

## DISCOVER-AQ Outlook for Monday, July 25, 2011

Clouds continue to be a problem for flying in the study region today and tomorrow. BWI went mostly cloudy by midday today, with increased chances of showers this afternoon. Clouds will be even more prevalent tomorrow along with shower activity in advance of a frontal system. The front will pass through Monday night with clearing by Tuesday morning. This will usher in somewhat drier and cleaner air, although not particularly cool. We expect good flying conditions Tuesday through possibly Friday. The upper level ridge supporting the string of clearer days is not quite as strong as the one during the past week, but heat and humidity will return, especially by Thursday and Friday. A short-wave trough will enter the picture by next Saturday. Relatively clean conditions will be the case for Tues and Wed, with increasing pollution by Thurs. and Fri. We will update the outlook for Tuesday and beyond tomorrow.

# Recommendations July 25<sup>th</sup>-28<sup>th</sup>

July 25, Monday: No Fly - Clouds

July 26, Tuesday: Can Fly

July 27, Wednesday: Can Fly

July 28, Thursday: Can Fly

Today

Tonight

Monday

Monday  
Night

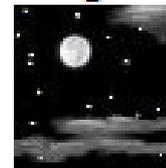
Tuesday

Tuesday  
Night

Wednesday

Wednesday  
Night

Thursday



50%  
Chance  
Tstms  
Hi 96 °F

40%  
Chance  
Tstms  
Lo 77 °F

60%  
Tstms  
Likely  
Hi 90 °F

60%  
Tstms  
Likely  
Lo 72 °F

Sunny  
Hi 91 °F

Mostly  
Clear  
Lo 71 °F

Mostly  
Sunny  
Hi 91 °F

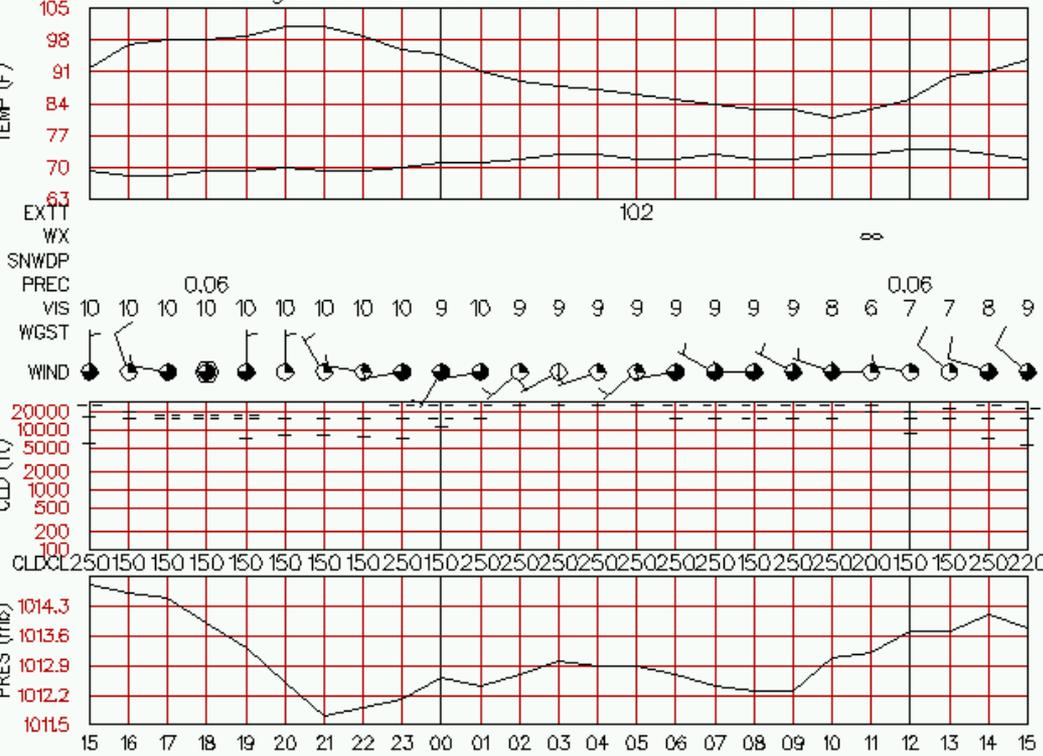
Partly  
Cloudy  
Lo 72 °F

Mostly  
Sunny  
Hi 94 °F

# Current Conditions at BWI, 11 am

## Plymouth State Weather Center

Meteogram for KBWI from 1500Z 23 JUL 11 to 1500Z 24 JUL 11



## Current Conditions [Move Up]

[view Yesterday's Weather](#)

### Baltimore-Washington International Airport

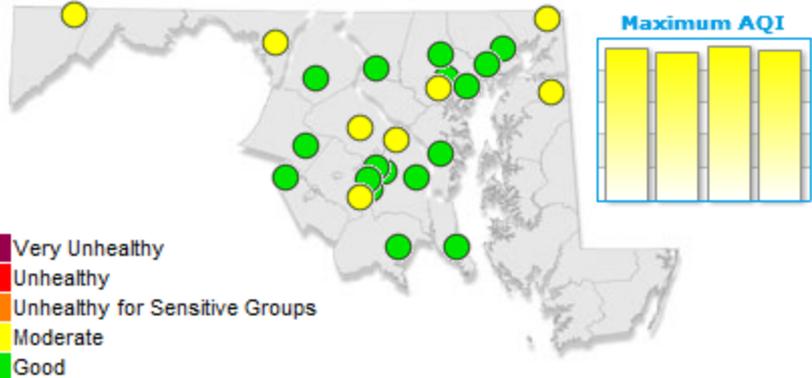
Lat 39.19 Lon: -76.67 Elev: 148

Last Update on Jul 24, 10:54 am EDT

Mostly Cloudy

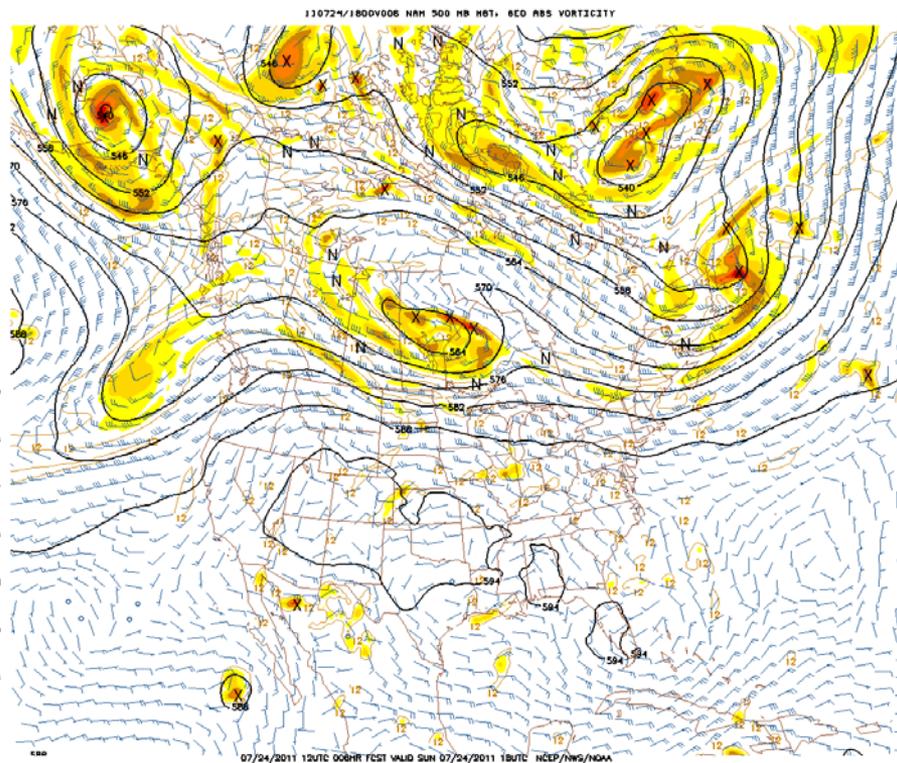
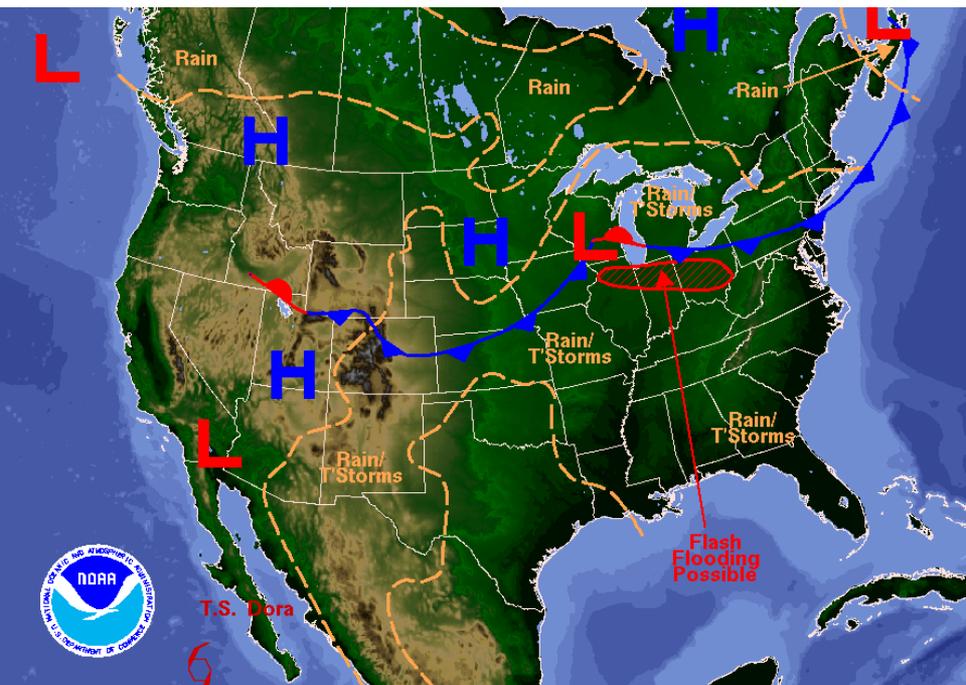
94 °F  
(34 °C)

Humidity:	49 %
Wind Speed:	NW 9 MPH
Barometer:	29.95" (1013.8 mb)
Dewpoint:	72 °F (22 °C)
Heat Index:	102 °F (39 °C)
Visibility:	9.00 mi.



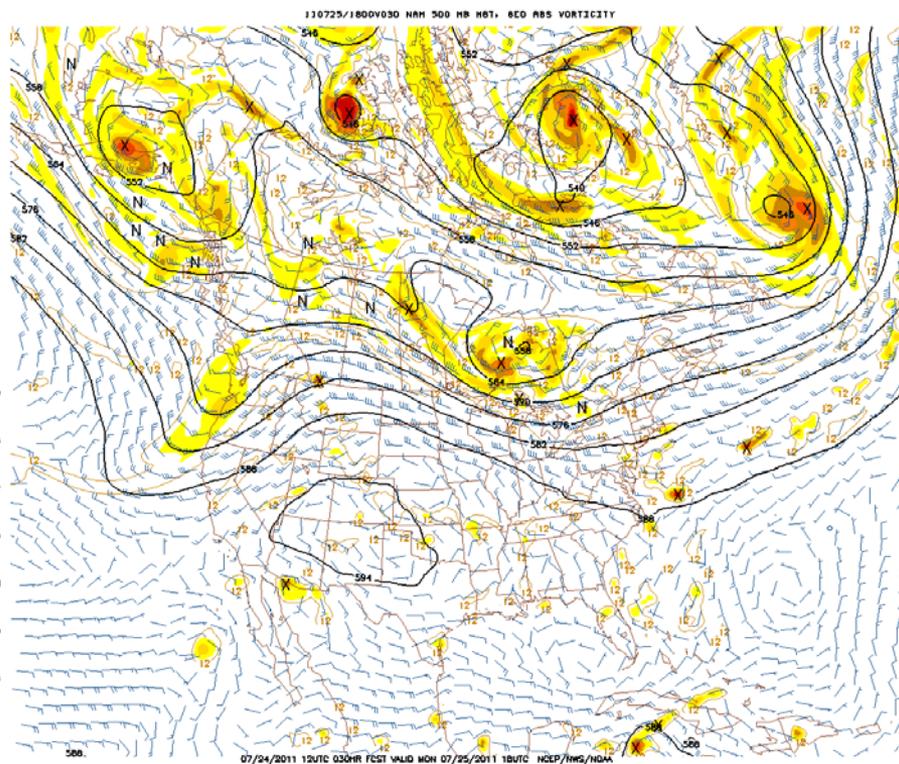
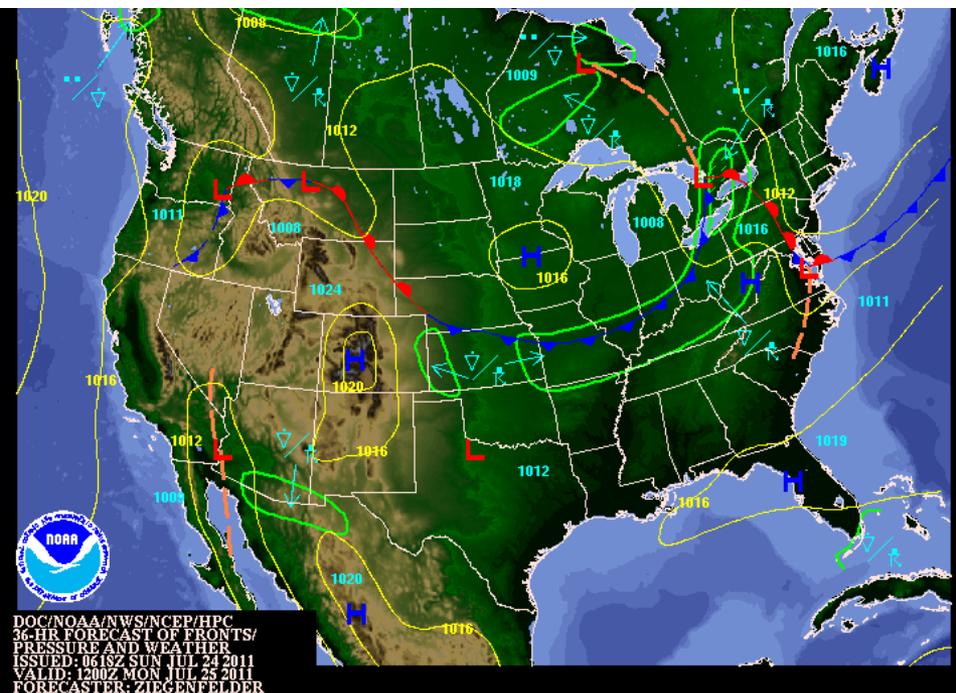
Today : Cloudy and a chance of thunderstorms ahead of cold front. Cloud cover may inhibit surface heating and widespread thunderstorm activity.

500 mb NAM at 2 PM.



