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Subject: **Fwd: Coastal Storm**
Date: 11 March 2013 6:04:39 PM EDT
▶ 3 Attachments, 117 KB

Resent-From: <lbosart@albany.edu>
From: Geoffrey Manikin - NOAA Federal <geoffrey.manikin@noaa.gov>
Subject: **Re: Coastal Storm**
Date: 8 March, 2013 04:32:28 GMT
To: "Bosart, Lance F" <lbosart@albany.edu>
Cc: <MAP@listserv.albany.edu>

MAP-

Having looked at this event from the perspective of the DC area forecast in some detail, I'd like to give my thoughts on the event. There are 2 pieces of the puzzle here - QPF for the overnight period Tuesday and then precip type during the daylight hours of Wednesday.

All of the guidance I've seen dramatically overforecasted the QPF for the 06-12z time period Wednesday. Here are some model totals for DCA for that 6-hr period:

TUESDAY
12z NAM: 0.61"
12z 4 km NAM: 0.77"
12z GFS: 0.45"
15z SREF mean: 0.59"
18z NAM: 0.58"
18z 4 km NAM: 0.74"
18z GFS: 0.47"
21z SREF mean: 0.64"

WEDNESDAY

00z NAM: 0.62"

00z 4 km NAM: 0.54"

00z GFS: 0.72"

Attached Fig. 1 shows the 03z Wednesday SREF 9-hr forecast probabilities of 0.25"

and 0.5" of precip during the 6-12z time period. It shows a certainty of 0.25" in the IAD to

DCA to BWI to DOV corridor and high chances of 0.5" from IAD to DCA to BWI. This is

consistent with multiple SREF cycles leading up to the event.

The observed 6-hr precip was 0.25" at DCA, 0.19" at BWI, 0.32" at IAD, and 0.13" at DOV.

NAM/SREF/GFS precip type showed snow across the IAD-DCA-BWI corridor, as did the

model microphysics (more on that in a moment). Based on the QPF I was expecting at least 3-5"

to be on the ground by morning in the DC-Baltimore corridor. Instead, the nearby suburbs

struggled to get 1-3" with the only occasionally moderate rates, while pretty much nothing

stuck in DC or Baltimore. Had the heavy precip actually occurred during this time period before

the sun rose, I believe that the column would have sufficiently cooled for accumulating snow.

During the daylight hours, boundary layer temperatures were simply too warm for the snow

to accumulate, and as has been noted, many locations in the DC-Baltimore corridor even

changed to rain. There was actually a very good signal in the NAM output that this would

be the case. Attached Fig. 2 shows the 4 km NAM nest % of frozen precip valid at 18z Wed.

from the 12z Tues run. When this parameter is at or near 100%, we expect all snow, but we

expect mixing as the value falls below 100. Note the values well under 50% in the

DC-Baltimore corridor, implying that accumulating snow is not going to happen. This is in contrast to the thermodynamic-based dominant precip type shown in Fig. 3 which suggests all snow for DC and Baltimore. The % of frozen precip signal for non-accumulating snow was present in all cycles leading up to the event for the parent 12 km NAM as well as the 4 km CONUS nest and 1 km fire weather nest.

EMC believes that the % of frozen precip field which is available from the parent NAM

at <http://www.emc.ncep.noaa.gov/mmb/mmbpll/opsnam/> can be extremely useful in forecasting precip type in marginal temperature events.

WPC is testing snowfall amount algorithms based on the % of frozen precip, and the feedback on this method at their winter weather experiment has been very positive.

