

Current Verification System

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Old Verification System

- Functions:
 - Construct forecast-observed data pairs
 - Calculate national verification program statistics
- Runs on an AWIPS platform
 - Used IHFS database as data source
 - Used verification database to store forecast and observed data
 - Calculated verification statistics for national verification project
 - Created pipe-delimited tabular pairs files for use in Interactive Verification Program (IVP)
 - Pairing and statistics calculation were connected

New Verification System

- Functions:
 - Construct forecast-observed data pairs
 - Calculate national verification program statistics and other statistics
- Runs on the archive machines
 - Uses archive database as data source
 - Stores forecast-observed data pairs in archive database (vfypairs table)
 - Calculates verification statistics for national verification program
 - Calculates additional verification statistics
 - Creates pipe delimited tabular pairs file for use in IVP
 - Pairing and statistics calculation done separately

Data Pairing

Define Location Information

- Location Information edited by the Vfyruninfo Editor
 - Executed on demand
- Defines the data that can be verified
- User determined parameters:
 - Location
 - Physical element
 - Forecast type sources
 - Sensor preferences (observed type source preferences for pairing)
 - River response

Data Pairing

Execute Pairing

- Pairing performed by the batch program
 - Execute in cron (can be executed on demand)
- User Controlled Elements:
 - Location
 - Forecast data must be in pedfsep
 - Observed data must be in pegrsep or pehpsep (user determined)
 - Location information must be defined within vfyruninfo table
 - Pairing is performed for all physical elements and forecast type sources specified in the vfyruninfo table
 - Pairing window
 - Forecast valid time interval
 - Start time and end time
- Extremum of data to pair must be 'Z'
- Populates the vfypairs table
 - Makes forecast-observed data pairs available for verification

Verification

Select and Sort Data

- Verification data selection performed by the batch program
 - Execute in cron or on demand
- User controlled elements:
 - Location
 - Physical element
 - Forecast type source
 - Forecast valid time interval
 - Start time, end time, analysis interval
 - Lead time interval
 - Lead time start, lead time end, time step
 - River Response Time
 - Slow, medium, fast
- Data is gathered from the vfpairs table

Verification

Calculate Statistics

- Statistics are calculated by the batch program
 - Execute in cron or on demand
- National statistics:
 - Error statistics: Root Mean-Squared Error, Mean Absolute Error, Mean Error
- Other Statistics:
 - Error statistic: Maximum Error
 - Categorical Statistics: POD, FAR, CSI
 - Extremes and Quantiles: MIN, 25%, MEDIAN, 75%, MAX
- User can define categories in two ways
 - Relative to flood stage
 - Found for a given location within the riverstat table (field fs)
 - Using specified category boundaries

Summary

- Designed for verification of river stage forecasts, but can be used for other types of data
 - Observed data must be in pegrsep or pehpsep tables
 - Forecast data must be in pedfsep table
 - Extremum must be 'Z'
- Can be used to generate statistics for all desired locations
 - Calculating verification statistics is fast
 - Pairing can be time consuming
 - Quadratic relationship between forecast valid time interval and CPU time required
 - Pairing algorithm is not database intensive

Documentation

www.nws.noaa.gov/oh/hrl/verification/verification.php