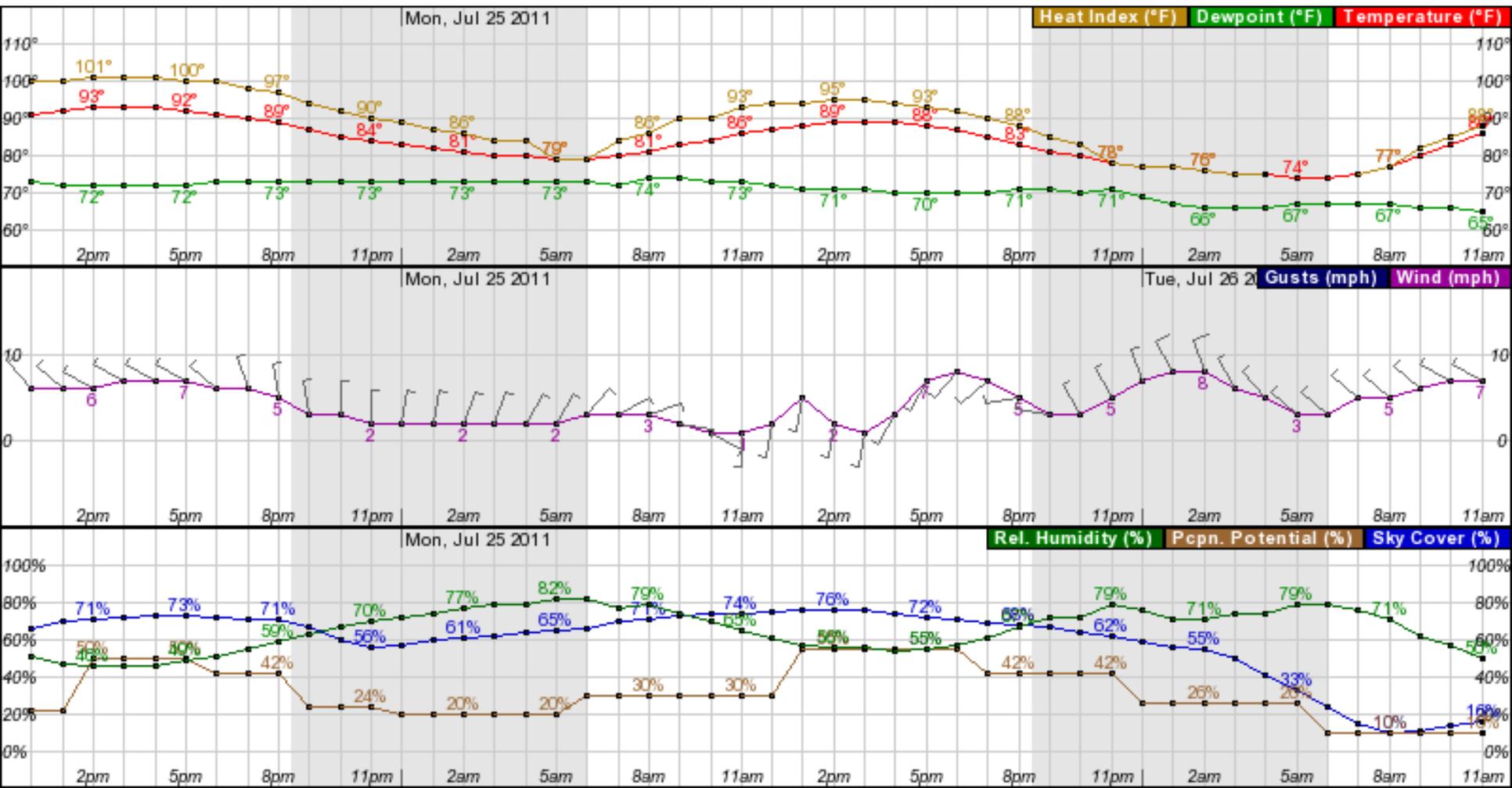
Tomorrow: Showers and thunderstorms beginning late tomorrow morning and ending after midnight after front passes through our region.

500 mb NAM at 2 PM.



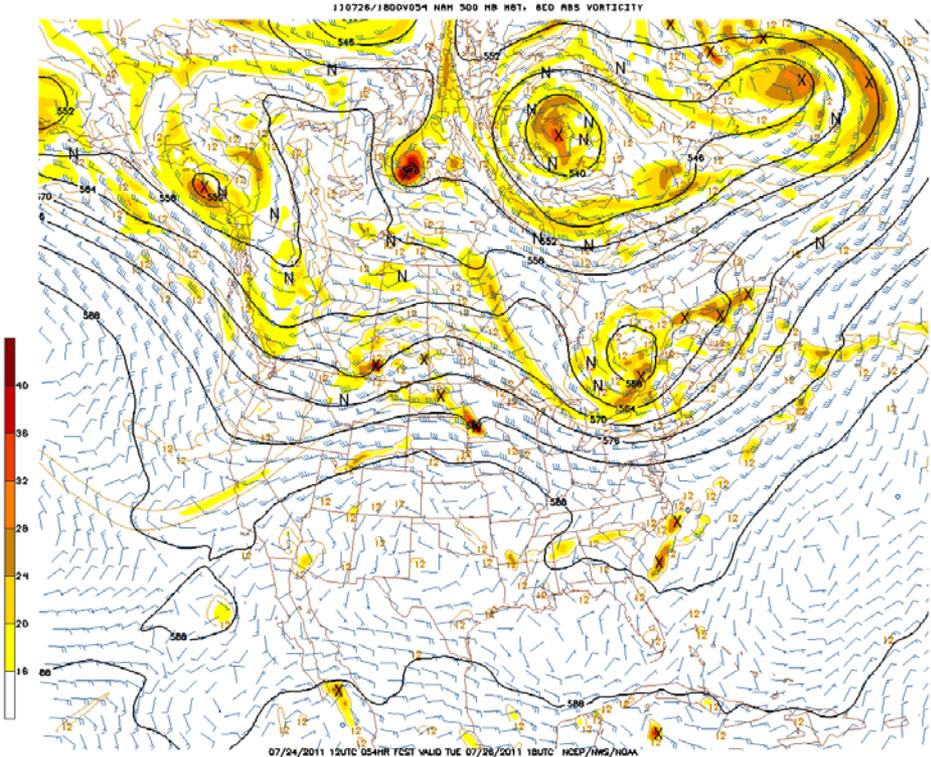
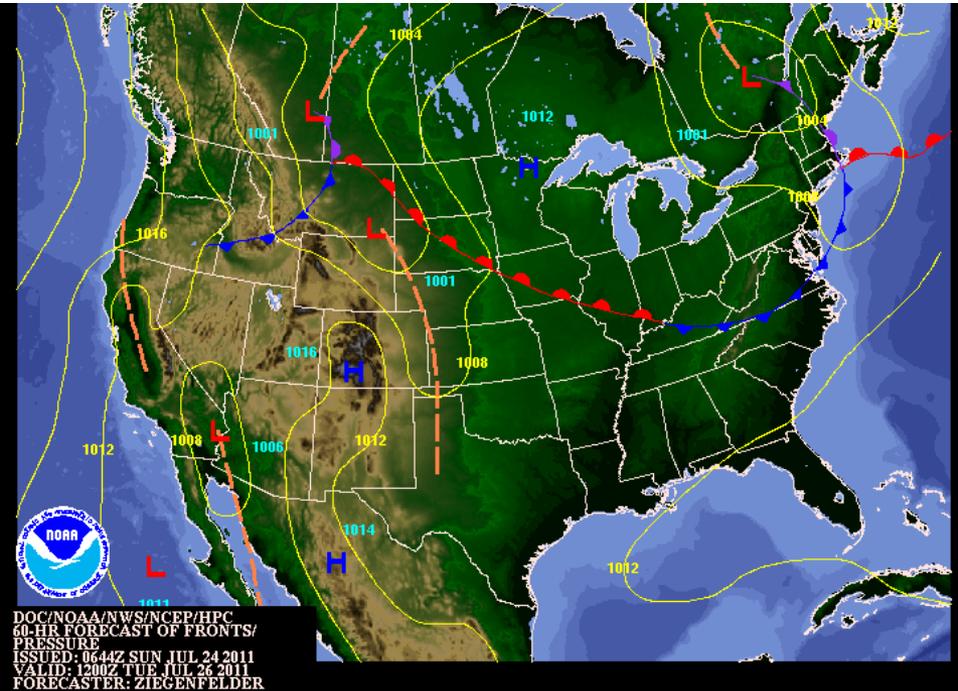
**Today: Hot, humid, cloudy, and chance of thunderstorms.**  
**Tomorrow: Thunderstorms as front passes through our region.**

**Today → Monday →**



Tuesday: Clearing early Tuesday morning after frontal passage.

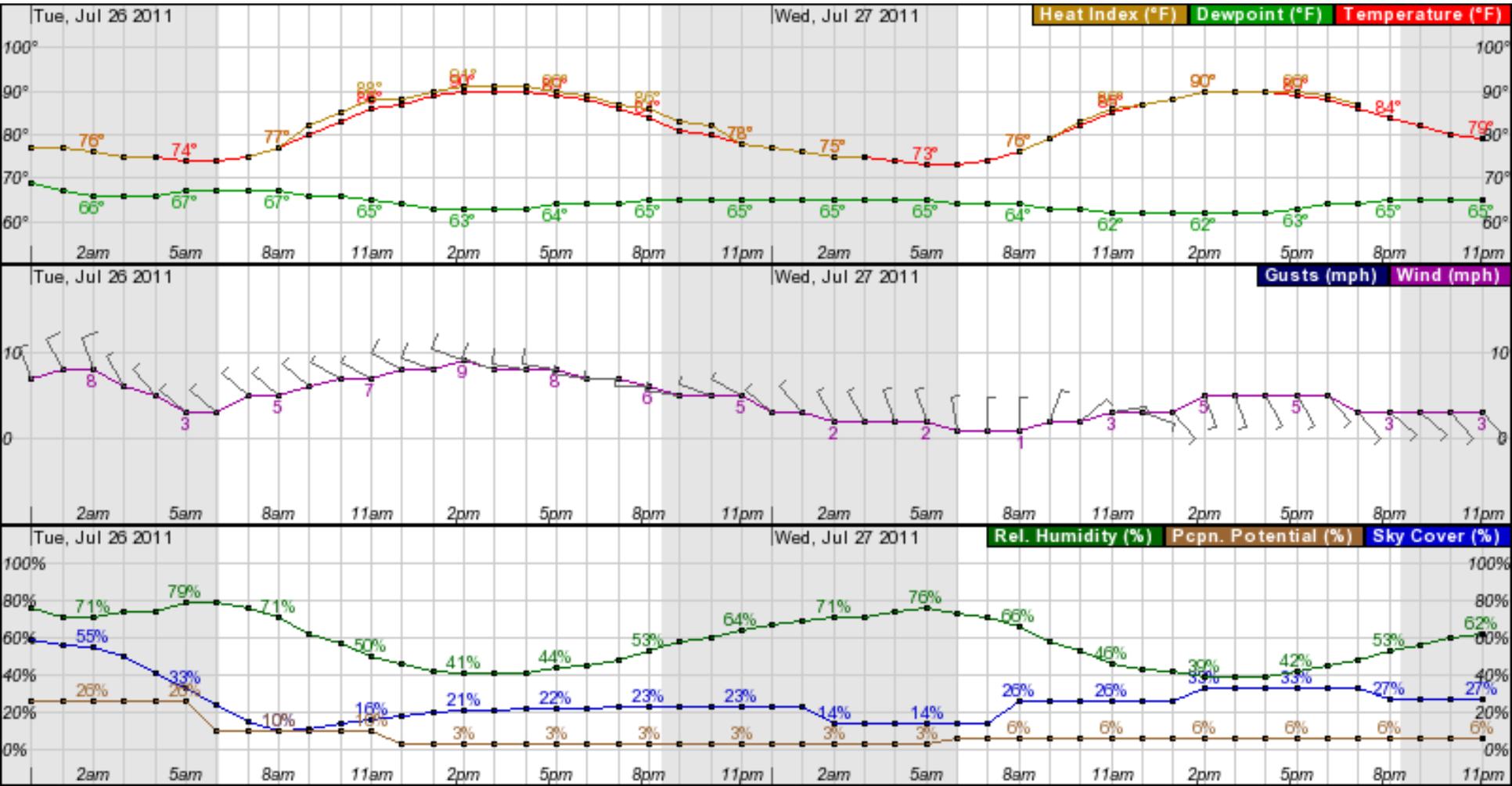
500 mb NAM at 2 PM.



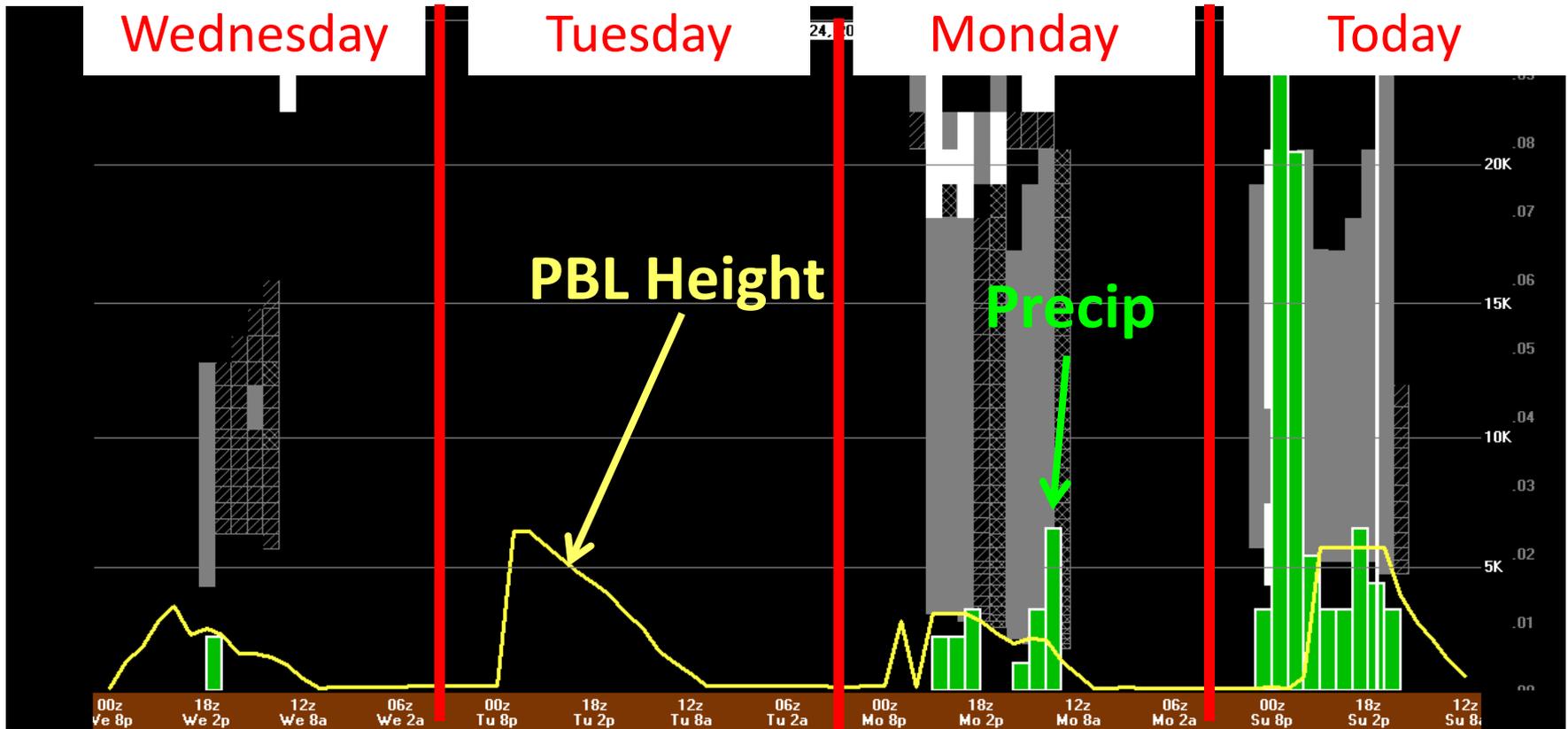
# Tuesday and Wednesday: Mostly sunny and dewpoints back in the 60s.

