

## N-AWIPS 5.10.3 Release Notes

May 3, 2007

Version 5.10.3 covers development from January 20, 2007 to April 20, 2007

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### I. NMAP Product Generation Improvements

#### A. Enhanced Barb Placement GUI for Jet Creation/Editing (AWC)

Enhancements to the "Barb Info" GUI for the Jet tool have been made to improve forecaster productivity. The LEVEL and TOP/BOT windows now accept either 2- or 3-digit values. The TOP/BOT windows are initialized to blank when the "Barb Info" GUI is first invoked and reset to blank after each barb is placed on a jet. Invalid TOP/BOT values entered in the input windows are not included in the display when the barb is placed. This development was done by the AWC in collaboration with the N-AWIPS 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 5.10.2 and intermediate test executables.

##### 1. Freezing Level Line Algorithm Improvements

Changed the order of processing for closed FZLVL contours to follow the proposed flowchart order. All closed FZLVL contours are now first reduced to fit on three lines of text. Clipping to FA Area(s) is done after this point reduction. If the contour is clipped by an FA Area bound, then it is opened up and formatted as an open contour. The result is a much better fit to the drawn contour than was provided in the 5.10.2 release. Also, corrected the case where three lines of text was exceeded.

2. Freezing Level Line Extension Option Added

A new switch named `ENABLE_FZLVL_EXTENSION` has been added to the `prefs.tbl`. This controls the extension of open FZLVL contours that do not intersect an FA Area bounds. The default table value is `FALSE`, meaning the open FZLVL contours are not extended.

3. Add cluster processing

Cluster processing has been added to both the GFA smearing and formatting. Either drawing/editing AIRMETS or smearing snapshots to generate AIRMETS should not result in any clustered points (consecutive points within a specified distance in `prefs.tbl`, which defaults to 30nm now).

4. Improve non-freezing level processing

The GFA point reduction algorithm for non-freezing level lines has been improved in several respects. First, the preferential removal of concave points has been eliminated thereby resulting in FROM lines with a much closer fit to the original smear. Second, a `prefs.tbl` table option has been added to restrict the overall size increase as a percent of the original polygon. The option is `"REDUCEPTS_INCR_PCT_ORIG"` with a delivered default of 10 percent. The bisection algorithm has been improved to determine a more equal area division of the From line polygon. In addition, bisection is now done on the point reduced FROM line polygon, to minimize the necessity for additional bisections.

5. Enhanced filter tool

The filter tool has been enhanced to work better with the GFA GUI. When the user selects forecast hours of 0 or 3 in the GFA GUI, the filter times of 0+ and 3+ are activated in the Filter tool. Similarly, stepping the Filter tool from 0+ to 3+ (using the right brace hot key) will activate the forecast time of 3 in the GFA GUI.

6. Smear

The smear now uses the computational projection. Also, all reported crashes with the smear have been eliminated and single-point smears are no longer created. Smear-by-tag projections issues have also been resolved.

7. GDFRZL

The program GDFRZL has been updated to account for additional text label attributes.

8. New X-O-X Rules for Conditional Wording

Two new rules requested by the AWC were added to control conditional wording. First, snapshots must have 3000 square miles in the region to be considered. Second, the algorithm now only considers an "O" snapshot if there is not an "X" snapshot inside the FROM line. The new rule enables users to draw multiple snapshots at the same forecast hour for the same hazard while automatically getting the desired conditional wording and the worst-type attributes. Without this new rule, the users were limited to one snapshot per forecast hour per hazard type.

9. Updated Logic to Account for Current Time in DVLPG and ENDG Wording

The new rules for DVLPG and ENDG wordings to account for the issue time have been implemented. Also, the "Routine" and the "Update" radio buttons have been added to the AIRMET GUI.

10. Miscellaneous Formatter Corrections

The correct time is now put on amendments issued between 00Z and 03Z. Also, both crash on canceled snapshots and no producing canceled outlooks problems have been corrected.

11. New GFA GUI for FROM Line Editing Added for Evaluation

The new GFA F/BB/A GUI (also known as GFA' or GFA prime) has been added to product generation for evaluation purposes only.

On the pgen palette there is now a GFA' button next to the GFA button. The GFA' button brings up the GFA F/BB/A GUI. This GUI can be used to create F/BB/A GFA elements or GFA snapshots. If a forecast period is selected instead of a discrete hour (e.g. "0-6, "6-12", etc), then the drawn element will be an F/BB/A element. The GUI will allow the user to enter the Area, State list, and the conditions beginning and ending statements. Please note that at present a Cycle field is displayed but it is non-functional.

