Build 17.1.1
October 24, 2017

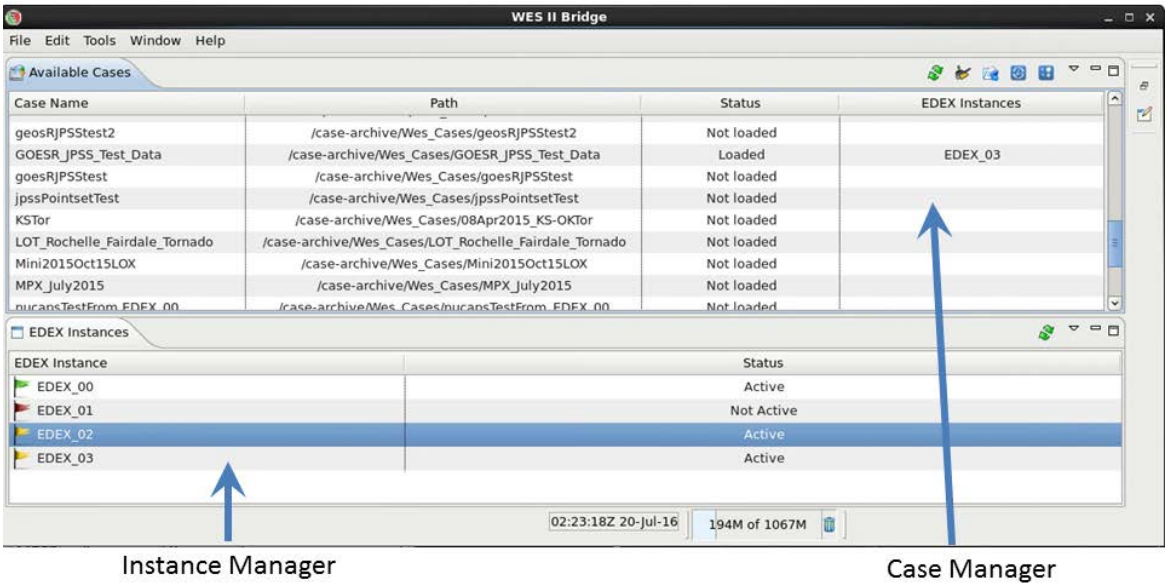
WES-2 Bridge Job Sheets

Basic Introduction.

There are two main parts of the WES-2 Bridge interface: a case manager and an instance manager. The case manager displays the cases that are available for the particular user. From the case manager, users start case reviews or simulations as well as load and unload cases. The interactions primarily occur through right-clicking on a particular case.

The instance manager allows you to start, stop, and reset any of the EDEX instances (independent versions of the main AWIPS server that each can hold a case and localization) as well as start additional CAVEs for each instance. WES-2 Bridge comes with 5 EDEX instances, labeled EDEX_00 through EDEX_04, so you have 5 AWIPSs on your WES-2 Bridge machine that can run at the same time and each have its own case and own localization.

WES-2 Bridge Basic Interface



WES-2 Bridge also provides an updated scripting capability (WESSL-2; a misnomer, but a carry-over from the old WES-1 WES Scripting Language). WESSL-2 adds some command and control capabilities to the simulation plus provides a method of viewing non-AWIPS data in a simulation. While more features are planned, it is already very flexible because it contains the ability to issue any Linux command.

Contents:

This packet contains five jobsheets (with accompanying explanations). These are examples of some the tasks you may complete with WES-2 Bridge.

Task 1: Import or Create a small archived case for event review
Task 2: Load a case and run a basic simulation. **(Updated!)**
Task 3: Load a case and run a simulation with GFE functionality, including a short simulation with the new winter Hazard Simplification (HazSimp) Formatters. **(New!)**
Task 4: Build a short WESSL Script and Play it in a Simulation
Task 5: Examine a Hydro case and run a simulation with Hydro Apps capabilities

<u>Task 1</u>: Import ("Create") a small archived data case for event review (no simulation).

Concepts:

- Examine a case as it came out of the archiver
- Start WES-2 Bridge, if needed.
- Start the EDEX_00 instance, if needed
- Use the AWIPS Archive Case wizard to create a WES-2 Bridge case from the archiver-produced case.
- Start another EDEX instance if needed
- Load the case
- Review the case.

Note: In operational practice, the archived case as it is produced by the AWIPS-2 Case Creation GUI is stored at /data/archiver. These instructions use a case delivered via Blu-Ray disc and unpacked on your machine. This necessitates a few changes in these instructions than would normally would be done for a ordinary case. These changes are notated below.

Step-by-Step Instructions:

1. Right-click on the desktop and select **Open in Terminal** to launch a shell window. Issue the following commands to list out the contents of an archived data case before the metadata is added:

   - **`cd /data1/wes_cases/W2B_17_1_1_ExerciseCase`**
     Note: you can hit the tab key after starting to type out the paths and the terminal will sometimes finish the command for you

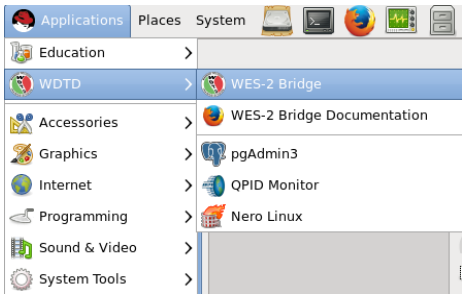
     Note: In practice, you would use this command: **`cd /data/archiver`**

   - **`ls`**
   - **`ls Processed`**
   - **`ls Processed/*`**

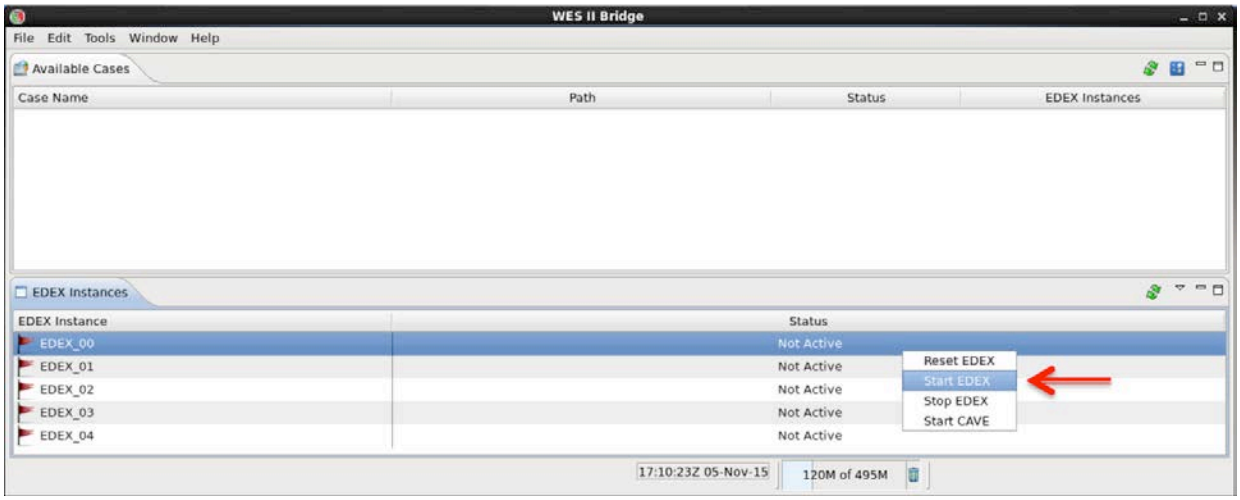
     Note: Only some bufrua (soundings), grid (ETA, FFG, LAPS, MSAS), obs, redbook, satellite, sfcobs and warning data should exist in this case as shown here.

```
[dmorris@awips2-dm W2B_17_1_1_ExerciseCase]$ ls
Processed
[dmorris@awips2-dm W2B_17_1_1_ExerciseCase]$ ls Processed/
bufrua  grid  obs  redbook  satellite  sfcobs  warning
[dmorris@awips2-dm W2B_17_1_1_ExerciseCase]$ ls Processed/*
Processed/bufrua:
bufrua-2016-02-23-12     bufrua-2016-02-23-18     bufrua-2016-02-24-00
bufrua-2016-02-23-12.h5  bufrua-2016-02-23-18.h5  bufrua-2016-02-24-00.h5

Processed/grid:
ETA  FFG-ALR  FFG-FWR  FFG-KRF  FFG-MSR  FFG-ORN  FFG-PTR  FFG-RHA  FFG-RSA  FFG-STR  FFG-TAR  FFG-TIR  FFG-TUA  LAPS  MSAS

Processed/obs:
metar-2016-02-23-16     metar-2016-02-23-18     metar-2016-02-23-20     metar-2016-02-23-22     metar-2016-02-24-00
metar-2016-02-23-16.h5  metar-2016-02-23-18.h5  metar-2016-02-23-20.h5  metar-2016-02-23-22.h5  metar-2016-02-24-00.h5
metar-2016-02-23-17     metar-2016-02-23-19     metar-2016-02-23-21     metar-2016-02-23-23
metar-2016-02-23-17.h5  metar-2016-02-23-19.h5  metar-2016-02-23-21.h5  metar-2016-02-23-23.h5

Processed/redbook:
PEBF98  PEIB40  PEIS46  PEWA32  PGNW49  PHBV50  PJBI88  PMNE01  PPHK01  PPZM50  PSBC04  PTIE94  PTNQ98  PWIE98  PYMA25  PYWM44
PEBG98  PEIC43  PEIY47  PEWA33  PGNW50  PHNT50  PMNA00  PMNE02  PPHM01  PPZO50  PSBC08  PTIO52  PTNS98  PWNE00  PYMA30  PYWO45
PEBH98  PEID44  PEIY96  PEWA34  PGNW51  PHTT50  PMNC01  PMWE98  PPHO01  PPZQ50  PSBC12  PTIO53  PTTU98  PXWA50  PYMA50  PYWQ46
PEBI88  PEIE40  PEIY97  PGIC42  PGNW52  PHTT51  PMNC02  PMWI98  PPIC01  PRWA51  PSBC25  PTIY51  PTWA32  PYAA89  PYMA70  PYWS98
PEBI98  PEIE41  PENA01  PGIE43  PGNW53  PHZM50  PMNC03  PPAA89  PPIE01  PSAO72  PSBD04  PTIY96  PTWA93  PYAA98  PYMA85
PEBJ88  PEIF40  PENE00  PGNA00  PGWA31  PHZO50  PMND01  PPAE89  PPIG01  PSBB04  PSBD08  PTIY97  PTWA94  PYBA89  PYNA98
PEBJ98  PEII42  PENJ88  PGNE00  PGWA32  PHZQ50  PMND02  PPAI89  PPII01  PSBB08  PSBD12  PTNK98  PWIA97  PYIY96  PYWA31
PEBK98  PEIK98  PETT00  PGNI00  PGWE46  PJAA88  PMND03  PPBE89  PPTG98  PSBB12  PSBD25  PTNM98  PWIA98  PYIY97  PYWA32
PEI745  PEIO46  PEWA31  PGNO98  PGWI47  PJAI88  PMNE00  PPBI89  PPTR98  PSBB25  PTIC94  PTNO98  PWIE97  PYMA20  PYWK43

Processed/satellite:
East CONUS  West CONUS

Processed/sfcobs:
1001  1003  1004  1005  1006  1007

Processed/warning:
warning-2016-02-23-12  warning-2016-02-23-16  warning-2016-02-23-20  warning-2016-02-24-00  warning-2016-02-24-11
warning-2016-02-23-13  warning-2016-02-23-17  warning-2016-02-23-21  warning-2016-02-24-01
warning-2016-02-23-14  warning-2016-02-23-18  warning-2016-02-23-22  warning-2016-02-24-02
warning-2016-02-23-15  warning-2016-02-23-19  warning-2016-02-23-23  warning-2016-02-24-10
[dmorris@awips2-dm W2B_17_1_1_ExerciseCase]$
```

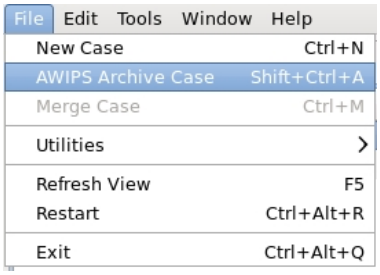
2. If WES-2 Bridge is not already started, you can start it by navigating to **Applications → WDTD → WES-2 Bridge** in the top-left Desktop menu.



3. Once the WES-2 Bridge GUI appears, **check to see if EDEX_00 is Active** under the "EDEX Instances" list. If it is listed as **Not Active**, **right click on EDEX_00 and select Start EDEX**.



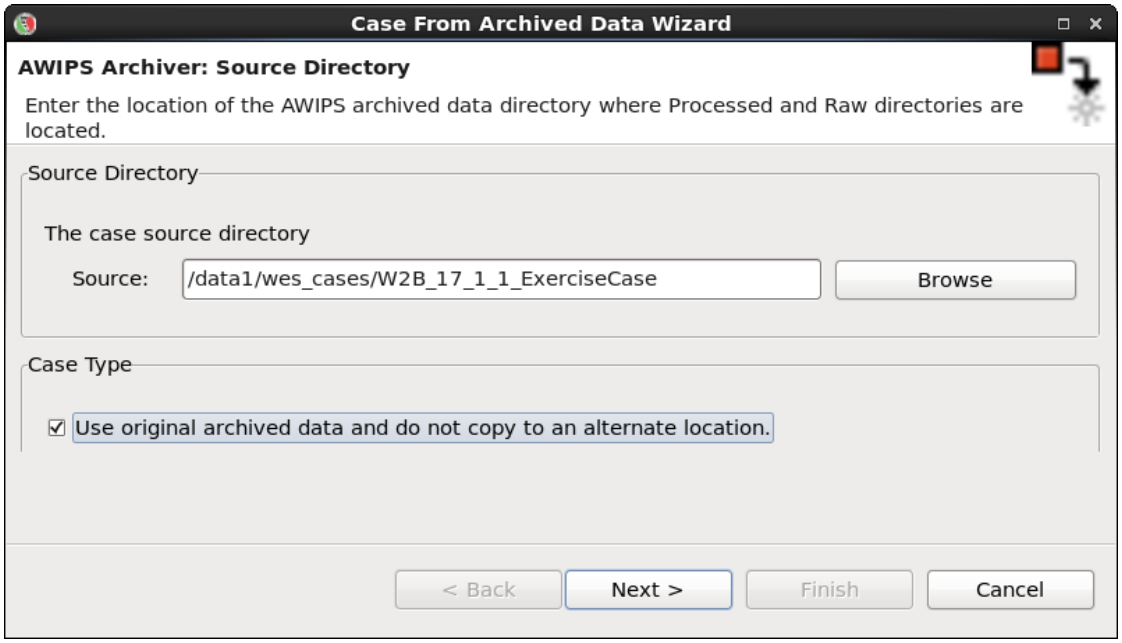
4. Under the **File** menu select **AWIPS Archive Case**.



5. In the first page of the wizard:

   - Click on the **Browse** button and navigate to **/data1/wes_cases** where you will select **W2B_17_1_1_ExerciseCase.**

     Note: In operational practice, this location will be **/data/archiver**.



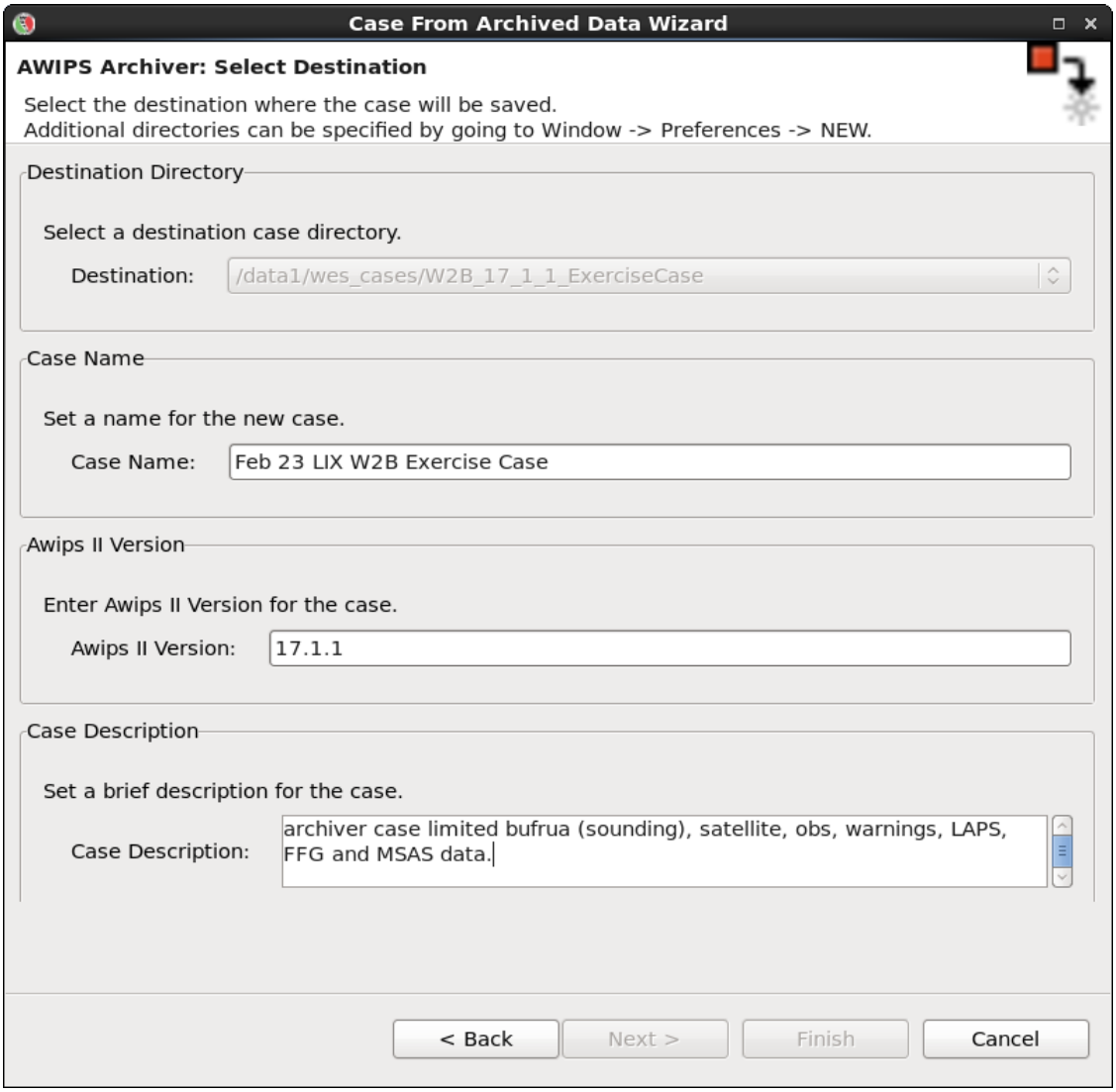
- **Ensure the "Use original archived data and do not copy to an alternate location" checkbox is <u>checked</u>.**

  <u>Note</u>: In operational practice, you will leave this box unchecked. This will ensures the WES-2 Bridge software copies data from /data/archiver to a case directory on the WES-2 Bridge box.

6. Click the **Next** button.

7. In the wizard's second page enter the following information:

Destination	**`/data1/wes_cases/W2B_17_1_1_Exercise case`** (This choice is grayed out because of the check box on the previous screen. Had we left it unchecked, then this dropdown box lists the available places on your WES-2 Bridge machine where you can store case data.)
Case Name	**`Feb 23 LIX W2B Exercise Case`** (the spaces in this case name and the resulting directory name will be changed to underscores by the WES-2 Bridge software)
AWIPS II Version	**`17.1.1`** (this is used for tracking build dependencies)
Case Description	**`archiver case with limited bufrua (sounding), satellite, obs, warnings, LAPS, FFG, MSAS data`** (this is useful documentation for later use; any comment listed here can be seen by any user who loads the case.)



8. Click the **Next** button.

9. In the **WFOs** box, you should select your own WFO. This case was collected from the LIX WFO, and we packaged the localization for LIX with the main test case. Cases that you make from your own archived data will need to use your own localization.

   Note: If your WFO does not appear in the list, then you have not customized WES-2 Bridge with your own localization. These job sheets pre-suppose that you have performed the local customization steps as described in the guide on "Customizing WES-2 Bridge with AWIPS Localizations" on WDTD's WES-2 Bridge web site at http://www.wdtd.noaa.gov/tools/wes2/documentation/LocalizationSteps.pdf. WDTD also has published a new script (/w2b/util/localizationcopy.csh) that simplifies copying the localization from your live AWIPS to your WES-2 Bridge workstation. There must be a cron job running on your PX1/PX2 that copies your localization daily to /data/archiver for this script to work correctly.

   Multiple WFOs may appear in this list, and the available WFOs may change depending on which cases are loaded into WES-2 Bridge at a given time. The list is constructed from the localizations that are located in the /awips2/edex/data/utility/site and /awips2/edex/data/utility/configured directories.

   Note: If you had a lot of data you may choose to filter the data that would be loaded in WES by using the **Data Types** box.