Tuesday →

Wednesday →



# BUFKIT – NAM (12 UTC 24 July)



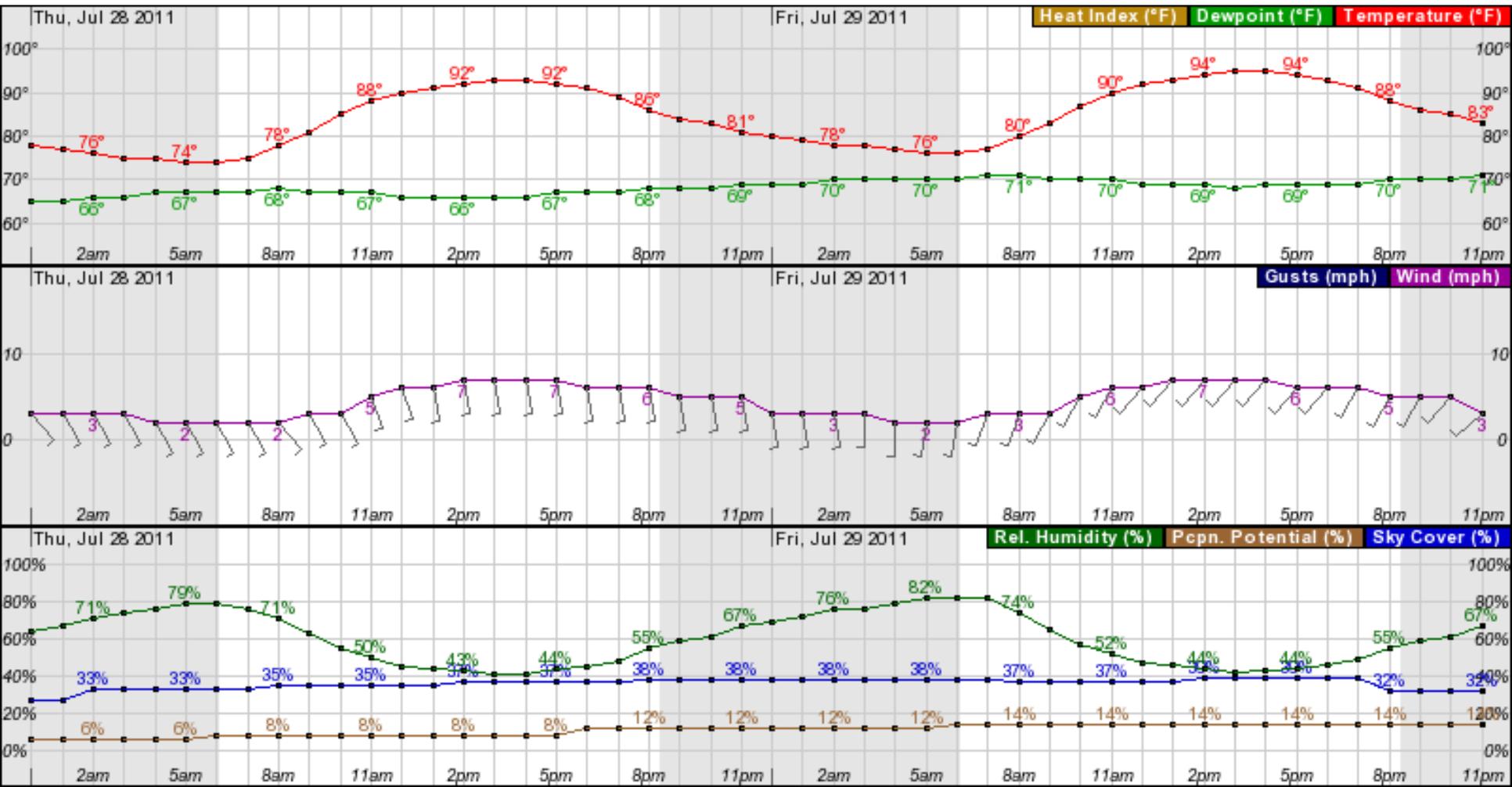
- Monday: Cloudy and a chance of precipitation.
- Tuesday: Mostly sunny.

**Thursday: Southerly flow and mostly sunny skies.**

**Friday: Southerly flow brings dewpoints back into the 70s.**

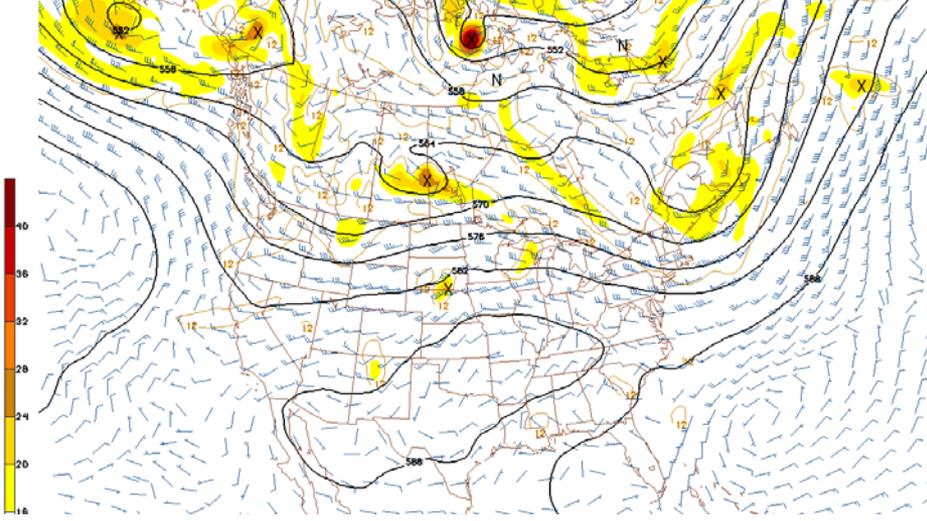
**Thursday →**

**Friday →**



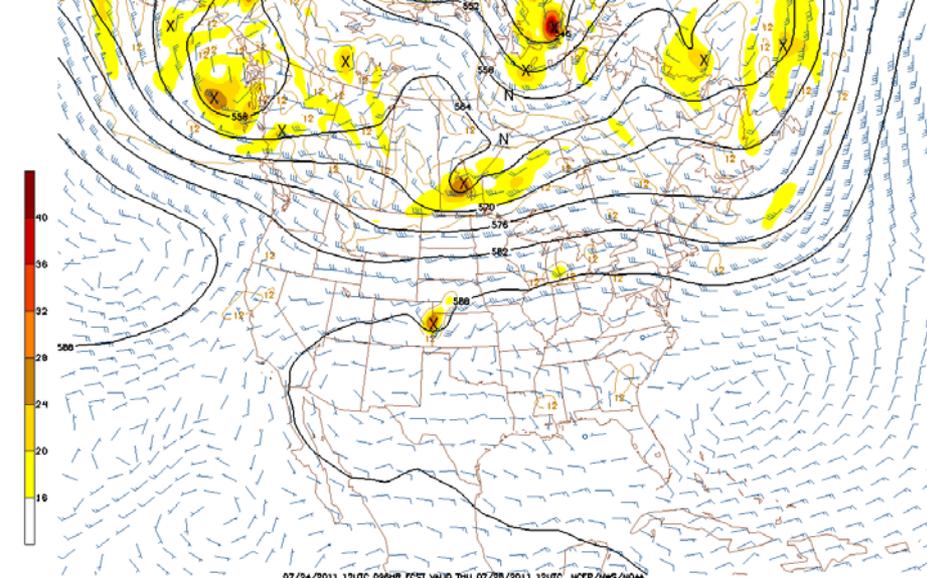
130727/1200V072 OF5 500 MB HGT, 6EO ABS VORTICITY

# 500 mb GFS Wednesday 8 AM



130728/1200V056 OF5 500 MB HGT, 6EO ABS VORTICITY

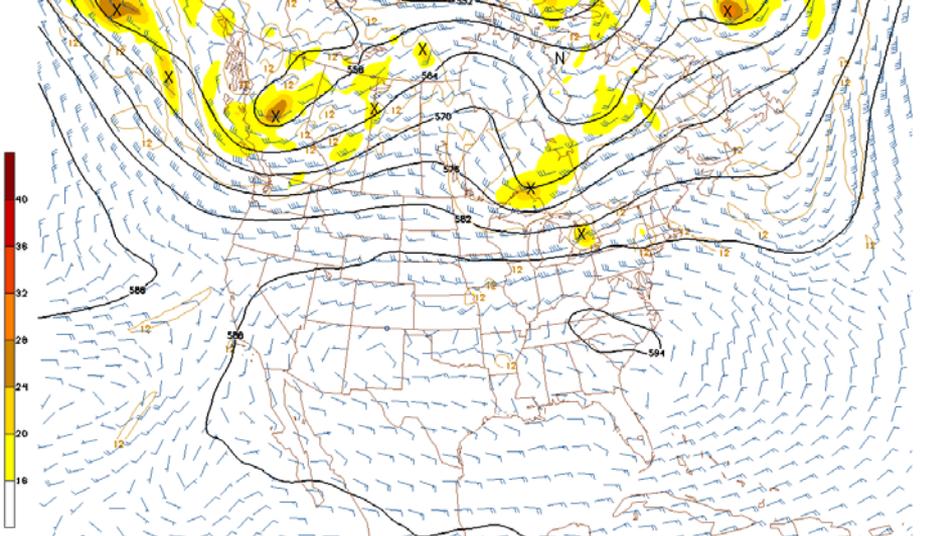
# 500 mb GFS Thursday 8 AM



07/24/2011 12UTC 090HR FCST VALID THU 07/28/2011 12UTC NCEP/NNL/NOAA

130725/1200V120 OF5 500 MB HGT, 6EO ABS VORTICITY

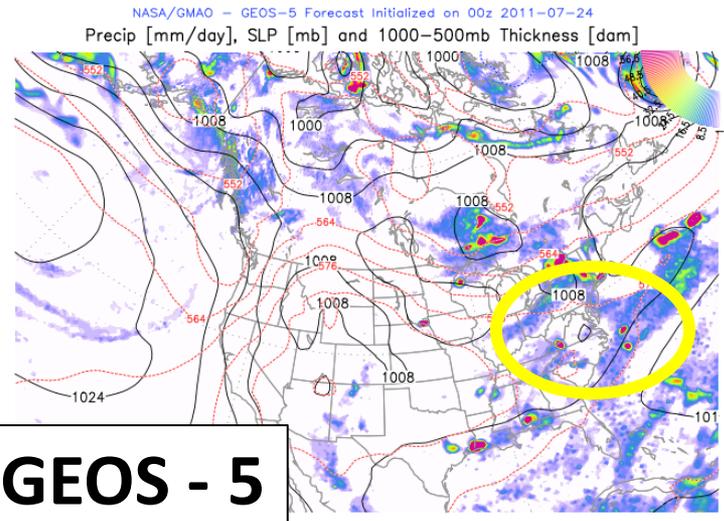
# 500 mb GFS Friday 8 AM



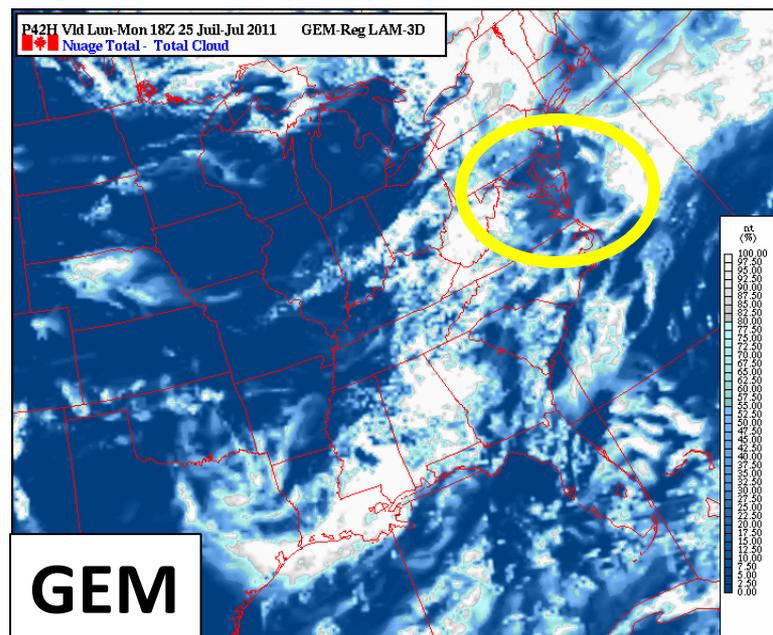
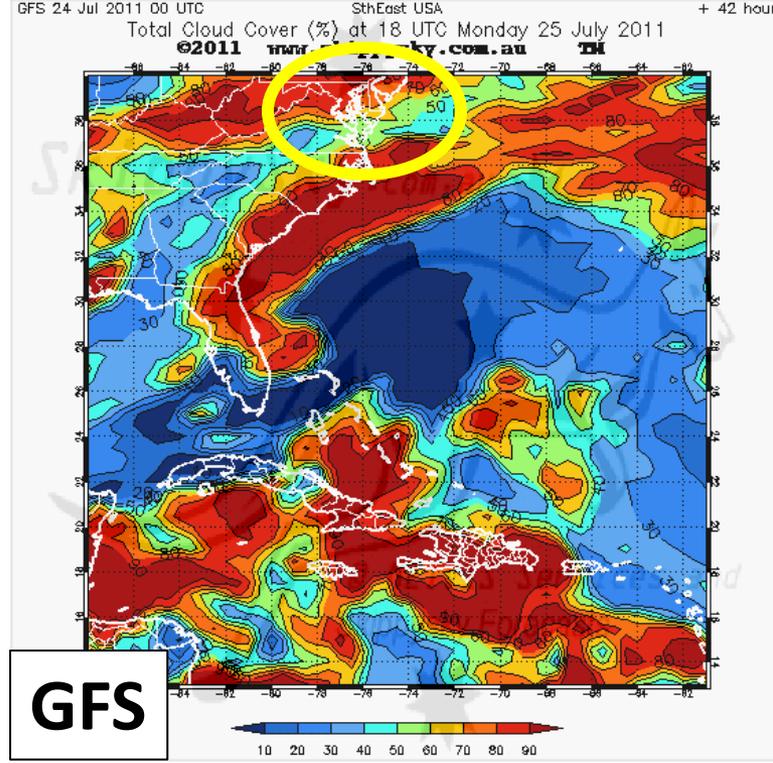
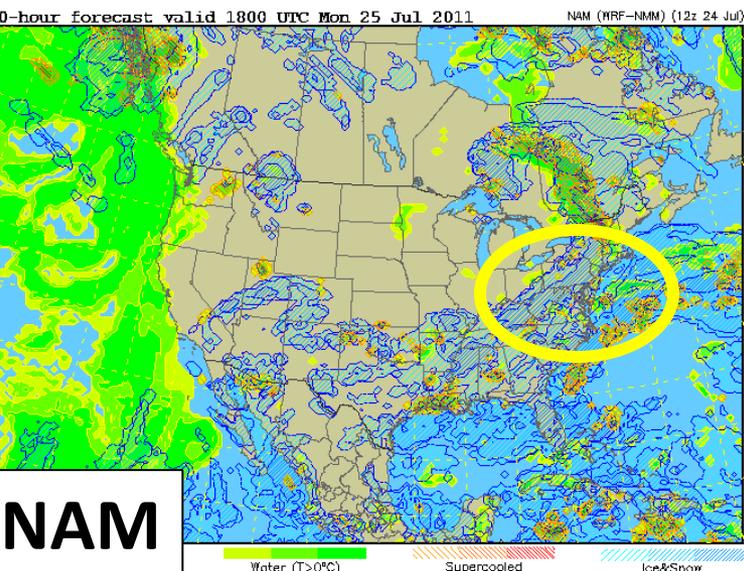
07/24/2011 12UTC 120HR FCST VALID FRI 07/29/2011 12UTC NCEP/NNL/NOAA



