

### VI.3.3A INTRODUCTION TO THE PREPROCESSOR COMPONENT INITIALIZATION PROGRAM (PPINIT)

#### Purpose

The Preprocessor Component Initialization Program (PPINIT) is used to maintain station and area information in the Preprocessor Data Base, the Preprocessor Parametric Data Base and the Processed Data Base.

Program PPINIT stores the parametric information needed by the Forecast Program Preprocessor Component. The parametric data is used by the Preprocessors to process observed and future data and write time series data to the Processed Data Base. These time series are used as input to the Forecast Component and include the following:

- o Mean Areal Precipitation (MAP)
- o NEXRAD Mean Areal Precipitation (MAPX)
- o Mean Areal Temperature (MAT)
- o Mean Areal Potential Evaporation (MAPE)
- o River, Reservoir, and Snow (data types such as STG, PELV and SNWE)

These time series can contain both regular and future data. The time series values for the regular period are based on observed data. The time series values for the future period are based on predicted data or long term values.

Program PPINIT creates stations in the Preprocessor Data Base (PPDB), stores Preprocessor parametric information in the Preprocessor Parametric Data Base (PPPDB) and creates time series in the Processed Data Base (PDB). When a station is defined in the PPPDB, the station also is defined in the PPDB. When a station is deleted from the PPPDB, the station also is deleted from the PPDB. When an area is defined in the PPPDB, the area also is defined in the PDB. When an area is deleted from the PPPDB, the area also is deleted from the PDB.

Program PPINIT can also be used to maintain information in the PPDB, PPPDB and PDB using the delete and redefine commands and to display the contents of the these data bases using the display commands.

Any unused space in the files that is created by deleting or redefining parameters will be recovered when the Forecast System Reorder Program (REORDER - see Section VI.2.4A [[Hyperlink](#)]) is executed. Program REORDER also puts the parametric data in the order that is most efficient for writing to the Processed Data Base (PDB) by the Forecast Program.

Observed and future data for stations are stored in the PPDB. The data can be any of the following:

- o precipitation (PCPN)
- o temperature (TEMP)
- o potential evaporation (PE)
- o river, reservoir and snow (RRS)

The observed data are read from the PPDB by the Preprocessors and processed as specified by the parametric data for each station. The Preprocessors produce time series and write them to the PDB. These time series are then read by the Forecast Component to produce short-range river and flood forecasts and long-range (extended) streamflow predictions.

### Parametric Data Types

Program PPINIT is used to define any of three types of parametric data:

- o station parameters - describes the attributes of a station that reports observed data values
- o basin parameters - defines the boundaries, centroid and area of a basin
- o area parameters - describes the attributes of an area for which MAP, MAPX, Future MAP, MAT or MAPE is to be computed

Station parameters are used for two general purposes:

- o identify the stations for which observed data are to be kept in the Preprocessor Data Base
- o define the attributes for stations that are to be used to compute mean areal time series (MAP, MAPX, MAT, MAPE) and point time series (QIN, STG, SNWE, etc.) values

Station definitions that include river, reservoir and snow (RRS) parameters are used by the RRS Preprocessor which converts the data values observed at the stations to time series. The time series are stored in the PDB.

Basin parameters define a basin. These parameters include pairs of latitude/longitude points that specify the basin boundary. Basin boundaries are used to compute the centroid of a basin, station weights, and the assignment of MDR boxes. If a basin definition is referenced when an MAP or MAT area is defined, the centroid of the area and station weights are obtained from the basin definition. If a basin definition is not referenced, the user must specify the centroid of the area and station weights. The same basin definition can be referenced by both an MAP and an MAT area.

Area definitions are used by the MAP, Future MAP, MAPX, MAT and MAPE Preprocessors that compute mean areal values from data values observed at stations. The mean areal values are stored as time series in the PDB.

### Steps for Defining Parameters

The following are the steps to follow for storing parameters in the

Preprocessor Parametric Data Base during the initial definition of parameters:

1. define user parameters using command DEFINE USER
2. define station parameters using command DEFINE STATION
3. define basin parameters using command DEFINE BASIN
4. Complete station parameters using command NETWORK - this command must be run before a station can be referenced by an area definition
5. define area parameters using command DEFINE AREA - Future MAP area parameters must be defined before regular MAP area parameters
6. determine MAP, MAPX and Future MAP area computational order information using command ORDER (Forecast Component segments must be defined before ORDER can be run)

After initial definition of parameters the DEFINE commands can be used to change existing parameters.

When certain parameters are redefined changes must be made to other parameter values. For example if the location of a station is changed, the parameters for MAP, MAT and/or MAPE areas that reference this station may have to be changed. These associated changes are done automatically by PPINIT by running command NETWORK to update all the necessary parametric information.

#### Program Execution Information

See Section I.2 [[Hyperlink](#)] for program execution information.