Note: In this job sheet we are purposefully not using FSI. In your office, if you choose to use FSI, then selecting this checkbox will require you to specify the location of Raw radar data for this case because that Raw radar data is required for FSI.

On Localizations and Transferring WES-2 Bridge Cases. At the current time, every case that is made on WES-2 Bridge also includes a copy of the localization. This does result in multiple copies of the localization residing on the machine, which is inefficient. However, this does make it easier to transfer cases to different WES machines (for example, to other WFOs). All that is needed to transfer cases to other machines is to tar up an entire case (including the caseMetaData.xml file, the localization and Processed directories and any Raw and/or wessl2 directories that are part of the case. Then simply untar the case on the target machine in one of the case directories (/data1/wes_cases, /data2, etc.) and refresh the case manager window. After transferring the case, you will need to ensure the permissions on the case are set to group write (chmod –R g+w <*caseDirectory*>). The size of the case will affect how the case is transferred (the physical media and any splitting up of the case into multiple tar files). Plans for future versions of the WES-2 Bridge software include not always copying the localization into every case and a "Package Case" option to make this process easier by grabbing the localization and by splitting up large tar files into manageable pieces. In the meantime, if you have questions about doing transferring cases to other WFOs, contact WDTD for assistance.

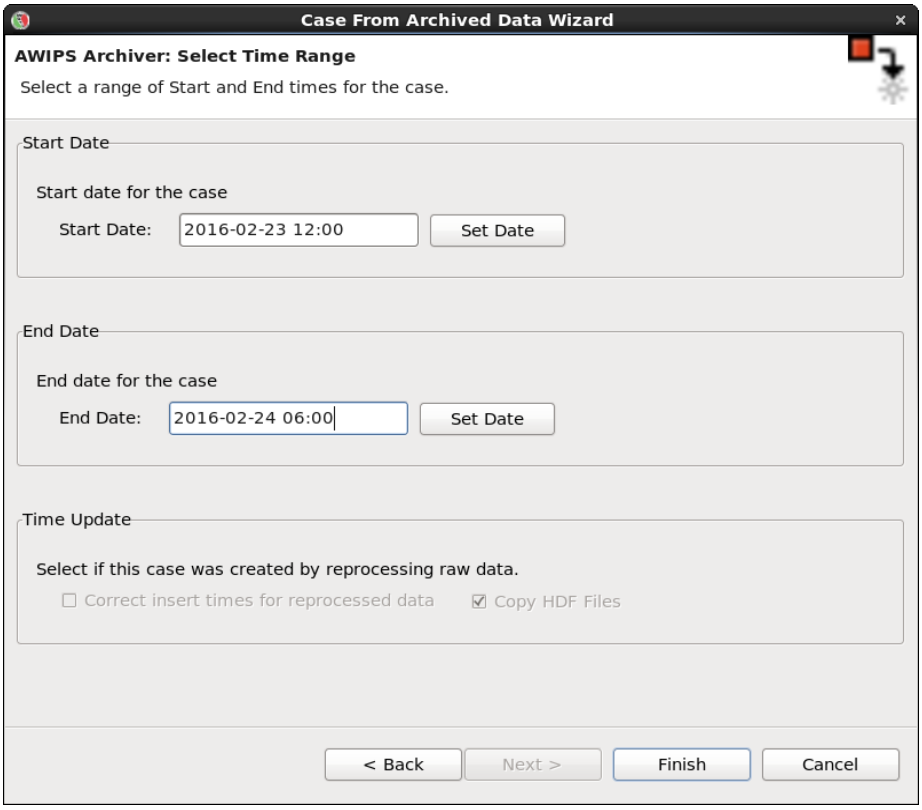
10. Click the **Next** button.

11. On the wizard's third page enter the following:

- **Start Date:** `2016-02-23 12:00`
- **End Date:** `2016-02-24 06:00`

Note: You may want to use the **Set Date** button to select the time from the calendar to ensure you don't make a typo. Also, you can hold down the arrows on the spin-boxes to rapidly index to a number.

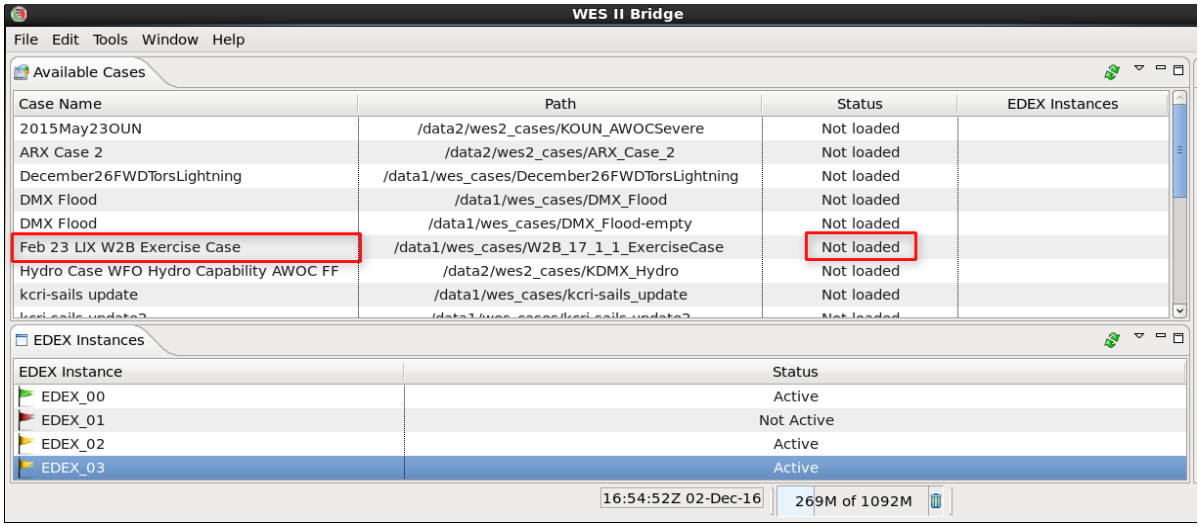
Note: You may have noticed that the "Correct insert times for reprocessed data" is grayed out. This is grayed out because of choosing the "Use original archived data and do not copy to an alternate location" check box above in Step 5. Most of the time, the "Correct insert times" option is available to you. If you are using data that came directly from your archiver, you should leave this setting alone. If you have used rawPlay to reprocess **raw radar and gridded** data you must select this box for simulations to work correctly. Eventually this will apply to datatypes other than radar and grids.



12. Click the **Finish** button to create the case metadata. It should take a couple of minutes to create the metadata and copy the localization.

When WES is done creating metadata for the case, you will see **Feb 23 LIX W2B Exercise Case** listed in the **Case Name** list of **Available Cases**, and it will have a status of "**Not loaded"**.

Note: If you do not see your case listed, check under **Window → Preferences** and make sure **/data1/wes_cases** has been **added to your "Case directory paths".** As of Build 17.1.1, the case path preferences have been centralized and /data1/wes_cases should be included by default.



13. In the terminal window from Step 1, issue the following commands to list the contents of the case after the metadata and localization are added:

- **`cd /data1/wes_cases`**
- **`ls W2B_17_1_1_ExerciseCase`**

Note: WES-2 Bridge changed the spaces in your case name to underscores for the case directory. The case name in the interface still contains spaces.

Note: The caseMetaData.xml and the localizations folder should now exist

- **`ls W2B_17_1_1_ExerciseCase/localizations`**
- **`cat W2B_17_1_1/ExerciseCase/caseMetaData.xml`**

Note: The localization tree and maps have been copied into the case from the AWIPS-2 installed on WES-2 Bridge. The maps directory will only exist if you have customized your WES-2 Bridge machine with the maps from your operational AWIPS system. For more information, see the "Customizing WES-2 Bridge with Local Maps" guide on the WES-2 Bridge web site at http://www.wdtd.noaa.gov/tools/wes2/documentation/LocalMaps.pdf.

Note: Beginning in WES-2 Bridge 16.2.2, part of the customization process involves copying Average Recurrence Interval (ARI) data into the localization in order to support FFMP's usage of ARI. Because it is static data (does not change in time), the ARI data is not normally available as part of an archived case. For that reason, WES-2 Bridge implemented ARI as part of an addition to the localization.

```
[dmorris@awips2-dm W2B_17_1_1_ExerciseCase]$ cd /data1/wes_cases/W2B_17_1_1_ExerciseCase/
[dmorris@awips2-dm W2B_17_1_1_ExerciseCase]$ ls
caseMetaData.xml  localizations  Processed
[dmorris@awips2-dm W2B_17_1_1_ExerciseCase]$ cd localizations/
[dmorris@awips2-dm localizations]$ ls
cave_static  common_static  edex_static  ffmpari  maps
[dmorris@awips2-dm localizations]$ ls ffmpari maps
ffmpari:
lix

maps:
LIX_alllocalroads_map.csv   LIX_hurricane_map.csv    LIX_la_map.csv   LIX_nha_map.csv     LIX_stormsurge_map.csv
LIX_alllocalroads_map.dump  LIX_hurricane_map.dump   LIX_la_map.dump  LIX_nha_map.dump    LIX_stormsurge_map.dump
LIX_ffmp_map.csv            LIX_ihncdetour_map.csv   LIX_ms_map.csv   LIX_river_map.csv   LIX_warngenloc_map.csv
LIX_ffmp_map.dump           LIX_ihncdetour_map.dump  LIX_ms_map.dump  LIX_river_map.dump  LIX_warngenloc_map.dump
[dmorris@awips2-dm localizations]$
```

14. **Right-click on the** "**Feb 23 LIX W2B Exercise Case"** and select **Load Case.**

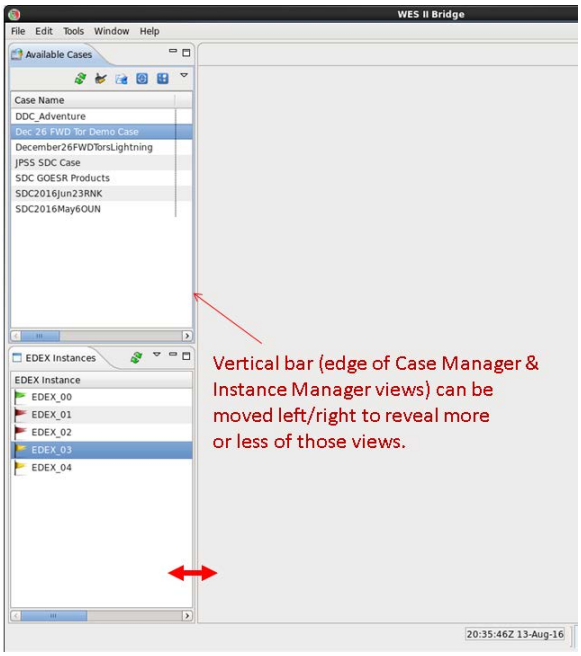
    In the **Load Case** tab, review the metadata, and then click **Load** to load the records into the database.

    - This will take a minute or two, and the Progress Information bar will disappear when the data is loaded into an available EDEX instance.

    - If there are no available (empty) EDEX instances, you will be prompted to unload an EDEX instance before being able to proceed.

    - If no EDEX instances are running, WES-2 Bridge should prompt you to start one. You can also manually start one by right-clicking on an instance in the instance manager and choosing "Start EDEX".

15. **Drag the vertical bar (the right edge of the Available Cases window) to the right,** so you can see that the Status of "**Feb 23 LIX W2B Exercise Case"** is **Loaded** and which EDEX instance (in the EDEX Instances window) the case is loaded on.



    - When a case is **loaded**, it can be quickly accessed for event review or simulation.

      Note: "Loading" means that the Postgres database for a particular EDEX instance has been populated with data from a case and that the localization for the case has been linked into the EDEX.

16. **Right-click** on "**Feb 23 LIX W2B Exercise Case"**, and select **Review.**

17. In the Review Wizard, click **Finish.**

    - CAVE will load with all the data visible, and after 1 minute WES-2 Bridge sets the D2D clock to the end of the case for reference.

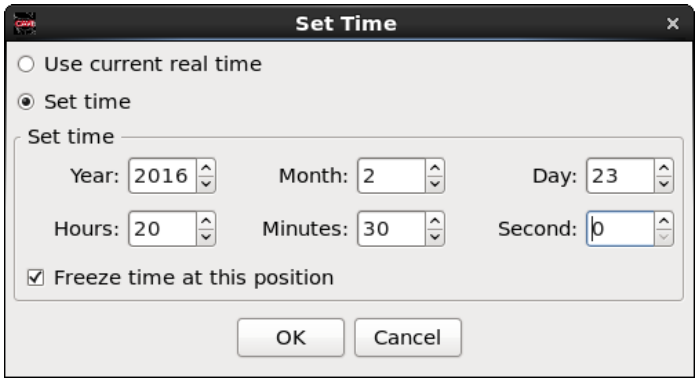
    Note: The D2D clock is frozen at the time of the end of the loaded case.

18. Under the **Satellite** menu select **Visible** and navigate through the data.

    Note: This is static case review (no simulation), so the data doesn't update automatically, and D2D displays the last data in the case. In case review, you can manually set the clock to an earlier time (and freeze it if you want to). Loading data after setting the clock then causes data from the earlier time to appear (which occurs later in this exercise).

19. **Double-click on the D2D clock** change the time to **`2016/02/23`** (Year/Month/Day) and **`20/30/0`** (Hours/Minutes/Second). Ensure the time is frozen with the **Freeze time at this position checkbox** selected.

20. **Swap panes with an empty pane and then swap the pane again.** The satellite data should now be at a time that ends just previous to 2030 UTC February 23.



- Your CAVE clock should have yellow text with a red background when the time is frozen and is set backwards from the system time. (This color configuration is part of AWIPS versions later than 16.1. Previous AWIPS builds had yellow text on a black background when the time was frozen. The red background indicates the time is not the current system time.)

- When the clock time is not set to the system time but is moving forward, the clock will have white text with a red background.

21. **Swap panes with an empty pane**, and under the **Obs** menu select **Other Warning Displays** then **All Regional Warnings** and navigate through the data. Since we created this case with your own localization, you may not see a display of warning polygons because this is a mostly southern US convective event. The warnings that are displayed are the actual warnings that were issued during the event.

22. **Swap panes with an empty pane**, and under the **Volume** menu select **NAM80** and navigate through the data. Clear this pane and then under the **Volume** menu select **LAPS** and navigate through the data. LAPS for this case uses the LIX domain.

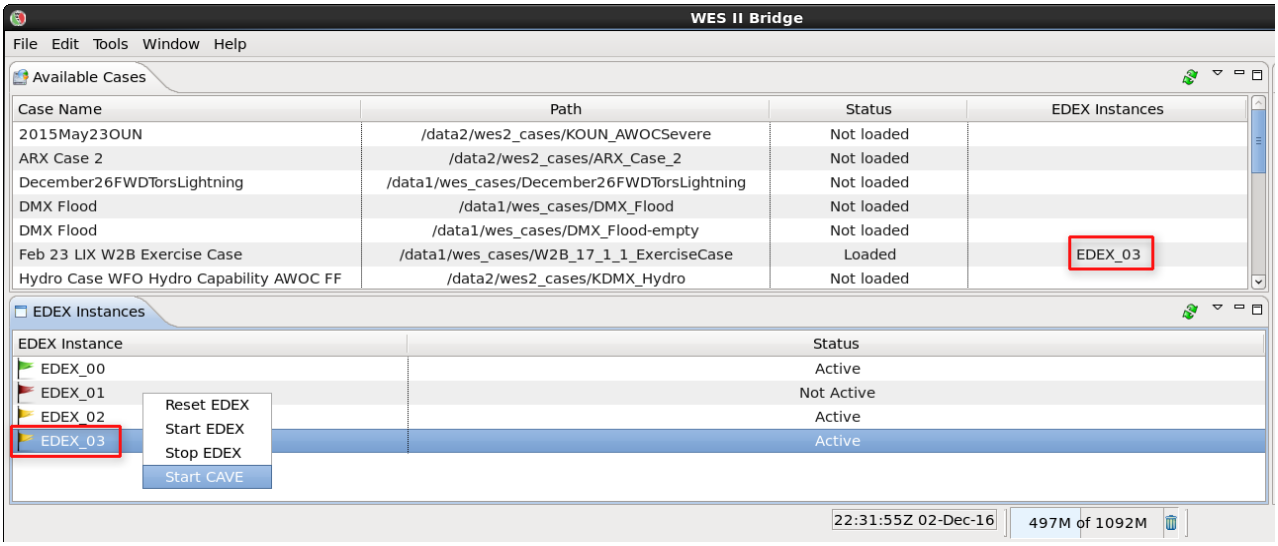
    Note: Some localizations may have removed LAPS from their main Volume menu and only have it as an option for the Surface Families menu under the Volume menu.

23. **Swap panes with an empty pane,** and under the **Obs** menu select **Station Plot** (in the METAR section) and navigate through the data.

24. Under the **Upper Air** menu, select **US Eastern ► New Orleans, LA** and verify the sounding appears in an NSHARP display.

25. Under the **MRMS** menu and under the **Hail Products** menu, select **MESH Tracks (1440 min. accum.)** and notice no data will load because this data type (MRMS) was not included in this case.

26. To launch another CAVE on this case, **identify the EDEX Instance** that contains this case in the **Case Name** list of available cases (EDEX_03 in the figure below), and then in the **EDEX Instances** on the bottom left of the WES -2 Bridge interface, **right click on the appropriate EDEX Instance and select Start CAVE.**



- Click **OK** on the available memory popup window if it pops up.

Note: You have to manually set the CAVE clock when using the Start CAVE popup when you are in review mode..

27. Load and view data on the new CAVE and verify it is the same data.

28. Shut down CAVE.

Note: Any active EDEX started above will remain running even after shutting down CAVE.

Task 2: Load a Case and Run a Basic Simulation: WES-2 Bridge 17.1.1 Test Case (LIX 2016-02-23)

Introduction. EDEX_01 is an EDEX instance that is reserved for simulations on cases that are not already pre-loaded, so you can load a case and run a simulation in one step. After running the simulation or case review, the case remains loaded in EDEX_01. The other instances (EDEX_02, EDEX_03, and EDEX_04) are designed to be used in a two-step fashion (loading the case and subsequently running a simulation or case review). After running an initial case review or simulation on EDEX_01, EDEX_01 behaves like EDEX_02 through EDEX_04 as long as the case remains loaded in EDEX_01.

You will also use one of the two parts of WESSL-2, the WESSL-2 Event Browser, to view ancillary information included with the simulation.

Concepts:

- Start an EDEX instance
- Load a simulation
- Start the simulation with a sample WESSL script.
- Observe the events from the sample WESSL script.
- Issue a warning
- Stop the simulation
- Find the text file that contains the warning (for subsequent evaluation purposes).

Step-by-Step Instructions:

1. In the WES-2 Bridge Case Manager, determine if any of the EDEX_02, EDEX_03, or EDEX_04 instances are both Active and have no case loaded. If needed, start and/or reset an instance by right-clicking on the instance in the instance manager, and selecting "**Start EDEX**" or "**Reset EDEX**".

2. Load the WES-2 Bridge Test Case by selecting **WES-2 Bridge 17.1.1 Test Case (LIX 2016-02-23)**, then **right click** and select **Load Case**. It may take about 10 minutes to load the case.