The GFA' GUI is provided for testing and feedback purposes only. While F/BB/A GFA elements can be created with it, the code to process them into airmet text reports is NOT yet available.

There are two other new pgen palette buttons related to the GFA'. These are the Prod/Airmet' (Airmet prime) button and FROM action button. These will be used in later steps of the editable F/BB/A project.

It is strongly recommended that the GFA', Airmet', and FROM buttons not be included in any operational version of NMAP2. To remove these from an operational version, remove or comment out the following table entries:

Table	Entry
metbn.tbl	gfa_p
prodbtn.tbl	airmet_p
funcbtn.tbl	from

## 12. Auto Placement Improvements

The auto placement performance has been improved to take into account layering and filtering. Also, the arrow placement has been corrected when auto placement is turned off. This development was done by the AWC in collaboration with the NAWIPS team.

### C. New Group Types Added to Support OPC Products (OPC)

Seven new group types were added to NMAP product generation. These group types are ISOBARS, HI\_FCST, LO\_FCST, WHFT, WHM,WPER and PROB. The group type and associated label values have been added to the \$GEMTBL/pgen/grptyp.tbl to facilitate object, e.g., line labeling.

#### D. Outlook Generation Streamlined (SPC)

NMAP outlook product generation has been enhanced to streamline the convective outlook file naming and saving process for outlook layers by adding an "Otlk All" button to the bottom row of the "FORMAT OUTLOOK" GUI. After forecasts for all layers of a particular day have been drawn, click the "Outlook" button under the "PROD" class to create outlook products as in previous versions of NMAP2. The "Format Outlook" GUI now includes an "Otlk All" button that if selected allows the automatic looping through all the layers in the LPF to create the text products and output VG files. For each layer, the user is prompted with the same GUIs as before that are necessary to produce the outlook products.

There are four ways to get out of the looping process: (1) click the "Cancel" button in the "FORMAT OUTLOOK" GUI, (2) click the "Close" button in the "Outlook Message" GUI, (3) click the "Close" button in the "Product Save..." GUI, and (4) click the "Continue" button in the "FORMAT OUTLOOK" GUI. Clicking the three buttons described in (1) - (3) in the non-looping mode pops down the "FORMAT OUTLOOK" GUI, so in the looping mode this functionality remains unchanged. The "Continue" button described in the 4th way continues to behave as before in the non-looping mode--to process for the current layer only. If the "Otlk All" button had been clicked, after processing a layer, the "FORMAT OUTLOOK" GUI pops up along with the "Confirm" GUI. If the "Cancel" button is clicked, then the "Confirm" GUI pops down with the "FORMAT OUTLOOK" GUI remaining up. After making changes to that GUI, to continue processing in the loop, the "Otlk All" button must be clicked. If the "Continue" button is clicked instead, then only the current layer will be processed and the looping ends.

Since the two Enhanced Thunderstorm periods are only forecast for Day 1 and they have different initial and expiration times than the other Day 1 outlooks, PGEN does special processing in looping mode only for Day 1 for the enhanced thunderstorm products to ensure that the correct initial and expiration times are used.

If the name of the layer is "GEN-TSTM", then no text message or output VGF is created.

#### E. Modify Outlook GUI and File Naming Convention For Enhanced T-Storms (SPC)

Two new buttons ("Enh\_Pd1" and "Enh\_Pd2") have been added to the Day/Prod (formerly Day) Choice section of the "Format Outlook" GUI in PGEN to facilitate multi-period Enhanced Thunderstorm outlook creation and automated file name construction. The button selection determines the initial and expiration times based on different clock time ranges obtained from the \$GEMTBL/pgen/outlooktimes.tbl. Selecting "Enh\_Pd1" or "Enh\_Pd2" also means the string "DAY1" will appear in the file name of the text product. Two new group types have been created for drawing the enhanced thunderstorm forecast: ENH\_PD1 and ENH\_PD2. These are the names that should be used for the group type name in the LPF files having the enhanced thunderstorm layers. The new group types and their associated label attributes have been added to the \$GEMTBL/pgen/grptyp.tbl table. Currently, the character string "enh03" will be pre-pended to the file name of the text product for period 1 and "enh12" will be pre-pended for period 2. To modify the character string to pre-pend, change \$GEMTBL/pgen/otlfilnam.tbl.

