Real-time Skew-T Plotting

Directory Structure (under /net/work/Projects/Project-name, where Project-name is OTREC, HIGHWAY, etc.)

real-time-plots (contains entire processing for the real-time skew-t plots)
- software (contains all software required)
  - src (needs to exist, but has nothing in it)
- data_processing
  - logs
  - output_ascii_data
  - output_esc
  - output_plots
  - output_preproc_data
  - raw_gts_bufr_data
  - snapshots

There are two important files under the data_processing directory:
DO_NOT_DELETE_last_run_time
DO_NOT_DELETE_running

The last_run_time file keeps track of when the process last successfully processed bfr files. This is used to decide which bfr files have not yet been processed. The running file is used to denote that the process is currently running. When the next process starts, if the running file exists, then the new process stops. Two processes should not be run at the same time. If one of the programs crashes, then the running file may have to be deleted. (Make sure that the Real-time-plots.pl program is not running before deleting the file). The process runs on tsunami as the joss user (sudo su - joss to become the joss user). The process runs from the crontab with an example from OTREC shown below:

0,10,20,30,40,50 * * * *
/net/work/Projects/OTREC/real-time-plots/software/Otrec-Real-time-plots.pl

For each project, the software will need to be changed to update the directory names. This includes Otrec-Real-time-plots.pl, build.xml, plot_sounding.py, and convertESCtosharppy.pl.

The raw_gts_bufr_data, output_preproc_data, output_ascii_data, and output_esc directories are used by the GTS_BUFR conversion software. This software can be found on svn at dmg/conversions/upper_air/GTS_BUFR. The logs, output_plots, and snapshots directories are used by the skew-t plotting software. This software can be found on svn at dmg/tools/upper_air/skewt_plot_realtime.

The process:

1) The bfr files are ftp-ed to a directory. Greg's process may rename the bfr files if they don't have the correct naming convention.
2) The real-time skew-t software (Otrec-Real-time-plots.pl for the OTREC project) reads the ftp directory to determine which bfr files need to be processed. The files, to be processed, are copied to the raw_gts_bufr_data directory.
3) The GTS_BUFR conversion software is run to convert the bfr files to ESC format.
4) The ESC files are sorted by time. The ESC files are in the output_esc directory.
5) The convertESCtosharppy.pl program is run to convert the ESC files to a format that the sharppy program expects. These cls.sharppy data files are also in the output_esc directory.
6) The plot_sounding.py program is run to create the skew-t plot, which is put in the output_plots directory.
7) After all the data files have been processed, all of the plots in the output_plots directory are copied to the field catalog incoming directory.
8) The process tars and gzips all the directories in the data_processing directory (except for snapshots) and places the resulting file in the snapshots directory. This is done to make it easier to debug issues that happen with the data files, either rerunning or determining what errors happened. There is a raw-data-cross-reference.txt file which is in the snapshots directory. This file lists the bfr files that were processed with each snapshot tar-gzip file. This is used to determine which snapshot file has the bfr file that did not process. Sometimes the bfr file can be touched in the ftp area, and then it will be rerun when this entire process runs again. That may solve some of the problems, especially if the file was not complete when it was copied to the raw_gts_bufr_data directory to be processed.

Note: The following software programs need to be added to the software directory from the GTS_BUFR conversion software (See above for the svn location):

GTSBUFR_Radiosonde_Converter_RealTime.pl
preprocess_GTS_BUFR.pl

The preprocess… program uses the bufr_dump software located in /opt/local/bufr/bin.

The file snapshots/raw-data-cross-reference.txt needs to exist and is empty. The DO_NOT_DELETE_last_run_time file has the information from a different project, but can be used as is for the next project.