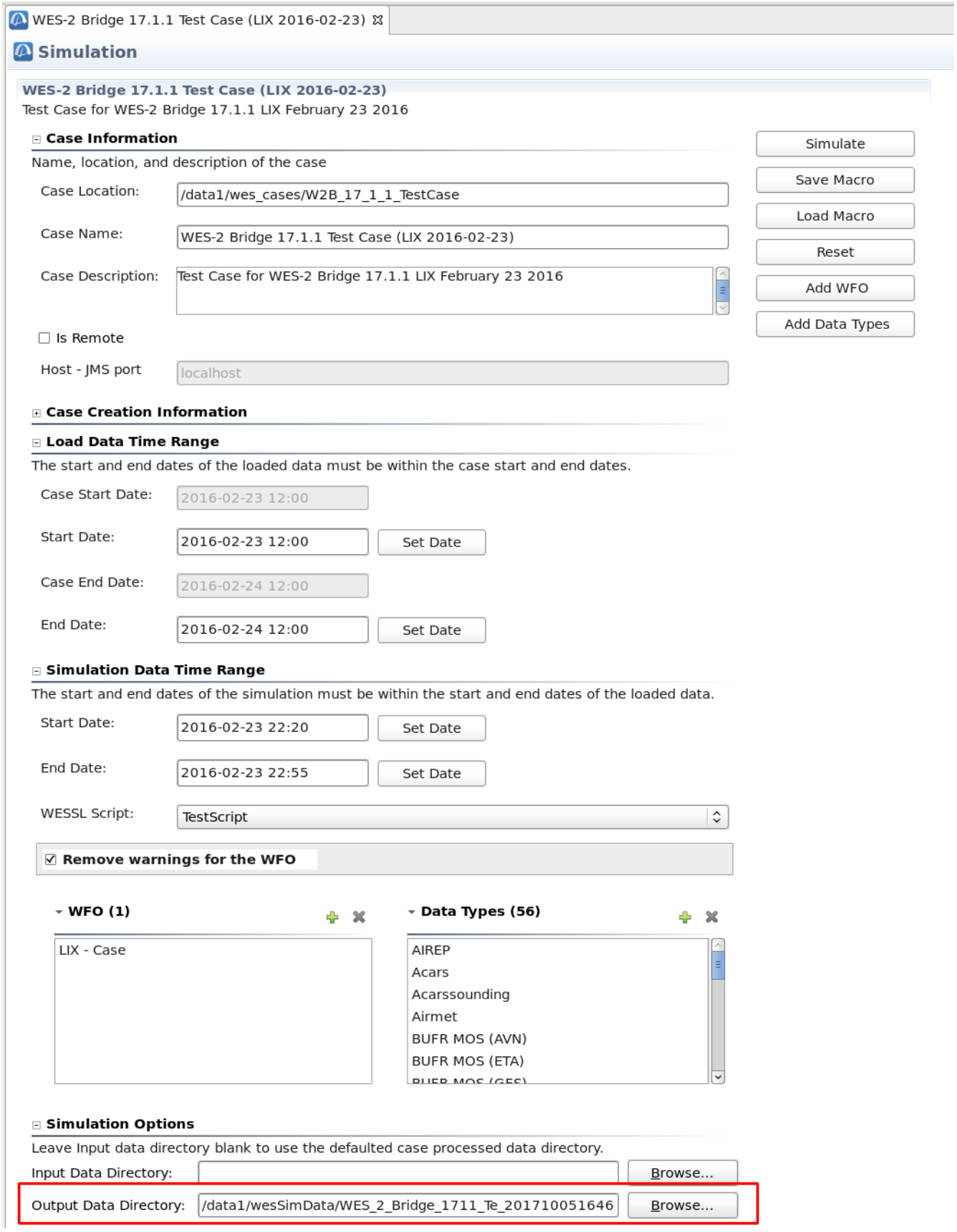
3. Start the simulation by selecting **WES-2 Bridge 17.1.1 Test Case (LIX 2016-02-23)** in the Available Cases tab, and **right click** and select **Simulation**.

4. In the **Simulation tab** (may need to move the right-edge vertical bar to see) enter the following:

Load Data Time Range	
Start Date	2016-02-23 12:00
End Date	2016-02-24 12:00
Simulation Data Time Range	
Start Date	2016-02-23 22:20
End Date	2016-02-23 22:55
WESSL Script	TestScript
Remove Warnings from WFO is checked.	

Verify your settings with the graphic below.

Note: Notice the Input Data Directory and the Output Data Directory (highlighted in red). **Beginning in the 17.1.1 version of WES-2 Bridge**, these locations are available to make the process of initializing a simulation and gathering evaluation data from a simulation much easier. The output directory is automatically filled in by the system based on the name of the case and the system time.


WES-2 Bridge 17.1.1 Test Case (LIX 2016-02-23)
Simulation
WES-2 Bridge 17.1.1 Test Case (LIX 2016-02-23)
Test Case for WES-2 Bridge 17.1.1 LIX February 23 2016
Case Information
Name, location, and description of the case
Case Location:
/data1/wes_cases/W2B_17_1_1_TestCase
Case Name:
WES-2 Bridge 17.1.1 Test Case (LIX 2016-02-23)
Case Description:
Test Case for WES-2 Bridge 17.1.1 LIX February 23 2016
Is Remote
Host - JMS port
localhost
Case Creation Information
Load Data Time Range
The start and end dates of the loaded data must be within the case start and end dates.
Case Start Date:
2016-02-23 12:00
Start Date:
2016-02-23 12:00
Set Date
Case End Date:
2016-02-24 12:00
End Date:
2016-02-24 12:00
Set Date
Simulation Data Time Range
The start and end dates of the simulation must be within the start and end dates of the loaded data.
Start Date:
2016-02-23 22:20
Set Date
End Date:
2016-02-23 22:55
Set Date
WESSL Script:
TestScript
Remove warnings for the WFO
WFO (1)
LIX - Case
Data Types (56)
AIREP
Acars
Acarssounding
Airmet
BUFR MOS (AVN)
BUFR MOS (ETA)
Simulation Options
Leave Input data directory blank to use the defaulted case processed data directory.
Input Data Directory:
Browse...
Output Data Directory:
/data1/wesSimData/WES_2_Bridge_1711_Te_201710051646
Browse...
Simulate
Save Macro
Load Macro
Reset
Add WFO
Add Data Types

5. In the **upper-right part of the simulation tab** (may need to use scroll bars), click on the **Simulate** button.

   - Several windows will begin to pop-up, including the WESSL-2 browser.

6. Click **OK** on the available memory popup window if it pops up, and note when the WESSL-2 window and Simulation Controls window pops up.

7. After CAVE finishes loading, click the **PLAY** button on the **Simulation Controls** window.

8. This WESSL-2 script will pop up several events at the beginning of the simulation, one at 22:27 and another towards the end (at 22:51 UTC), and you can click on each one of the WESSL Events manually if you want to review them.

   This WESSL-2 script does not demonstrate all the functions possible. WESSL-2 can pause a simulation at prescribed times, and it can play audio and video clips, display web (HTML) pages and run any system command. Therefore, there are numerous possibilities of displaying ancillary information alongside your simulation, limited mostly by one's creativity. Task 3 below demonstrates adding observations (spotter reports) by importing files downloaded from SPC.

9. From the **klix** menu, select **0.5 Z+SRM8** and review the recent radar data.

10. Under the **CAVE** menu and **New** submenu select **Text Workstation**, and then **issue a tornado warning** with WarnGen (don't spend much time doing it -- this is just for demonstration purposes), making sure to **select a basis for the warning** (radar detected, spotter, etc.) **and/or hail or wind threat**.

    - If you receive a message about product expiration, **click the "Go Ahead" button**. The AWIPS-2 issue that is responsible for this notice also was verified to be fixed in AWIPS 16.4.1.

    - **If warning product does not display** in the Text Workstation after you select "Create Text" in Warngen, **navigate to CAVE → Preferences → Text Workstation** and make sure the **host matches the workstation name you are running WES II Bridge from**.

      Note: The AWIPS version packaged with previous builds of WES-2 Bridge did not allow PathCasts in WarnGen to function correctly. Form the 17.1.1 build forward, the AWIPS code was fixed to allow generation of PathCasts.

11. In a **new pane,** load the **Local CWA Warnings** plot from the **Obs** menu, and see your new Warning polygon.

12. The simulation will stop automatically at 22:55:00. If you have finished issuing your warning, you can manually stop the simulation at any time by pressing the **STOP** button in the **Simulation Controls** panel.

    - **Note:** In WES-2 Bridge 14.3.1, it was critically important to actually **STOP** the simulation by using the STOP button or allow it to finish naturally. This ensured that radar and other data were ready for the next simulation or review used on a particular case. In Builds 16.2.2 and later, WES-2 Bridge improved the methodology of loading radar and other data to remove this dependency and this problem should no longer occur.

- After the simulation has stopped, shut down CAVE and the WESSL-2 Event Browser.

13. In order to locate and examine the text file that contains your warning (for later evaluation purposes), open a terminal window (right-click on desktop and select "Open in Terminal") and issue these commands:

- **`cd /data1/wesSimData`**
- **`ls`**

There should be a directory named **WES_2_Bridge_1711_Te_** followed by twelve digits that represent the system date and time when the simulation was started. Inside this directory you should see at least a text directory and a warnings directory. These contain the text products issued during the simulation in plain text format (*.txt files) for human perusal and in a binary format (*.bin files) suitable for loading back into the AWIPS databases to use in subsequent simulations.

Note: The warning text is also available in the fxatext database and in the warning table of the metadata database. Both of these can be accessed via pgadmin or psql.

Task 3: Load a case and run some short simulations with Graphical Forecast Editor (GFE) functionality.

Introduction. Beginning with Build 17.1.1, WES-2 Bridge includes support for basic GFE functions. It uses archived GFE data so that both gridded and text forecasts can be produced along with hazard products. Simulations can be initialized with either an archived Fcst database or with a Fcst database prepared for a particular training objective. Simulations can also be initialized with text and warning products.

This task illustrates how to use these functions. There is a special checkbox when a case is loaded to ensure GFE functions are enabled. The standard GFE functions of populating and editing grids, saving the Fcst databse and running formatters should operate normally. The final steps depict a second simulation that loads the output from a previous simulation for review purposes.

Note: Some particular WFO GFE procedures and SmartTools may be written specifically to work with specific versions of models without consideration of how models may have changed from previous archived versions. These types of local software issues are beyond the scope of the WES program.

Concepts:

- Load a case that contains only unmodified GFE data (no pre-initialized Fcst database)
- Populate Fcst grids with some model data
- Edit the hazard grid
- Save and Publish the Fcst database
- Run some formatters to create text products
- Run a second simulation to examine pre-created Fcst database and text products.
- Run a third simulation to generate a winter storm watch using the Hazard Simplification (HazSimp) winter formatter.

Step-by-Step Instructions:

1. In the WES-2 Bridge case manager, **right-click on the** "**WES-2 Bridge 17.1.1 GFE Case (LIX 2016-02-23)"** and select **Load Case**.

Note: This step assumes there is an empty EDEX instance. If all three of EDEX_02, EDEX_03, and EDEX_04 contain cases, you will have to unload one of them in order to perform this step and continue. This also assumes that one of your empty EDEX instances is active.

2. Start the simulation by selecting **WES-2 Bridge 17.1.1 GFE Test Case (LIX 2016-02-23)** in the Available Cases tab. Then **right-click** and select **Simulation**.

3. Set the Start date for the Simulation Data Time Range to **2016-02-23 18:45**

4. Click the **Simulate** Button.

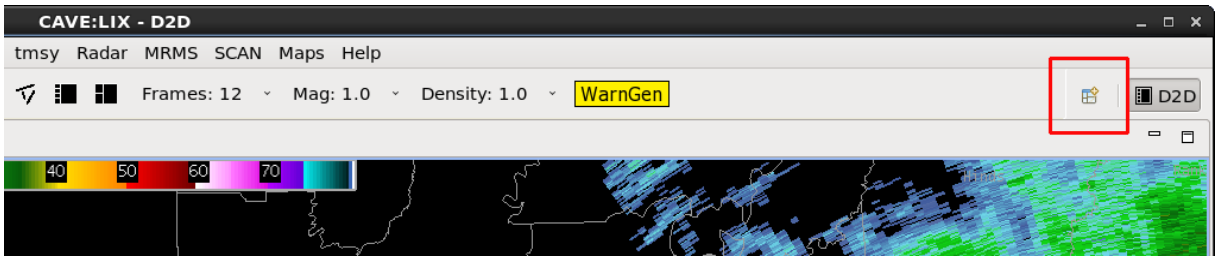
WES-2 Bridge will attempt to activate GFE and then start CAVE once GFE is activated.

Note: The Simulation Controls may appear prior to CAVE being ready to start. Do not press Play until after CAVE launches.

5. After CAVE launches, press the **Play** button in the **Simulation Controls** Window. The clock at the bottom of the CAVE window should turn red with yellow text.

6. In CAVE, launch the GFE perspective, either from the CAVE Menu (**Perspective ►GFE**) or by using

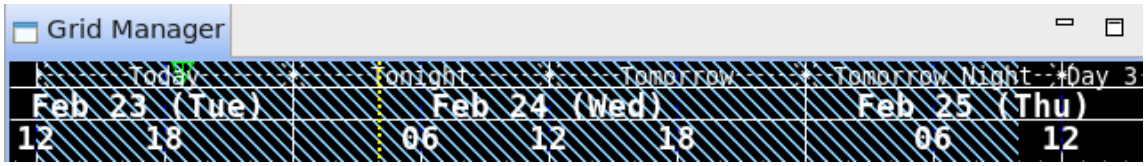
the **Open Perspective Button** and choosing **GFE**.



7. In the **GFE Startup** dialog, choose **LIX_gfeConfig** and press the **OK** button.

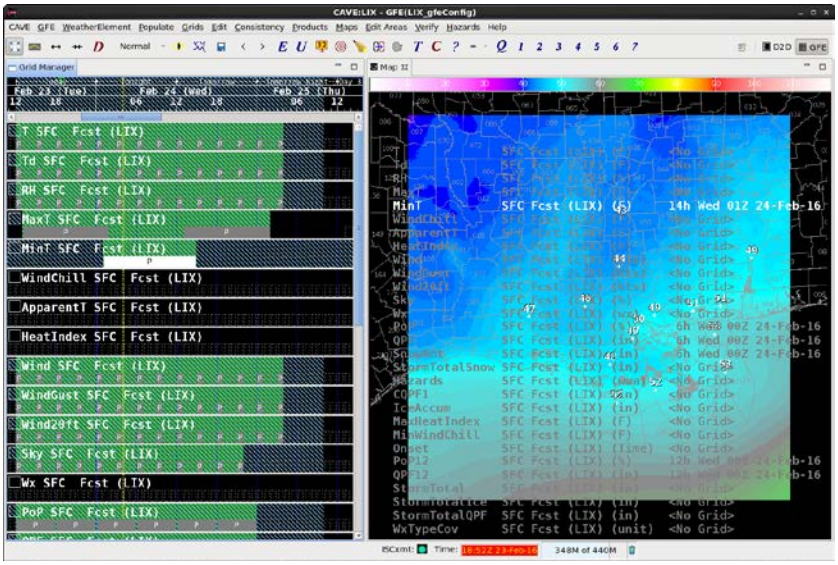
8. To populate the Fcst Database, we will copy some grids in from some models. This is just for illustrative purposes only. We will not be doing any particular grid editing, nor a full set of grids.

   In the **Grid Manager**, select the time period for Today, Tonight and Tomorrow, and Tomorrow Night.



   Under the **Populate** menu, choose the **Copy All Grids From…** option and then choose **GFS 2312 (LIX).** If GFS 2312 is not available, use the model of your choice.

   Under the **Grids** menu, choose **Interpolate.** In the resulting dialog, ensure the **Gap**s option is selected and press the **OK** button.



9. Save the Forecast by using the **Save Forecast** button (the Diskette icon) or choosing **Edit ► Save Forecast**. In the resulting dialog, press the **Save Forecast** button.

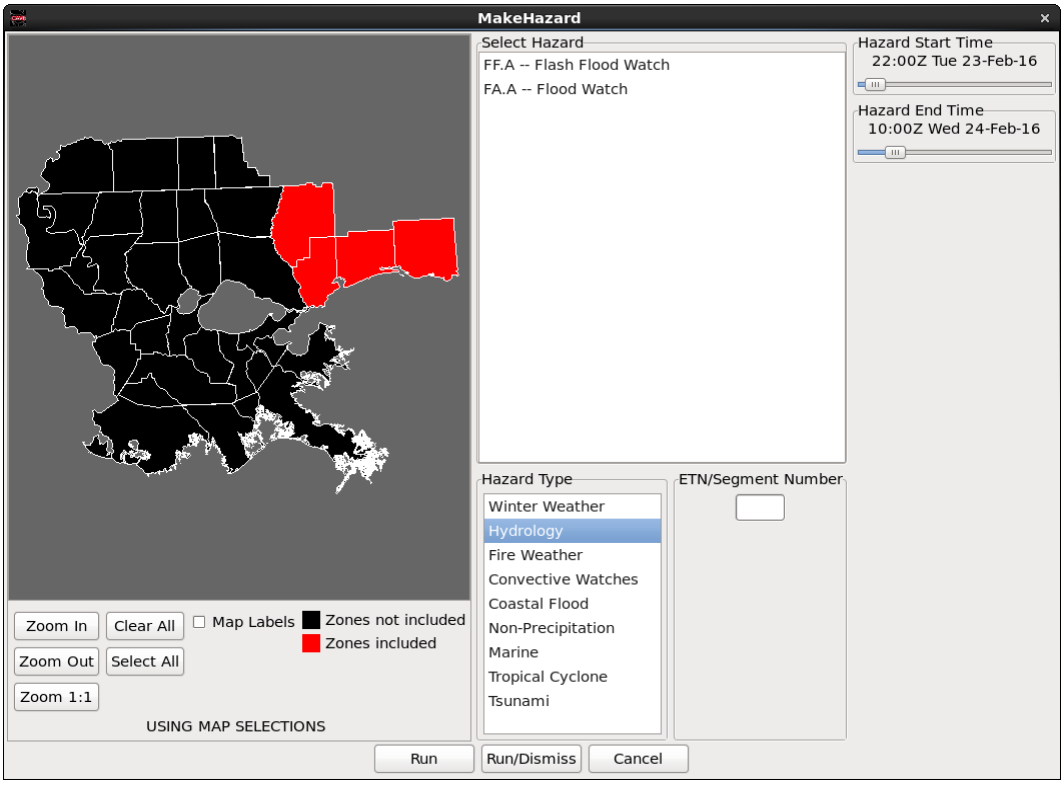
   Note: WES-2 Bridge does not have ISC (Intersite Coordination) functionality. Therefore, when you try to save a forecast database, GFE tries to send the grids to a server it can't connect to. Later, this can

cause delays in trying to shut down the EDEX server. To help avoid this problem, click the **Consistency** menu and then click the **ISC Send Enable** check box to turn it off. This obviously is something only for WES-2 Bridge and would never be appropriate for real-time operations.

10. To edit the Hazard grid, go to the **Hazards** menu and choose **MakeHazard**. Select some parishes (counties) choose a start time and end time, and a hazard.

In this example, use a Flash Flood watch with these parameters:

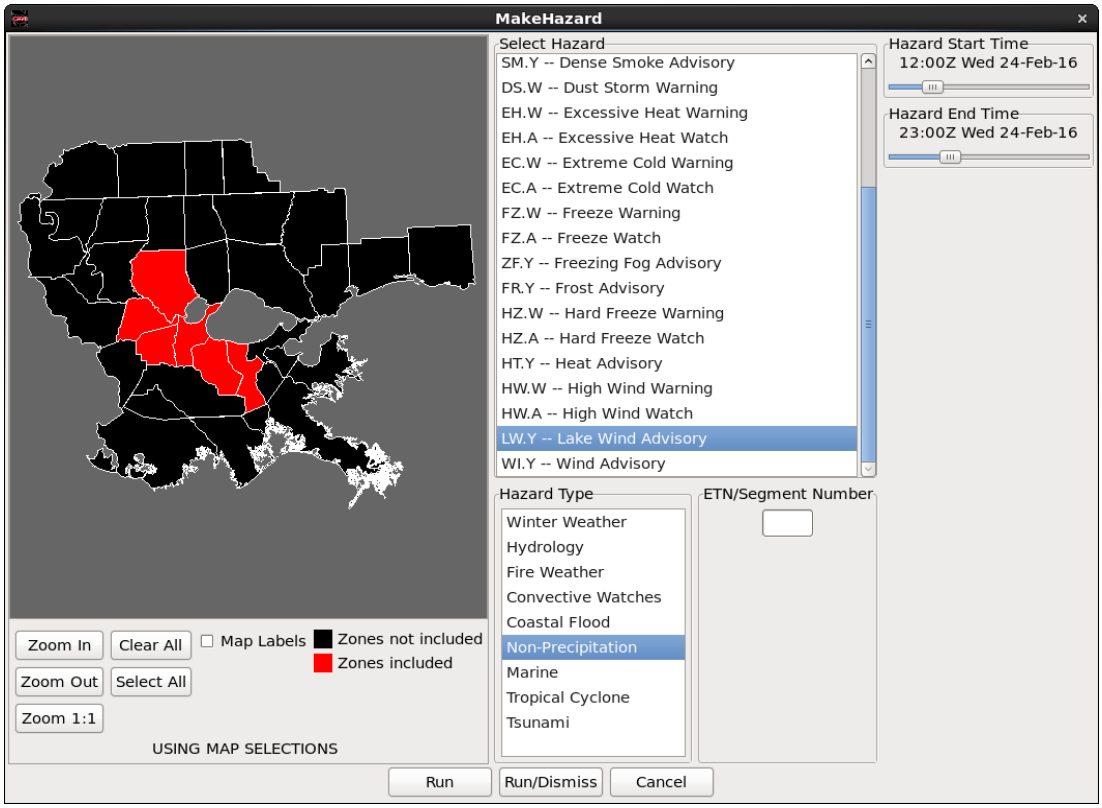
Hazard Type	Hydrology
Hazard	Flash Flood Watch
Begin Date/Time	22Z Tuesday 23 Feb 2016
End Date/Time	10Z Wednesday 24 Feb 2016



After making the first hazard, press the **Run** button.