#### F. Fire Weather Day 3-8 Outlook Added (SPC)

The "FORMAT OUTLOOK" GUI in NMAP2 Product Generation (PROD;OUTLOOK) has been updated to support the SPC Fire Weather Outlook Day 3-8 product becoming operational. The following "Day/Prod Choice" option has been added: DAY 3-8 and the following "Day/Prod Choice" options have been removed: Day 3, Day 4, Day 5, Day 6, and Day 7.

This development was done by the SPC in collaboration with the NAWIPS team.

## II. Product Generation Pre/Post Processing Improvements

### A. Graph-to-grid (HPC, TPC, ALL)

Graph-to-grid has a new parameter named EDGEOPTS which optionally allows 1) the

G2G algorithm to recognize contours or extensions of contours beyond the edge of the analysis domain, and/or 2) the user to specify boundary conditions surrounding the input contours or analysis domain. By default these new features are turned off. See \$GEMHLP/hlx/edgeopts.hl2 for more information.

#### B. GPTCWW Enhancements for Pacific Region (PR)

New labels identifying some islands and atolls in the Pacific Ocean near Hawaii have been added to the Tropical Cyclone Watch/Warning graphic produced by program GPTCWW. In addition, a few new breakpoints were added to the tcabkpt.tbl for several locations in the Central Pacific Hurricane Center's (CPHC) area of responsibility. Also, GPTCWW was not properly displaying the entire cone of uncertainty and tropical storm forecast track on the watch/warning graphic when any part of the storm track was west of 180 degrees longitude. This problem has been corrected.

#### C. New Probabilistic to Categorical Outlook Generation Program (SPC)

PROB2CAT is a new stand-alone program that allows the transformation of probabilistic outlooks to categorical ones. The conversion is done in accordance with the table given on SPC website:

[http://www.spc.noaa.gov/misc/SPC\\_Prob\\_Conv\\_Otlk\\_Change\\_20060214.html](http://www.spc.noaa.gov/misc/SPC_Prob_Conv_Otlk_Change_20060214.html)

The program is run in a command line manner:

```
prob2cat VGF1 [,VGF2 [,VGF3...] ]
```

where

VGFn - the probabilistic outlook VGF

It is expected that the input file names agree with the SPC name convention:

for day1	- HAZoutlook_DAY1_DDHHMMZ.vgf
for day2	- proboutlook_DAY2_DDHHMMZ.vgf
for day3	- proboutlook_DAY3_DDHHMMZ.vgf

where

HAZ - torn, hail or wind  
DDHHMM - issue day and time of the outlook

For day1 outlooks, there are at least three input files for hazards – hail, tornado and high wind. In addition to these files one more file can be specified as input file – the enhanced resolution thunderstorm outlook. For one cycle only (0100Z), two enhanced resolution thunderstorm outlook files are needed.

For day2 and day3 outlooks, there is only one input file for each day.

It is assumed that the program is run in directory where the input files are located. It will look for input VGF files and create an output VGF file with the name:

p2c\_outlook\_DAYxn\_DDHHMMZ.vgf

where

xn - is the 1, 2 or 3  
DDHHMM - issue day and time of the outlook

The table \$GEMTBL/pgen/pecdef.tbl specifies the mapping between the various categorical outlook types, e.g., Tornado High and their respective probabilistic values for each outlook day.

#### D. Add Check To DCWCN For Bogus WFO (KWNS), (SPC)

The SPC reported a problem where a WOU extended in time had continued to include counties that were canceled by a WCN. The problem was caused by a WCN having an invalid WFO ID of "KWNS", that was erroneously copied from a WOU by a WFO. To prevent this problem from reoccurring, the WCN Decoder DCWCN has been modified to check for the bogus WFO of "KWNS" and not decode the WCN.

### III. NMAP2 Display Improvements

#### A. Added AIRMET Low-Level Wind Shear Decoding/Display (AWC)

The AIRMET decoder DCAIRM has been modified to decode low-level wind shear (WS) portions of turbulence AIRMETs. NMAP2 and GPMAP have been modified to display this AIRMET hazard. Type "help airm" in GPMAP for instructions on



displaying decoded WS. To display decoded WS in NMAP2 see the AIRM Attributes window that pops up when the "Edit Source" button is clicked in the "Data Selection Window" of NMAP2 for MISC/AIRM data.

The flag "Using Issue Time" has been added to the AIRM section of the table \$GEMTBL/config/miscset.tbl to specify whether the issue time is used for NMAP AIRMET plotting. Set the flag to 1, to use the issue time.

