (Figure 18). The LSR reports that contain at least one rainfall event will be listed at the left side, sorted by issuance time.
- Click on a report entry. It shows up in the LSR Viewer at right for your review.
- Click "**Load**". The rainfall in the report is added into the rainfall entry table with a confirmation message (Figure 19).
- Continue to pick other reports from the left side to add more rainfall entries.
- Click "**Close**" to exit "**LSR File Manager**" when no more entries will be added.

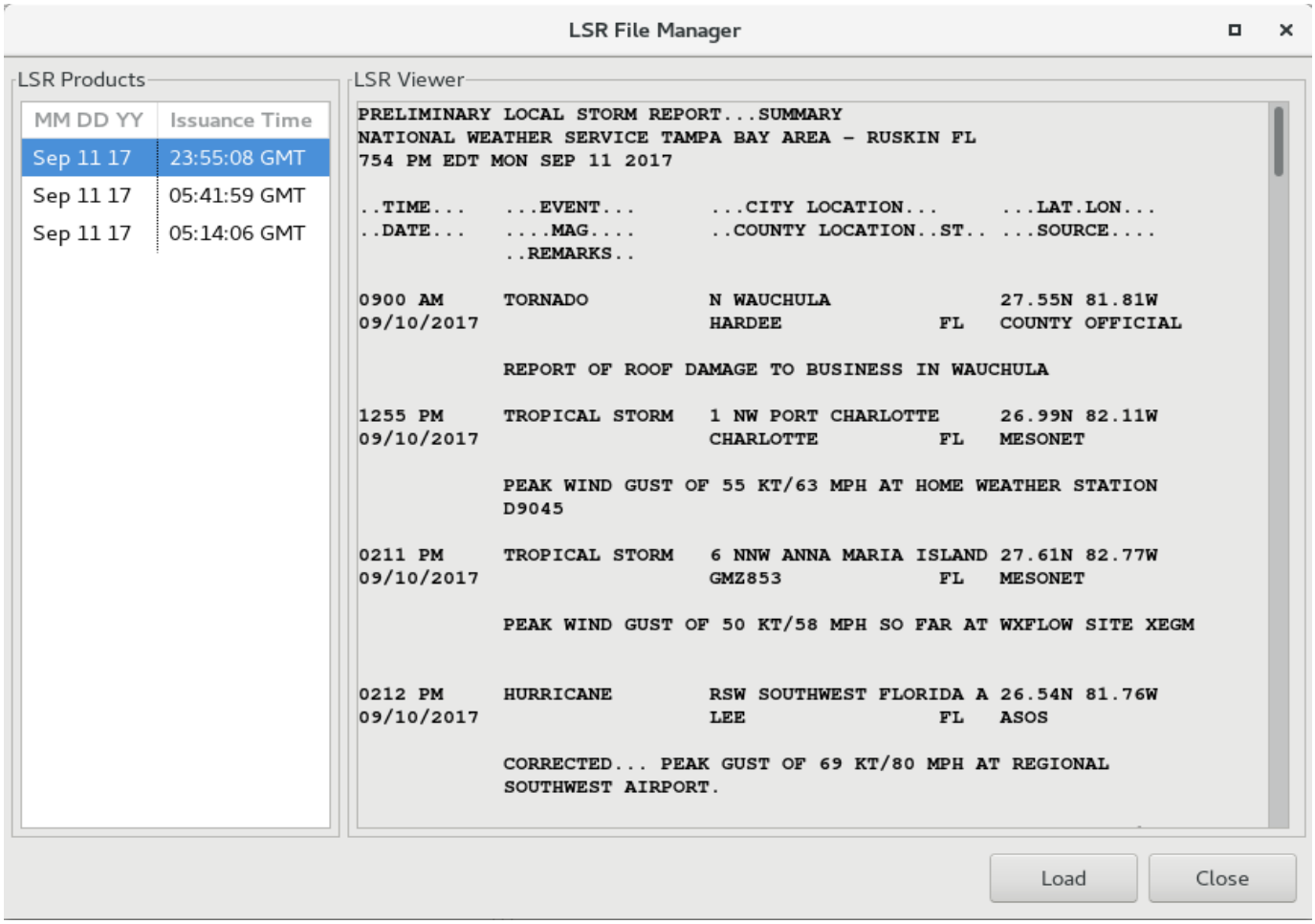


Figure 18 - PSH Rainfall LSR File Manager Dialog

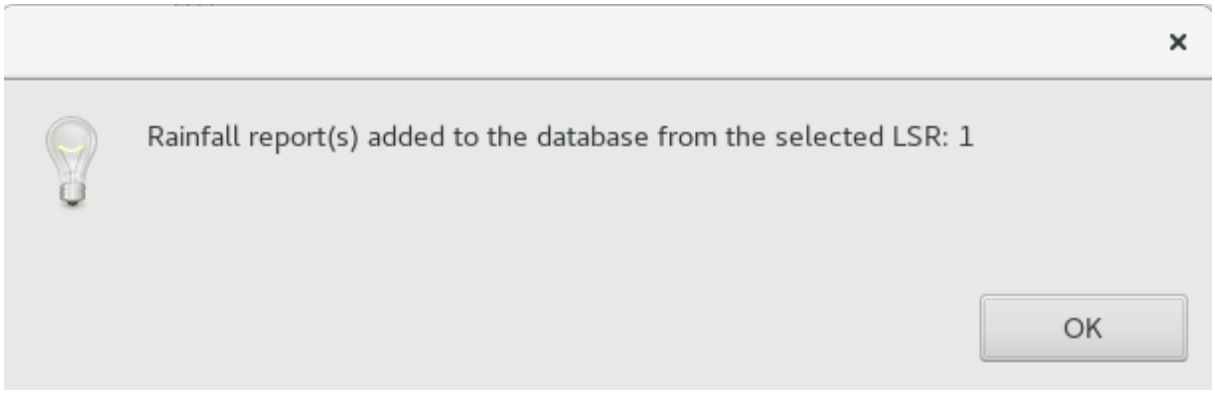


Figure 19 - PSH Rainfall Load Confirmation Message Dialog

Load Rainfall from User File

- Click the “**Load User Files**” button at the lower left. “**Load User File**” Dialog opens up (Figure 20).
- Click the “Example” button to see the format for a rainfall user file. It should be a comma-delimited file, one entry per line with “City,Lat, Lon, Distance from City, Direction from City, County,StationID, Rainfall, Incomplete”, e.g.:

  Palm Harbor, 28.08, -82.76, 1, SE, Pinellas, -, 2.34,I

  Fields with a comma can use double quotation to surround the whole field.
- Click “**Browse**” to open up a file browser to locate the file (Figure 21)
- Select the file and click “**Ok**”. The rainfall entries in the file will be added to the end of the Rainfall table.