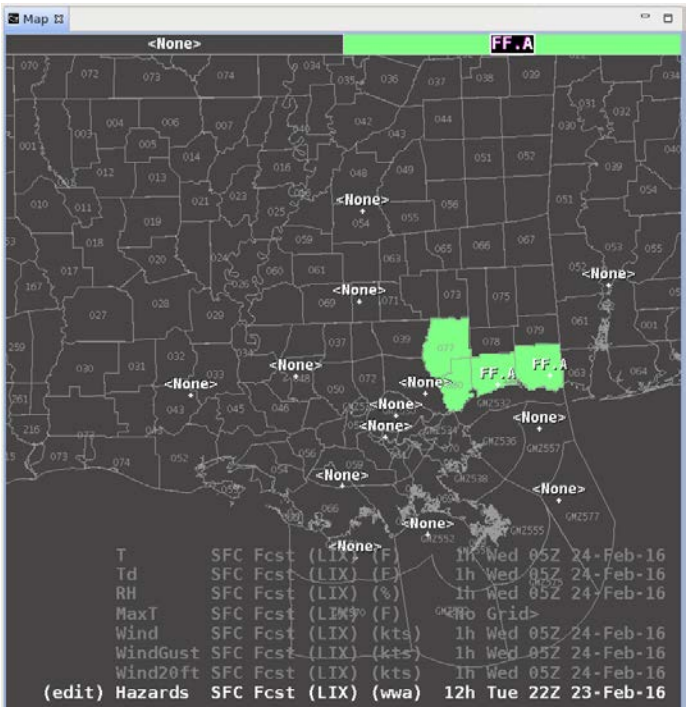
Choose a different hazard category and create another hazard for some different parishes (counties). In this example, we'll do a Lake Wind Advisory.

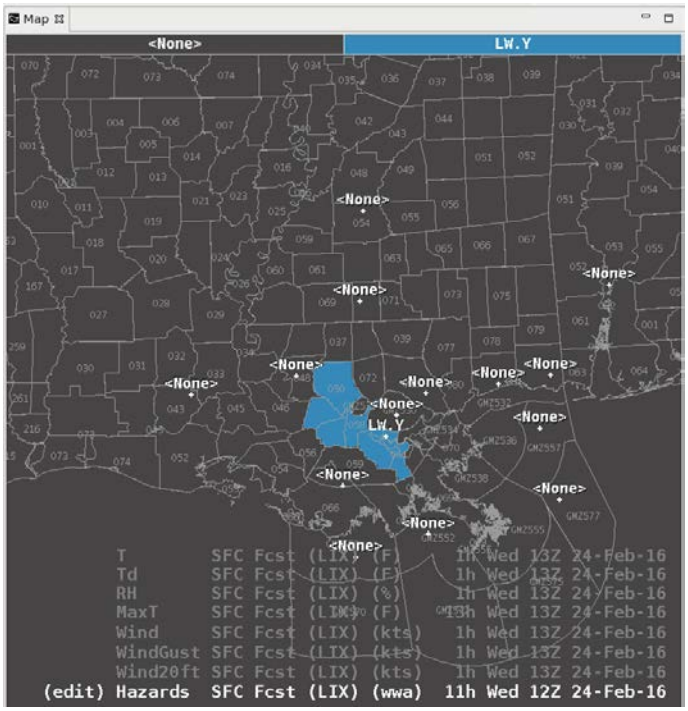
Hazard Type	Non-Precipitation
Hazard	Lake Wind Advisory
Begin Date/Time	12Z Wednesday 24 Feb 2016
End Date/Time	23Z Wednesday 24 Feb 2016



After making these selections, press the **Run/Dismiss** button.

After creating the hazards, click **Hazards** followed by **MergeHazards**. **<u>Then save the forecast.</u>**





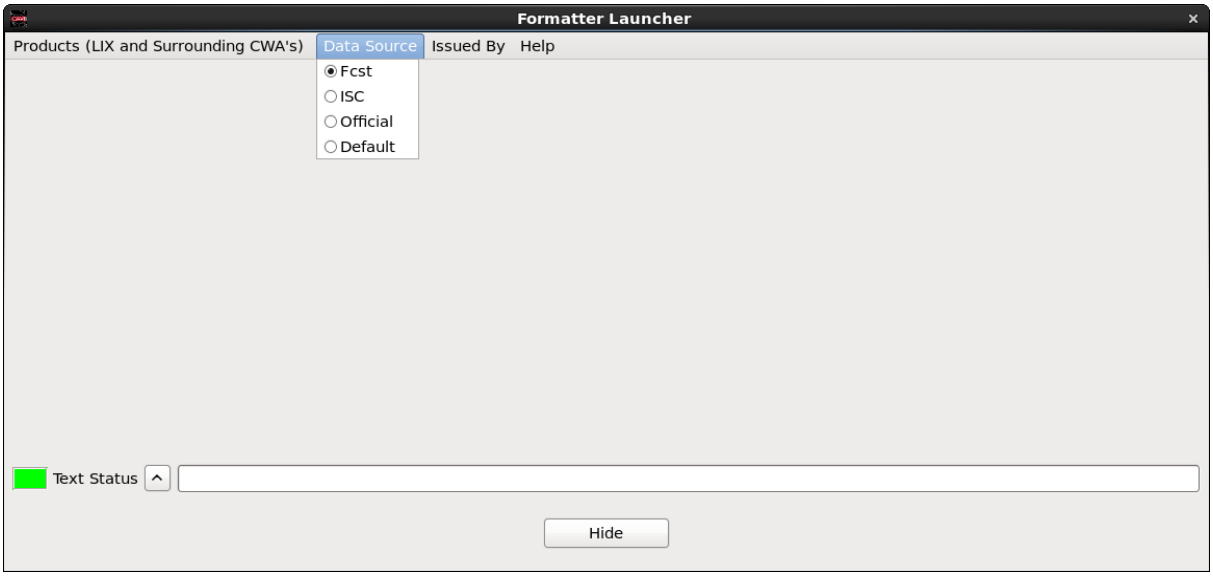
11. This step is about saving the forecast to the Official database. This is an optional step because the GFE software packaged with the WES has not always been reliable about saving the Official files.

Save the forecast as Official. Use the **Products ►Publish To Official** option.

Note: Sometimes Publish To Official seems to work without giving errors but does not actually save the Official database HDF files. Because of this, we will run the formatters against the Fcst database in the following steps.

12. To create the text products, under the **Products** menu, choose **Formatter Launcher.** This step will create two hazard products (one each for the Flash Flood Watch and the Lake Wind Advisory) and two text forecasts (Zone Forecast Product and Area Fire Weather Matrices).

Under **DataSource** choose **Fcst**.



Under **Products**, choose **Hazard ►Hazard_FFA (Flood Watch**). Click the **Gear** button to run the formatter. You will get a warning message about using the Fcst database rather than the Official database; you can acknowledge this warning.

For Flood Reason, choose Excessive Rainfall and edit the text as desired.

Under **Products**, choose **Hazard ► Hazard_NPW (Non Precipitation)**. Click the **Gear** button to run the formatter and edit the text as desired. Again, acknowledge the warning about using the Fcst database.

Under **Products,** choose **ZFP** and choose **Rest of Today.**

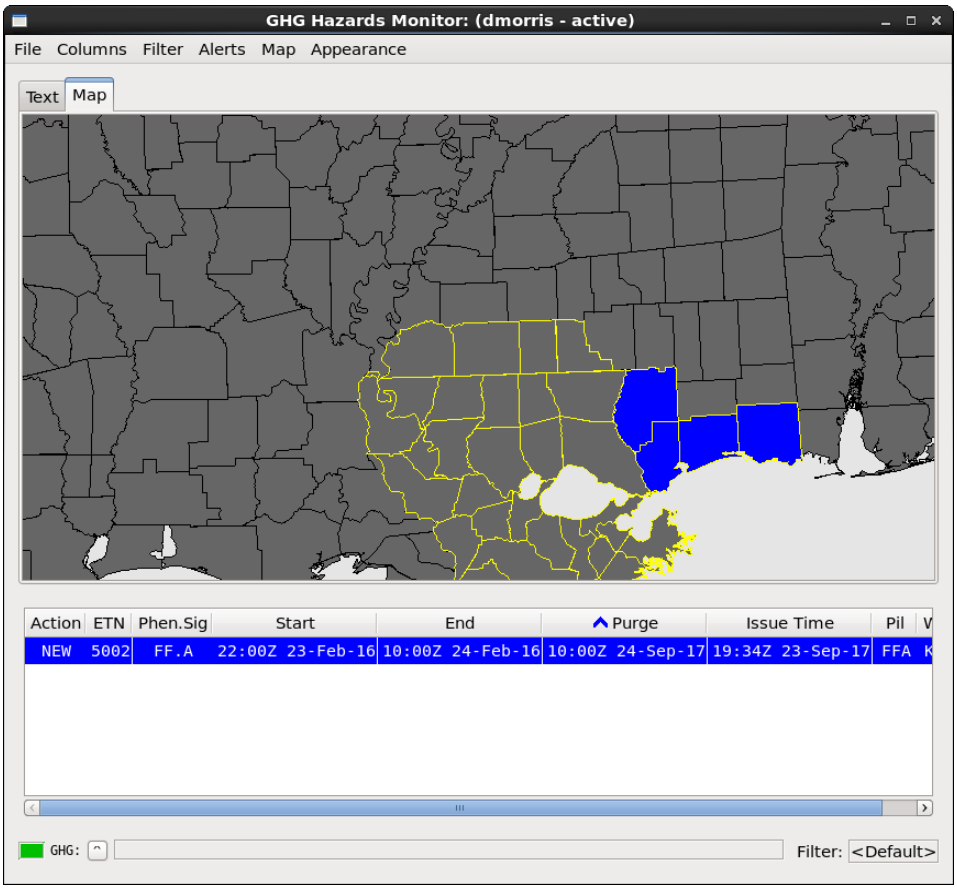
Under **Products**, choose **AFM (Area Fire Weather Matrix)** and choose **Afternoon**.

For all of these, edit the products as desired and click the red **Transmit** button.

Successively hit the Transmit button for all four of these products (the FFA, NPW, ZFP, and AFM). Each of these will have several Transmit dialogs and accompanying Transmit buttons to make sure you

really want to transmit the product.

To see the Flash Flood Watch in the GHG monitor, choose **CAVE ►New ► GHG Monitor.**

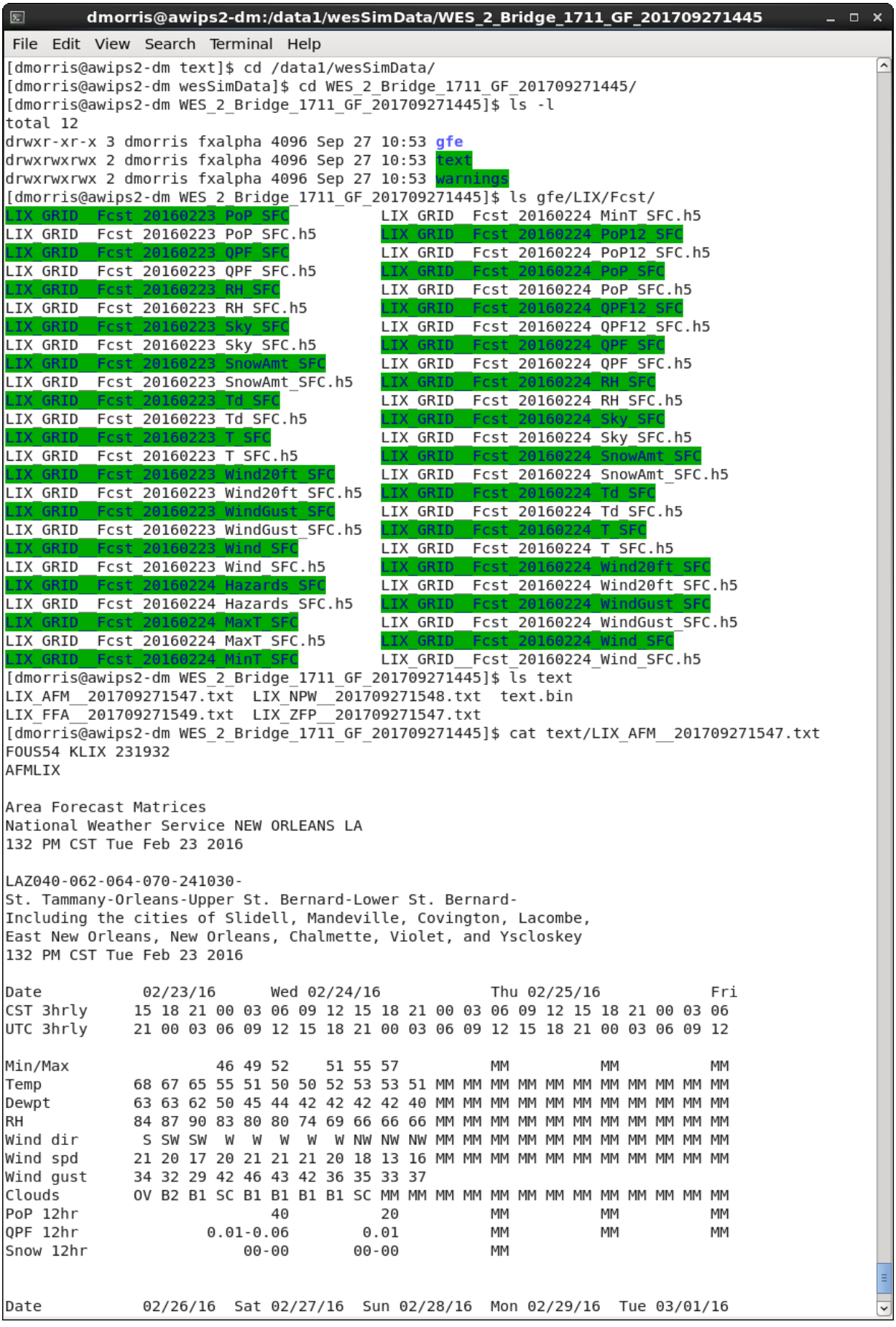


13. Stop the simulation. Close GHG. Close out of the GFE Perspective and exit CAVE.

14. WES-2 Bridge will copy the Fcst Database, and the text and warning products into the **/data1/wesSimData** output directory for later viewing. It is possible to choose a different output directory when the simulation is first launched..

To see the products issued, open a terminal window and type **cd /data1/wesSimData.** Then go into the directory for the particular simulation. In this example, the simulation directory is **WES_2_Bridge_1711_GF_201709271445**

Look at the various directories as shown in the figure below. The **gfe** directory contains the **Fcst** database (and **Official** if it was saved). The **text** directory contains the text products and the **warnings** directory contains warnings (including the polygons for severe convective warnings).


dmorris@awips2-dm:/data1/wesSimData/WES_2_Bridge_1711_GF_201709271445
File Edit View Search Terminal Help
[dmorris@awips2-dm text]$ cd /data1/wesSimData/
[dmorris@awips2-dm wesSimData]$ cd WES_2_Bridge_1711_GF_201709271445/
[dmorris@awips2-dm WES_2_Bridge_1711_GF_201709271445]$ ls -l
total 12
drwxr-xr-x 3 dmorris fxalpha 4096 Sep 27 10:53 gfe
drwxrwxrwx 2 dmorris fxalpha 4096 Sep 27 10:53 text
drwxrwxrwx 2 dmorris fxalpha 4096 Sep 27 10:53 warnings
[dmorris@awips2-dm WES_2_Bridge_1711_GF_201709271445]$ ls gfe/LIX/Fcst/
LIX_GRID__Fcst_20160223_PoP_SFC
LIX_GRID__Fcst_20160223_PoP_SFC.h5
LIX_GRID__Fcst_20160223_QPF_SFC
LIX_GRID__Fcst_20160223_QPF_SFC.h5
LIX_GRID__Fcst_20160223_RH_SFC
LIX_GRID__Fcst_20160223_RH_SFC.h5
LIX_GRID__Fcst_20160223_Sky_SFC
LIX_GRID__Fcst_20160223_Sky_SFC.h5
LIX_GRID__Fcst_20160223_SnowAmt_SFC
LIX_GRID__Fcst_20160223_SnowAmt_SFC.h5
LIX_GRID__Fcst_20160223_Td_SFC
LIX_GRID__Fcst_20160223_Td_SFC.h5
LIX_GRID__Fcst_20160223_T_SFC
LIX_GRID__Fcst_20160223_T_SFC.h5
LIX_GRID__Fcst_20160223_Wind20ft_SFC
LIX_GRID__Fcst_20160223_Wind20ft_SFC.h5
LIX_GRID__Fcst_20160223_WindGust_SFC
LIX_GRID__Fcst_20160223_WindGust_SFC.h5
LIX_GRID__Fcst_20160223_Wind_SFC
LIX_GRID__Fcst_20160223_Wind_SFC.h5
LIX_GRID__Fcst_20160224_Hazards_SFC
LIX_GRID__Fcst_20160224_Hazards_SFC.h5
LIX_GRID__Fcst_20160224_MaxT_SFC
LIX_GRID__Fcst_20160224_MaxT_SFC.h5
LIX_GRID__Fcst_20160224_MinT_SFC
LIX_GRID__Fcst_20160224_MinT_SFC.h5
LIX_GRID__Fcst_20160224_PoP12_SFC
LIX_GRID__Fcst_20160224_PoP12_SFC.h5
LIX_GRID__Fcst_20160224_PoP_SFC
LIX_GRID__Fcst_20160224_PoP_SFC.h5
LIX_GRID__Fcst_20160224_QPF12_SFC
LIX_GRID__Fcst_20160224_QPF12_SFC.h5
LIX_GRID__Fcst_20160224_QPF_SFC
LIX_GRID__Fcst_20160224_QPF_SFC.h5
LIX_GRID__Fcst_20160224_RH_SFC
LIX_GRID__Fcst_20160224_RH_SFC.h5
LIX_GRID__Fcst_20160224_Sky_SFC
LIX_GRID__Fcst_20160224_Sky_SFC.h5
LIX_GRID__Fcst_20160224_SnowAmt_SFC
LIX_GRID__Fcst_20160224_SnowAmt_SFC.h5
LIX_GRID__Fcst_20160224_Td_SFC
LIX_GRID__Fcst_20160224_Td_SFC.h5
LIX_GRID__Fcst_20160224_T_SFC
LIX_GRID__Fcst_20160224_T_SFC.h5
LIX_GRID__Fcst_20160224_Wind20ft_SFC
LIX_GRID__Fcst_20160224_Wind20ft_SFC.h5
LIX_GRID__Fcst_20160224_WindGust_SFC
LIX_GRID__Fcst_20160224_WindGust_SFC.h5
LIX_GRID__Fcst_20160224_Wind_SFC
LIX_GRID__Fcst_20160224_Wind_SFC.h5
[dmorris@awips2-dm WES_2_Bridge_1711_GF_201709271445]$ ls text
LIX_AFM__201709271547.txt LIX_NPW__201709271548.txt text.bin
LIX_FFA__201709271549.txt LIX_ZFP__201709271547.txt
[dmorris@awips2-dm WES_2_Bridge_1711_GF_201709271445]$ cat text/LIX_AFM__201709271547.txt
FOUS54 KLIX 231932
AFMLIX
Area Forecast Matrices
National Weather Service NEW ORLEANS LA
132 PM CST Tue Feb 23 2016
LAZ040-062-064-070-241030-
St. Tammany-Orleans-Upper St. Bernard-Lower St. Bernard-
Including the cities of Slidell, Mandeville, Covington, Lacombe,
East New Orleans, New Orleans, Chalmette, Violet, and Yscloskey
132 PM CST Tue Feb 23 2016
Date 02/23/16 Wed 02/24/16 Thu 02/25/16 Fri
CST 3hrly 15 18 21 00 03 06 09 12 15 18 21 00 03 06 09 12 15 18 21 00 03 06
UTC 3hrly 21 00 03 06 09 12 15 18 21 00 03 06 09 12 15 18 21 00 03 06 09 12
Min/Max 46 49 52 51 55 57 MM MM MM
Temp 68 67 65 55 51 50 50 52 53 53 51 MM MM MM MM MM MM MM MM MM MM
Dewpt 63 63 62 50 45 44 42 42 42 42 40 MM MM MM MM MM MM MM MM MM MM
RH 84 87 90 83 80 80 74 69 66 66 66 MM MM MM MM MM MM MM MM MM MM
Wind dir S SW SW W W W W W NW NW NW MM MM MM MM MM MM MM MM MM MM
Wind spd 21 20 17 20 21 21 21 20 18 13 16 MM MM MM MM MM MM MM MM MM MM
Wind gust 34 32 29 42 46 43 42 36 35 33 37
Clouds OV B2 B1 SC B1 B1 B1 B1 SC MM MM MM MM MM MM MM MM MM MM MM MM
PoP 12hr 40 20 MM MM MM
QPF 12hr 0.01-0.06 0.01 MM MM MM
Snow 12hr 00-00 00-00 MM
Date 02/26/16 Sat 02/27/16 Sun 02/28/16 Mon 02/29/16 Tue 03/01/16

The following steps describe how to load a Fcst database that resulted from a previous simulation. There are at least two reasons to do this:

- Use the Fcst database as a starting point for a simulation (as in real-life where one forecast shift always begins with the forecast produced by the previous shift).

