Program Disagg

Contents

Overview

Program disagg disaggreates multi-hour gauge data into one-hour estimates based on xmrg files.

Disagg inputs real time data from Informix Database and the Xmrg files and outputs hourly time distributed results to table ProcPrecip which is read by program RFCWide-MPE [Hyperlink].

Apps Defaults Tokens

pproc_dir: /awips/hydroapps/precip_proc

pproc_bin: $(pproc_dir/bin

disagg_msglog_level: message level
   Default value is 30.
   Possible values are 1, 10, 20, 30 ... 80.
   Lower values signify less info in log.

disagg_dur: maximum duration of precip gage data to disaggregated
   Default value is 24.
   Valid range is 2 to 24.

disagg_log_dir: directory containing log files
   Default is $(pproc_log)/disagg.

disagg_radius: number of HRAP bins within which the QPE will be
      averaged
   Default value is 1.
   Values is set from 1, 3, 5, 7 ... 25.
   Example: if disagg_radius=3 then the 9 nearest neighbor QPE bin
   values will be averaged

disagg_look_back: time (hours) to look back from current hour for
   precip gage data to be disaggregated
   Default value is 0 hours.

Value range is 0 to 72 hours.

disagg_set_date: current date (yyyymmdd)
Default value is 0.
If this token is 0 then the current system date and time will be used and the token disagg_set_hour will not be used.

disagg_set_hour: current hour (hh)
Default value is 0.
Valid range is 0 to 23.
This token is used only if disagg_set_date is not 0.

mpe_date_form: date format; Ymd (yyyymmdd) or mdY (mmddyyyy)
Default value id mdY.

server_name: sever name
Default value is ONLINE.

db_name: database name
Default value is hd_ob[n][xxx] where n is the release number and xxx is the site name.

ofs_griddb_dir: pathname for the xmrg files
Default value is /awips/hydroapps/precip_proc/local/data/mpe/qpe.

Disagg Files

1. script for running disagg from cron:

   /awips/hydroapps/precip_proc/bin/run_disagg

2. disagg HP-UX executable:

   /awips/hydroapps/precip_proc/bin/disagg.HP

3. disagg Linux executable:

   /awips/hydroapps/precip_proc/bin/disagg.LX

4. disagg log files:
   /awips/hydroapps/precip_proc/log/disagg/disagg.mmddyyyyhhmm

Units of Disagg Values

Disagg updates hourly estimated gage values to table ProcPrecip in units of millimeters.

Disagg Input Files

The input for program disagg are the xmrg file directory which is set by the token 'ofs_griddb_dir' and the data base name which is set by the token 'db_name'.

Disagg Log File

Program disagg writes a log file to the directory set by the token 'disagg_log_dir'. The log file contains information about data written to the data base and any error messages. The log files should be occasionally be deleted.

Running disagg

Go to the pproc_precip bin directory and run the script run_disagg.

Disagg Algorithm

Program disagg determines hourly time distributed by the following algorithm:

- If gage value from the curpp table = 0.0 then new hourly time distributed value = 0.0.
- If gage value > 0.0 then first calculates summation of the radar values (determined from xmrg files) for the duration period.
- If summation of radar values for all hours is not zero then:
  new_value = radar_value * gage_value/summation_of_radar_values
- If summation of radar values is zero then:
  new_value = gage_value / duration (evenly distributed)

Disagg Program Outline

main

1. Call API for initializing disagg

2. Get system current time

3. Get value of Apps_defaults tokens

4. Open log file

5. Open data base

6. Set time out to database lock mode

7. Query table PerfLog to find the last disagg run time

8. Get all records table curpp in link list form with posting time later than last disagg run time; data is in units of inches

9. For each set of records found:
   a. Determine earliest start time and latest end time
   b. Loop for each hour between start time and end time
      - Determine hrap value base on disagg_radius and xmrg files availability call GetXMRGVal routine

- Call OpenXMRGFile routine to determine if xmrg files not exist for the period start time and end time
- Stop the disagg process
- Close data base
- Exit

If there are enough xmrg files for disagg then call routine OpenXMRGFile

Call fillPostProcPrecip to insert data to table ProcPrecip.

10. If there are no more records to process then:

    Update table PerfLog

    Close data base

    Write messages to a log file

    Return value two

    Exit

OpenXMRGFiles

1. Create xmrg file names and number of files by calling the FileNames subroutine

2. Get the radius from the disagg_radius token by calling the GetRadiusVal subroutine

3. If number of files is less than or equal to zero, then return error

4. Get the xmrg file path by calling the get_apps_default subroutine

5. For every xmrg file name:

   A. concatenate it to the end of the xmrg file path

   B. open the xmrg file

   C. stop if unable open any xmrg file

6 If found any xmrg file unable to open then close all previous opened xmrg files

GetRadiusVal

1. Get the disagg_radius token in string format by calling subroutine get_apps_defaults

2. If the disagg_radius token was not exported then set the radius value to be 1

3. Else the token is not a number then set the radius value to be 1

4. If the token is a float then round it up

5. If the token is not an odd number the add 1 to it

6. If the token is less than 1 then set it to 1

7. If the token is greater than 25 then set it to 25

GetXMRGVals

1. Convert latitude and longitude to hrap by calling subroutine LatLongToHrap

2. Calculate which xmrg file will be used

3. Round up the hrap

4. If the xmrg file is not in the opened files list then return -999

5. Else go to the begin of the file and read it header information

6. If location is not in the xmrg file grid then return -999

7. Else calculate the reading area will be read in the xmrg file

8. If the reading area is invalid then return -999

9. Else read and accumulate all data in the reading area

10. Calculate the xmrg value

CreateFileNames

1. Calculate number of file will be generated in starttime to endtime

2. If number of file is not in 1 to 100 then number of file to be 0

3. To create each file name use xmrgMMDDCCYYhhz if time is before 2000 else use xmrgMMDDYYhhz

fillPostProcPrecip

1. Determine new value for each hour time distributed.

2. Insert data to ProcPrecip table.

3. If inserting/updating data to table ProPrecip failed then write error messages to log file

Program Disagg Data Flow Diagram