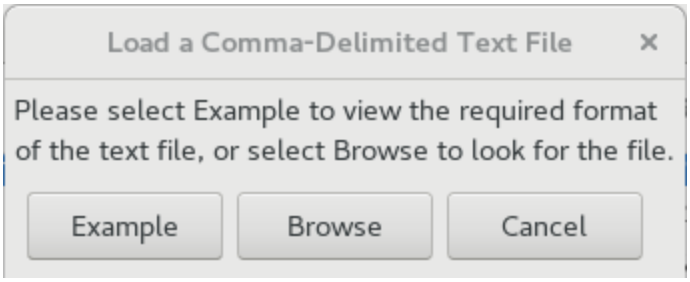


Figure 20 - PSH Rainfall Load User File Dialog

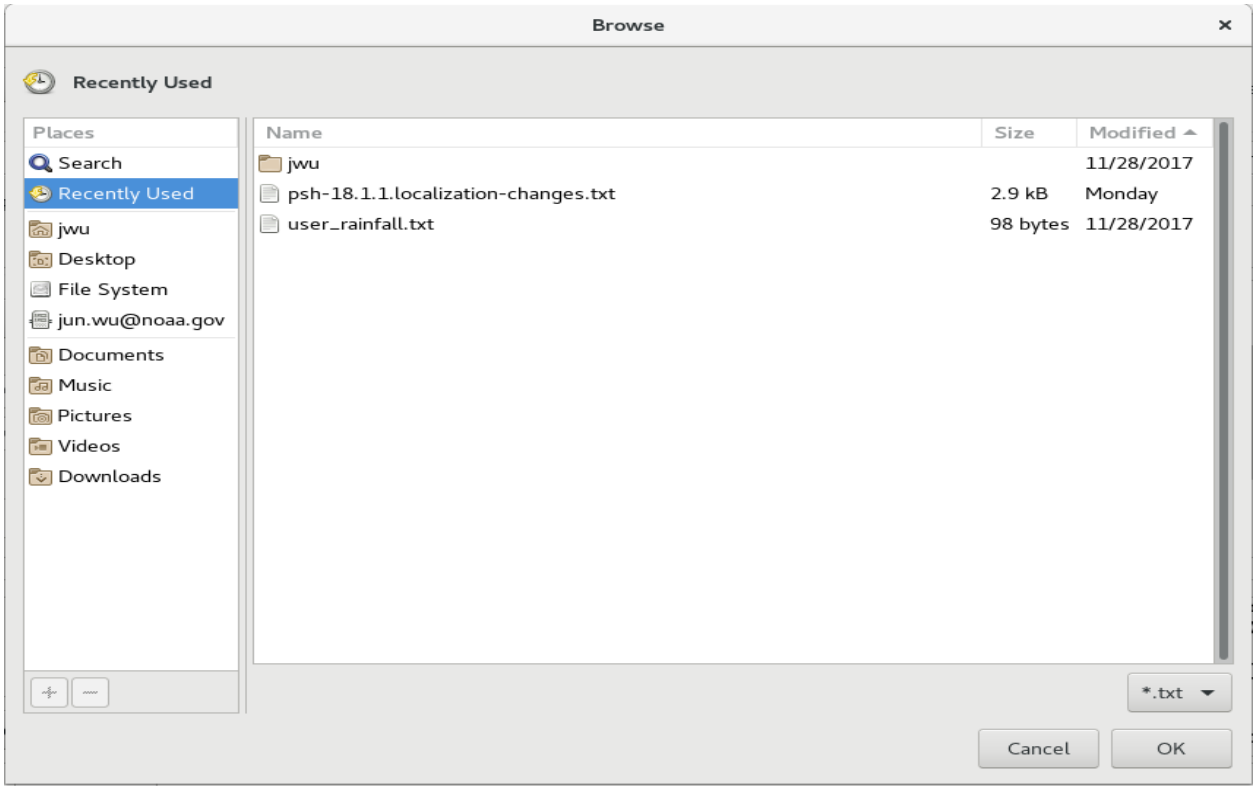


Figure 21 - PSH Rainfall Load User File Browser

Add Rainfall Entry Manually

- Click the “**Add Entry**” button. A new row is added at the end of the Rainfall table.
- Type in City/Town and other information directly or type in Lat/Lon first to help find a city.
- Click “Ok” to accept. Note that “Rainfall” is a required field.

Sorting and Rain Period

- Rainfall is **ALWAYS** sorted automatically in a descending order by rainfall amount.
- You need to choose starting and ending time for the rain period as well.

Inland Flooding

Inland Flooding (Figure 22) can be either retrieved from LSR reports (like rainfall) in textdb or entered manually by clicking the “**Add Entry**” button. For manual input, you can choose from the list of counties you configured in the setup and then add “Flooding Input”. There are no “**Final Remarks**” for “Inland Flooding”.