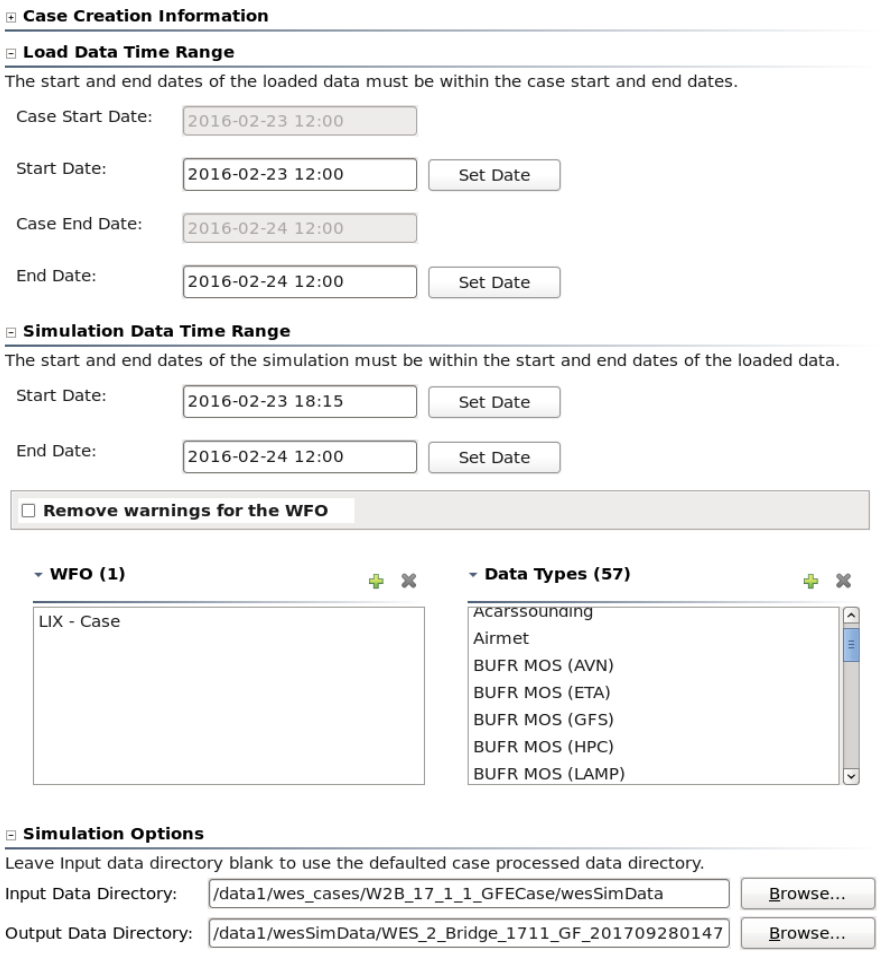
- Review the work produced during a previous simulation for evaluation.

In this example, the results of the previous simulation are stored in a directory packaged with the GFE case. By default, output directories from previous simulations are stored in /data1/wesSimData, but they can be specified to be anywhere on the system, on a simulation by simulation basis.

15. Start the GFE case simulation by selecting **WES-2 Bridge 17.1.1 GFE Test Case (LIX 2016-02-23)** in the Available Cases tab. Then **right-click** and select **Simulation**.

16. Set the **Start Date** for the Simulation Data Time Range to **2016-02-23 18:15.**

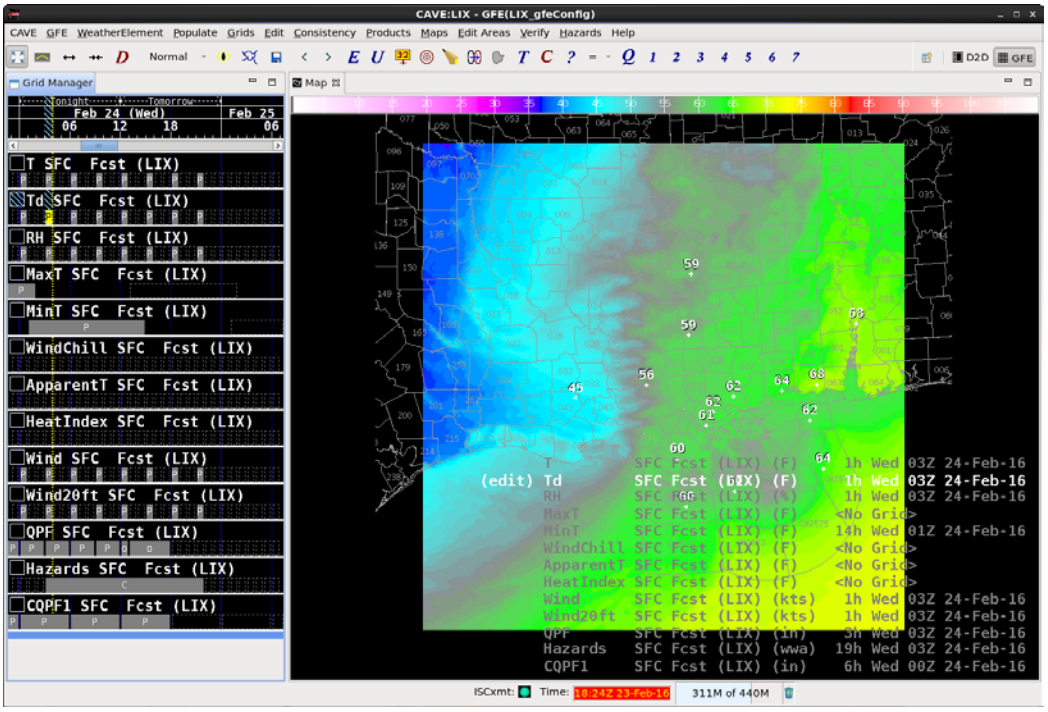
17. Near the bottom of the Simulation settings window, set the **Input Data Directory** to **/data1/wes_cases/W2B_17_1_1_GFECase/wesSimData**.

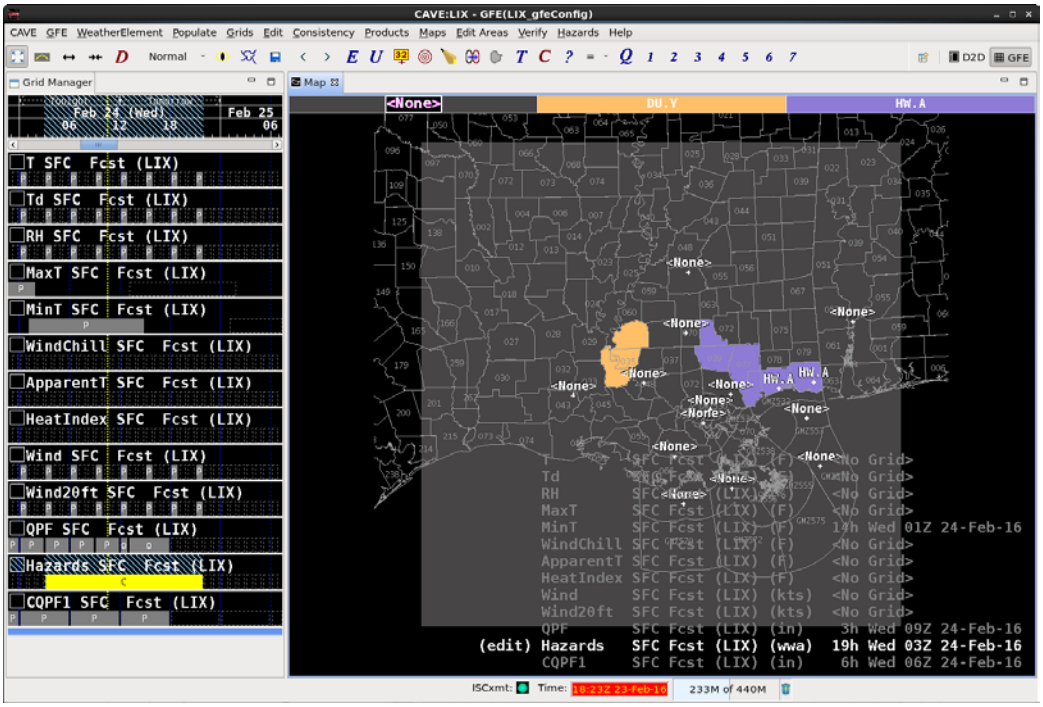


After verifying the settings are correct, click the **Simulate** button.

The simulation will start up in a manner similar to that above as represented by steps 4 through 7.

18. When CAVE launches, start the GFE perspective. You should see the Fcst database pre-populated with some grids, including the Hazards grid which contains a Blowing Dust Advisory and a High Wind Watch.





19. The simulation that created the data stored in wesSimData just simply populated grids from the HIRESWarw model database, created the hazard grid, and then stopped. Thus, the grids would be ready for potential further editing plus text product creation using the formatters, if so desired.

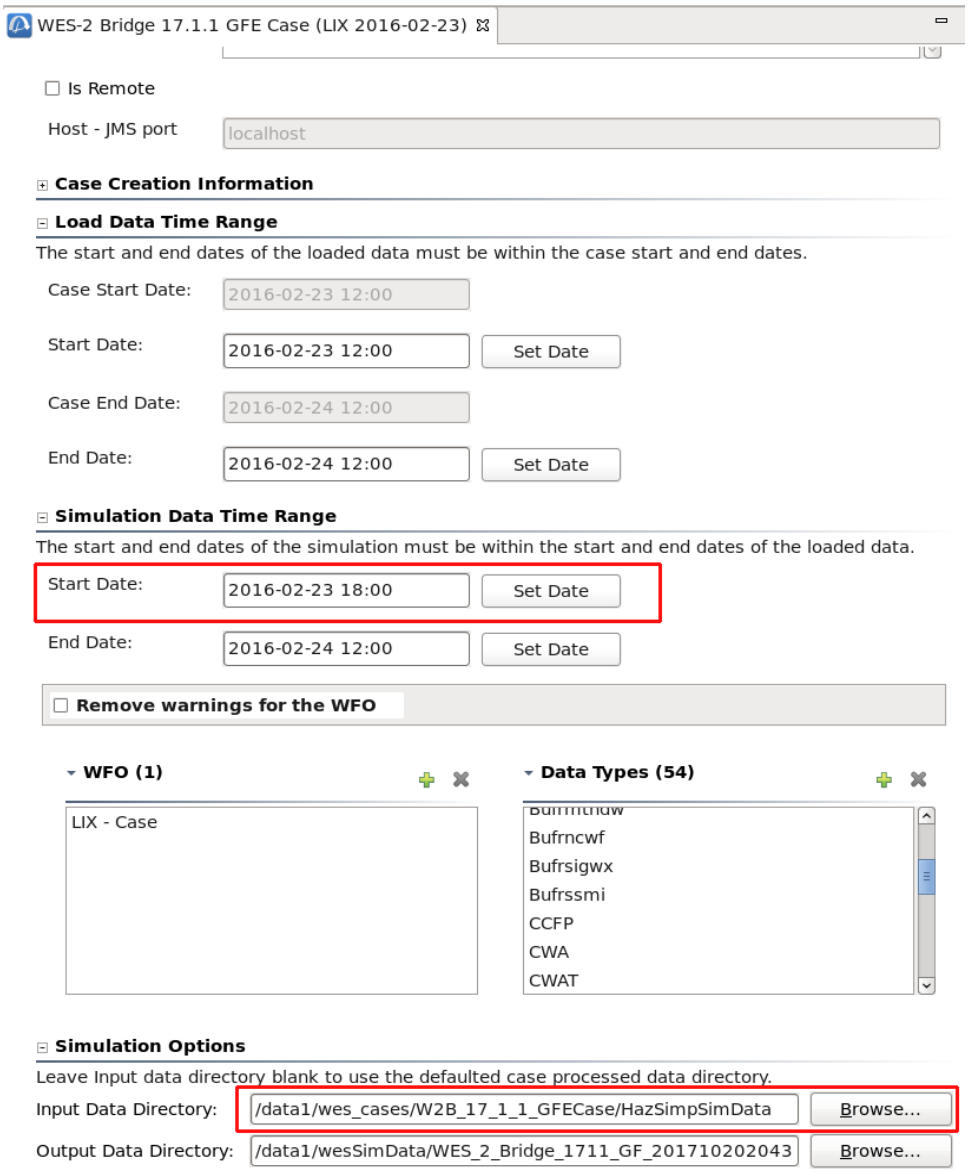
20. Stop the simulation. Close GHG. Close out of the GFE Perspective.

21. Start a third simulation to demonstrate using the HazSimp winter storm watch formatter. This simulation starts with a pre-created Fcst database (although this particular database is not necessarily a realistic weather scenario). The Fcst database contains a Wx grid along with IceAccum and SnowAmt grids so that the template has information to populate the watch text.

Start the GFE case simulation by selecting **WES-2 Bridge 17.1.1 GFE Test Case (LIX 2016-02-23)** in the Available Cases tab. Then **right-click** and select **Simulation**.

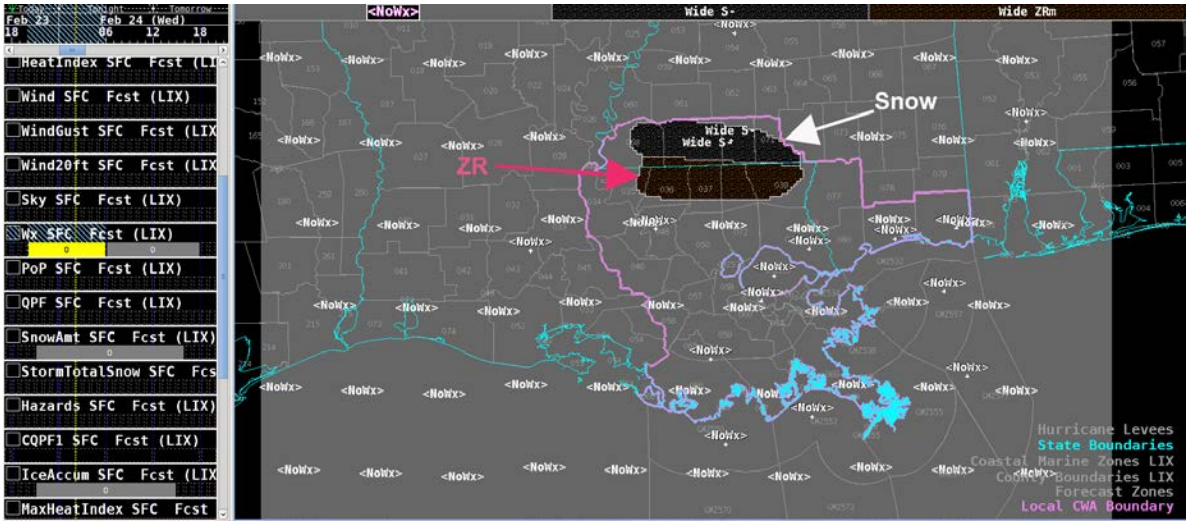
22. Set the **Start Date** for the Simulation Data Time Range to **2016-02-23 18:00.**

23. Near the bottom of the Simulation settings window, set the **Input Data Directory** to **/data1/wes_cases/W2B_17_1_1_GFECase/HazSimpSimData**.



After verifying the settings are correct, click the **Simulate** button.

24. When CAVE launches, press the **PLAY** button and then start the GFE perspective. You should see the Fcst database pre-populated with a Wx grid, and Snow and Ice Accumulation grids.



We are going to issue a winter storm watch with "blizzard conditions possible" for a set of counties and use the default settings of the formatter for another set of counties, based on Wx type set in the grid.

25. Choose **Hazards** > **Make Hazard**. Use these parameters to generate the hazard:

Hazard Type	Winter Weather
Hazard	WS.A – Winter Storm Watch
Begin Date/Time	20Z Tuesday 23 Feb 2016
End Date/Time	18Z Wednesday 24 Feb 2016

Note: This is for demonstration purposes. The correct policy for this situation/forecast period would be a warning rather than a watch.

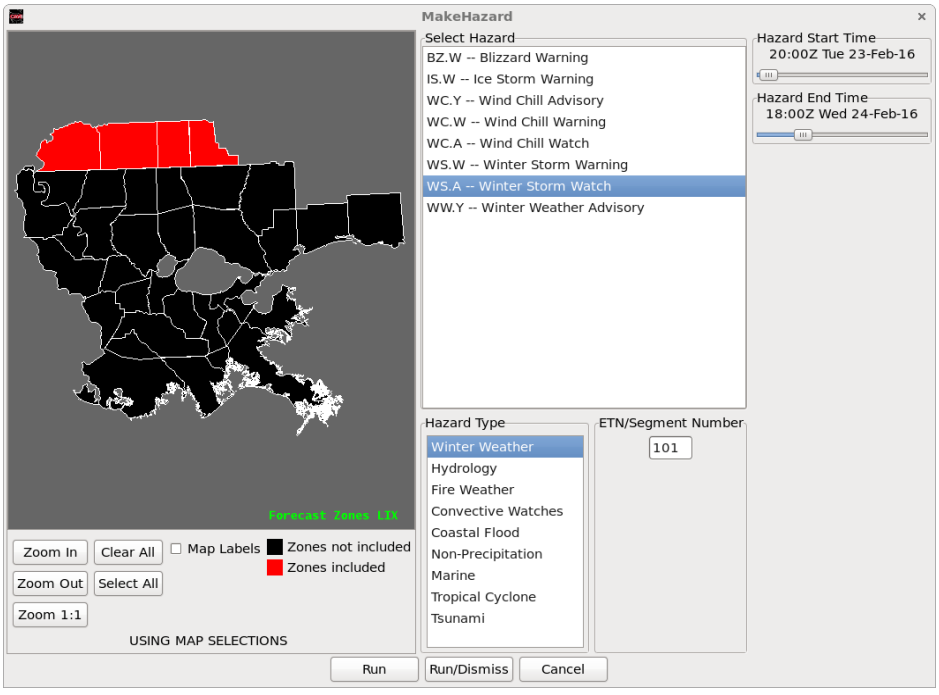
Based on the guidance below (courtesy of a HazSimp briefing via Andy Just), different ETN/Segment numbers trigger different language to appear in the text.

What This Means For WFO Forecasters
GHG Template Features and Protocols

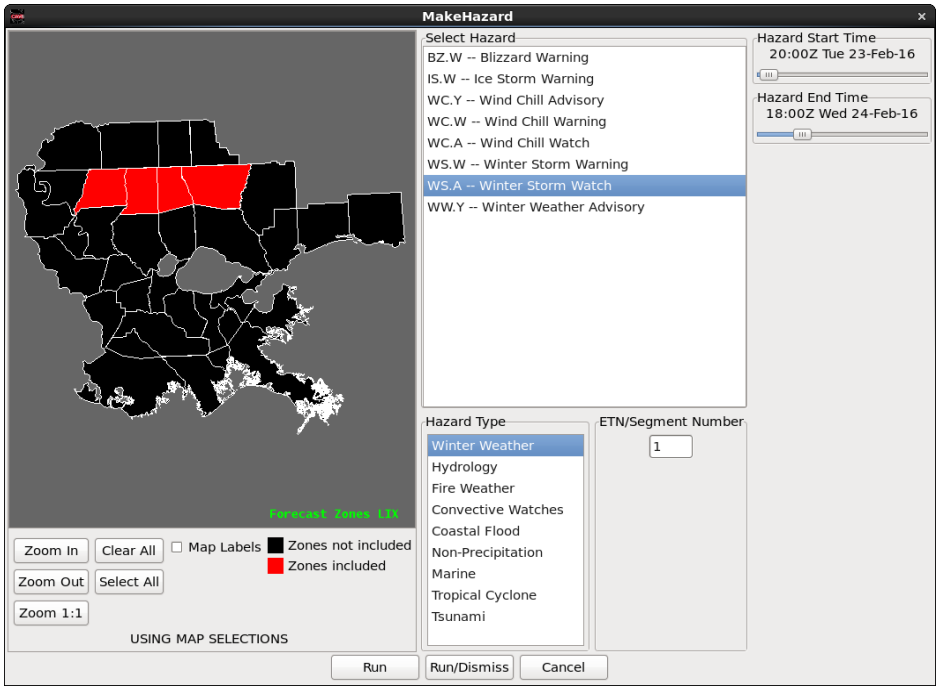
- Consolidated products no longer appear in hazard selector within "Make Hazard"
- New use for segment number input box to generate the first phrase in the "What" section for Winter Storm Watches where messaging for Lake Effect and Blizzard impacts are desired:
  - Segment numbers of 100-199 will generate "Blizzard conditions possible" in the "What" section of the Winter Storm Watch
  - Segment numbers of 200-299 will generate:
    a) "Lake effect snow possible." in Winter Storm Watches
    b) "Lake effect snow expected." in Winter Weather Advisories
    c) "Heavy lake effect snow expected." in Winter Storm Warnings (CR only)

15

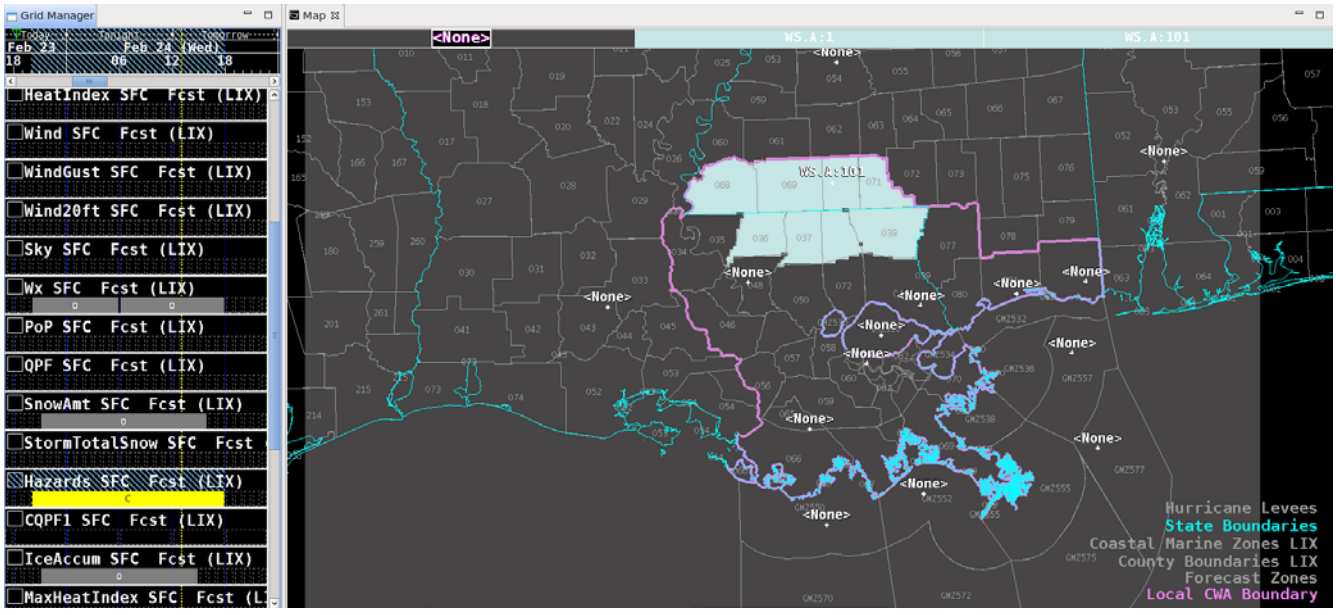
For the snow area, we'll use a segment number of **101** and for the ice area we'll use a segment number of 1. Click the counties indicated and then the **Run** button.



