

## N-AWIPS 5.10.4 Release Notes

August 6, 2007

Version 5.10.4 covers development from May 14, 2007 to July 20, 2007

\*\*\*\*\*

### I. NMAP Product Generation Improvements

#### A. International SIGMET formatter (AWC)

The International SIGMET formatter will now automatically determine which FIR(s) to include in a SIGMET text product based on the intersection of the SIGMET area, line or point with any of the six FIR regions whose map points are defined in a new FIR bounds file. The logic for deciding which of the FIRs are to be included in the SIGMET is invoked during the callback function for the “SAVE” button. The six FIR radio buttons (KZNY, KZMA, KZHU, KZOA, TJZS, PAZA) have been removed from the SIGMET Edit GUI. Two other minor changes were also made to the International Sigmet formatter: the FIR for Anchorage was corrected to say “Anchorage”, not “Anchorage\_Oceanic”; and the “Forecaster” menu option has been removed from the SIGMET Edit GUI at the request of AWC. This work was done by the AWC in collaboration with the NAWIPS team.

#### B. GFA/AIRMET (AWC)

Several new features and enhancements have been added to NMAP GFA GUIs and formatting functions in support of creating the Graphical AIRMET. In addition several problems have been corrected that were found during AWC evaluations of version 5.10.3 and intermediate test executables.

##### 1. Add type selection menu for MT OBSC

The type selection menu has been added into the MT OBSC create GUI. Each item in the selection menu has a radio button to turn on and off each MT OBSC type. The type items are defined in gfa.tbl. The user can modify the gfa.tbl to add and remove MT OBSC types in the selection menu. If no type is selected after

drawing the MT OBSC, a warning box will pop up and let the user select MT OBSC types.

2. Add tag numbers at the end of each AIRMET

Tag numbers have been added at the end of each AIRMET/OUTLOOK bulletin except for FZLVL and M\_FZLVL. An H or L is prefixed to tag numbers for TURB-HI and TURB-LO, respectively. Tag numbers in AIRMET/OUTLOOK bulletins can be turned off/on by setting the ADD\_TAG\_NUMBER flag in prefs.tbl to FALSE/TRUE.

3. Select a GFA element by clicking on the text box

It is now possible to select a GFA element for editing by clicking on the text box. The GFA element can be selected either by clicking on/near the figure or by clicking on/near the text box.

4. Join multiple snapshots

Added to the existing "Connect" tool the capability to join two selected GFA elements (including snapshots, airmets, and outlooks), as long as they have the same hazard type and forecast hour. It works like smearing two GFAs together with some special features, as follows: (1) the joined GFA element will have the first selected GFA's attributes, except for identified "worst-case" attributes; (2) canceled GFAs cannot be smeared, but could be joined; (3) the resulting GFA will not be snapped unless the first selected element is an airmet or outlook.

To join two GFA elements, click "Connect" on the Product Generation palette, select the first GFA element, then select the second GFA element, then confirm the selections with another click. A new joined GFA appears, while the two old GFAs are deleted.

5. Improve the “shrink-wrap” smear algorithm

Polygon translation for both the GFA smear and general polygon interpolation has been improved. The simplistic default polygon point mapping has been replaced with an algorithm based on convex hull theory. The result should be the elimination of extraneous intermediate points and more realistic overall results.

6. Editable From Lines

Changes made to support the editable F/BB/A element in this release include the following:

**Cycle Time display.** A new prefs.tbl setting, USE\_DAY\_CYCLE, has been added. When this flag is set to TRUE, a default day, cycle, and status (Routine or Update) will be selected and displayed in the title of the nmap2 window (right end). The starting value uses the same logic that the current Airmet GUI uses in selecting the day/cycle/status.

**Cycle Time Selection GUI.** A new Action, named “Cycle”, will be available in the pgen palette. This opens the day/cycle selection GUI, which provides the user a means to change the selected Day, Cycle, and status. Any changes the user makes will be immediately displayed in the nmap2 window title.

**Airmet' (Airmet prime) GUI.** The Airmet' GUI has been provided with some limited functionality. It cannot yet produce airmet text reports from the user drawn F/BB/A elements (that will be added in the next version), but it can generate valid, empty airmet text bulletins for the selected FA Areas and airmet types. There is one minor, known problem in this GUI. The button used to create the airmet bulletin is labeled “Format/Save”, and according to the design document it should be “Generate/Save”. This will be corrected in the next version of this GUI.

**GFA' (GFA prime) GUI.** There is one known issue with the GFA' GUI, which will be corrected in the next version. One field in the GUI is labeled “Cycle”. This will be removed, as it has been replaced by the Cycle selection GUI (described above).

7. Change the order of processing for Freezing Level objects to text

The processing order for formatting closed FZLVs has been changed to improve the performance. If a closed FZLV is in the FA area, the closed line point reduction is executed. Otherwise, the closed line point reduction is skipped.