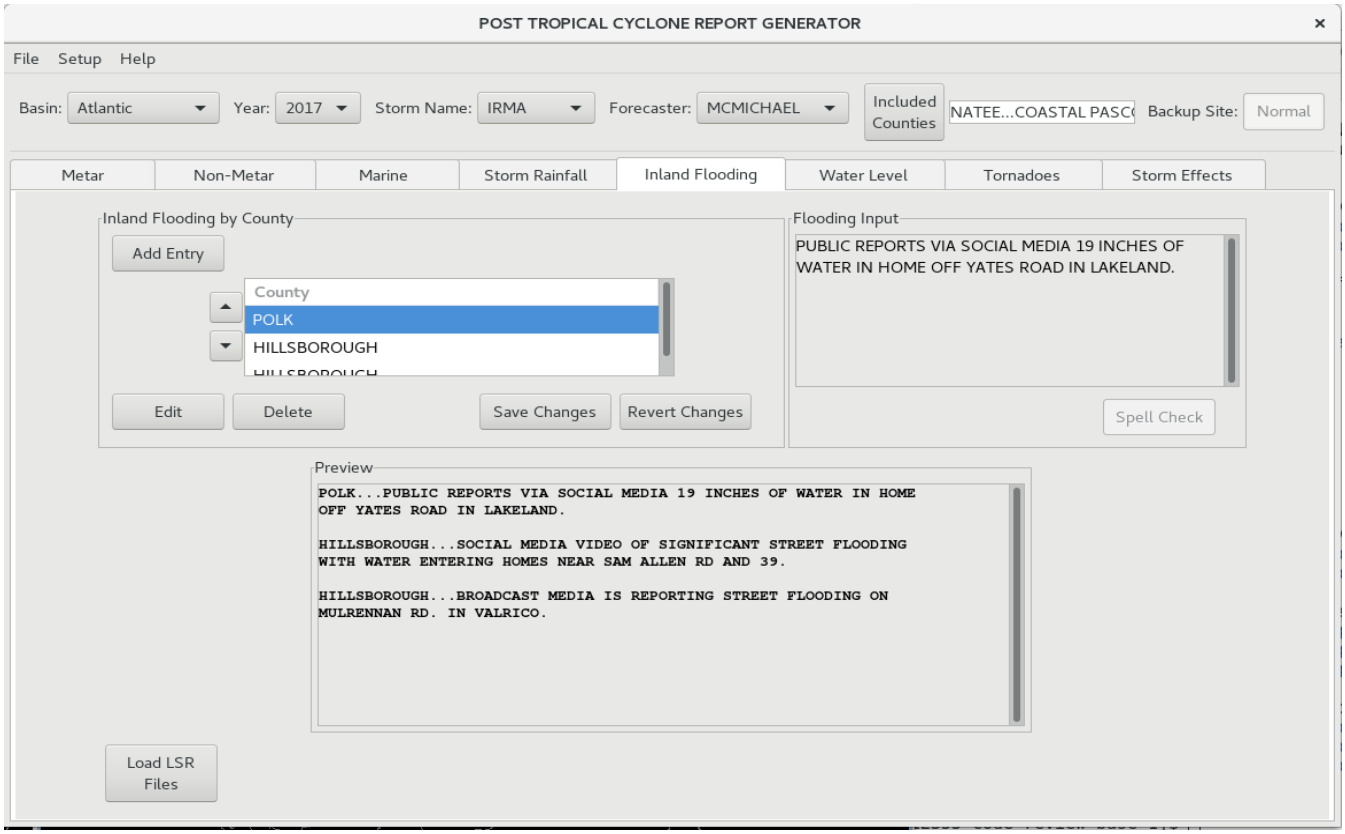


Figure 22 - PSH Inland Flooding Data Entry Tab

Water Level

Water level (Figure 23) is a new section implemented to replace the “Tide/Surge” section in the legacy PSH report. The data could only be manually entered.

- Click “**Add Entry**” to add a new row.
- Click on “**Location**” column in the new row to select a water level station from the list. ID/County/State/Lat/Lon will be automatically filled.
- Type in “**Water Level**” amount
- Pick “**Datum**” from the list.
- Type in “**Date/Time**”.
- Pick “S**ource**”.
- Check “Incomplete” if needed.
- Click “OK” to accept.

The Water Level tab has a “Load User Files” button to load Water Level data from a file. The button functions similarly to rainfall and non-Metar. It reads from the selected comma-delimited text file and populates data to the table. The file should has one entry per line with “Location, ID, County, State, Lat, Lon, Water Level, Datum, Source, Incomplete”, e.g.:’Aguadilla, AUDP4, Aguadilla, PR, 18.45664, -67.16458, 10, MHHW, 20/1225,NOS,I’