Deselect the previously selected counties and choose a new set of counties as indicated for segment number **1**. Then click the **Run/Dismiss** button.

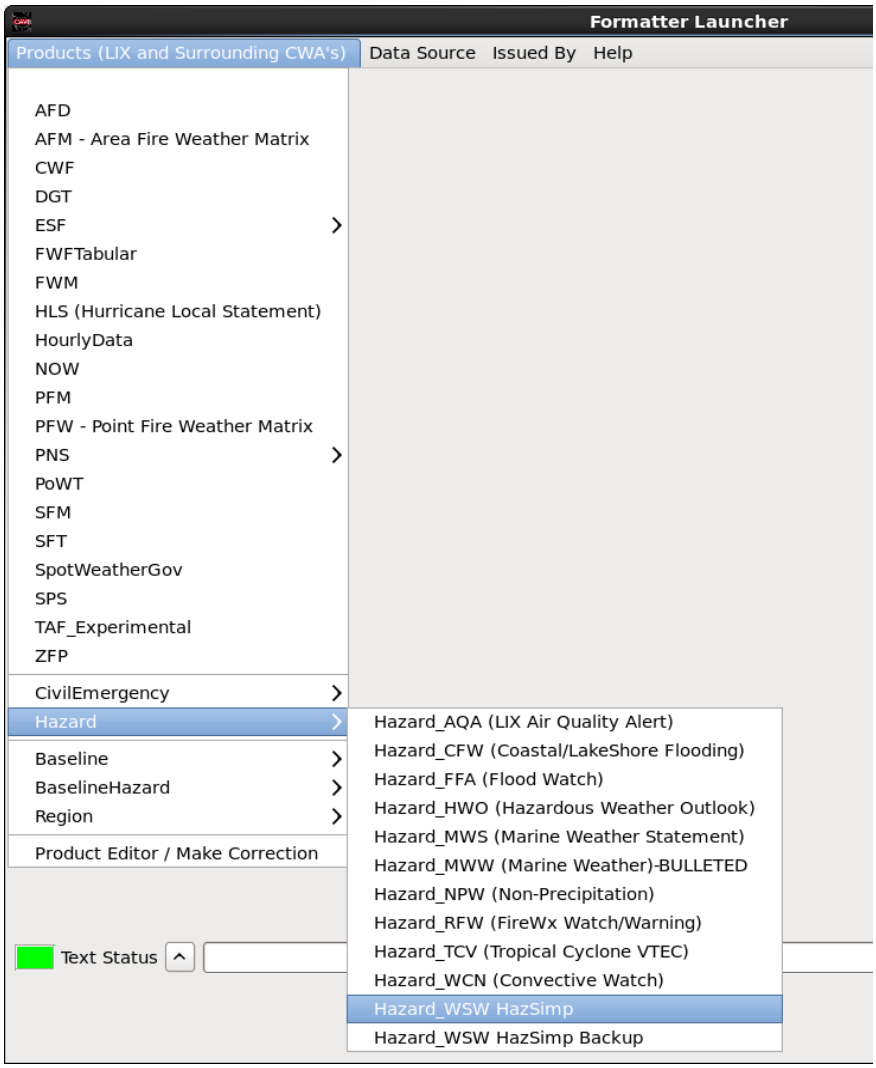


26. Click **Hazards ► Merge Hazards**, and then save the grids by clicking the **Diskette** icon. In the Grid Manager select the Hazard grid to verify the counties that were previously selected.



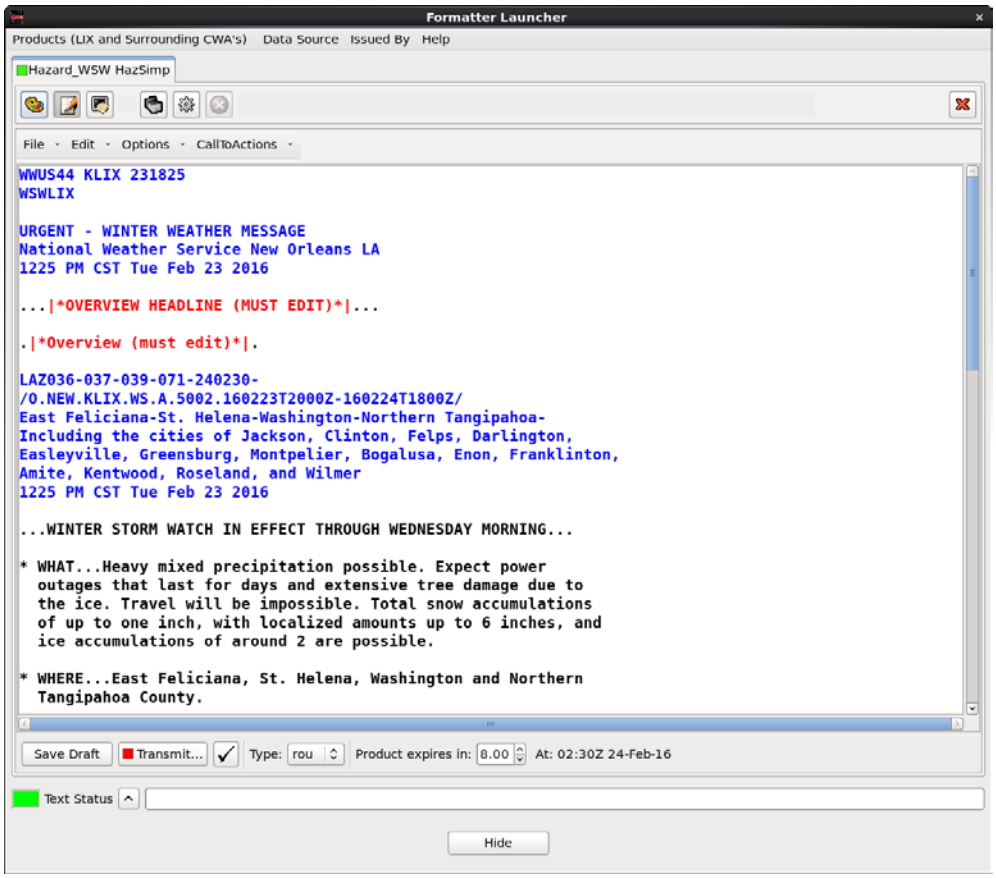
27. To create and edit the watch text products, under the **Products** menu, choose **Formatter Launcher.** Under **DataSource** choose **Fcst**.

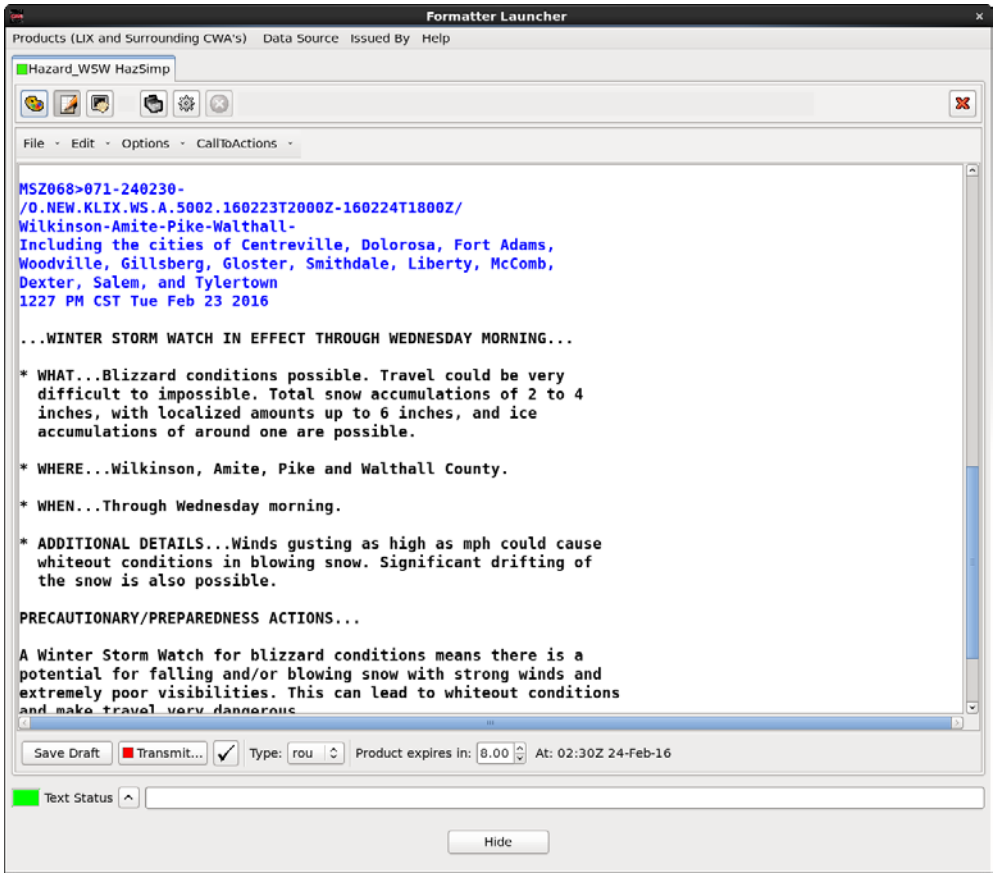
28. In the **Formatter Launcher**, Under **Products**, choose **Hazards ► Hazard_WSW (HazSimp**).



Click the **Gear** button to run the formatter. You will get a warning message about using the Fcst database rather than the Official database; you can acknowledge this warning.

29. Check the text to verify one segment is for heavy mixed precipitation and the other segment is for possible blizzard conditions. Edit the text to your satisfaction and then transmit the product.





30. Stop the simulation. Close out of the GFE Perspective and exit CAVE.

<u>Task 4</u>: Build a short WESSL Script and Play it in a Simulation

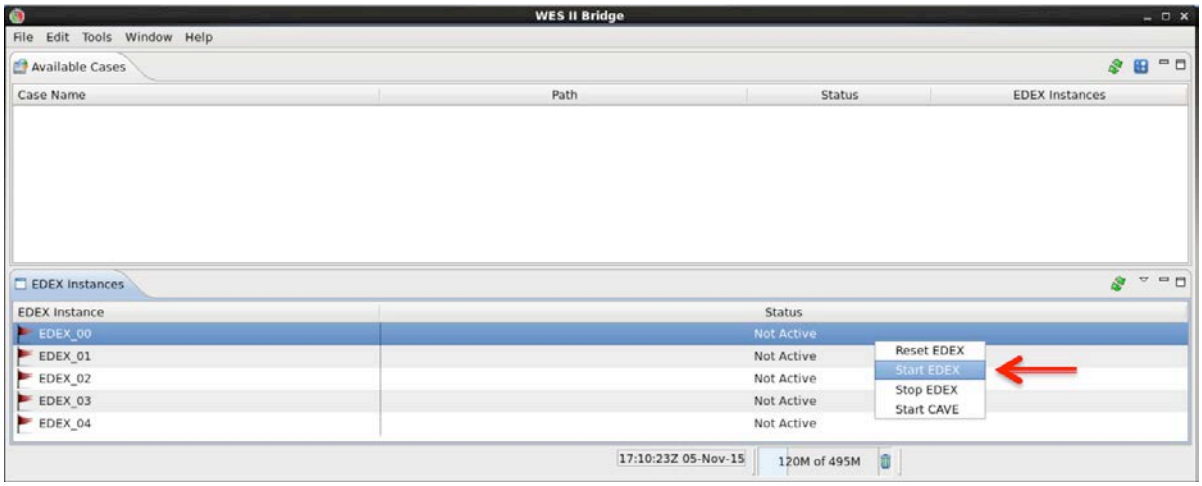
Introduction. A case can contain more than one WESSL-2 script. We will add a new script to the WES-2 Bridge 17.1.1 Test Case (LIX 2016-02-23) case. This script will contain some of the same content as the previous script plus some additional media to demonstrate how to use the Script Builder to add various commands.

Concepts:

- Create a new script
- Add a pre-brief web page (SPC Day 1 Convective Outlook) and image (tornado watch county graphic)
- Give students a period to do environmental assessment by pausing the simulation
- Add text to instruct the students to skip forward in the simulation
- Add a few reports using the Script Builder Local Storm Report Importer. WESSL-2 has the ability to import .CSV files containing SPC storm reports to save you from having to enter reports one-by-one. At a WFO, because WES-2 Bridge machines do not have Internet access, you will have to obtain the .CSV files on a PC that does have Internet access, then subsequently scp the files to the wes2 workstation (e.g., `scp file.csv user@wes2:`)
- Add a video
- Add a recap animated gif using a Linux command to display in a Firefox window. (WESSL-2 does not natively display animated gif files)
- Stop the simulation

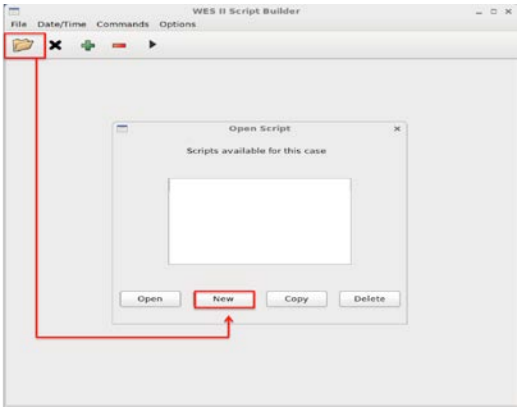
Step-by-Step Instructions:

1. **Check to see if EDEX_00 is Active** under the **"EDEX Instances"** tab**.** If it is listed as **Not Active,** right-click and **select Start EDEX.** EDEX_00 **MUST** be active for Script Builder to run.



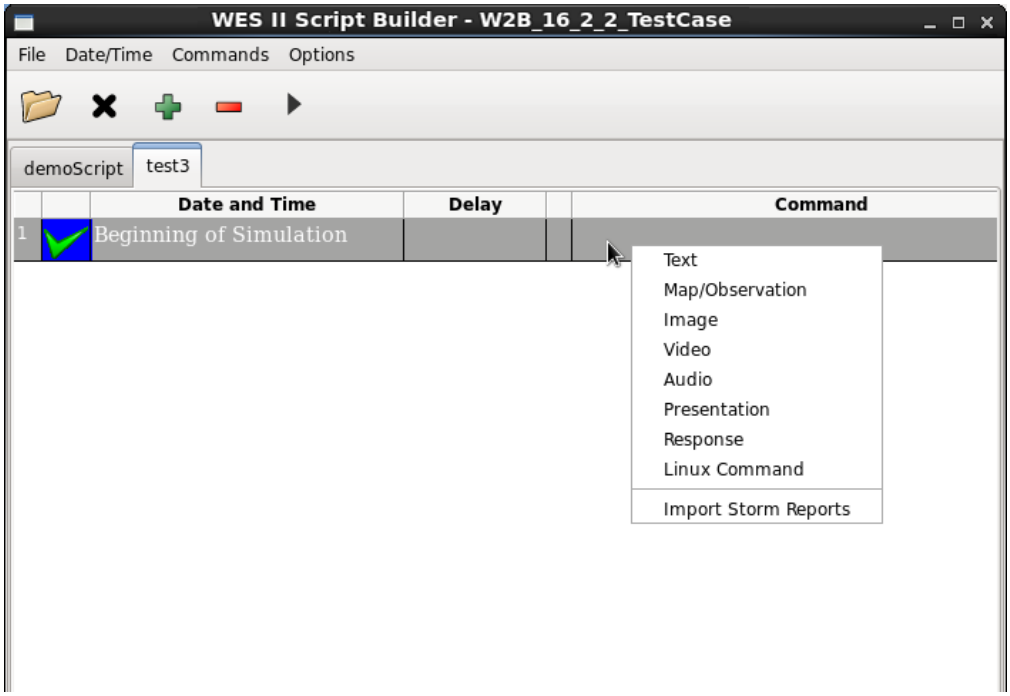
2. In the Case Manager**, Right-click** on **WES-2 Bridge 17.1.1 Test Case (LIX 2016-02-23)** and select **Launch Script Builder.**

3. **Click on the folder icon**, click the **New** button, and **enter a name for your script.**

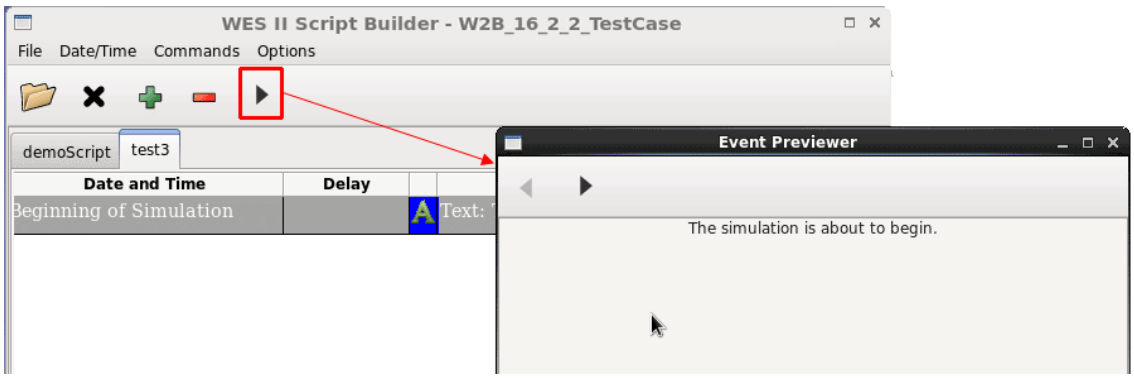


4. **Right-click** on the empty **Date and Time** cell and select "Beginning of Simulation".

5. **Right-click** on the empty Command cell and select Text. In the **Text Event** box, type "**`The simulation is about to begin.`**" Click **OK**.

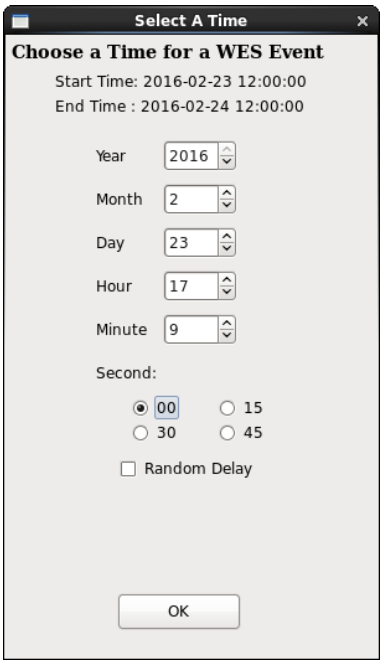


6. **Click the right arrow** in the tool bar to preview the command.



7. **Click the green + sign** in the tool bar to create a new row for a new event.

8. **Double click** on the **Date and Time empty cell** where you will enter **`2016 02 23  17 09`** and click **OK**.

