

VI.5.3C-FCEXEC PROGRAM FCST FORECAST EXECUTION FUNCTION (FCEXEC)

Purpose

Function FCEXEC is a forecast Function that produces short-term forecasts of river and reservoir conditions from time series data such as MAP, MAT, MAPE, MAPX and STG.

The hydrologic computations in Function FCEXEC are compatible with the Calibration System Manual Calibration Program (MCP3). As in MCP3, the building blocks used to define the hydrology of an area are Operations (see Chapter V.3). However, in contrast to MCP3, parameters and carryover values are not entered from card input with each run, but are read from data files. These data files are maintained by the Forecast Component Initialization Program (FCINIT - see Section VI.3.4 [[Hyperlink](#)]). The decoding and checking of parameters is done only when the files are initialized and when changes are made and not during daily operational forecast runs.

A group of Operations performed as a unit is called a Segment (see Chapter V.3). An ordered list of Segments forms a Forecast Group. Forecast Groups can be combined to form a Carryover Group. Function FCEXEC can produce forecasts for a single Segment, a Forecast Group or a Carryover Group.

A Carryover Group run is the only type of run for which carryover can be saved. A user can have one or more Carryover Groups for the forecast area and a Carryover Group run would be made at the end of each forecasting day to save carryover for subsequent runs.

A Forecast Group usually consists of the Segments comprising a river system or some other subsection of the user's area. This run might be repeated several times as new data are available or modifications are deemed necessary. Function FCEXEC is designed to run most efficiently for Forecast Group runs. One or more Forecast Groups can be included in an FCEXEC run.

Segments can be run if one basin is particularly troublesome. As with Forecast Group runs, Segments can be run repeatedly without updating any data files. One or more Segments can be included in an FCEXEC run.

HCL Input

Input to Function FCEXEC is through the Hydrologic Command Language (HCL).

The input consists of Techniques and their Arguments (see Section VI.5.3C-FCEXEC-TECH [[Hyperlink](#)]) and run time modifications (see Section VI.5.3C-FCEXEC-MOD [[Hyperlink](#)]).

Sample HCL Input

Example 1. Forecast Group

The following example will run the Forecast Group SPRING. Local defaults for the start and end of the run Techniques have been set.

```
@SETOPTIONS
  FGROUP SPRING
@COMPUTE FCEXEC
@STOP
```

Example 2. Forecast Group with Options

The following example will run the Forecast Group SPRING and will start 10 days before TODAY and will end on September 15, 1984:

```
@SETOPTIONS
  FGROUP SPRING
  STARTRUN *-10
  ENDRUN   091584
@COMPUTE FCEXEC
@STOP
```

Example 3. Forecast Group with Options and run time MODs

The following example will run the Forecast Group SPRING and will start 10 days before TODAY and will end on September 15, 1984. The run time MOD will set the Sacramento soil moisture carryover value for upper zone tension water contents to zero for the SAC-SMA Operation in Segment JOPM7 on September 1.

```
@SETOPTIONS
  FGROUP SPRING
  STARTRUN *-10
  ENDRUN   091584
  MOD
  .SACCO 0901
  JOPM7 UZTWC 0.
  ENDMOD
@COMPUTE FCEXEC
@STOP
```

Example 4. Carryover Group

The following example will run the Carryover Group TULSARFC. Carryover will be saved for TODAY, TODAY minus one day and TODAY minus two days. Any dates for which carryover was previously stored on the files that falls within the run period will be updated.

```
@SETOPTIONS
  CGROUP TULSARFC
  NUMCOSAV * *-01 *-02
@COMPUTE FCEXEC
@STOP
```

Output

There are three types of output from Function FCEXEC. The first is printer output which includes output from the Operations (see Section V.3.3) and information about saving carryover. The second is time series data written to the Processed Data Base. The third is carryover values that are written to the Forecast Component Data Base if a save carryover run is made.

Error Messages

General error messages printed by Function FCEXEC are described in Section VI.5.3C-FCEXEC-ERROR [[Hyperlink](#)].

Other errors may be printed by Operations (see Section V.3.3 [[Hyperlink](#)]).