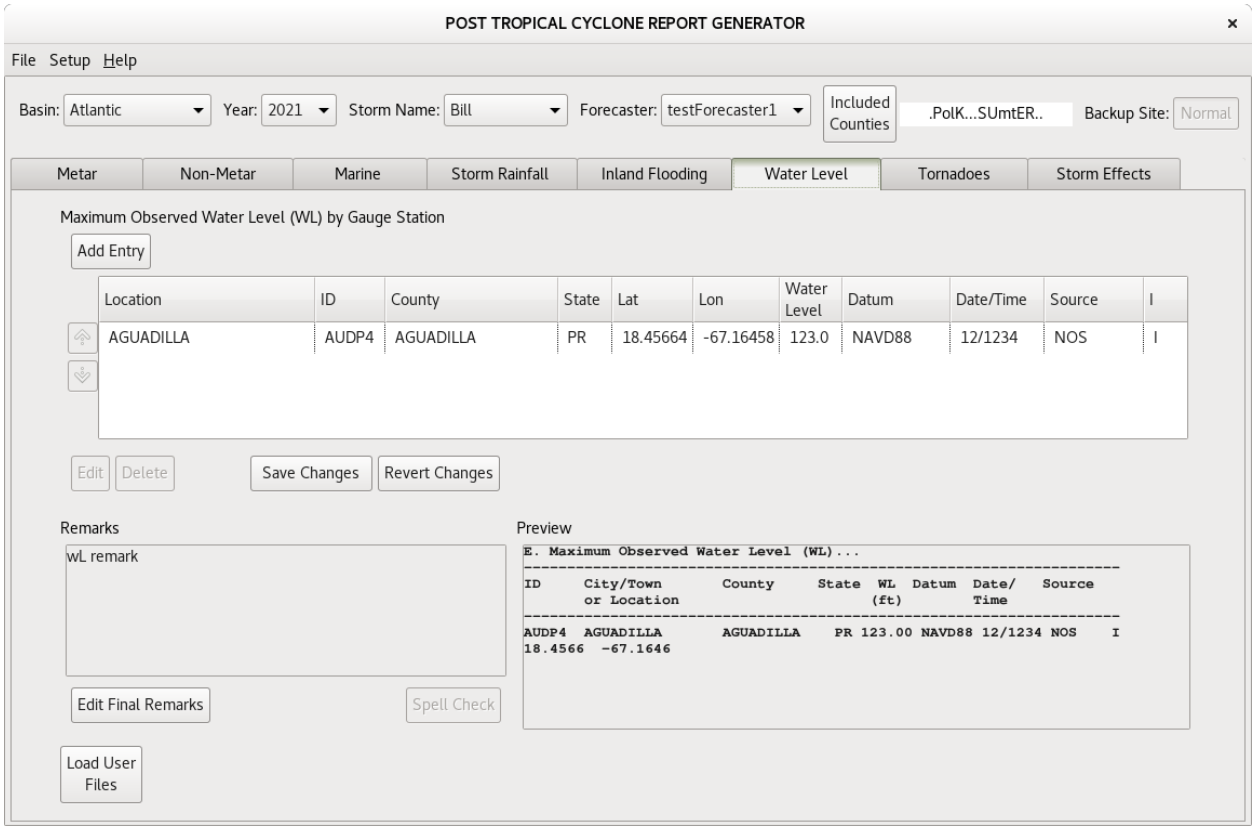


Figure 23 - PSH Water Level Data Entry Tab

Tornadoes

Tornado data entry can be retrieved from LSR reports in textdb or manually entered, the same way like how rainfall data entry is generated.