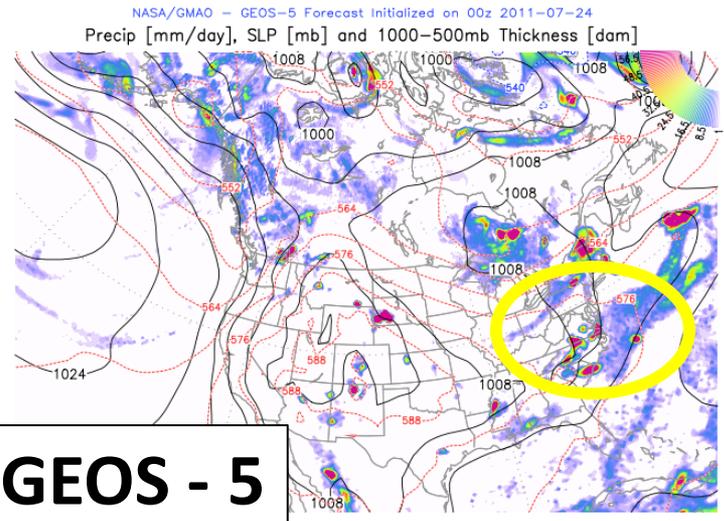
# Monday 2 pm: Cloudy; GEM has less clouds than GFS.



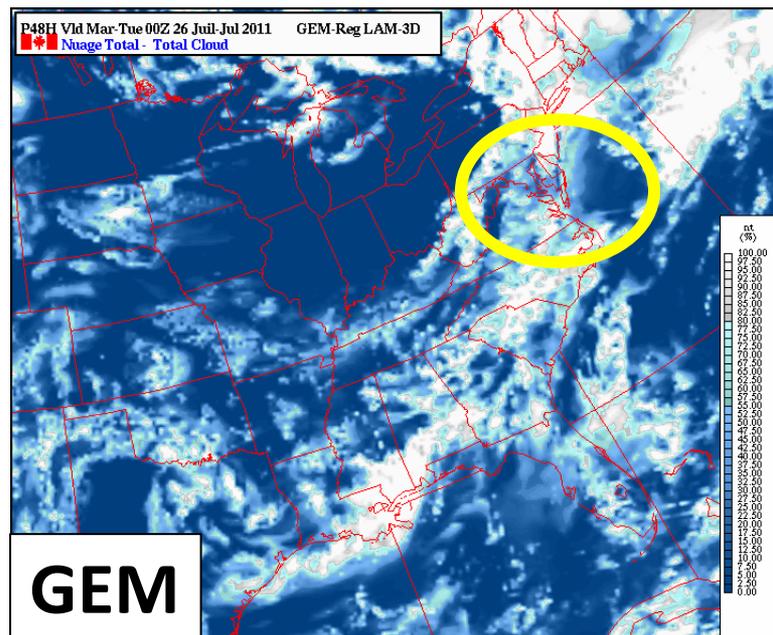
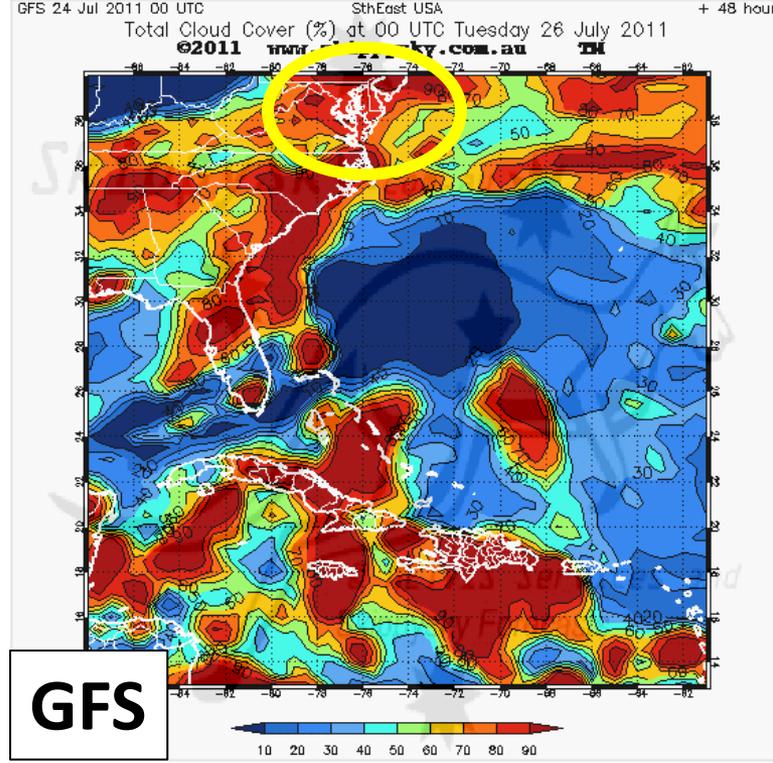
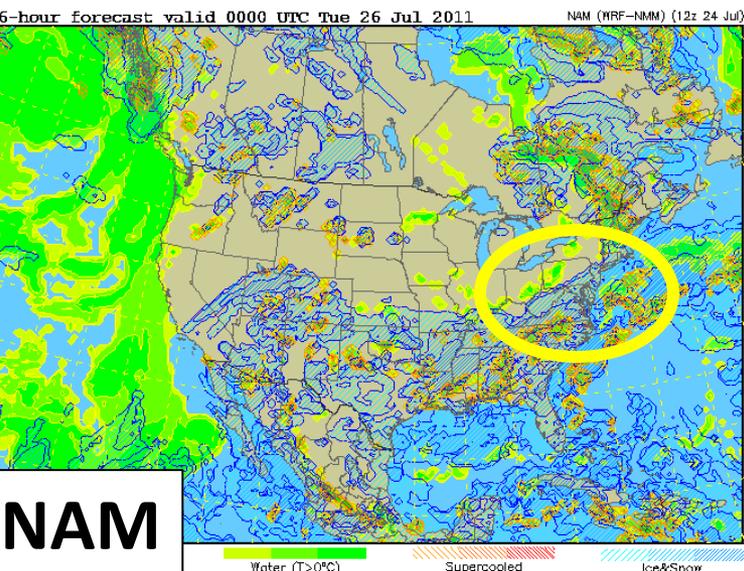
42-hr forecast valid Mon 18z 2011-07-25



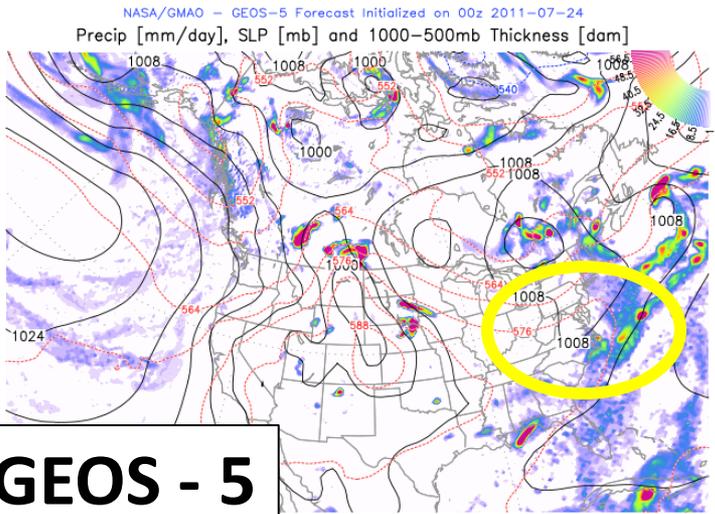
# Monday 8 pm: Mostly cloudy.



48-hr forecast valid Tue 00z 2011-07-26

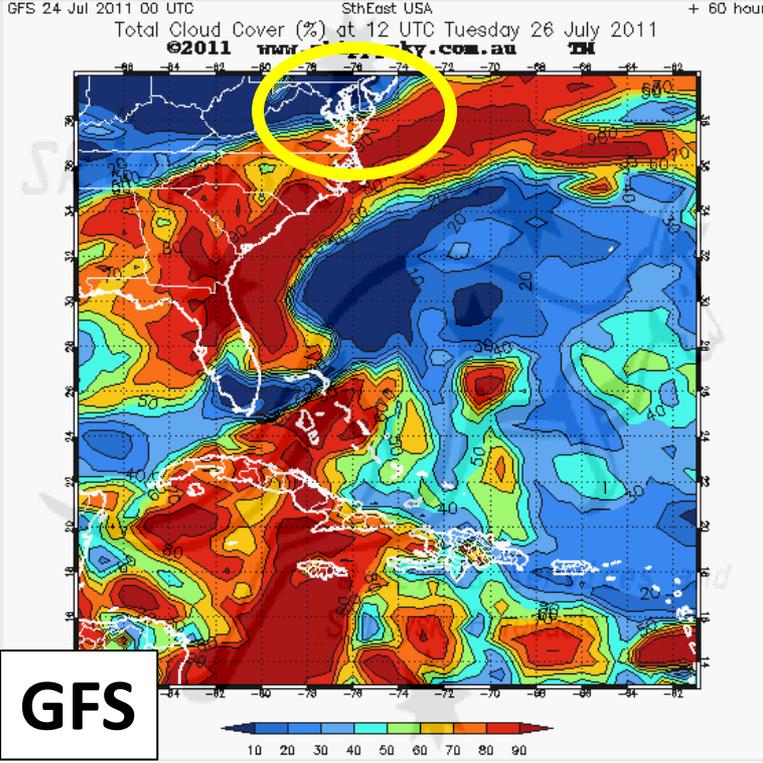


Tuesday 8 am: Mostly sunny.



**GEOS - 5**

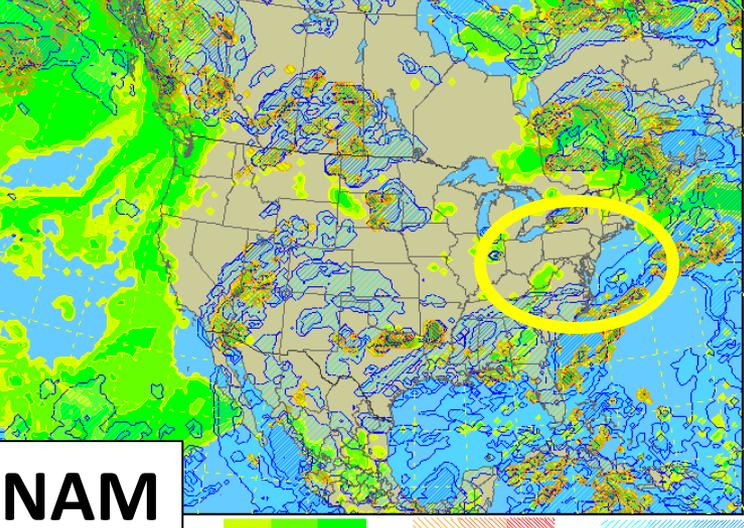
60-hr forecast valid Tue 12z 2011-07-26



**GFS**

10 20 30 40 50 60 70 80 90

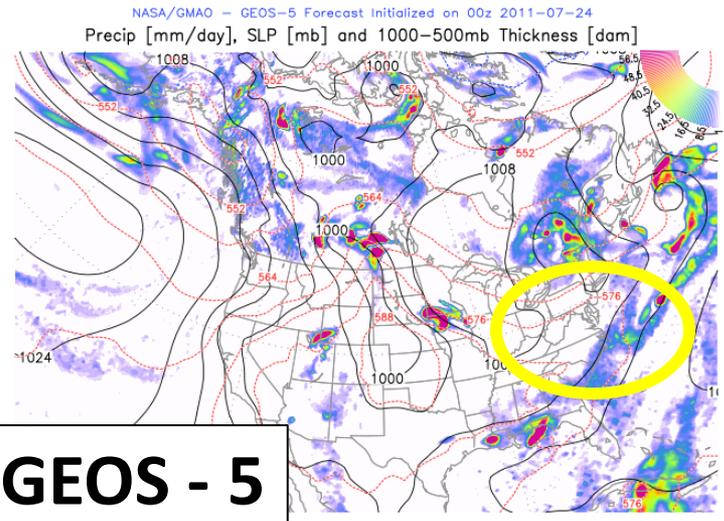
48-hour forecast valid 1200 UTC Tue 26 Jul 2011 NAM (MRF-NMM) (12z 24 Jul)



**NAM**

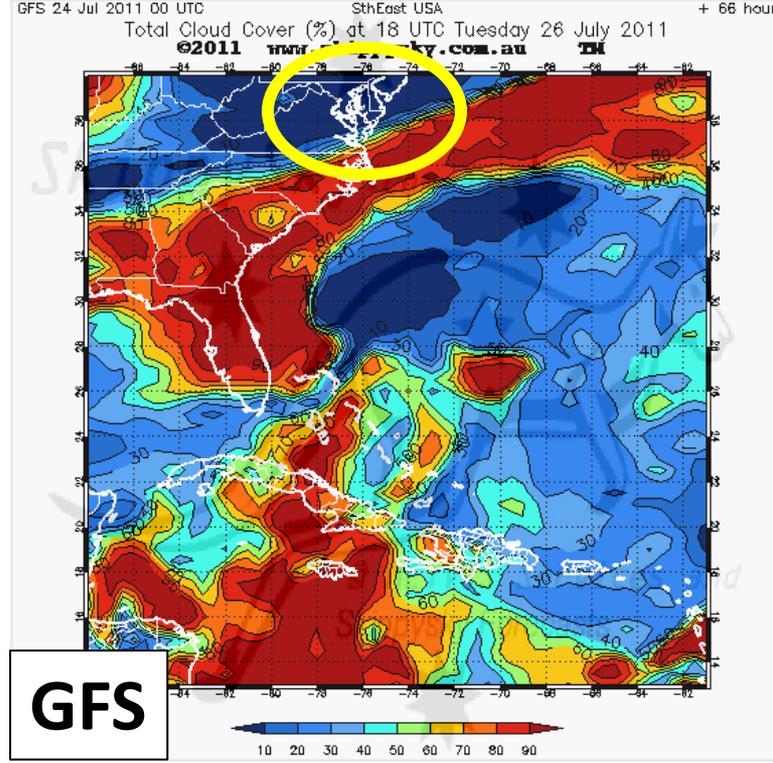
Water (>0°C) Supercooled Ice&Snow

Tuesday 2 pm: Mostly sunny.