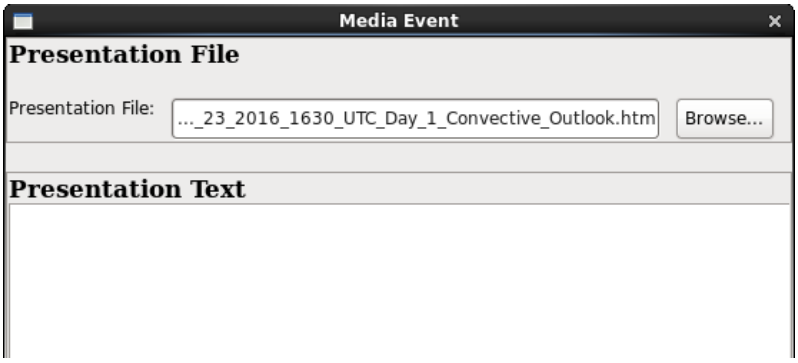


- **Right-click** in the **Command** box, and **select Presentation**.

- **Browse through the filesystem to find this HTML page (**for the SPC Day 1 Convective Outlook)**:**

  `/data1/wes_cases/W2B_17_1_1_TestCase/wessl2/Resources/`
  `Storm Prediction Center Feb 23, 2016 1630 UTC Day 1 Convective Outlook.html`

  After **Opening the file**, Click **OK**.

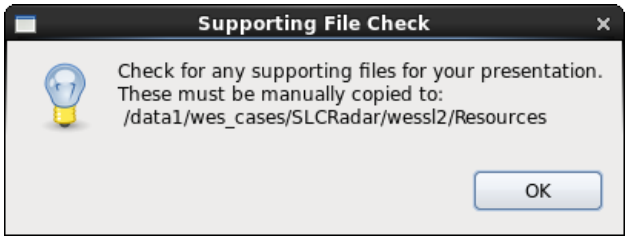


- Click on the **Play** button to preview the convective outlook web page in the Firefox browser.

Note: It is a best practice to collect external media (web pages, audio/video/image files) in a common directory inside the wessl2 directory. Here we created a Resources folder inside the wessl2 directory to contain this content. This makes the wessl2 script much easier to share with others.

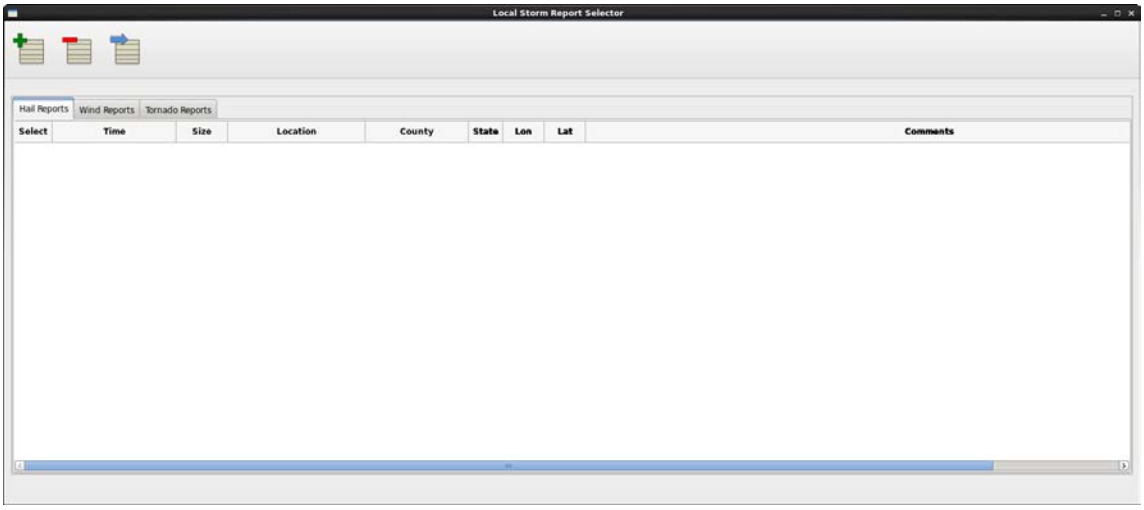
Note: The 16.2.2 version of WESSL-2 was the first to handle relative pathnames (i.e., using media files that are located in the wessl2/Resources folder that is relative to the case directory, rather than absolute paths like /data1/wes_cases….). This change was made to make sharing scripts among machines much easier. Consequently, incompatibilities likely exist with scripts created with the earlier versions of WESSL-2 that utilized absolute paths and the referenced media files could be located at any location on the machine. The media files (audio, video, images, notification sounds, and presentations/web pages) must be in the Resources folder, and the path names in older scripts may need to be adjusted in Script Builder.

Note: "Presentations" in WESSL-2 normally consist of some type of web-based content, like a web page or more interactive content, like Articulate or Camtasia presentations. All of these require multiple (supporting) files in addition to the main .html file that launches the presentation. WESSL-2 now automatically copies the main .html file into the Resources folder but doesn't support automatically grabbing the supporting content. Therefore, when using a Presentation, the Script Builder displays a reminder message:



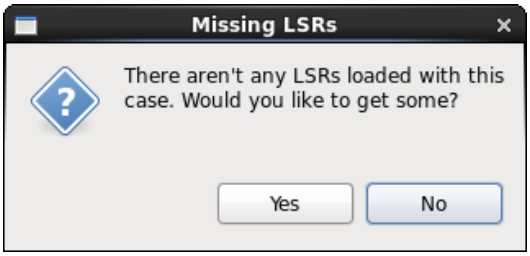
For the purposes of this job sheet, we have already packaged the supporting content in the Resources folder for you, so you can ignore this message. But this is an issue for when you make your own scripts using your own content.

9. **Open** the drop-down **Commands** menu at the top of the script builder window and **click Storm Reports**. This will pull up the **Local Storm Report Selector** window, where storm reports can be imported from .CSV files containing SPC storm reports to save you from having to enter reports one-by-one.

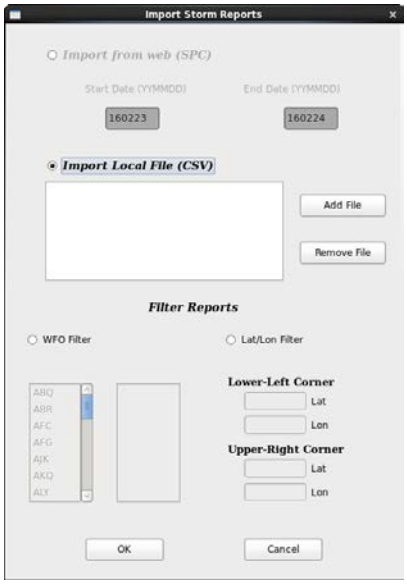


Note: At a WFO, because WES-2 Bridge machines do not have Internet access, you will have to obtain the .CSV files on a PC that does have Internet access, then subsequently scp the files to the wes2 workstation (e.g., **`scp file.csv user@wes2:`**). For ease we have included the reports file with this case.

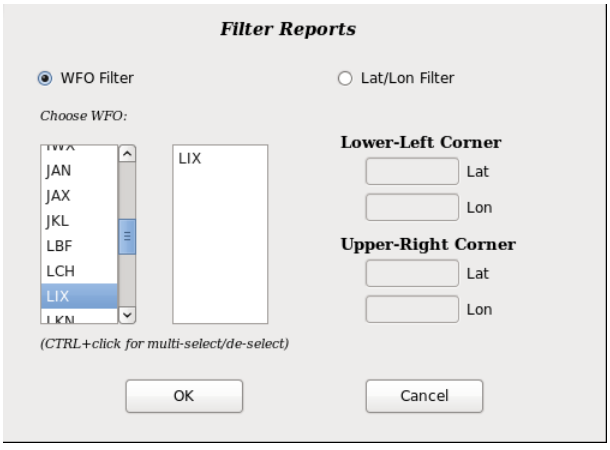
- When no reports have previously been imported a pop-up message appears asking if you would like to get some. You can also import reports by **clicking** the **"Get New Reports" button** (green plus sign) at the top of the window. **Click "Yes"** on the pop-up that appears.



- The **Import Storm Reports** window will appear. Click **"Add File"** and navigate to .CSV file at: **`/data1/wes_cases/W2B_17_1_1_TestCase/wessl2/Resources/160223_rpts.csv`**

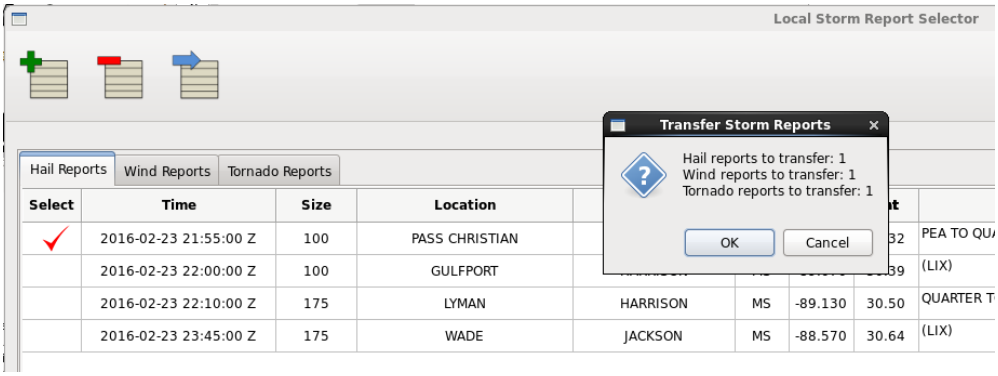


- After selecting the 160223_rpts.csv file, it should appear in the list. To only import the reports for the LIX CWA, **select** the **"WFO Filter" radio button**, then **scroll through the list** and **select LIX**. Reports can also be filtered by Lat/Lon by selecting the "Lat/Lon Filter" radio button and entering coordinates for two corners of a filtering bounding-box.

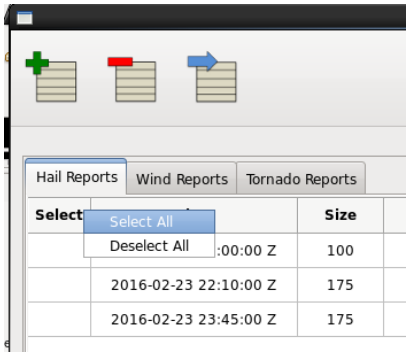


- **Click "OK"** to import the storm reports. It may take a few moments but once complete the reports will appear in the LSR Selector window. You can then **close the Import Storm Reports** window.

- **Select** a couple of the hail, wind, and tornado reports. To add them as events in your script, **click** the **"Transfer to Script"** button (blue arrow) at the top of the window. A summary will pop-up of the reports to transfer. **Click "OK"**. The reports will now appear in your Script Builder window.



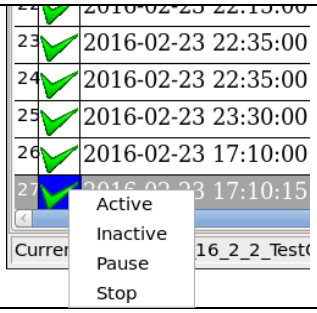
- To reset the window for future users, **click "Select"** in the top-left corner of the table**, then "Select All"** to select all the reports. Then **click** the **"Delete Reports" button** (red minus sign) at the top of the window. Repeat this step for all reports tabs (Hail, Wind, Tornado) to fully clear the database of reports.



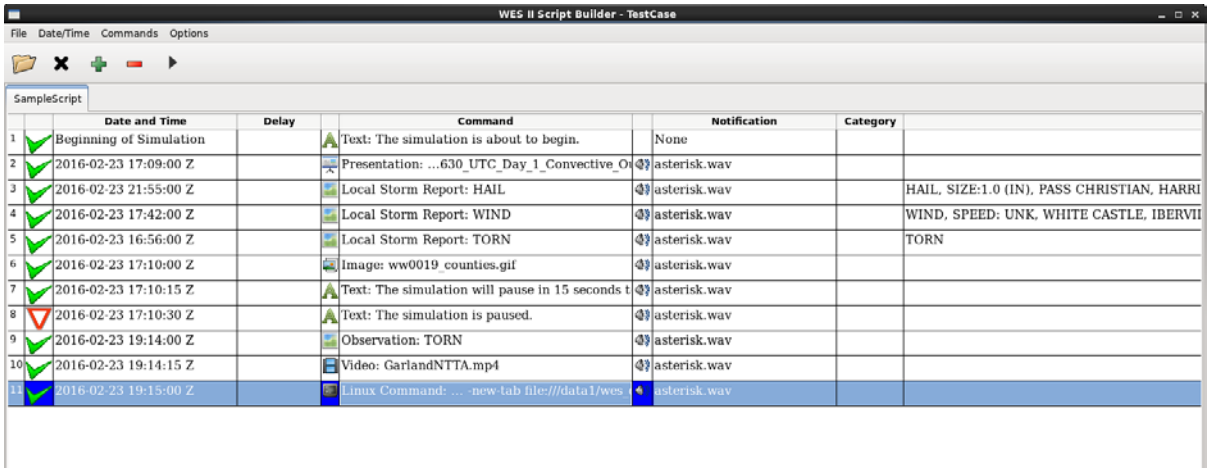
10. Use this table to fill out the remaining events in this script. You have already entered then the first event (at 02/23/2016 17:09:00). To generate each new event, click the green + sign in the toolbar.

Note: The media files in this exercise are for instructional purposes. Some of the files do not correspond to the weather event featured in this specific case.

Time	Command	Details
02/23/2016 17:09:00	Presentation	Add a web page for the SPC Day 1 Convective outlook. Browse in the filesystem to **`/data1/wes_cases/W2B_17_1_1_TestCase/wessl2/Resources/Storm Prediction Center Feb 23, 2016 1630 UTC Day 1 Convective Outlook.html`**
02/23/2016 17:10:00	Image	Add an image of the counties included in Tornado Watch #0019. Browse to **`/data1/wes_cases/W2B_17_1_1_TestCase/wessl2/Resources/ww0019_counties.gif`**

		For the optional text caption, enter this text: **`Tornado Watch #0019 Issued at 1110 AM CST`**
02/23/2016 17:10:15	Text	Enter this text: **`The simulation will pause in 15 seconds to allow you to analyze the environment. When you are finished, use the simulation controls to SKIP forward to 02/23/2016 19:14:00.`**
02/23/2016 17:10:30	Text	Enter this text: **`The simulation is paused.`** To enter a Pause in the script, right click on the green checkmark in the first column of the row, and select Pause. 
02/23/2016 19:14:00	Observation	Type: **`Tornado`** Latitude: **`30.68`** Longitude: **`-90.60`** Text: **`Reports of moderate damage to a trailer, 3 miles east of Montpelier`** **Note:** This is how reports can be added to a script manually, without using the Storm Report Importer used previously. 
02/23/2016 19:14:15	Video	Browse in the filesystem to: **`/data1/wes_cases/W2B_17_1_1_TestCase/wessl2/Resources/GarlandNTTA.mp4`** For the optional text caption, enter this text: **`Video from North Texas Tollway Authority traffic cameras.`**
02/23/2016 19:15:00	Linux Command	Enter this text in the box (this command text is all one line): **`firefox -new-tab file:///data1/wes_cases/W2B_17_1_1_TestCase/wessl2/Resources/myanimation.gif`** **Note:** The WESSL-2 Event Browser cannot natively display animated GIFs, but a web browser can, so that's why this Linux command starts Firefox. Linux commands can also run shell scripts to do most any other task.

11. After completing steps 3–10, your Script Builder window should be populated with events similar to this:



12. In practice, here you would **close** the **WES II Script Builder** and **Event Previewer** windows and click **Yes**.

13. In the WES-2 Bridge Case Manager, select **WES-2 Bridge 17.1.1 Test Case (LIX 2016-02-23)** in the Case Name tab, **right click,** and select **Simulation** since the case would already be loaded through completing Task 2.

14. In the **Simulation tab Simulation Data Time Range** enter **`2016-02-23 17:09`** for the **Start Date** and **`2016-02-23 19:30`** for the **End Date**.

15. Under the **WESSL Script**, **select the script name you created in Step 3.** Click the **Simulate** button.

16. If it appears, click **OK** on the available memory popup window, and note when the WESSL2 window and Simulation Controls window pops up.

17. Click the **PLAY** button on the **Simulation Controls** window.

18. WESSL-2 will display your events as you created them.

Task 5: Examine a Hydro Case and Run a Basic Simulation with Hydro Apps Capabilities: WES-2 Bridge 17.1.1 Hydro Test Case (LIX 2016-02-23)

Introduction. Since Build 14.3.1, WES-2 Bridge has had the capability of running simulations using some of the basic Hydro Apps (in the Hydro and MPE perspective). These simulations display hydro data at the proper times; RiverPro does not yet work, so product issuance is not yet possible. Running these simulations is not difficult, but constructing hydro cases can be challenging. This task illustrates the structure of a WES-2 Bridge case with hydro capabilities and how to access these data.

Note: Case Review does not work with hydro simulations and attempts to use Case Review with hydro-enabled simulations can generate errors. This will be addressed in future WES-2 Bridge versions.

You will also use one of the two parts of WESSL-2, the WESSL-2 Event Browser, to view ancillary information included with the simulation.

Concepts:

- Examine the structure of a hydro case:
  - caseMetaData.xml
  - hydro database
  - coord_host.dat
  - XMRG files used in Hydro Perspective (gridded FFG and Best Estimate QPE)
  - XMRG files used in MPE Perspective
- Load a hydro simulation
- Start a Hydro Simulation.
- Access various hydro data
- Use the Skip function to move ahead in the simulation
- Stop the simulation

Step-by-Step Instructions:

1. In a terminal window, issue the following commands to list out the contents of the WES-2 Bridge 17.1.1 Hydro Test Case:

- `cd /data1/wes_cases/W2B_17_1_1_HydroCase`
- `more caseMetaData.xml`

  Note: notice there is a Hydro data type. This must be manually added to the caseMetaData.xml file for a case that has hydro capabilities.

- `ls hydro`
- `ls hydro/*`

There are five folders here. This entire structure has to be manually created because the AWIPS-2 archiver cannot archive hydro data, partly because the hydro data has different purging mechanisms than the rest of the AWIPS-2 datasets.

The following discussion describes the contents of these folders and where the data may be obtained. Currently these datasets must be obtained manually and some of the datasets are purged very aggressively so there is limited time to grab these perishable files.

```
[dmorris@awips2-dm W2B_16_2_2_HydroCase]$
[dmorris@awips2-dm W2B_16_2_2_HydroCase]$ ls hydro
database  geo_data  griddedffg  hpe  mpe
[dmorris@awips2-dm W2B_16_2_2_HydroCase]$ ls hydro/*
hydro/database:
hd_ob92lix

hydro/geo_data:
coord_host.dat

hydro/griddedffg:
misc

hydro/hpe:
avgrmosaic  ebmosaic  hpe_gif   hpe_netcdf  lsatpre
bdhrmosaic  ermosaic  hpe_grib  hpe_xmrg    maxrmosaic
dhrmosaic   height    hpe_jpeg  index       nowcast

hydro/mpe:
avgrdmosaic  ldmosaic   lqmosaic     mlqmosaic     rmosaic        srmosaic
bdmosaic     lmosaic    lsatpre      mmosaic       satpre         state_var
bmosaic      locbias    maxrdmosaic  q2_state_var  sat_state_var  state_var_dp
gageonly     locbiasdp  mdmosaic     qpe           sgmosaic
height       locspan    mldmosaic    qpe_grib      srdgmosaic
index        locspandp  mlmosaic     rdmosaic      srdmosaic
[dmorris@awips2-dm W2B_16_2_2_HydroCase]$
```

Directory	Description	How To Obtain
database	copy of hydro database for a given case (e.g., hd_ob92lix)	The hydro database is backed up daily in /data/fxa/DAILY_BACKUP/postgres/{day of week}/hd_ob92xxx. These files require root access. The database can also be retrieved manually by using a pg_dump command on dx1: **pg_dump –Fc –U awips –f /data/local/hd_ob92xxx hd_ob92xxx** (xxx is your WFO ID) Your hydro database contains both static and dynamic information. Among other things, static information includes data about rating curves, flood stage impacts, and stream gage locations, ownership, contact information and so on. Dynamic information is time-dependent, and the database has its own purging mechanism. This data comes mostly, but not exclusively, from SHEF format data files. If you manually dump your database, you should probably do it the day after your event. It is also possible to reprocess much of the SHEF data if the hydro database needs to be reconstructed for an event.
geo_data	Boundary coordinates of the HRAP (Hydrological Rainfall Analysis Project) grid for a WFO.	This file is different for each WFO. The gridded data files in the remaining directories are in XMRG format (a binary grid) using a subset of a national HRAP grid. Your WFO's file is located at this location on dx3 or dx4: **/awips2/edex/data/share/hydroapps/geo_data/host/ascii/coord_host.dat** This file is necessary to display the griddedffg, best estimate qpe and mpe files. It is also necessary if you wanted to reprocess XMRG-format HPE files for FFMP.

griddedffg/misc	XMRG format version of FFG for your WFO. This grid is displayable in the Hydro Perspective	These files contain gridded FFG for 1-, 3- and 6-hour periods. These files normally remain on your system for 2 days. The files are located in this directory on dx3 or dx4: **/awips2/edex/data/share/hydroapps/whfs/local/data/grid/misc/** Here are some example filenames for the LIX case: LIX201602220001.ffg LIX201602220003.ffg LIX201602220006.ffg The format is XXXYYYYMMDDHHFF.ffg, where XXX is the WFO ID, FF is the forecast period (01, 03, and 06). Thus, these particular files are for February 22, 2016 at 00 UTC.
hpe	These are XMRG format files for the High Resolution Precipitation Estimates produced at your own WFO.	The hydro simulation currently does not utilize these files, but they may be useful for reprocessing HPE for FFMP. These are the "raw" format files for HPE, Bias HPE, and HPN (HPN files are in a "nowcast" directory.). These files are found at the following directory on dx3 or dx4: **/awips2/edex/data/share/hydroapps/precip_proc/local/data/hpe/** The previous day's files up to 09Z are purged each day at 1200 UTC, so there is a three-hour daily window between 9Z and 12Z where files can be obtained for the previous day.
mpe/qpe	These are XMRG format files for the Best Estimate QPE produced at your own WFO. This gridded data is viewed in the Hydro Perspective.	These files normally remain on your system for 2 days. The files are located in this directory on dx3 or dx4: **/awips2/edex/data/share/hydroapps/precip_proc/local/data/mpe/** Here is an example file from the LIX case: xmrg0224201607z, which is for February 24, 2016 at 07 UTC. By default, the MMOSAIC (multi-sensor mosaic from MPE) is used for the Best Estimate QPE.
mpe	These are XMRG format files for various precipitation estimate mosaics produced by the MPE (Multi-sensor Precipitation Estimate) system on a local AWIPS system. These are viewable by the MPE perspective.	These files normally remain on your system for 2 days, but some files have a longer purge time. The files are located in this directory on dx3 or dx4: **/awips2/edex/data/share/hydroapps/precip_proc/local/data/mpe.** The filename is usually {PRODUCT}YYYYMMDDHHz, where PRODUCT is the name of the particular MPE mosaic (e.g. MMOSAIC, RMOSAIC, GAGEONLY, etc.) Here are a few sample filenames: gageonly/GAGEONLY2016022123z mmosaic/MMOSAIC2016022123z rmosaic/RMOSAIC2016022123z

2. In the WES-2 Bridge case manager, **right-click on the** "**WES-2 Bridge 17.1.1 Hydro Test Case (LIX 2016-02-23)"** and select **Load Case**.