8. Block GFA writes when closed figures have less than 3 points

Fixed the single point smear problem. The single point smear problem occurred when smearing a single snapshot that was sufficiently small so that one or more vertex points snapped to the same location, resulting in a GFA figure of fewer than 3 points. With this change, GFA figures of insufficient points are rejected by the lowest level file writing routine (cvgwritgfa.c), and the user is warned that the smear for the offending tag sequence is too small to be smeared. In routine operational use users will be very unlikely to encounter this situation since it requires a single snapshot (or multiple, overlaid snapshots) of very small size (much less than 3000 sq nm).

This fix also rejects GFA elements with insufficient points during a file copy. If an older vg file happens to contain GFA elements of insufficient points, the offending GFA elements will not be copied into the work file when the user selects and opens the vg file, however all valid GFA elements will be copied and displayed.

9. Fix the filter to GFA link to avoid tag resets

Improved the coordination of the filter and GFA menus so that when a single new time is selected in the filter window, the GFA (or GFA') GUI switches to the new time, but does not switch the tag to "New". This corrects a bug that the AWC discovered in the version 5.10.3 evaluation, which resulted in resetting the tag to "New" whenever the GFA (and GFA') forecast time was reset from the filter GUI.

10. Change wording in AIRMET text

In the airmet formatting process the phrase “...UPDT TO CANCEL...” has been removed from all airmet text reports. This phrase was formerly placed on the final line of a canceled airmet or outlook paragraph.

11. Improve cluster processing in the clipping formatter

This task improved the clustering and kink removing algorithm in the AIRMET formatter to fix two clustering cases found in version 5.10.3 release testing. The improved algorithm also makes the formatted FROM line tighter and better (closer to the original FROM line) than it did in version 5.10.3.

12. Restore debugging features for areal clipping

This task restored some helpful debugging/testing features for internal testing, which were available in version 5.10.2 but were shut off by accident in version 5.10.3. (1) allow the areal clipping and bisection to be turned on/off independently; (2) remove the unused mid-points.

13. Fix problems when drawing is interrupted by other main window commands

In previous releases, after loading a map in the middle of drawing a GFA, users can continue to draw the unfinished GFA. This behavior is not consistent with other MET objects, and causes NMAP2 to crash in some cases. In this release, if a map is loaded in the middle of drawing a GFA, the drawing action is canceled and the unfinished GFA is abandoned.

14. Modify CLIPVGF for GFA elements

Added all of the GFA elements to CLIPVGF. This allows these elements to be clipped at the international boundary for creating web graphics. This work was done in collaboration with the AWC.

## II. Product Generation Pre/Post Processing Improvements

### A. Generate SHAPE files for Tropical Watch/Warning information (TPC)

A new program, TPC2SHP, has been added to convert TC graphics produced by program GPTCWW to Shape file format. The objects are created by NMAP product generation and by the program GPTCWW and include: the TC track, the TC error cone and the associated Watch and Warning breakpoints. The objects are stored in an NAWIPS VG file. The new application converts the objects in the VG file to objects in a Shape file.

Conversion of each input VGF file results in 4 output files (.dbx, .shp, .shx, .prj) which comprise the shapefile format. These files then can be loaded for viewing or further processing using GIS software. See \$GEMPAK/hlp/tpc2shp.hlp for detailed information about the output files structure.

### B. Allow NAGRIB to Decode ECMWF Ensemble Grids (HPC)

Functionality was added to NAGRIB to process the ECMWF Ensemble information from the GRIB header extension.

### C. Add Lightning Decoder (ALL)

A new decoder has been added to decode lightning data. The display options for lightning data (LTNG) were added in a previous release. The lightning data arrives in bulletins with the headers SFUS41 and SFPA41. The lightning decoder is intended to be run in real-time from the LDM. The following is an example of the entries needed for the LDM pqact.conf file:

```
# Decoder for Lightning data
WMO ^SFUS41 .... ([0-3][0-9])([0-2][0-9])
    PIPE -flush ltgdecode -p 3600 -L -N -o data/decoders/ltng/%Y%m%d%H.ltn
WMO ^SFPA41 .... ([0-3][0-9])([0-2][0-9])
    PIPE -flush ltgdecode -p 3600 -L -N -o data/decoders/ltng/%Y%m%d%HP.ltn
```

### III. NMAP2 Display Improvements

#### A. Added enhancements to the Ensemble Cyclone track display (OPC)

New user selections have been added to the Ensemble Cyclone display attributes. The user now has the option of setting a wind speed and color for Gale force winds. This is the same as for the wind speeds and colors for Tropical Depression, Tropical Storm and Hurricane.

A forecast hour value has also been added to the attribute list. The Forecast Hour allows the user to display all cyclone positions for a single forecast hour. The user can select a specific hour after turning the selection on by clicking the check box.

\*\*\*\*\* Important Please Note \*\*\*\*\*

Since miscset.tbl was modified, old SPF files using ENS\_CYC data should be recreated.

#### B. Update ASCT and ASCT\_HI display (OPC)

Changed the Rain Flag to the KNMI Quality Control Flag. The ASCAT satellite does not flag winds in areas of rain. Instead there is a flag that indicates when a wind matches the KNMI Quality Control conditions. When this flag is selected by the user, the second color for this data type may be used to plot the winds that meet the QC conditions.