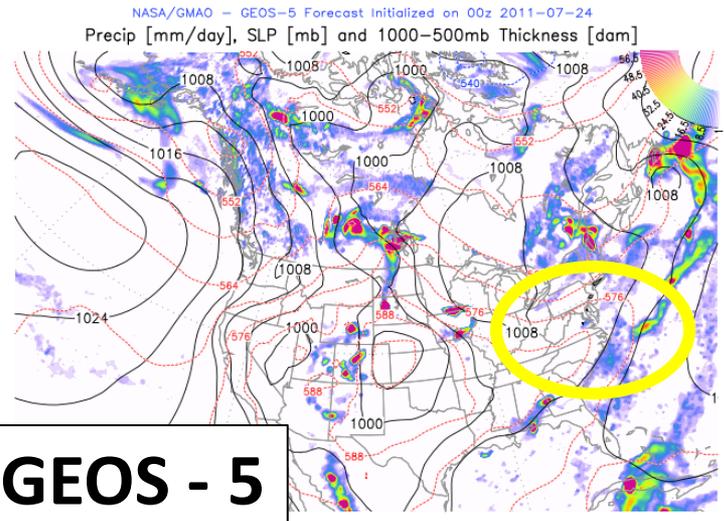
**GEOS - 5**

66-hr forecast valid Tue 18z 2011-07-26

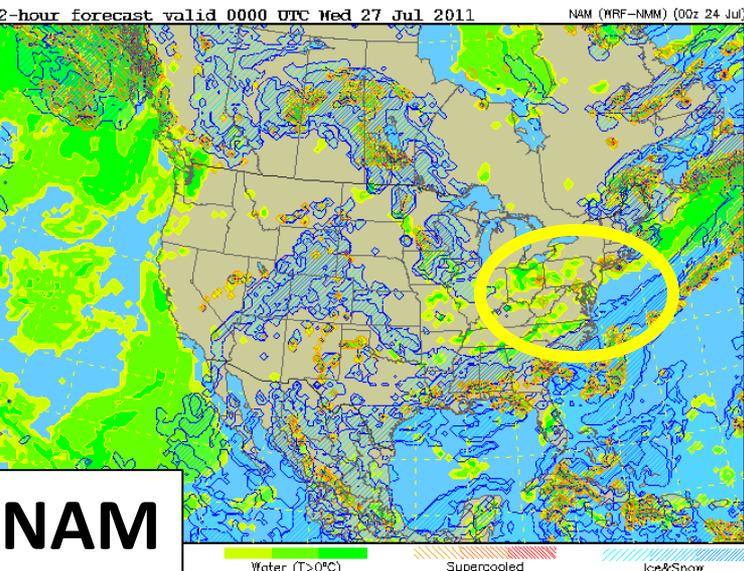
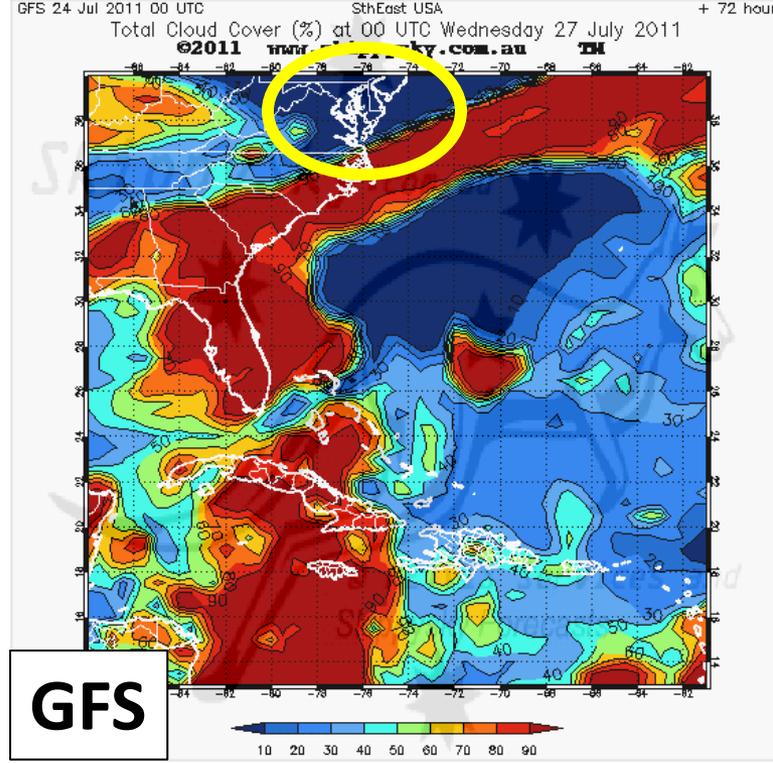


**GFS**

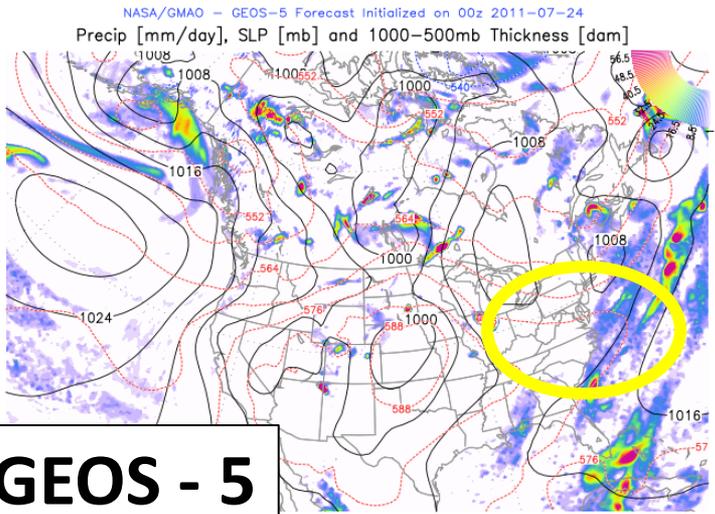
# Tuesday 8 pm: GFS – Mostly sunny; NAM – clouds.



72-hr forecast valid Wed 00z 2011-07-27

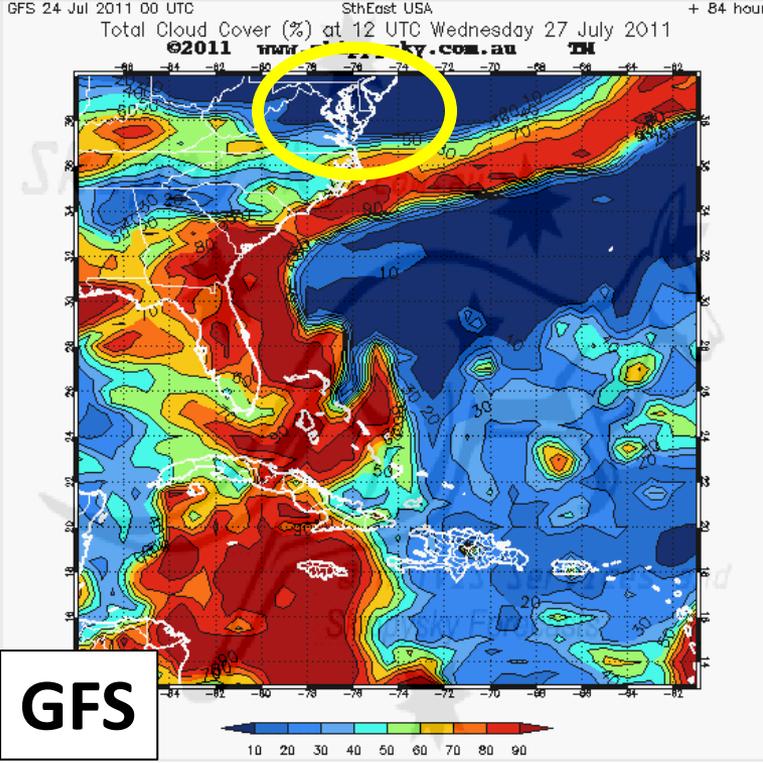


# Wednesday 8 am: GFS – mostly sunny; NAM – clouds.



**GEOS - 5**

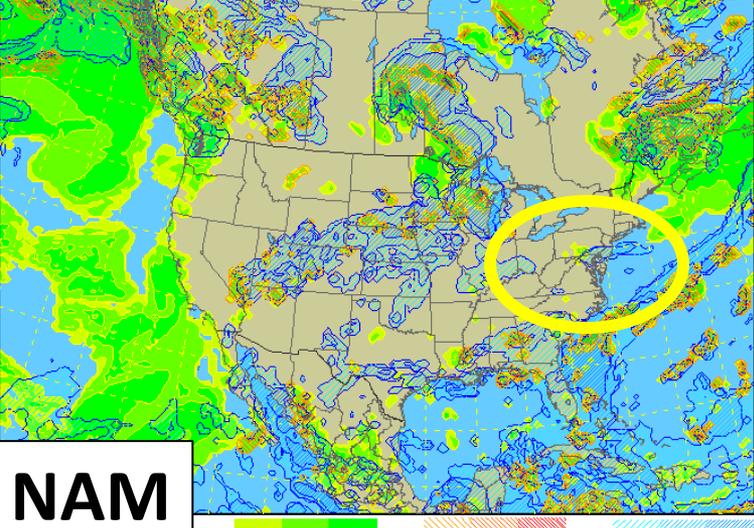
84-hr forecast valid Wed 12z 2011-07-27



**GFS**

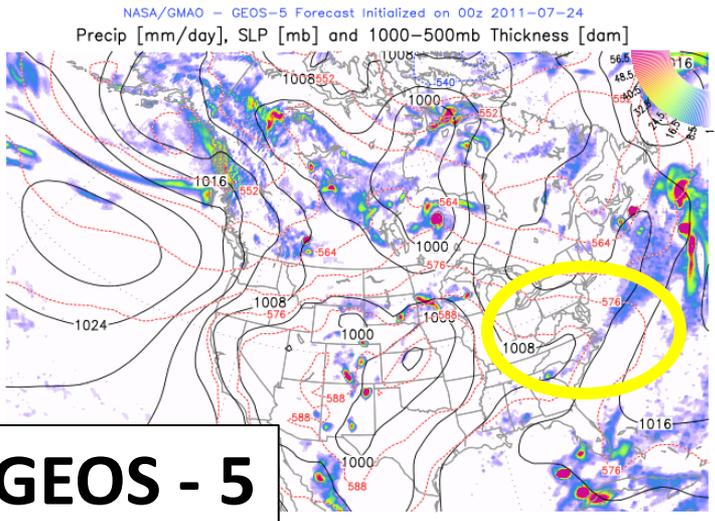
10 20 30 40 50 60 70 80 90

72-hour forecast valid 1200 UTC Wed 27 Jul 2011 NAM (MRF-NMM) (12z 24 Jul)

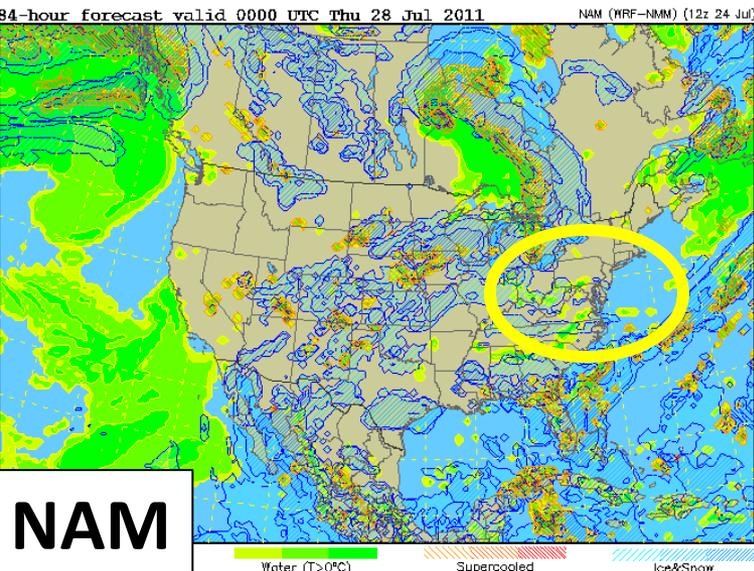
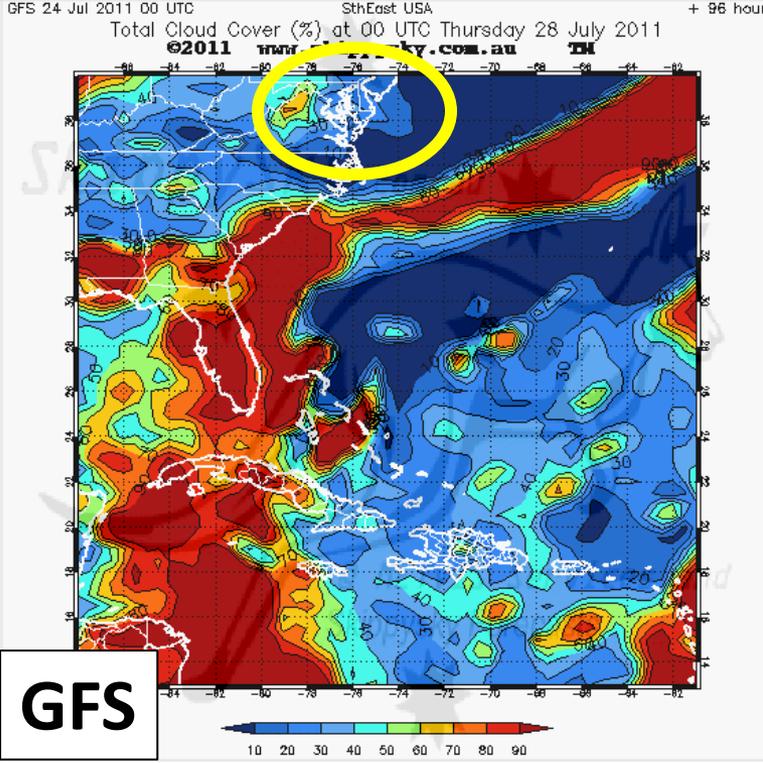