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

Since miscset.tbl was modified, old SPF files using AIRMET data should be recreated.

The default colors for Mountain Obscuration and Turbulence AIRMETs were changed. Mountain obscuration is set to color #5 and turbulence is set to color #7.

This development was done by the AWC in collaboration with the NAWIPS team.

#### B. Add Option to Save Reference Time for NMAP SPF Access (HPC, ALL)

An option has been added to allow the NMAP2 time line reference time to be saved to Stored Procedure Files (SPFs) for later access such as case studies. A new button called "Save Reference Time" has been added to the "Save To SPF File". If this button is clicked, then the reference time is saved to the SPF. When the SPF is restored, the reference time will be used to set the time line for the dominant data type, accordingly.

#### C. Added Option To Categorize Models in NMAP2 Selection GUI (OPC, ALL)

A new feature has been added to NMAP2 grid data selection that allows models to be grouped under user-defined categories. No database changes, or changes to the \$GEMTBL/nmap/mod\_res.tbl are required. A new table, \$GEMTBL/nmap/grid\_cat.tbl specifies the mapping between user defined grid category names and models. The table has two columns. The first specifies the user specified grid category name and the second column specifies the models that will appear under that category in the NMAP "Data Source", " GRID" entry. For example, say the table includes two categories, Global, and Regional, with gfs; ecwf; ukmet, and nam;ruc;ngm entries, respectively. When "GRID" is selected in the "Data Source" GUI, Global and Regional appear as

entries in the scroll window under GRID. If Global is selected, then the gfs, ecwf and ukmet appear in the scroll window under Global. If Regional is selected, then the nam, ruc and ngm entries appear in the scroll window. Note that a third category under the GRID called "Others" is automatically generated to include all other models in mod\_res table that were not specified as entries in the grid\_cat.tbl. If the grid\_cat.tbl does not exist or all of its entries are commented out, then NMAP model selection using the "Data Source" GUI remains the same as previous versions of NMAP2.

#### D. Added ASCAT Decode/Display (OPC)

Added the capability to decode and display ASCAT MGDR-Lite data in NMAP2 and GPMAP. These data are displayed in a similar fashion as QuikSCAT data. For NMAP2, click on ASCT under the "MISC" category in the "Data Source" GUI to select ASCAT data for display. The display attributes, e.g., wind speed color coding, can be modified by clicking on the "Edit Source" button and invoking the "ASCT Attributes" GUI. Display attributes include:

- Time stamp interval, line width and color
- Directional arrow, Regular arrow, or Wind barb, and select Width/Size/Head size
- Wind Speed intervals with available color coding of wind vectors
- Display/Hide High Wind Speed, Low Wind Speed, Rain Flagged data, Redundant Data, 2nd color for Rain

Default display attributes are specified in the table \$GEMTBL/miscset.tbl.

In GPMAP, set the par ASCT in a similar fashion as the QSCT parameter to display the ASCAT data. See \$GEMHLP/hlx/asct.hl2 for additional details.

This development was done by the OPC in collaboration with the NAWIPS team.

#### E. Added Display of AMSRE Brightness and Sea Surface Wind Imagery (TPC)

Two new satellite type entries were added to table \$GEMTBL/sat/imgtyp.tbl to allow the display of AMSRE 89Ghz brightness and sea surface wind passive microwave imagery.

F. Added Option to Link Display Loops with Layers (TPC, ALL)

A new option has been added that allows the display loop hot keys (F1 to F8 and Shift F1 to Shift F8) to optionally control which product generation layer is active. To turn this feature on, select a new menu cascade button named “Loop Layer Link” from the NMAP “Option” menu. If the option is “On” and “Layer” window is up and the corresponding layer exists, the loop hot key switches the current layer to the match the corresponding loop number. That is, hot keys F1 to F8 and Shift F1 to Shift F8 correspond to the first layer to the sixteenth layer, respectively. Note that the linkage only applies to the loop hot keys. Switching the active layer using the product generation layer GUI or hot keys will not switch the display loop. Also, note that clicking on a loop number that exceeds the number of active layers will not change the active layer.

IV. Bug Corrections

A. GIF Driver Crash on Radar Images (AWC)

An error was reported in the gif driver that occurred for certain image sizes and platforms. The logic in the wsatim.c routine was corrected. This bug was introduced in release 5.10.1.