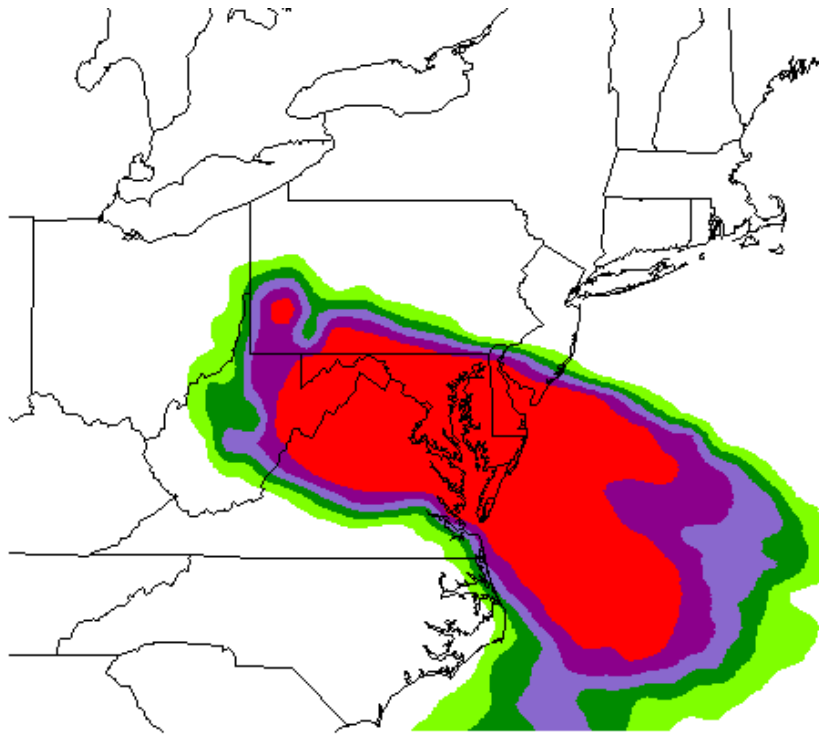
I'll note that it showed significantly lower snow amounts for the PHL area for this event than more classic snowfall amount guidance.

Again, though, even with the microphysics-based precip type approach, one would still have predicted significant snow in the DC-Baltimore corridor during the 6-12z time period.

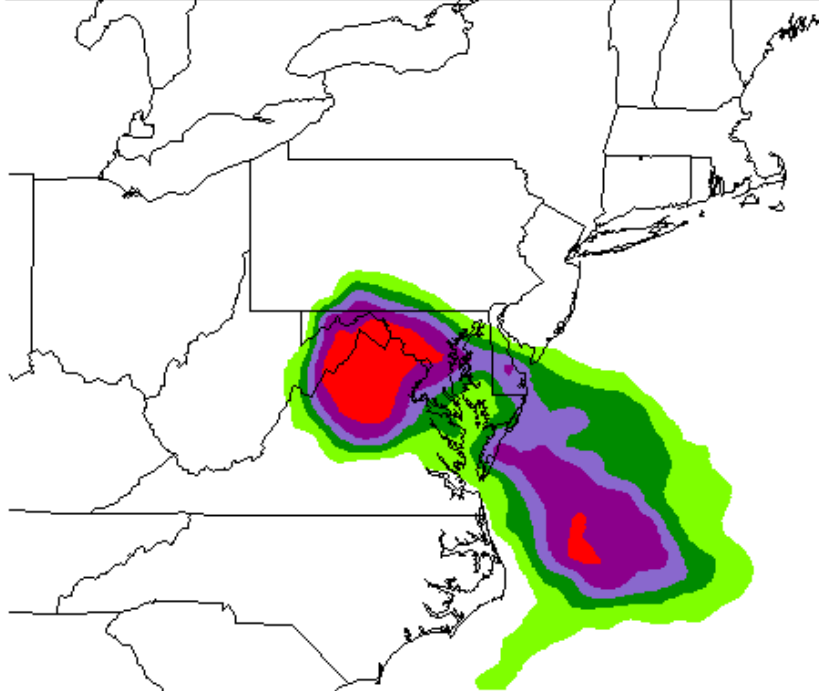
The question of why all of the guidance (I don't have 6-hourly ECMWF data to know if it joined the party) was so wet with the initial warm advection precip needs to be answered.

But the microphysics could have been useful (in true hindsight) in dropping winter storm warnings sooner once the early morning heavy snow did not materialize.