**NAM**

# Wednesday 8 pm: GFS – Mostly sunny; NAM – clouds.

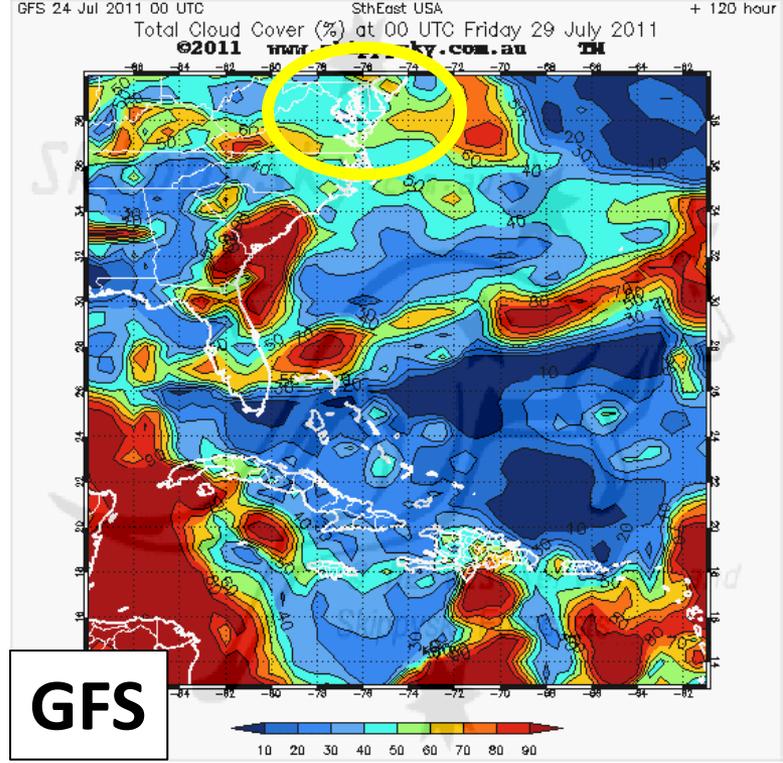
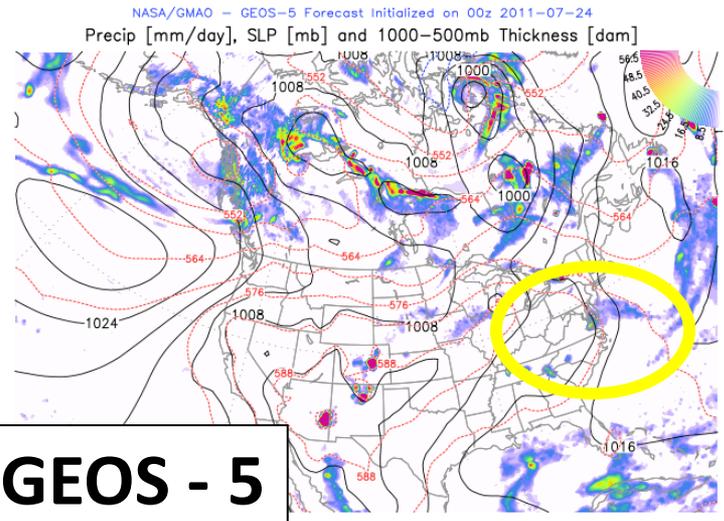


96-hr forecast valid Thu 00z 2011-07-28





# Thursday 8 pm: GFS – Cloud cover close to 50%.



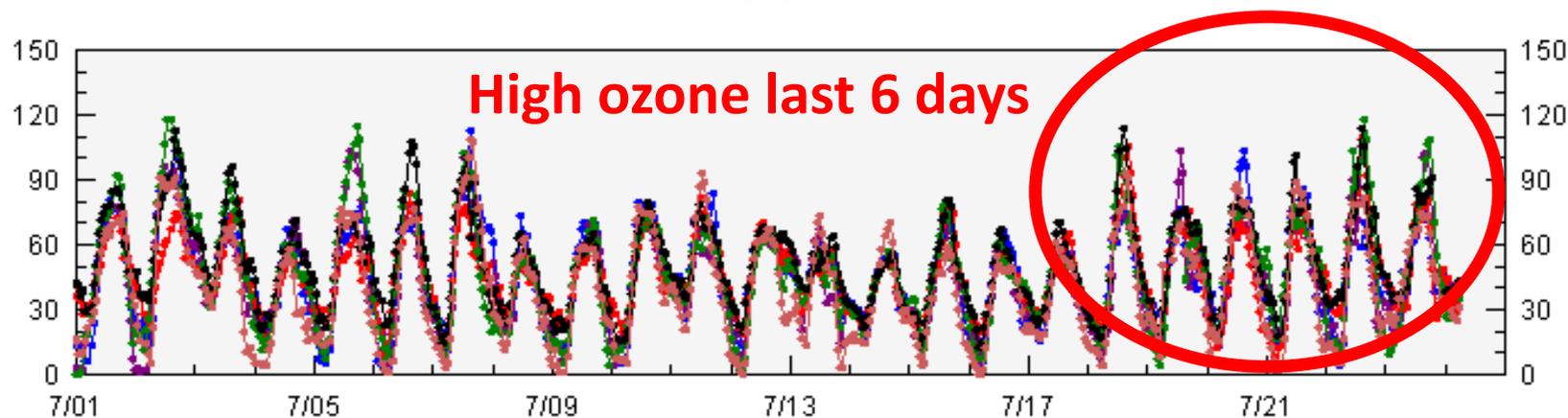
Extended forecast (Thursday through Saturday):

Temperatures and humidity increase Thursday and Friday as southerly flow brings in more moisture. More cloud development and a chance of thunderstorms Saturday as a shortwave trough approaches.