   Note: Loading and running a simulation for a hydro case is the same as for any other case.

3. Start the simulation by selecting **WES-2 Bridge 17.1.1 Hydro Test Case (LIX 2016-02-23)** in the Available Cases tab. Then **right-click** and select **Simulation**.

4. Set the Start Date for the Simulation Data Time Range to **2016-02-23 16:00**

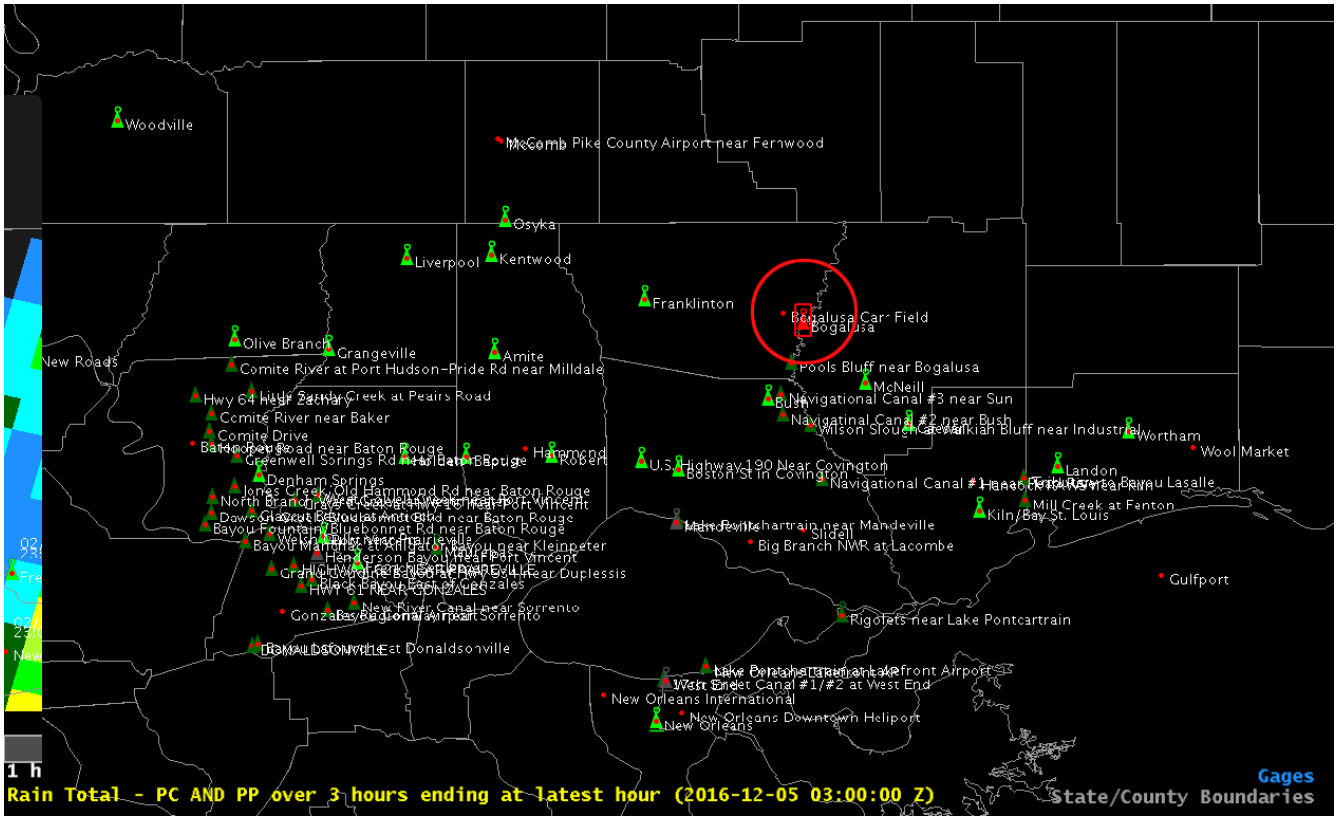
5. Click the **Simulate** button.

   Note: It may take several minutes for the simulation to initialize. When the simulation is ready to run, a CAVE window should launch and the simulation controls window should appear.

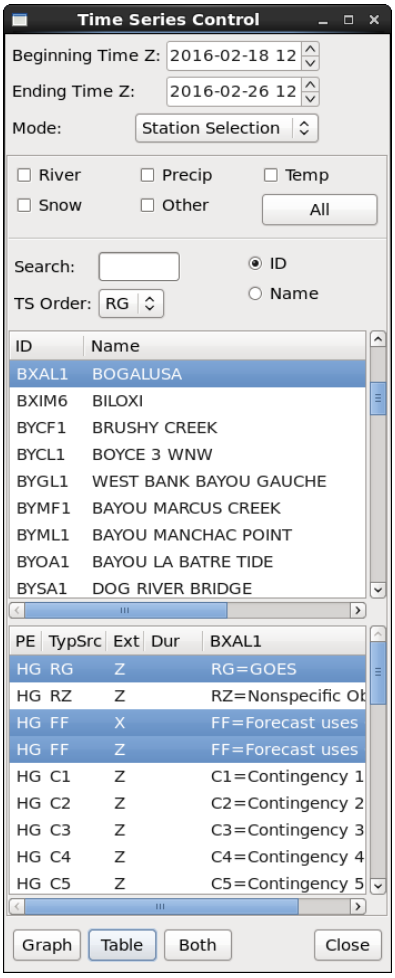
6. Press the **Play** button in the Simulation Controls.

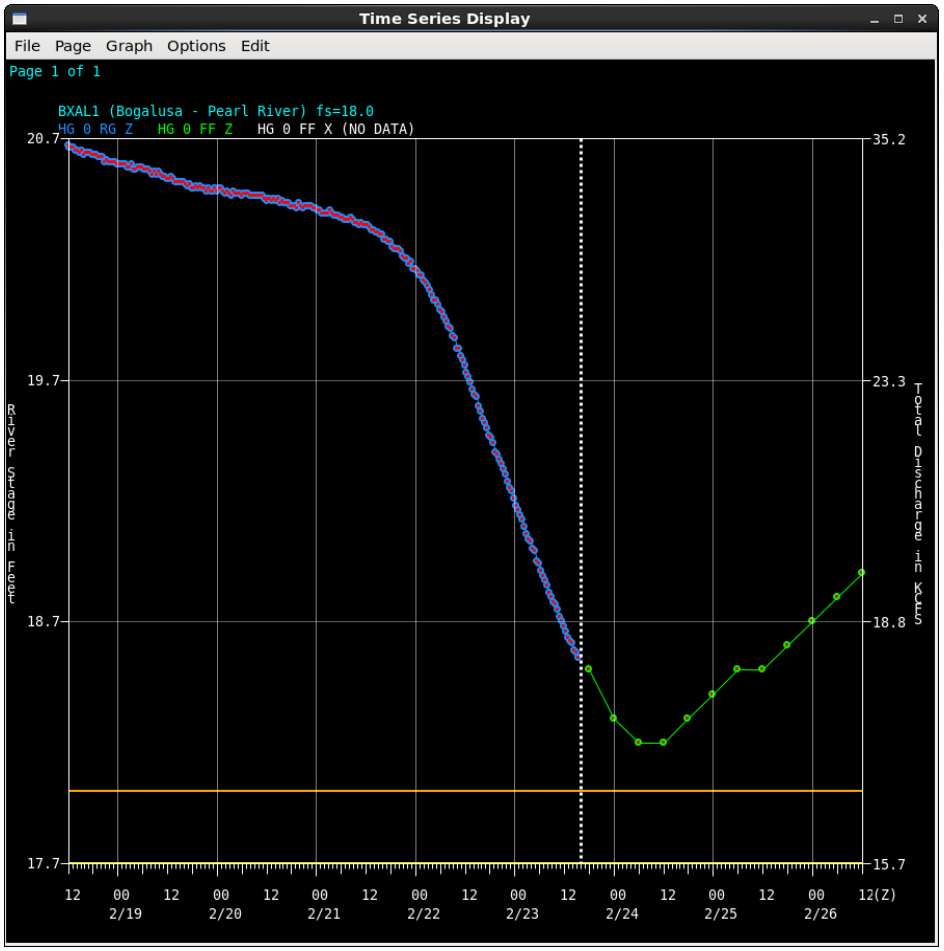
7. Use the **Open Perspective** button to change to the **Hydro Perspective** or use the CAVE menu and choose **Perspective** then **Hydro.**

8. Find the Bogalusa stream gauge station, in the northeast portion of the CWA (highlighted with a red circle in the figure below). **Double-click** the station to select it (it becomes highlighted in a red box). **Right-click** on the station, and click **Timeseries**.

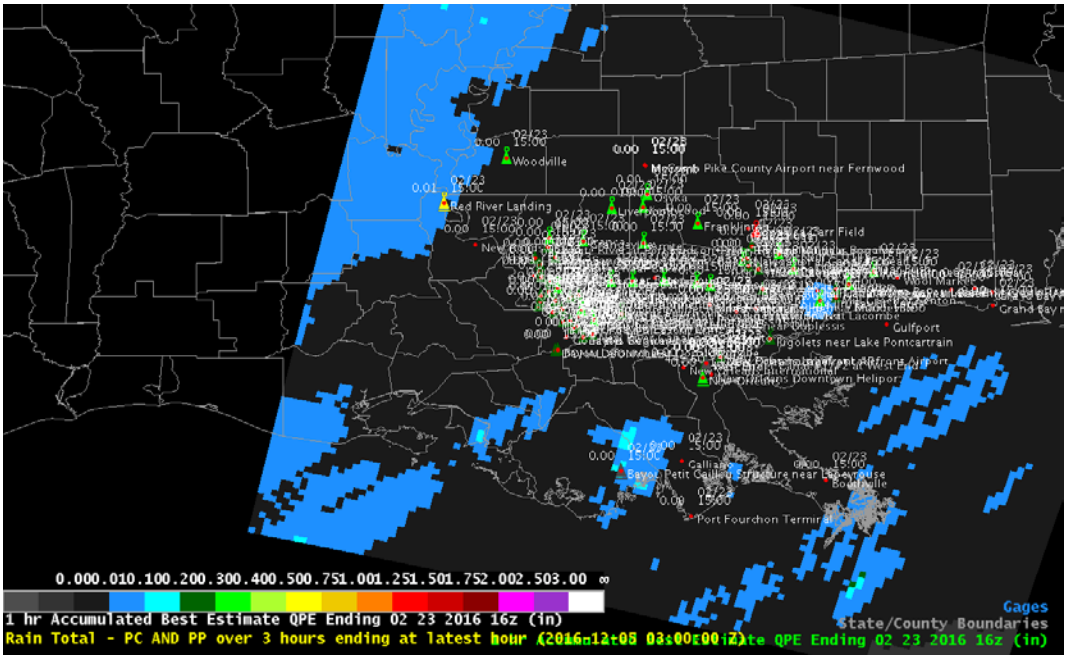


9. In the Time Series Control dialog, highlight the HG RG and HG FF lines in the lower list box and then click the **Graph** button. You should see a hydrograph similar to the one below.





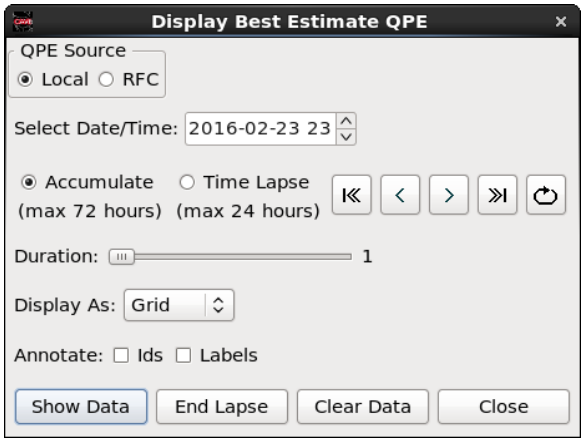
10. In the CAVE window, click Map Data then Best Estimate QPE. In the resulting Dialog Box, ensure the Date/time is **2016-02-23 16** and then click the **Show Data** button. The Hydro perspective window should look similar to the image at the right.

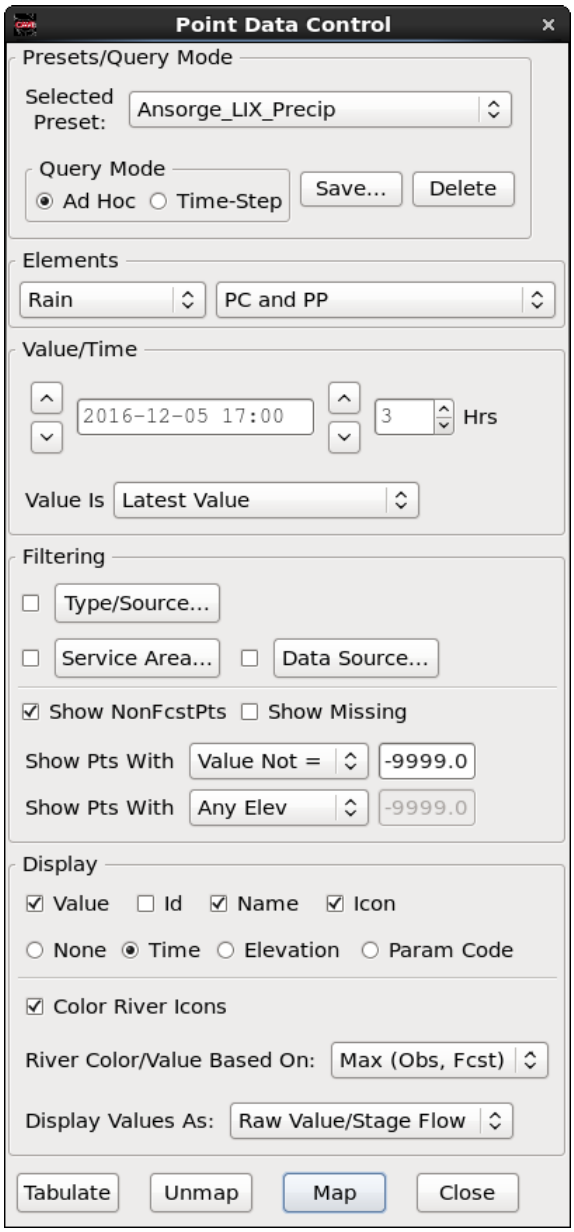


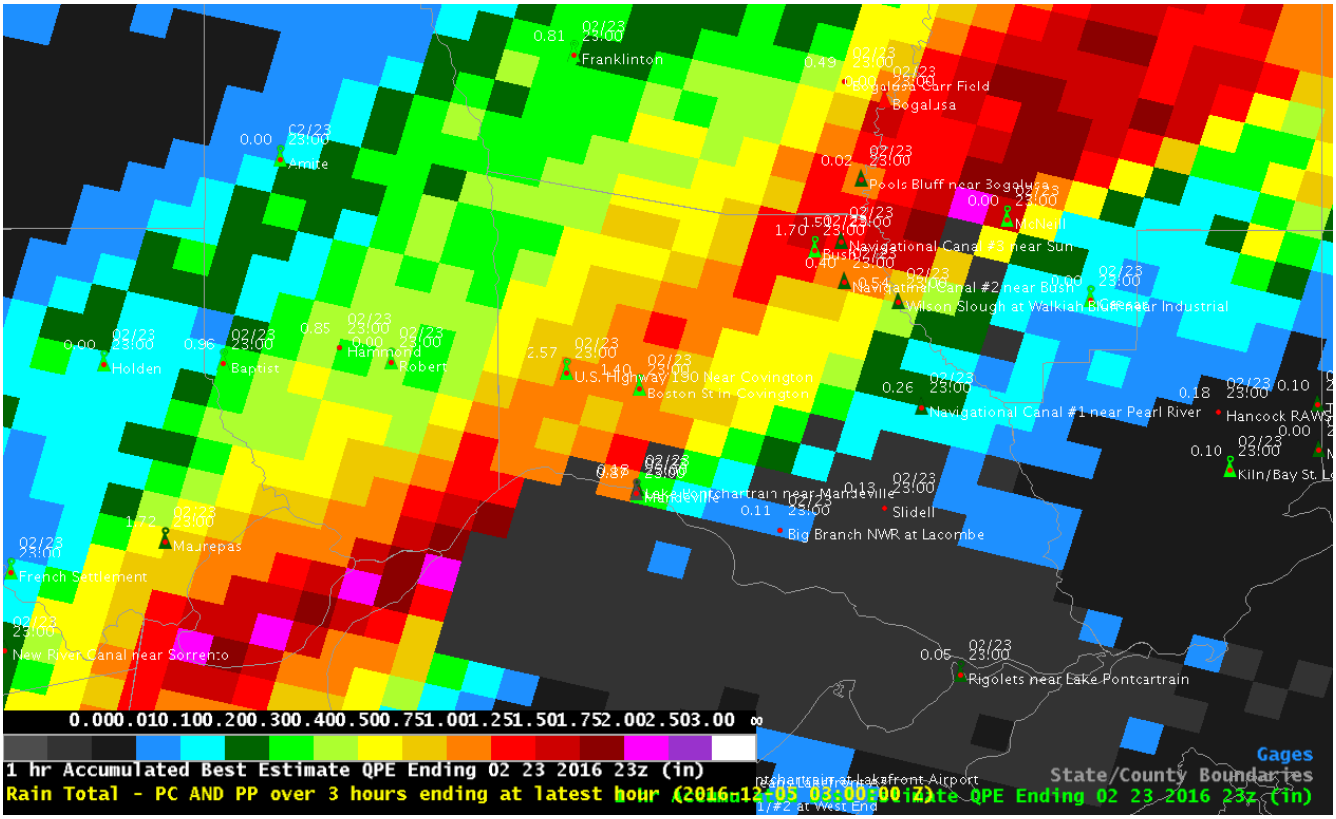
11. Find the Simulation Controls window and click the Skip button. Skip to **2016-02-23 2300 UTC**.

Note: The Hydro Apps displays do not typically auto-update like their D2D counterparts.

12. Force the main Hydro Perspective Window to update by finding the **Best Estimate QPE** dialog, ensuring the date is now **2016-02-23 23** and clicking the **Show Data** button. Also find the **Point Data Control** dialog (you can choose the **MapData** menu and **Point Data Control** option). Click its **Map** button to force a screen refresh. This display should update and look similar to the image on the next page.







13. Find the **Time Series Control** dialog and click the **Graph** button, and the hydrograph plot should update. Notice how the most recent precipitation has caused the stream stage to deviate from the forecasted values.

14. Use the Simulation Controls to **STOP** the simulation. Finally, unload the case.