-Geoff

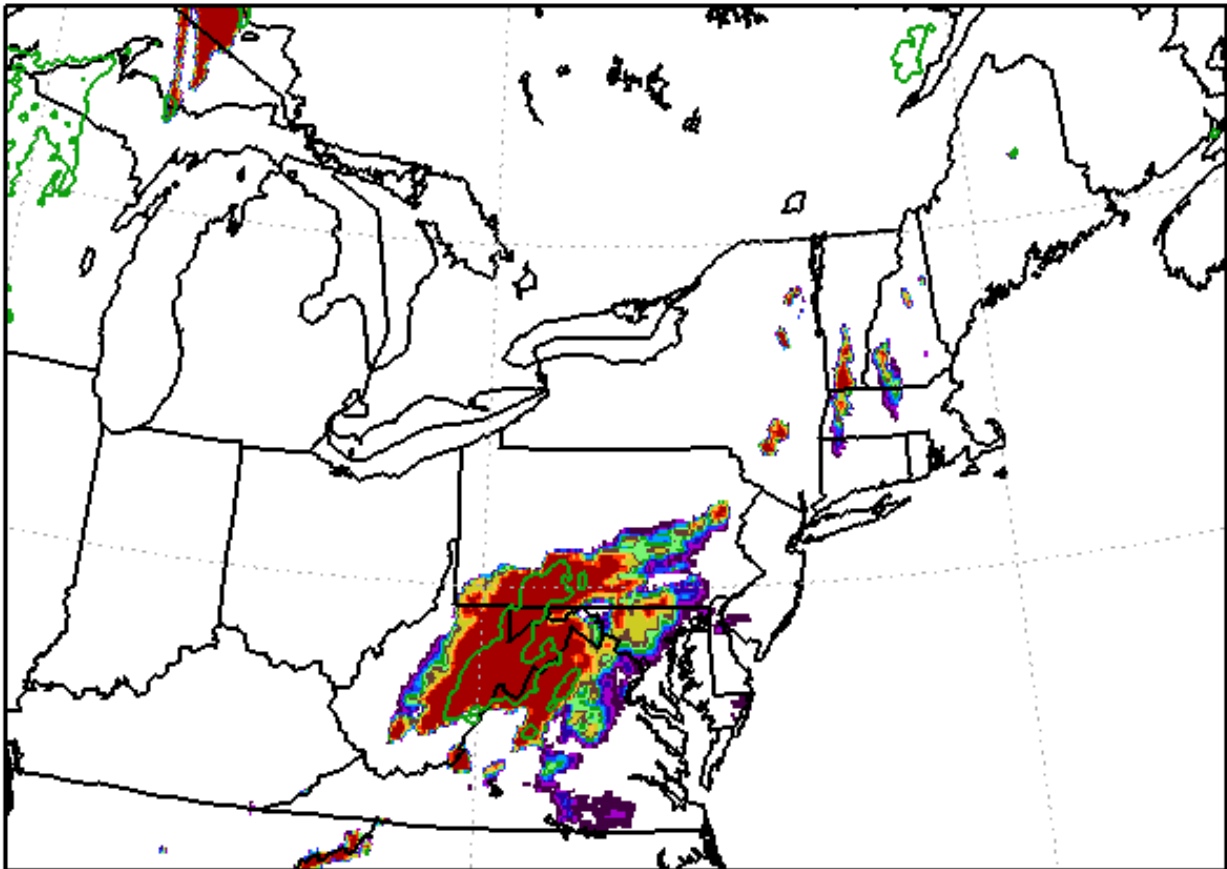


130306/1200V009 SREF 6-HR PROB of 0.25"



130306/1200V009 SREF 6-HR PROB of 0.5"

PERCENT OF FRZ PCP OPSNEST 30H FCST VALID 18Z 06 MAR 2013



Green Line = 0 deg C Skin Temperature



PRECIP TYPE OPSNEST 30H FCST VALID 18Z 06 MAR 2013