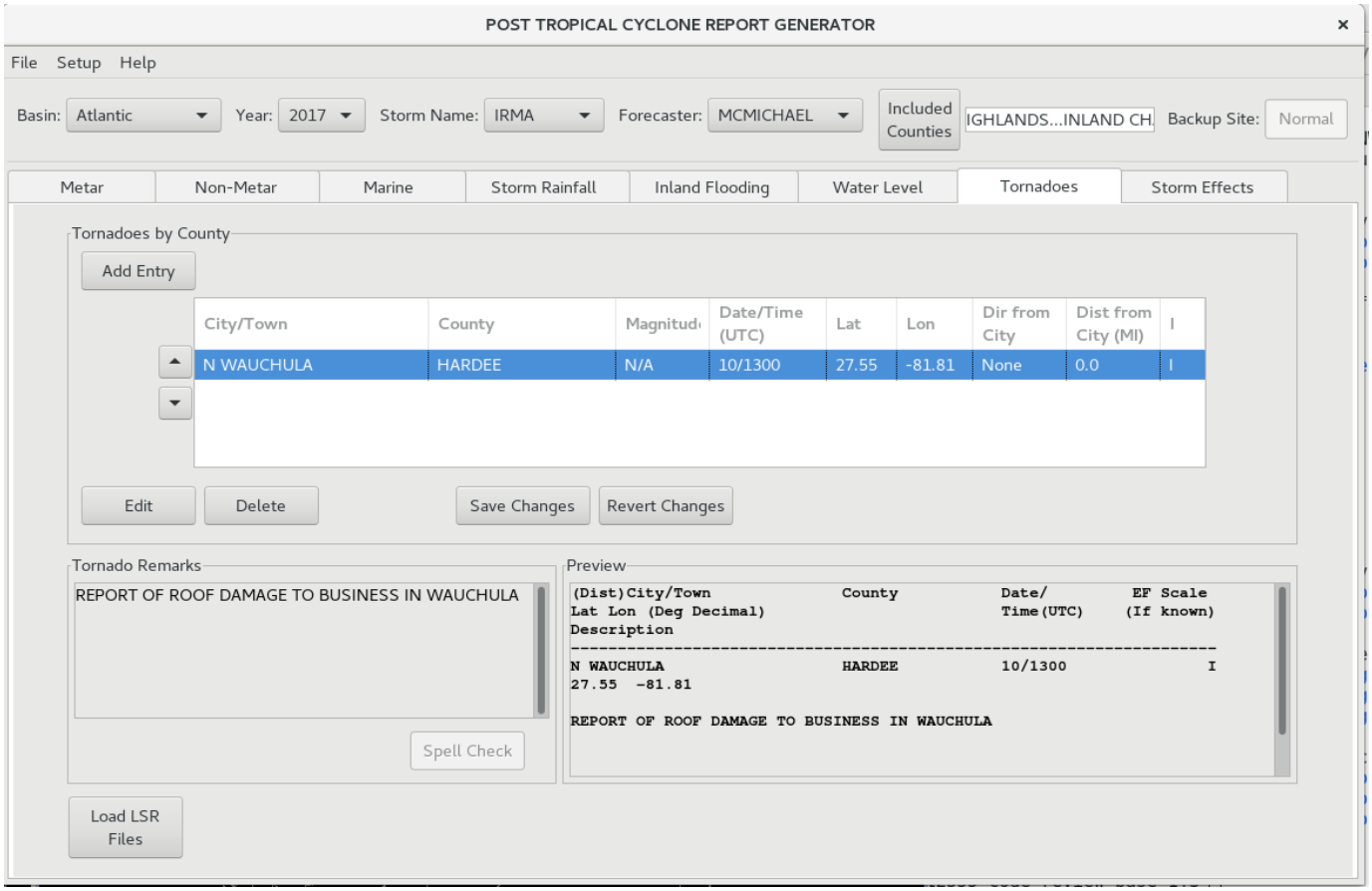


Figure 24 - PSH Tornado Data Entry Tab

Storm Effects

Storm Effects (Figure 25) can be retrieved from LSR reports in text DB or manually entered, the same way line “Inland Flooding”. Note that the “LSR File Manager” is slightly different here (Figure 26). There are a list of storm hazard categories at right and you pick the ones you want to add in. After clicking “Load”, each category you pick will be checked against the report and loaded with a confirmation massage.

