

20 Background Information on FSI

20.1 FSI Installation

The WES installation software installs the Four-dimensional Stormcell Investigator (FSI) into `/awips/fxa/fsi`, and other AWIPS FSI-related files are included in `/awips/fxa/bin` and `/awips/fxa/data`. Like all applications included on the AWIPS OB8.3 release DVD, FSI is designed to work with RHEL4.

20.2 FSI Background

FSI is essentially a preconfigured display of the National Severe Storm Laboratory's Warning Decision Support System 2 (WDSS2). Most of the WDSS2 functionality has been removed except for the display. Those who are WDSS2 savvy may wish to investigate the hidden navigation panel by clicking "Ctrl n" after loading FSI (not recommended for most).

When FSI displays radar data it uses base products stored in the `<data_case>/radar/kxxx` directory as well as an inventory stored in a linear buffer file (Section 20.5). FSI was designed for real time use in AWIPS, but WDTB was able to develop "plug and play" case review and simulation capability on archived cases. However, there are several steps which must be completed in order for FSI to function with WES.

- The `<data_case>/tstorm` directory must exist
- An OB8.3 or later localization (full and with the `-scan` switch) must be created

e.g. `cd /awips/fxa/data/localization/scripts`

e.g. `mainScript.csh XXX XXX`

e.g. `mainScript.csh -scan XXX XXX`

Note: You will be prompted to enter your case name and verify it is correct.

Where XXX is the three letter ID of your CWA.

Note: If you are using multiple machines to run simulations (Section 21), FSI will update on the server automatically, but it will not update automatically on the

client machines. FSI uses “rssd” to update FSI, and we have been unable to get this to work on a network of WES machines.

20.3 Running FSI

If the tstorm directory is created and an OB8.3 localization is run (steps above), the WES will initialize the case for FSI when FSI is launched by taking the following steps:

- FSI is selected from the kxxx or Tools menu
- WES creates a radar index file (Section 20.4) if one does not already exist. This step will only occur the first time FSI is launched on a specific radar. This file is also created during the conversion to DRT format for all dedicated radars. Note creating the radar index file can take a while for large cases.
- An RPS list is created to support viewing Super Res data if necessary.
- If the case contains more than one dedicated radar (Section 20.7), a radar selection pop-up will appear and the user must select which radar data are viewable in FSI
- For **start_awips** or **enhanced_case_review** use only, an FSI Time Entry tool will appear with a useful default time. If the D2D clock was set to a “frozen” time, the default will be the frozen time. If no time was “frozen” in D2D, then the default will be the last visible appropriate base radar file. The time specified in the FSI Time Entry tool specifies the mid-point of a 4-hour range of data to be viewable in FSI.
- WES creates an FSI linear buffer (Section 20.5) based on the start time in a simulation or the user-selected time (FSI Time Entry tool) for **start_awips** or **enhanced_case_review**.
- FSI is launched, displaying the data listed in the FSI linear buffer.

20.4 Radar Index File

This WES radar index files contain all the information needed to create an FSI linear buffer for a particular radar, so radar data can be viewed in FSI:

- `<data_case>/drt/fsi/FSIindex$radar.txt` (i.e. FSIindexklvx.txt)

The information in this file comes from the base data available in the case as well as the FSI products specified in the FSI’s `/awips/fixa/data/FSIproducts.txt` (Section 20.6) file. The radar index file is also used to determine the start and end time of the radar data, and it is used as a reference when creating the FSI linear buffer file discussed next.

Note: The radar index file is only created if a previous index file does not exist, or if the case is converted to DRT format.

20.5 FSI Linear Buffer (LB)

FSI uses this file to determine which radar products need to be displayed and where to find them. On a live AWIPS system, the LB contains only the latest 2-hours worth of data. When using FSI on the WES, The LB contains information about the latest 2-hours worth of data in simulation mode. In case review mode, the LB will contains 4-hours worth of data centered on a user specified mid-point time. The LB file is stored in the following location.

- `<data_case>/tstorm/FSIradarLB_<radar>` (i.e. FSIradarLB_klvx)

Note: In case review mode, the linear buffer file is recreated each time a new FSI session is launched. When running a simulation, the linear buffer is created when the start time is set, and it is continuously updated throughout the simulation.

