4.0 ESPVS Generation

ESPVS allows the user to select (1) a valid carryover date from the NWSRFS Operational Forecast System Forecast Component Data Base, (2) a new carryover month and day from which to generate verification traces and (3) a period of historical data over which to generate traces.

Carryover will be saved on the month and day of the historical year and ESP will be run using historical data (excluding the year being generated) to develop trace ensembles over the period of record. These traces, N years worth of trace ensembles (each comprising N-1 years), can be analyzed for statistical verification against observed data.

4.1 Running ESPVS Generation

From the ESPVS menu items, **select Data...Generate** (Figure 4-1). A graphical user interface (GUI) for generation information will be displayed (Figure 4-2).
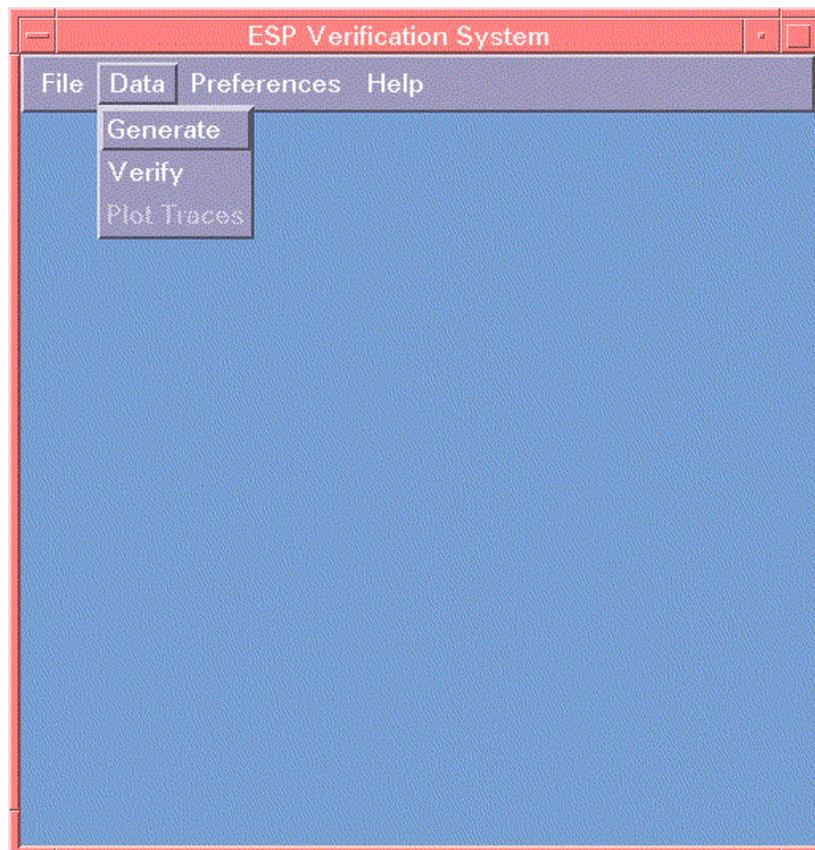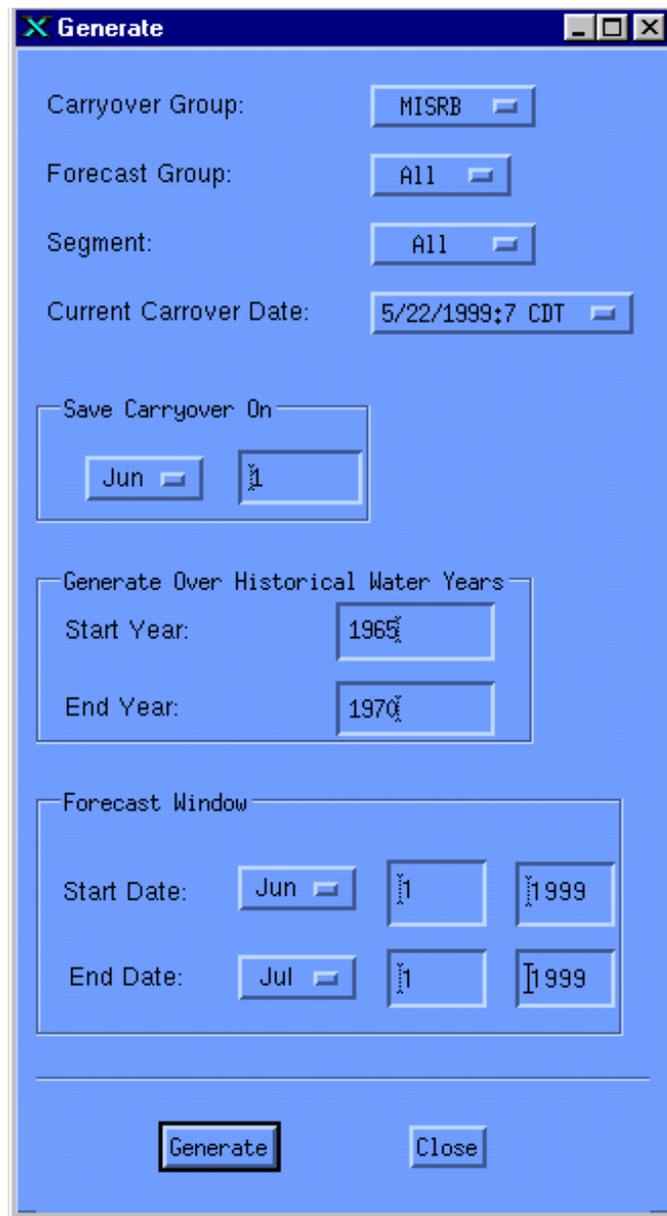