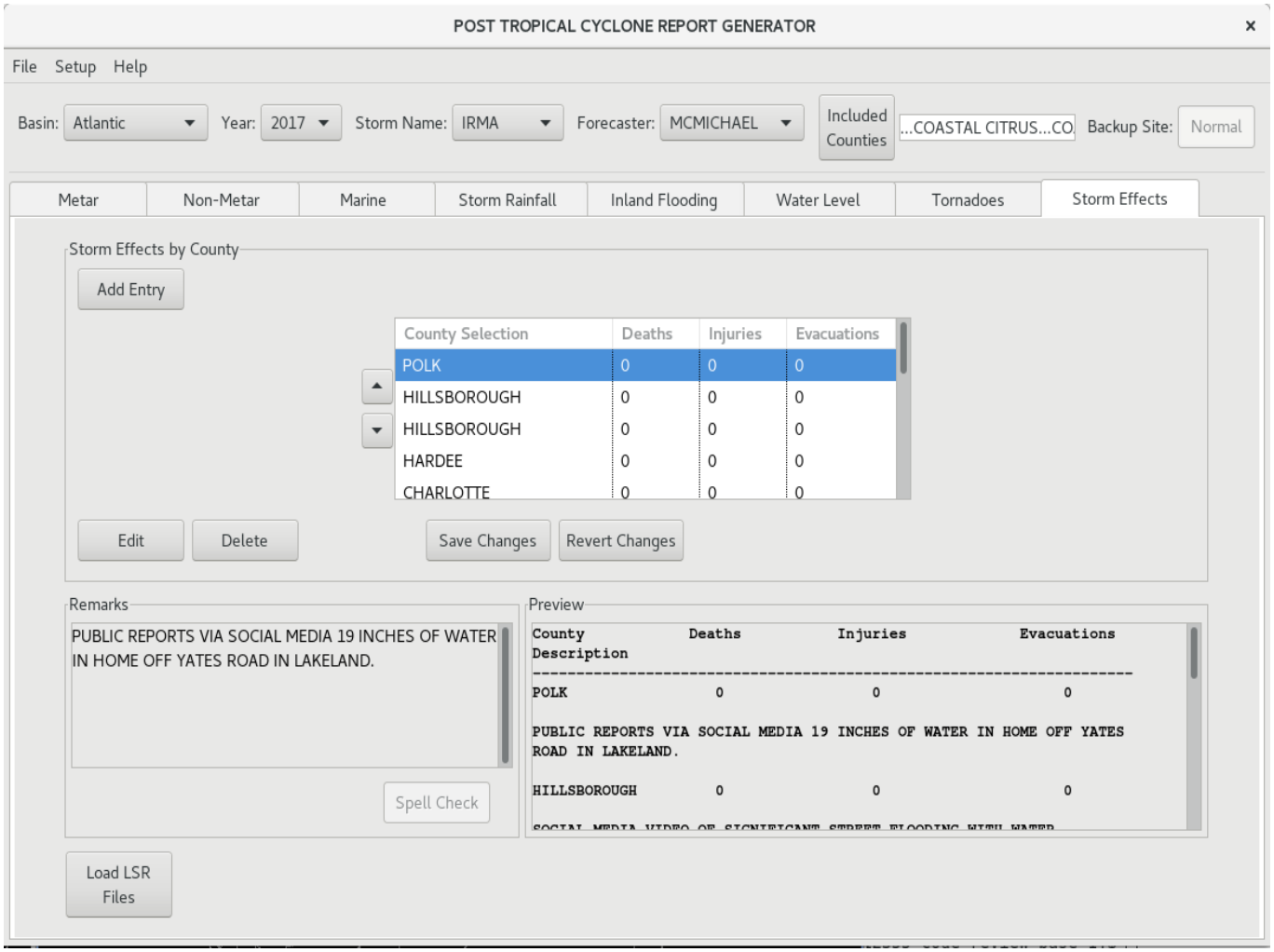


Figure 25 - PSH Storm Effects Data Entry Tab

PSH Report Viewer/Transmitter

Once you have entered PSH data entry window, you can view PSH report anytime by clicking "**File**" menu, then "**View/Send Report**" to open up the dailog to review (Figure 26), or print report by clicking "**File**" => "**Print Report"**. The report is built using all saved data for current storm.

The "**View/Send**" dialog has the following buttons:

Storm Type Allow to pick from Subtropical Storm, Tropical Depression, Tropical Storm

	and Hurricane. When “Tropical Depression” is selected, you can specify it as “Tropical Depression with No Name” and then pick a storm number. These changes are immediately reflected in the report.
Transmit Type	“ROU” (Routine), “AAx” (Amended), or “CCx” (Corrected). When “AAx” or “CCx” is selected, a dialog will open up to ask you to enter a reason for the update (Figure 27).
Route	By Default, it is “ALL”. When “LOC” or “000” is selected, the report will only be stored into local textdb without sending out when “Transmit” is clicked.
Transmit	Transmit the PSH report as an AWIPS2 Official User Product.
Print	Opens a dialog to print the report to a selected printer.
Close	Close the dialog.