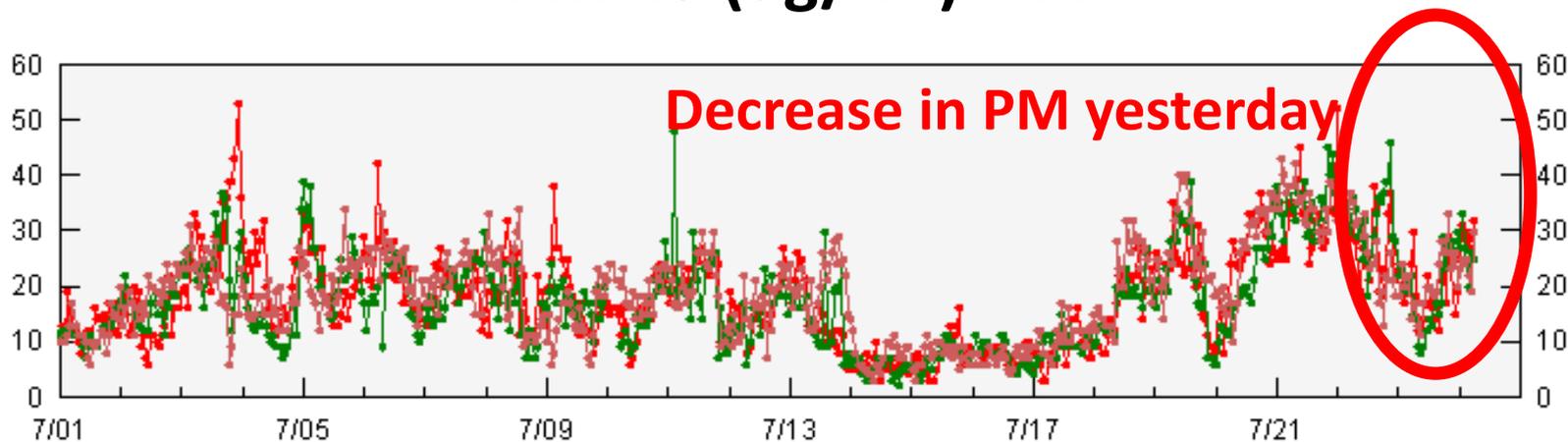
# MDE Surface Sites

Padonia    Beltsville    Edgewood    Aldino    Essex    Fairhill

## Ozone (ppbv) 1 hr

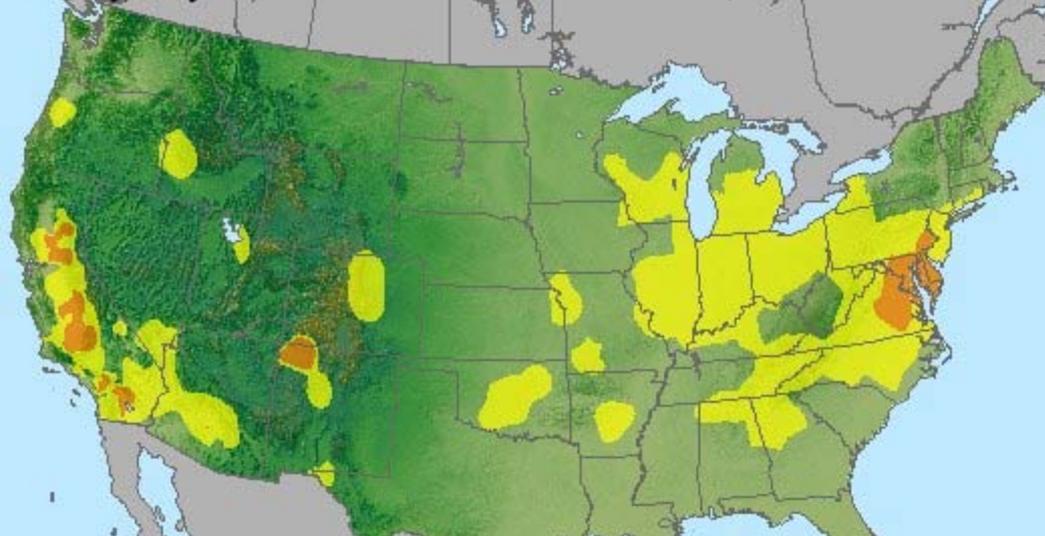


## PM2.5 (ug/m<sup>3</sup>) 1 hr



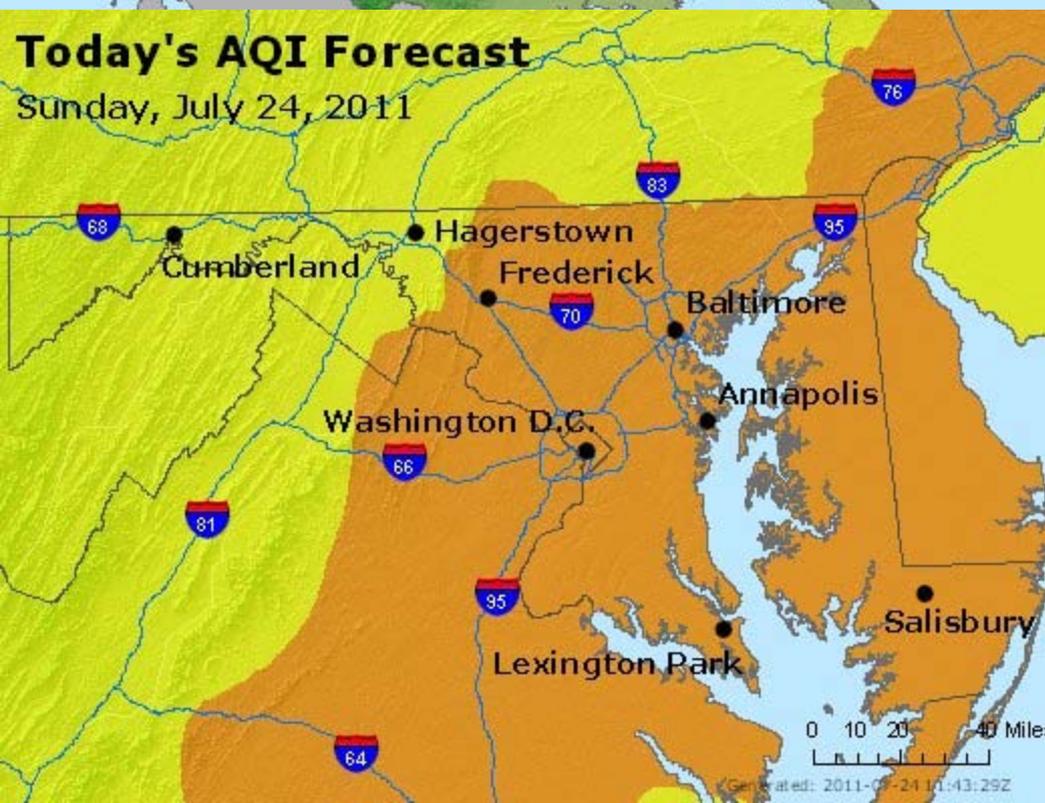
# Today's AQI Forecast

Sunday, July 24, 2011



# Today's AQI Forecast

Sunday, July 24, 2011



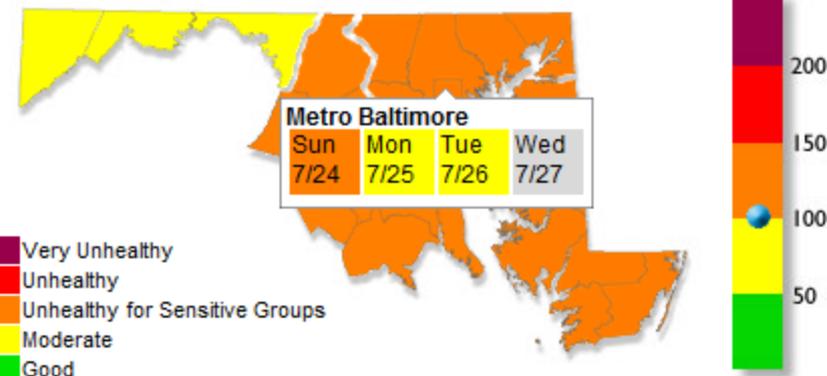
## Air Quality Forecast

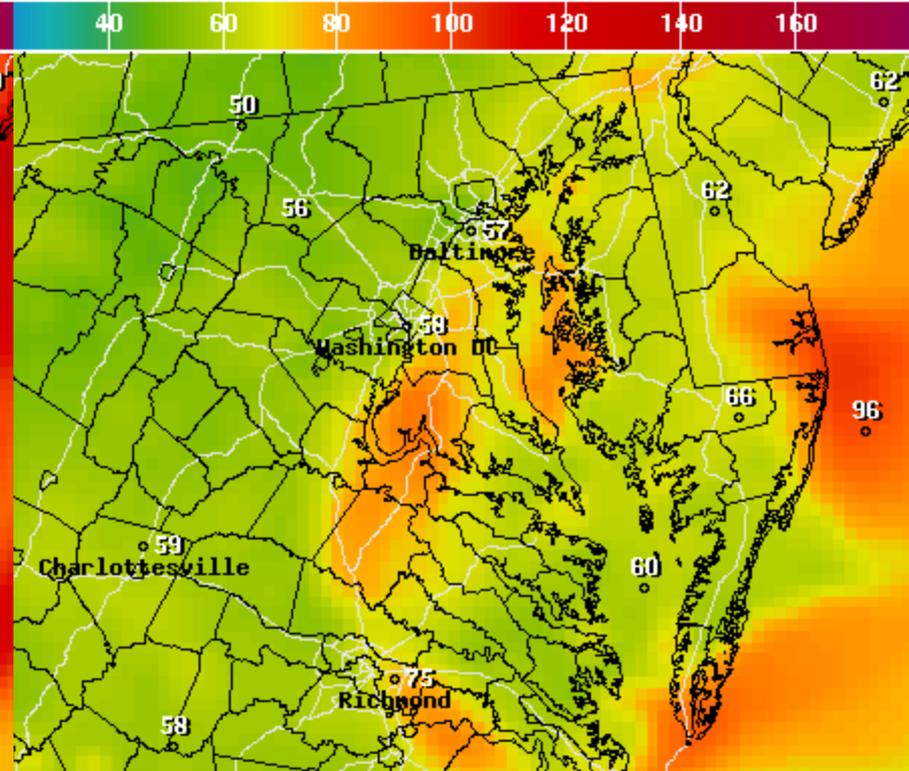
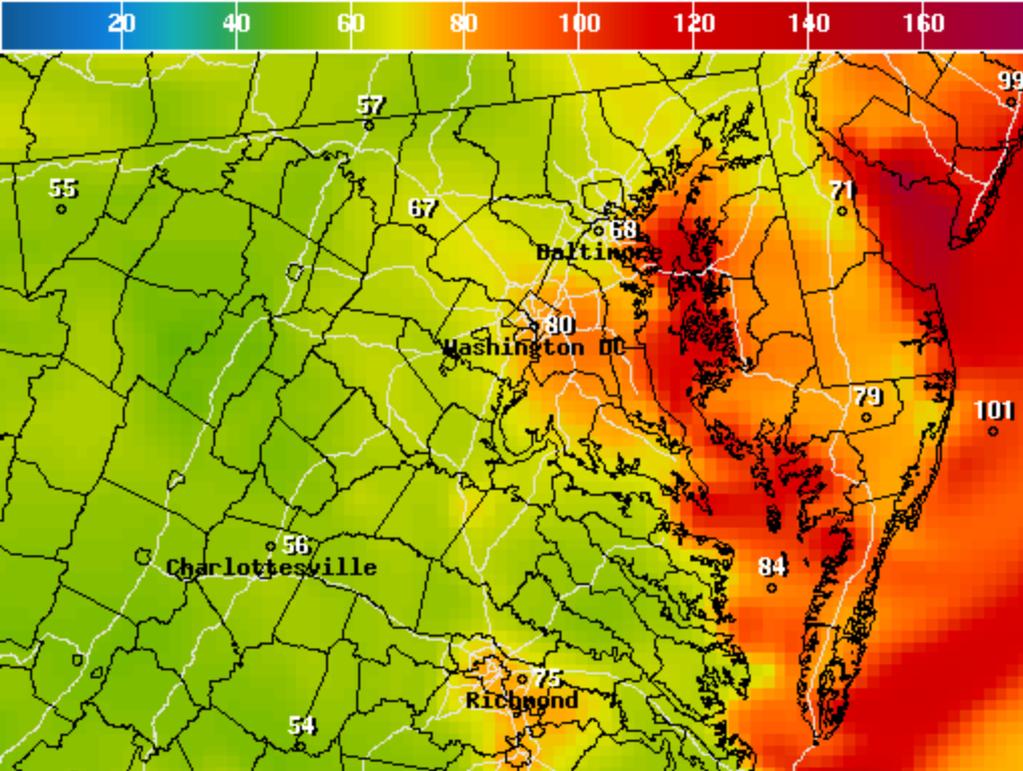
Today's High	Tomorrow's High
<b>Air Quality Index (AQI)</b> <b>101</b> <b>Unhealthy for Sensitive Groups</b> <b>Health Message:</b> Active children and adults, and people with lung disease, such as asthma, should reduce prolonged or heavy exertion outdoors.	<b>Air Quality Index (AQI)</b> <b>67</b> <b>Moderate</b> <b>Health Message:</b> Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.

### AQI - Pollutant Details

Ozone	<b>101</b> <a href="#">Unhealthy for Sensitive Groups</a>	Ozone	<b>67</b> <a href="#">Moderate</a>
Particles (PM2.5)	<b>67</b> <a href="#">Moderate</a>	Particles (PM2.5)	<b>62</b> <a href="#">Moderate</a>

**Forecast Discussion:** Temperatures decrease to near normal late July levels in the 90's F on Sunday. In addition, cloud cover becomes more prominent and chances of scattered rain showers increase which should lead to a slight improvement in air quality. Ozone in the Baltimore-Washington corridor is expected to be along the Moderate/Unhealthy for Sensitive Groups AQI threshold, while western Maryland will be in the Moderate range. Fine particles will remain in the mid Moderate range due to continually high humidity. Monday will have a higher chance of rain showers as a cold front approaches the region allowing for air quality in the Moderate range for all locations. This front is expected to move through early Tuesday with a noticeable drop in dew points indicating an air mass change. Fine particles will improve into the Good range while ozone will be in the Moderate range due to clearing skies after the frontal passage. - MDE





National Digital Guidance Database  
06z model run    Graphic created-Jul 24 6:46AM EDT



National Digital Guidance Database  
06z model run    Graphic created-Jul 24 6:46AM EDT