B. Corrected GPANOT String Handling for \n Characters (AWC)

GPANOT was modified to properly handle the \n string on Linux platforms. This work was done by the AWC in collaboration with the NAWIPS team.

C. Corrected Problems Zooming on Some Mosaic Satellite Images (HPC)

It was reported that certain global mosaic images did not zoom. It was determined that the imgtyp.tbl lacked an entry for METEOSAT 7, sensor 4, depth 1, which prevented the zoom from working. The imgtyp.tbl located in \$GEMTBL/sat was updated to fix this problem. In addition, METEOSAT 9 and 10 have also been added to the imgtyp.tbl.

D. Clipvgf Problem With Closed Lines (OPC)

The program clipvgf was producing extra points for closed lines each time it was executed. This problem has been corrected.

E. Correct GEMPAK Grid File Name Case Processing (NCO)

A bug was introduced in 5.10.2 where upper case grid file names were not converted to lower case when checking to see if the file exists. This problem has been corrected.

F. Corrected Reading of GRIB Tables Without Last Two Columns (NCO)

Proper defaults are now assigned to the interpolation flags if the last two columns of the GRIB tables are missing.

G. Corrected Occasional Streamline Infinite Loop (NCO)

A long standing bug was corrected where under rare circumstances, the grid streamlining function went into an infinite loop.

H. Correct Wet Bulb Indicator for Synoptic and Marine Decoders (NCO)

Corrected the problem setting sign for wet bulb for indicators 2 and 7. The sign is now set to negative.

I. Correct Problem When Contour Interval (CINT) is not Specified (SPC, ALL)

Corrected a bug reported by the SPC when specifying the contour interval (CINT) in gridded programs. The problem occurred when the contour interval is not specified in combination with the specification of a min/max contour value.

J. Remove Duplicate WCNs From Watch Processing (SPC)

The SPC reported a problem with watches 44 and 46 during the watch status process in NMAP product generation. When the forecaster clicked "Yes" in the "county-auto-update\_popup" GUI, the NMAP2 application locked up. The problem was caused by

having triplicate WCNs transmissions exceed the maximum allowable number of counties. This problem has been corrected by not adding a county to the active county array if it is already in the array. If the size (currently 400) of the active county array is still too small, NMAP2 will now properly terminate processing and set the error box to red.

K. Corrected Problem Computing RELH on Theta Surfaces (Unidata)

Fixed a bug that was preventing the calculation of RELH from PRES and SPFH on THTA vertical coordinates.

L. Corrected NOAAPORT GRIB processing for SREF (Unidata)

The GRIB2 decoder was corrected to properly process SREF GRIB2 fields on NOAAPORT. This development was done by Unidata in collaboration with the NAWIPS team.

V. Map and Table Updates

A. Updated Local GRIB Table Parameter (HPC)

The parameter (PEFG--) for probability of precipitation exceeding flash flood guidance has been added to g2varsncep1.tbl under \$GEMTBL/grid.

B. Updated WOU Default Table (SPC)

\$GEMTBL/txtprd/woudef.tbl has been updated to reflect the current SPC settings per their request. The settings for tags UPDT\_WOU\_PROD\_CODE and FINL\_WOU\_PROD\_CODE\_CAN have been changed from "E" to "O". The setting for tag UPDT\_UNIQUE\_MINS has been changed from "60" to "50".

VI. Calling Sequence Changes

- A. \$GEMPAK/source/programs/gui/nmap2/nmap\_seekw.c
- B. \$GEMPAK/source/cgemlib/clo/closnap.c
- C. \$GEMPAK/source/gemlib/gg/ggmisc.f

- D. \$GEMPAK/source/programs/gui/nmap2/nmap\_spfw.c
- E. \$GEMPAK/source/textlib/airmet/afcreate.c
- F. \$GEMPAK/source/textlib/airmet/afconditions.c, affmtxml.c
- G. \$GEMPAK/source/textlib/airmet/afutils.c, afreducepts.c
- H. \$GEMPAK/source/programs/gui/nmap2/nmap\_mmenuw.c
- I. \$GEMPAK/source/programs/gd/grphgd/gggint.f, grginp.f
- J. \$GEMPAK/source/programs/gui/nmap2/nmap\_pgofmt.c, nmap\_pgpalw.c

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

## VII. Compiling and Linking Instructions

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

```
release_build_5.10.3
```

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

```
cd $GEMPAK/build
```

```
release_build_5.10.3>&! RELEASE_${NA_OS} & ; tail -f RELEASE_${NA_OS}
```

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