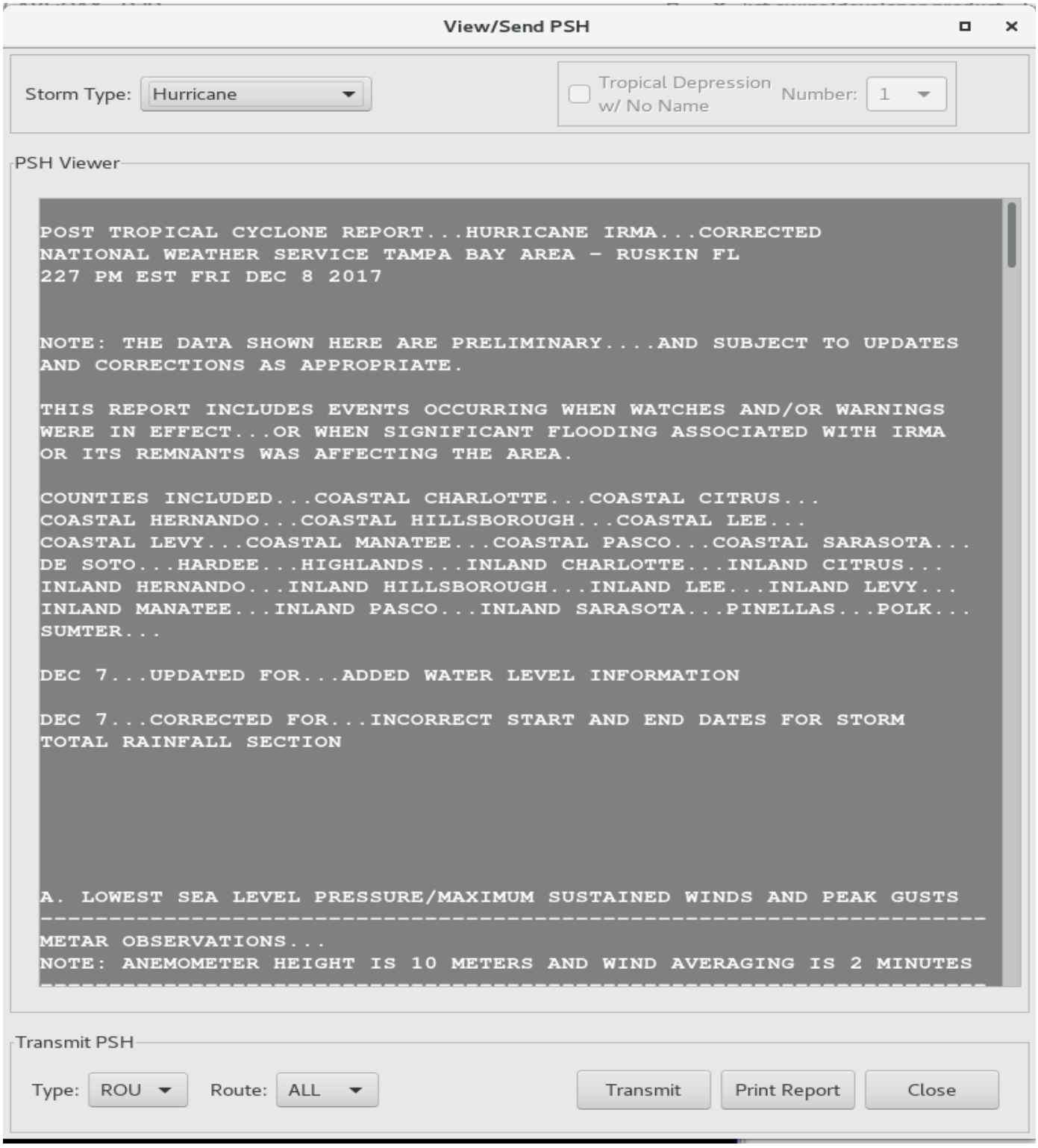


Figure 26 - PSH View/Send Dialog

Figure 27 - PSH View/Send Update Status Dialog

View Historical PSH Report

There are historical PSH reports generated by the legacy PSH application. They can be viewed by clicking “File”=>”View Historical Reports”, browsing to the file (finalpsh.txt) and opening it (Figure 28). The report could be printed.

Figure 28 - PSH View Historical Reports Dialog

Export/Import PSH Data and Report

Export

PSH could be optionally configured to export its data in xml file format and its report (text file) to a given location for users' backup purpose.

In the "**Program Configuration**" setup dialog (Figure 2). Choose "**Export To Directory**" (by default, it is "**None**"), then pick either "Localization" or "User".

If "**Localization**" is selected, a "finalpsh.xml" file will be saved under */awips2/edex/data/utility/common_static/site/"site ID"/psh/product/"basin/"year"/"storm name"* and updated with every save to hold PSH data for the current storm. Also, a "finalpsh.txt" file will be saved there when a "Transmit" is invoked.

If "**User**" is selected, you can pick your destination directory. Then data and report files will be saved under that directory with the same subdirectory structure as ".../*psh/product/"basin/"year"/"storm name".*

Import

The exported PSH data XML file could be imported into the PSH generator.

Click **"File**" => "**Import Product File**", a file browser opens up. The default directory will be the "**Export To Directory**" specified in the "**Program Configuration**" setup dialog (Figure 2). Browse to subdirectory ".../psh/product/" and its basin/year/storm based subdirectories to locate the PSH storm XML you want to import. If the storm already exists in the database, you will be asked to confirm if you want to overwrite it.

The exported product file (finalpsh.txt) could be viewed via "File"=>"View Historical Reports".

Mixed Case Report

