



U.S. DEPARTMENT OF COMMERCE  
**National Oceanic and Atmospheric Administration**  
NATIONAL WEATHER SERVICE  
1325 East-West Highway  
Silver Spring, Maryland 20910-3283

December 21, 2006

MEMORANDUM FOR: All Affected Offices

FROM: W/OS Glenn Austin, <signed>  
Digital Services Transition Manager

THROUGH: Digital Services Planning and Action Committee (DSPAC)

SUBJECT: Actions to Support Implementation of Operational QPF and Snow Amount Grids

This memo explains changes that will support the NDFD Quantitative Precipitation Forecast (QPF) and Snow Amount (SnowAmt) forecast element transitions to operational status. QPF is the most popular grid downloaded from NDFD sectors. SnowAmt is also very popular.

The SnowAmt Grid became experimental for the CONUS in June 2003 and for Hawaii in September 2004. SnowAmt is not required for Puerto Rico/Virgin Islands or Guam, and is not yet available for Alaska. QPF in NDFD has been experimental since June 2003 for CONUS and Puerto Rico/Virgin Islands and since November 2006 for Hawaii. QPF is not yet available for Guam or Alaska. The current experimental grids for both elements are planned to become operational on May 2, 2007.

DSPAC requests that all NWS headquarters, regions, national centers, and field offices review the following and ensure local procedures are adjusted where necessary to support the demonstration of our operational readiness for these important forecast grids. Your compliance is needed by February 5, 2007 which is the beginning of a 60 day evaluation period. Applicable procedural changes described in this document are planned for inclusion in future policy revision.

**Background:** A national team was created and asked to assess QPF quality. Team recommendations were unanimously approved by the NWS Corporate Board Operations and Execution Committee. A detailed implementation plan is currently being executed. The plan includes steps to mitigate inconsistencies between HPC, RFC, and WFO (NDFD) QPF. It was agreed that SnowAmt would transition along with QPF.

**Definitions:** The SnowAmt definition has not changed from the current WSDM 10-506. The definition is:

**The expected total accumulation of new snow (in inches) during a 6 hour period. A snow accumulation grid will be specified whenever a measurable snowfall is forecast for any hour during a valid period.**

A new QPF definition was established in the QPF Whitepaper and approved by the NWS Corporate Board. The definition that will be implemented on February 5th is as follows:

**The expected amount of liquid precipitation (in hundredths of inches) accumulated over a six hourly period. NDFD valid periods are six hours in length beginning and ending at 0600, 1200, 1800, and 0000 UTC.**

Further explanation of the new definition including its relationship to other elements (e.g., PoP and precipitating weather) will be available in the QPF e-Learning Training Modules (see below).

**Grid Production Requirement:** SnowAmt grids are produced for each 6 hour period out to 48 hours from 00 UTC Day 1. QPF grids are produced for each 6 hour period out to 72 hours. Valid periods for the NDFD begin and end at 0600, 1200, 1800, and 0000 UTC.

**Inter-element Integrity:** The following integrity checks are required beginning February 5, 2007:

- If a non-zero QPF is indicated in the 6-hour QPF grid, at least one of those corresponding hours shall have a non-zero floating PoP.
- A non-zero QPF shall be included during one or both of the 6-hour QPF periods when the corresponding 12-hour PoP is  $\geq 50\%$ .
- If there is an accumulation  $\geq 0.5$ " in the 6-hour SnowAmt grid, a corresponding non-zero 6-hour QPF shall be included.
- If a non-zero QPF is indicated in a 6-hour period, at least one of those hours shall have a precipitating weather type (rain, snow, rain showers, snow showers, rain/snow, sleet, freezing rain, drizzle).
- If there is a non-zero snow accumulation in the 6-hour SnowAmt grid, at least one of those hours shall have snow or sleet in the Wx grids during the corresponding time period.

**Ramifications to Snow Amount Configuration in Zone Formatter:** The threshold for inclusion of the Snow Accumulation phrase in the Zone Forecast remains at a PoP value of greater than or equal to 60%. At this time, no configuration adjustments are necessary to the snow accumulation phrase in the zone formatter. However, future changes to Zone Policies may necessitate the formatter configuration be adjusted (e.g., to better align legacy products with the new mandatory QPF/50 % grid requirement.)

**Procedural Improvements:** Forecasters are expected to utilize HPC forecasts (or RFC forecasts which use HPC QPF) in their forecast process. Significant snowfall or rainfall events and times when significant changes are needed to ongoing forecasts are to be recognized as “collaboration opportunities.” A web site has been established by HPC to assist with collaboration between HPC, WFOs and RFCs. The web page is located at: [http://www.hpc.ncep.noaa.gov/colqpf/colqpf\\_diff.php](http://www.hpc.ncep.noaa.gov/colqpf/colqpf_diff.php)

**Smart Tools:** The National Smart Tools and Smart Initializations Team (STSIT) has made available a QC Integrity Smart Tool to assure the QPF and SnowAmt grids are meeting inter-element integrity and follow new definitions and policies. The tool, called *SnowAmtQPFPopWxCheck* informs forecasters when grids are not compliant with integrity checks listed above. The assistance tool is available for download from the national Smart Tool Repository at the following URL: [http://www.mdl.nws.noaa.gov/~applications/STR/nstsit\\_rcmnd.php3](http://www.mdl.nws.noaa.gov/~applications/STR/nstsit_rcmnd.php3)

**Collaboration Thresholds:** Collaboration thresholds were modified in January 2006. Current thresholds for all elements are available at: [https://bestpractices.nws.noaa.gov/contents/ndfd-stats/supplementalpages/NDFD\\_threshlds.htm](https://bestpractices.nws.noaa.gov/contents/ndfd-stats/supplementalpages/NDFD_threshlds.htm). Specific thresholds for QPF and SnowAmt are:

	Condition	Thresholds		
QPF (Inches)	> .25	.25	.50	1.0
	(one office)	for <1.5	for <3.0	for $\geq 3.0$
SnowAmt	> 2	2	4	6
	(one office)	for <6	for <12	for $\geq 12$

**Training:** New QPF training modules will be completed and made available in January. The modules will be listed in the catalog of courses found in the NWS Learning Management System (LMS) located at: <http://e-learning.noaa.gov/>. There already exists a considerable amount of training on forecasting SnowAmt (much of it developed by the WFO Science Operations Officers). These modules can also be found in the NWS LMS. DSPAC recommends all NWS forecasters complete this training, especially the new training modules created for QPF.

**Verification:** NDFD QPF is compared with HPC and model QPF. Monthly station scores are then produced. The official, national verification of QPF is located at <http://www.hpc.ncep.noaa.gov/npvu/qpfv/>. Additional quality control checks, in the form of daily, weekly, and monthly NDFD integrity statistics are available at:

<https://bestpractices.nws.noaa.gov/contents/ndfd-stats/>.

A requirement for gridded SnowAmt verification has been submitted to the Operations and Services Improvement Process (OSIP). (For details go to: <https://osip.nws.noaa.gov/osip/projectDetail.php?projectid=06-082>)