Added the ASCT\_HI as a new data type. It is similar to the ASCT except that the data has a higher spatial resolution.

#### C. Modify the time binning for satellite scatterometer winds (TPC)

Added the capability to change the time interval for displaying the MISC data types QSCT, ASCT, and WSAT in NMAP2 and GPMP. Two new tags have been added to \$GEMTBL/prefs.tbl to allow the user to do this. Tag SAT\_WIND\_START is for the number of minutes before the frame time to start. The start time in prior releases has been hard-coded to 360 minutes before the frame time and that is still the default. The end time in prior releases has been hard-coded to be the same as the frame time and

with a default value of 0 for tag SAT\_WIND\_END, that will not change. However, by changing the value for SAT\_WIND\_END to a positive number of minutes, the end time for displaying will be SAT\_WIND\_END minutes after the frame time.

D. Change TAF decoder to store files based on cycle time (AWC)

The TAF decoder has been modified at AWC's request to store decoded reports into four files per day based on cycle time instead of by valid day and time into daily files. Scheduled TAFs should be valid for 24 hours and should be issued four times per day at 00, 06, 12, and 18 UTC, which are the cycle times used in the new filenames.

A new parameter STIM (hhmm) which gives the issue time has been added for TAF reports. STIM can be displayed in NMAP2 and listed in SFLIST.

E. Decode and Display Warnings by Polygon (SPC)

The warning decoder, dcwarn, was modified to extract the storm-based polygon latitude/longitude pairs and add them to the output ASCII file, \$OBS/warn/YYYYMMDDHH.warn.

In addition, ggwarn.f was modified to allow the display of the storm-based polygons based upon a new flag associated with the miscellaneous data type, warn. See the \$GEMTBL/config/miscset.tbl.

To display the storm-based polygons, run gmap or nmap2. When the polygon flag is YES, the polygon will be plotted with the color assigned to the type of warning being displayed.

For more information, see the help for dcwarn, \$GEMHLP/hel/p/dcwarn.hlp and the help for the warn parameter, \$GEMHLP/hlx/warn.hl2.



## IV. General Improvements

### A. Grid size limitation removal (ALL)

Many GEMPAK programs impose a limit on the size of grids that can be processed successfully. This limit is currently set for a maximum of 1 million grid points for the majority of the grid programs. In this release, the grid size limitation has been removed from programs GDPLLOT2, GDPLLOT3, NMAP2 and GDCFIL.

## V. Bug Corrections

### A. Fix METAR Decoder (ALL)

A problem arose due to changes in the call letters for stations in Canada. Some Canadian stations are now using the same call letters as U.S. stations, after the leading C or K. The decoder was modified to no longer overlap the reports from these stations.

### B. Corrected Weather Codes With a Leading + or - (Unidata)

A bug was reported by Unidata where the heavy (+) or light (-) indicators on weather codes in METAR reports were not being applied correctly. For multiple weather codes in the same report, the indicator was only being applied to the first code. With this fix, the indicator is now applied to all weather codes in a report.

### C. Corrected Creation of the WMO Header ID for Grids (HPC)

A bug was reported by the HPC regarding the creation of grids in GRIB. The application GDGRIB2 was fixed to properly concatenate the header string to remove the garbage characters observed by the HPC.

## VI. Map and Table Updates

### A. Updated Local GRIB Table Parameters (NCO)

Parameters necessary for processing the Wave Model have been added to the GRIB2 tables – g2varswmo2.tbl and g2vcrdncep1.tbl – under \$GEMTBL/grid.

B. Updated Originator for Redbook Graphic (NCO)

\$GEMTBL/ tables/pgen/awdef.tbl has been updated to fix the originating station for Redbook graphic PTWA93.

VII. Calling Sequence Changes

- A. \$GEMPAK/source/programs/gui/nmap2/nmap\_pggfawp.c
- B. \$GEMPAK/source/gemlib/gh/ghrdad.f, ghrdbd.f, ghrdfv.f
- C. \$GEMPAK/source/gemlib/gb/gbpds.c
- D. \$GEMPAK/source/nmaplib/nms/nmsdspl.f
- E. \$GEMPAK/source/bridge/wn/wnout.f
- F. \$GEMPAK/source/cgemlib/crg/crgmkrange.c
- G. \$GEMPAK/source/bridge/tf/tfdecdf.f
- H. \$GEMPAK/source/programs/gui/nmap2/nmap\_mainw.c
- I. \$GEMPAK/source/gemlib/dg/dgcsbg.c

See the nawips.log and changes.log for additional details concerning these routines.

VIII. Compiling and Linking Instructions

The necessary compiling and linking instructions are contained in the following file:

```
release_build_5.10.4
```

To execute the script and save its output in a file type:

```
cd $GEMPAK/build
```

```
release_build_5.10.4>&! RELEASE_${NA}_OS & ; tail -f RELEASE_${NA}_OS
```

The output of the script will be written to RELEASE\_\${NA}\_OS.