NWS is in the process of issuing all text products in mixed-case format instead of uppercase format. Effort has been made in the migrated PSH for this capability to minimize the work needed in the future once a detailed requirement is available.

To activate “Mixed Case”, check “**USE MIXED CASE”** in the “**Program Configuration**” setup dialog (Figure 2, by default, it is unchecked) and “**Save**”.

- All fixed non-data parts in the report will use mixed case.
- All information retrieved from LSR will use mixed case (mainly, remarks). The user may need to edit them to correct the capitalization for county/city names. Note that the data saved before the “USE MIXED CASE” is turned on will still use uppercase.
- The stations for METAR/Non-Metar/Marine will use upper case. The user could configure all stations to be mixed case instead.
- Manual input should use mixed case - no effort is made to convert uppercase to mixed case.

Mixed case conversion

Starts 21.4.1 county names and city names and station names mixed case won't be automatically capitalized by PSH. Instead, users/sites should update the configuration files. There are four scripts to help users to update those files to mixed case. Users should run these scripts where there are these configuration files being used by PSH. The configuration files should be at /awips2/edex/data/utility/common_static/[SITE/USER]/XXX/psh/setup
The syntax to run the script is
python SCRIPT where SCRIPT should be convertCities.py, convertCounty.py, convertStations.py, or convertWaterLevel.py.
The convertCities.py script capitalize the name and county attributes file cities.xml.
The convertCounty.py script capitalize the name elements in file counties.xml.
The convertStations.py script FullName and Name elements in files marine_stationinfo.xml, metar_stationinfo.xml, and non_metar_stationinfo.xml.
The script convertWaterLevel.py capitalize the 1st/city and 2nd/county columns in file Water_Level_Stations.txt.
Users should verify the results are correct and edit if necessary.