Figure 4-1

Figure 4-2

4.2 Generation Requirements

Generation results in OFS scripts being created dynamically to 1) save carryover at the correct point in time and 2) generate ESP runs over the historical period. Conditional and historical simulations are placed in *$(espts_dir)/verification*.

4.2.1 Carryover Group

A pulldown menu of available Carryover Groups is available. The *All* option generates all Carryover Groups and disables Forecast Group and Segment selection, defaulting to *All*.

4.2.2 Forecast Group

When a valid individual Carryover Group is selected, a pulldown menu of available Forecast Groups within that Carryover Group is created dynamically. Valid selections include *Individual Forecast Groups* or *All*. Selecting *All* generates all Segments within all Forecast Groups.

4.2.3 Segment
When a valid individual Forecast Group is selected, a pulldown menu of defined Segments within that Forecast Group is created dynamically. Valid selections include *Individual Segments* or *All*. Selecting *All* generates all defined Segments within the Forecast Group.

4.2.4 Current Carryover Date

A dynamic pulldown menu of available carryover dates within the *FS5FILE* database will be generated. The trace generation uses the carryover specified on this date to generate carryover for the user-specified date over each historical water year selected.

4.2.5 Save Carryover On

The user must specify month and day for which to save carryover for each historical water year. This date must follow the date for the current carryover. ESPVS always saves carryover at hour 24 local standard time.

4.2.6 Generate Over Historical Water Years

The user specifies a start and end year over which traces will be generated, beginning on the month and day for which carryover was specified.

4.2.7 Forecast Window

This is a user-specified window for generating ESP forecasts for each historical water year. The forecast window must begin after the carryover date upon which carryover is saved for each historical water year.

4.2.8 ESPINDIR and ESPOTDIR

The Trace Generate function in the fcst program supports the connectivity between upstream and downstream basins when those runs are made at different times in the same manner the operational ESP

supports such runs. (The GUI does not yet support this function.) The ESP function in fcst searches a known set of directories for the files it requires to satisfy the downstream input needs. When running in an Hindcast Trace Generation mode, the time series must be matched for the year for which they are run. That is Hindcasts in a downstream basin for Carryover from Jan 1, 1972 must be matched with upstream hindcasts for the same year and carryover in the upstream basin. Therefore, when in the ESPVS Generate mode (GENTRACE is set to on in the fcst ESP input deck) ESP will first look for the time series with the same carryover date in the file name. If it does not find this year, it will then look for a file without the year (the standard naming convention). It must fall back to the standard naming convention in order to properly support the HISTSIM runs for generating carryover.

The ESPINDIR and ESPOTDIR tokens are used to specify the directories where files will be written and the directories from which they will be read. For a basin with an upstream connection in a different Forecast Group, for example, the input flow time series files may be read from one directory and the output files will be written to a different directory. Subsequent reading will take place from the directory where the files are being written. Therefore, the ESPINDIR value will change from the first Segment to the subsequent Segments, but the ESPOTDIR will be the same for all Segments.

For example, if there are two forecast groups, UPPER and LOWER and they connect at a Segment named LOWSTART in the LOWER Forecast Group, then the ESPINDIR and ESPOTDIR techniques may be set as follows. This example is built on the assumption each Forecast Group writes time series to a directory named for the Forecast Group.

For the UPPER Forecast Group the techniques would be defined as follows:

ESPOTDIR UPPER
ESPINDIR UPPER

For the LOWER Forecast Group the techniques would be defined as :

ESPOTDIR LOWER
ESPINDIR (LOWSTART) UPPER
ESPINDIR (2NDSEG-FGEND) LOWER

In this way each Forecast Group will write output to a directory named for itself and the downstream Segment, LOWSTART, will read the time series it needs from the UPPER directory.