20.6 Changing Products Viewable in FSI

FSI can be configured to display different resolutions of base data files (e.g. 8bit Z versus 4bit Z). *For most recently archived cases with high resolution data you should not be changing this file, even if you have cases with Super Res and cases without Super Res (FSI & WES will take care of that).* If you have an old archived case with only 4 bit data, you may want to temporarily configure FSI to display on this data set. To do this you need to alter the products specified in the following file:

- `/awips/fixa/data/FSIproducts.txt`

For example, to change from viewing 8-bit reflectivity data to viewing 4-bit reflectivity data, edit the line in the file from:

```
94      z      Reflectivity      1      256
```

to

```
19      z      Reflectivity      1      16
```

Note: The FSIproducts.txt file changed from OB8.2 to OB8.3, including changing Spectrum Width from product 30 to product 28. The default version on WES has been changed back to product 30 for Spectrum Width, since that product is more useful due to its longer range.

Note: The FSIproducts.txt file format also changed from OB8.2 to OB8.3 to include Super Res entries in addition to the traditional Z, V, and SW entries. If the Super Res entries exist in the file and the Super Res products are on the RPS list, the FSIProcessor will only write Super Res file entries to the linear buffer.

WES uses the FSIproducts.txt file to create FSI linear buffers, and the file is also used by the FSIprocessor in a simulation to update the FSI linear buffers. If you change this file for temporary use on a particular case, you will need to delete any existing WES radar index files in that case thus allowing the inventories to update in the FSI linear buffers.:

```
e.g. rm -rf /data/awips/1991Apr26/drt/fsi
```

New radar index files and FSI linear buffer files will be created the next time FSI is launched or a simulation is started. An RPS list is also created for the radar depending on whether it has Super Res data or not. During a simulation, the FSI linear buffer will update with the radar base data specified in the modified FSIproducts.txt file. When you want to return to the standard FSI product configuration to look at your regular archived cases, you need to restore the settings in the FSIproducts.txt configuration and remove the `fsi` directory in the case before viewing FSI or running a simulation.

20.7 Configuring Radars Viewable in FSI

FSI can only be run on dedicated radars as defined in the following file:

```
- <your_case>/tstorm/scanBackupRadarList.txt
```

This file is created when the localization is run with the `-scan` switch. In this file, dedicated radars have a "1" in the third column. If there is more than one dedicated radar in this file, there will be a pop-up a radar select tool when starting FSI. FSI will only display data for the radar selected in the pop-up.

If for some reason the `<your_case>/tstorm/scanBackupRadarList.txt` file does not exist, WES will create a `<your_case>/tstorm/scanBackupRadarList.txt` file from the `<your_case>/localizationDataSets/XXX/radarsInUse.txt` file in the localization.

If you would like to add a radar to those viewable in FSI, you can also edit `<your_case>/tstorm/scanBackupRadarList.txt` and change the 0 to a 1 in the third column next to the radar you wish to add. In general we recommend modifying your `radarsInUse.txt` file in your AWIPS customization along with running a localization update with the `"-scan"` switch (Section 6 and 7).

20.8 FSI Map / Shapefile Background

FSI in WES has been configured to provide the appropriate map background based on the specific CWA being viewed. Inside the directory

`/awips/fxa/fsi/cwa_shapefiles` you will find directories containing the shapefiles used to generate maps for each CWA.

When FSI is launched, WES determines the CWA in use and creates a link `/awips/fxa/fsi/shapefiles` which points to the appropriate CWA within `/awips/fxa/fsi/cwa_shapefiles`.

For example, a case viewed in the LMK CWA would show the link `/awips/fxa/fsi/shapefiles` pointing to `/awips/fxa/fsi/cwa_shapefiles/lmk`.

Note: Keep in mind that if you plan on altering / adding maps for a specific CWA, you must make the changes in the CWA directory within `/awips/fxa/fsi/cwa_shapefiles`.

To make changes apply to the whole country, all additions / alterations will need to be included in each CWA directory within `/awips/fxa/fsi/cwa_shapefiles`.