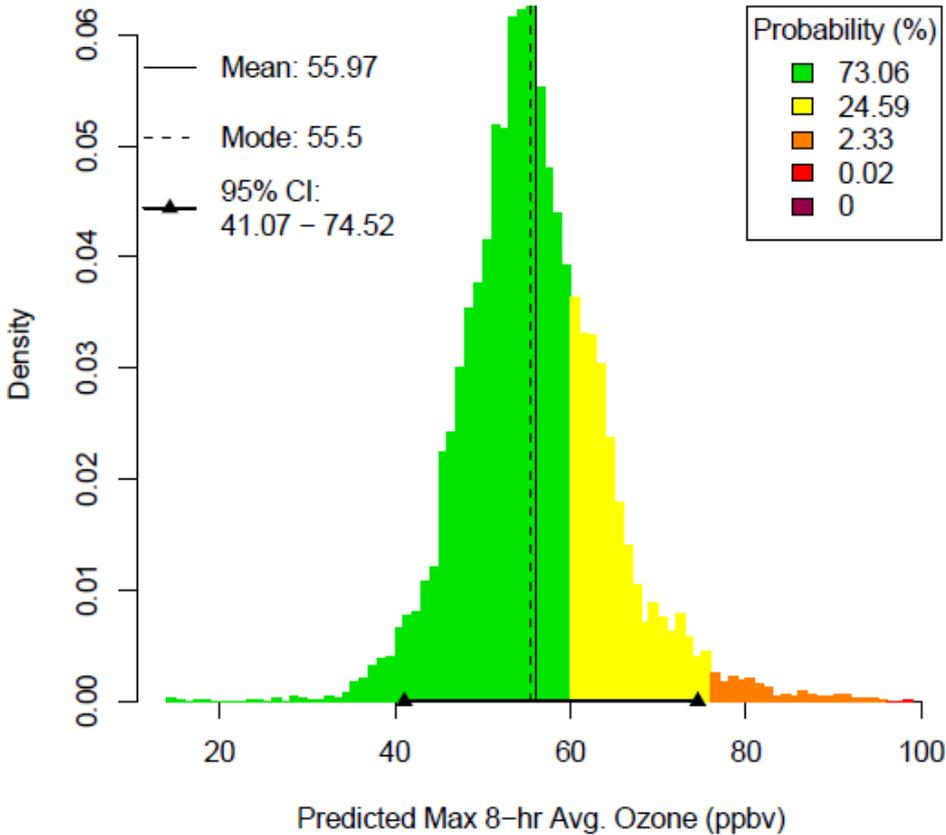


# 1-hr Max Ozone (ppbv) Today

# 1-hr Max Ozone (ppbv) Tomorrow

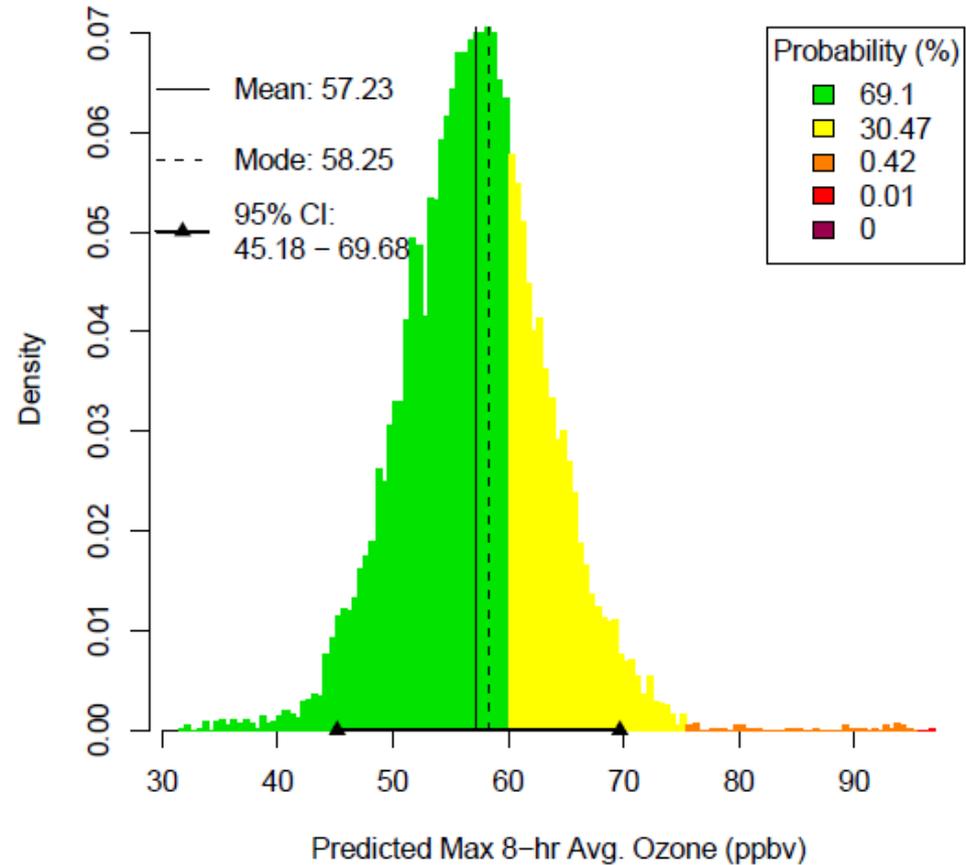
# NAQFC-MOS valid for Saturday

ID: 240251001 VALID: 2011-07-25



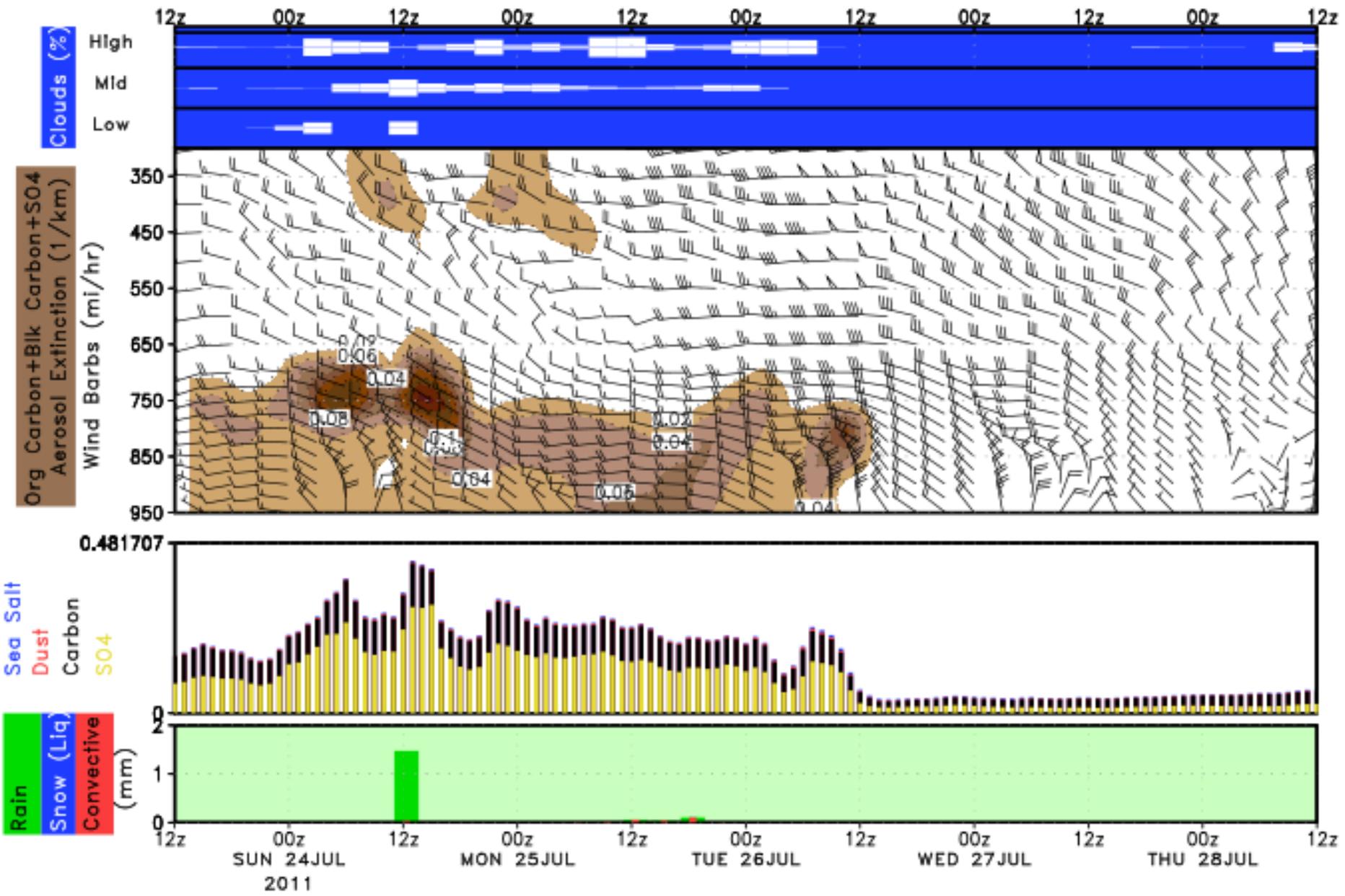
## Edgewood

ID: 240330030 VALID: 2011-07-25

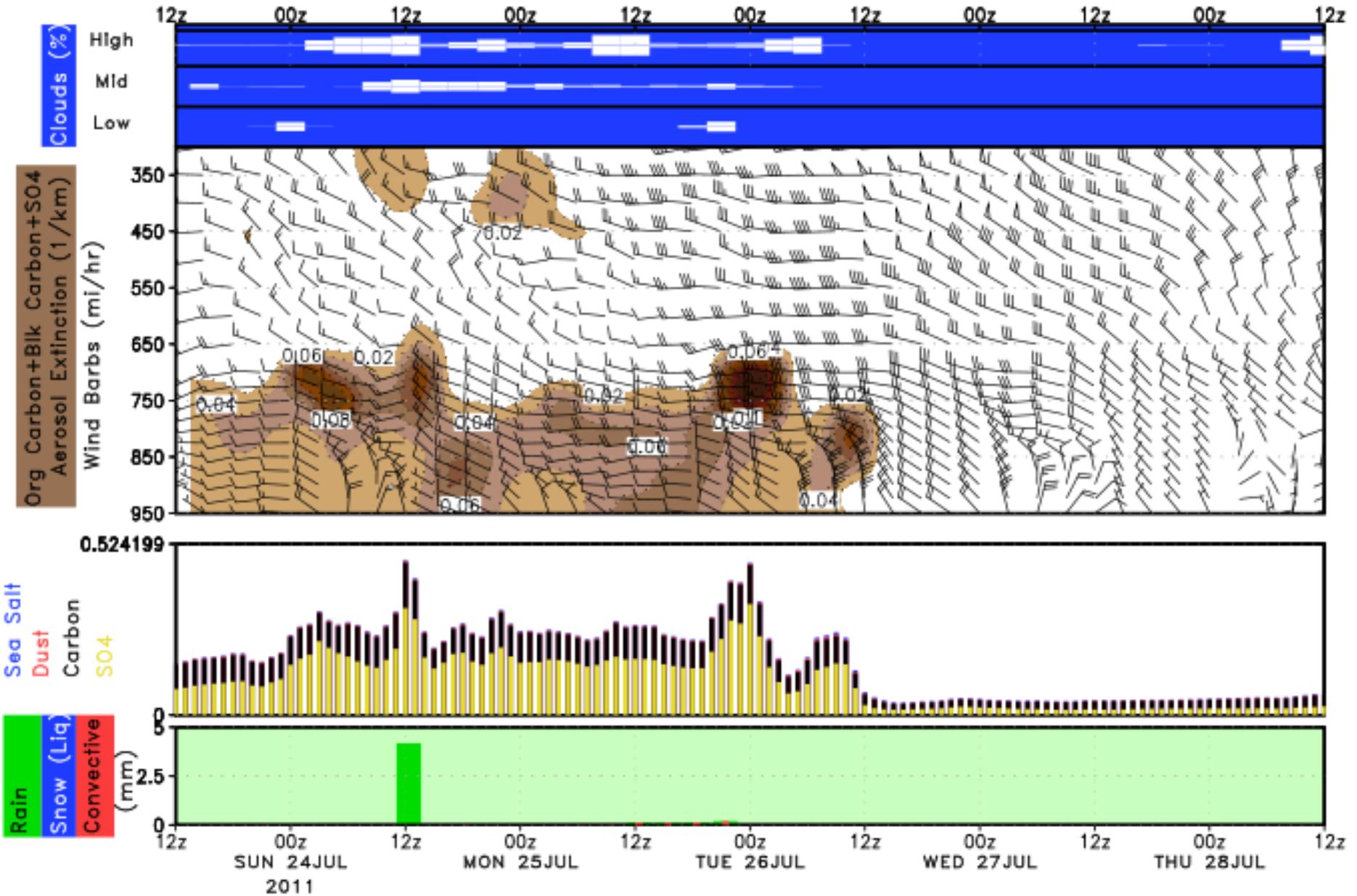


## Beltsville

# Essex

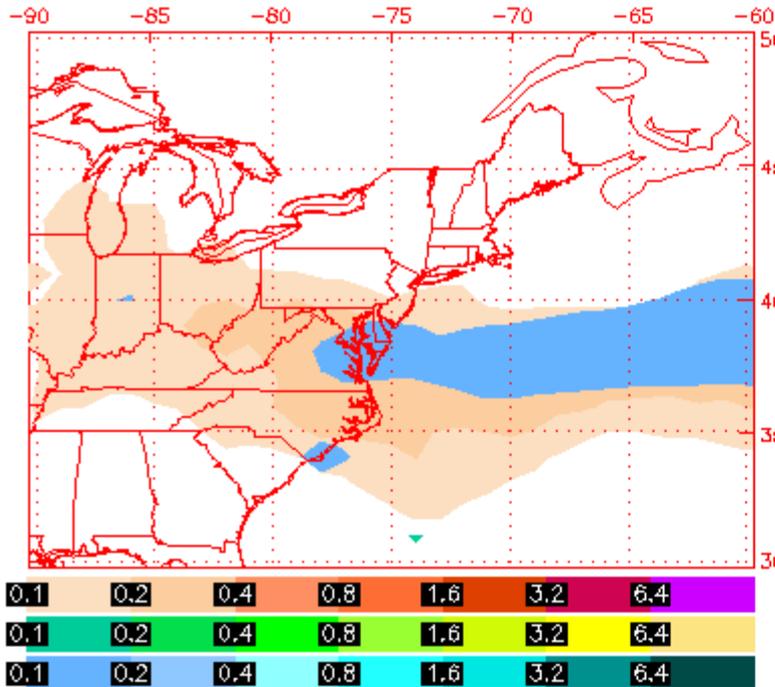


# Beltsville

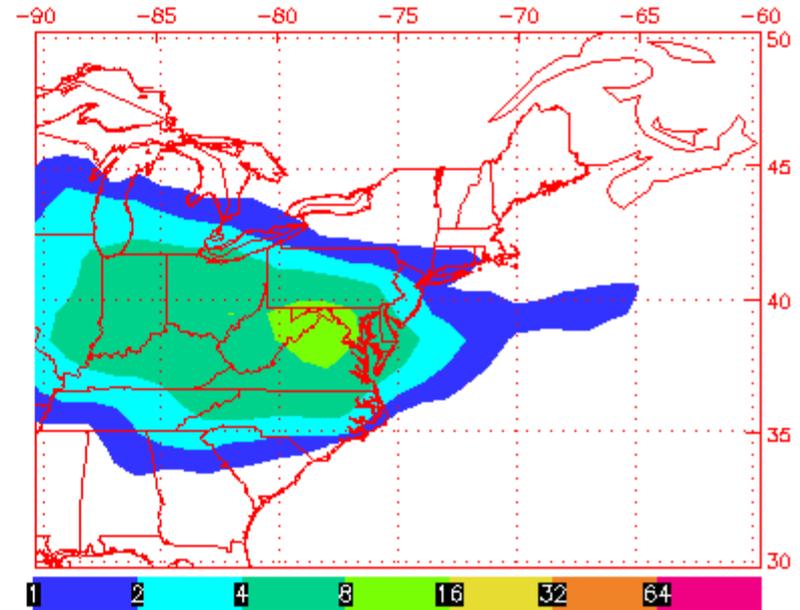


# Today 2 PM

NAAPS Total Optical Depth for 18:00Z 24 Jul 2011  
Sulfate: Orange/Red, Dust: Green/Yellow, Smoke: Blue

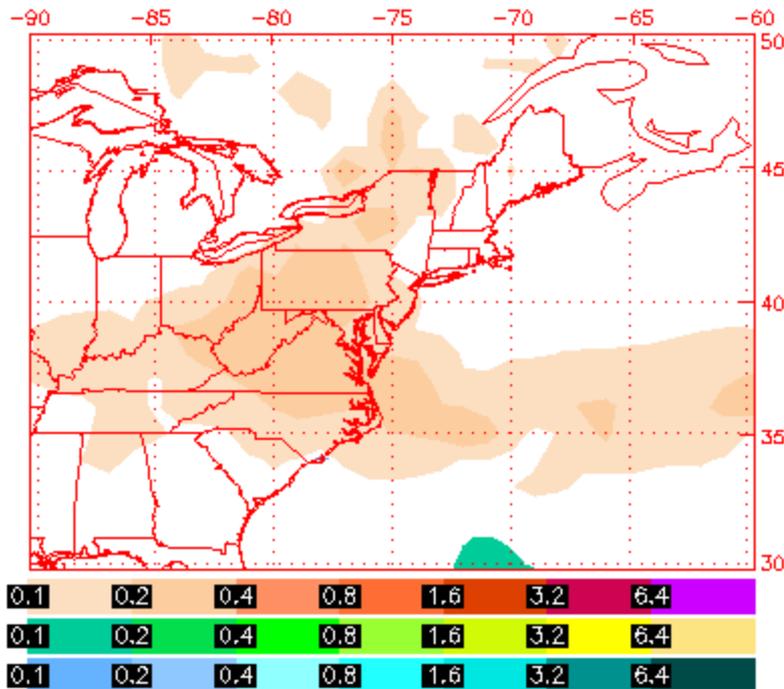


Sulfate Surface Concentration ( $\mu\text{g}/\text{m}^3$ )  
for 18:00Z 24 Jul 2011

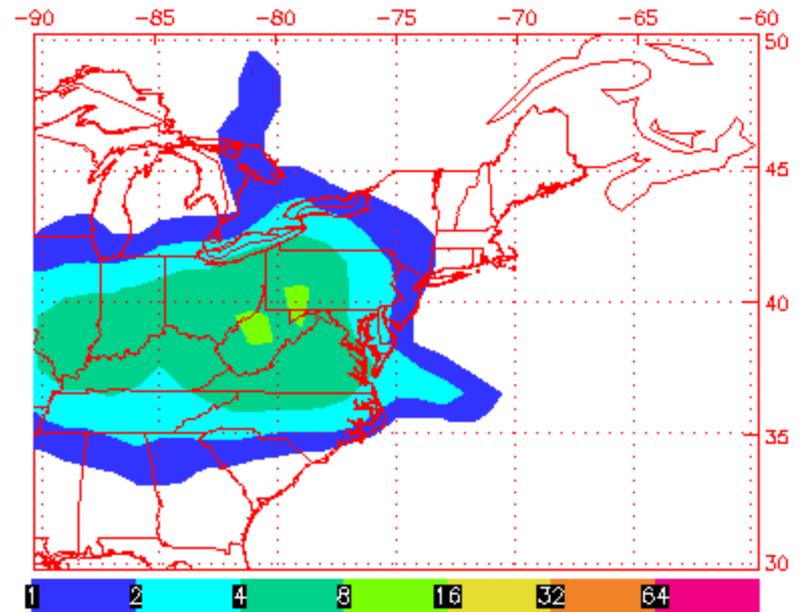


# Tomorrow 2 PM

NAAPS Total Optical Depth for 18:00Z 25 Jul 2011  
Sulfate: Orange/Red, Dust: Green/Yellow, Smoke: Blue

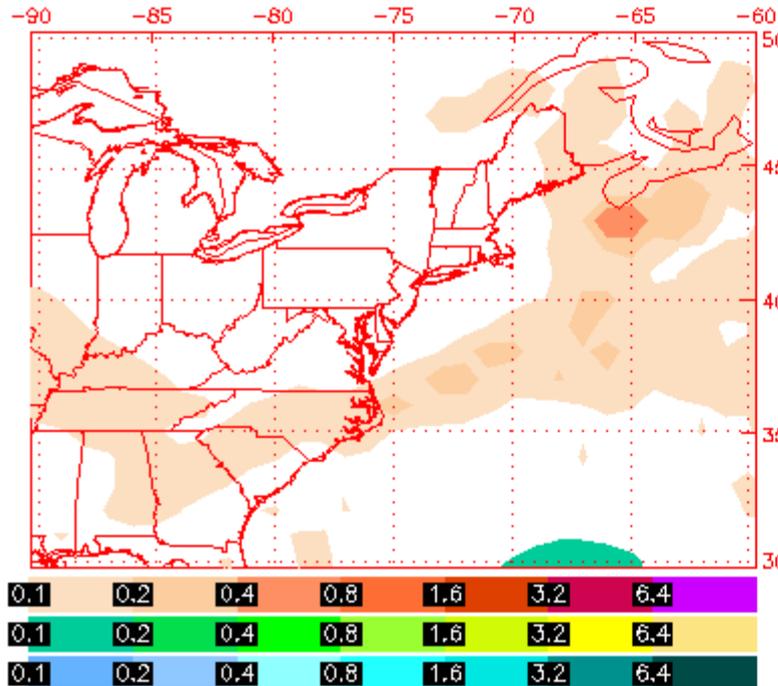


Sulfate Surface Concentration ( $\mu\text{g}/\text{m}^3$ )  
for 18:00Z 25 Jul 2011

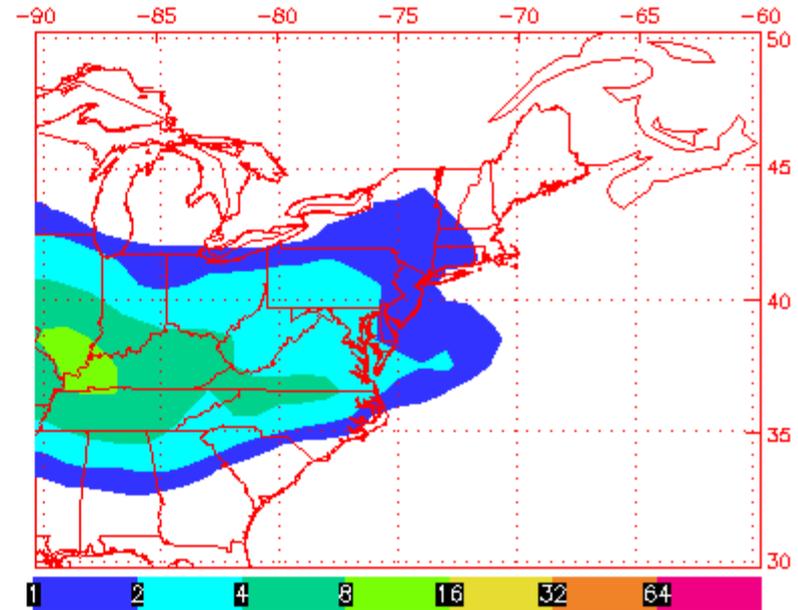


# Tuesday 2 PM

NAAPS Total Optical Depth for 18:00Z 26 Jul 2011  
Sulfate: Orange/Red, Dust: Green/Yellow, Smoke: Blue

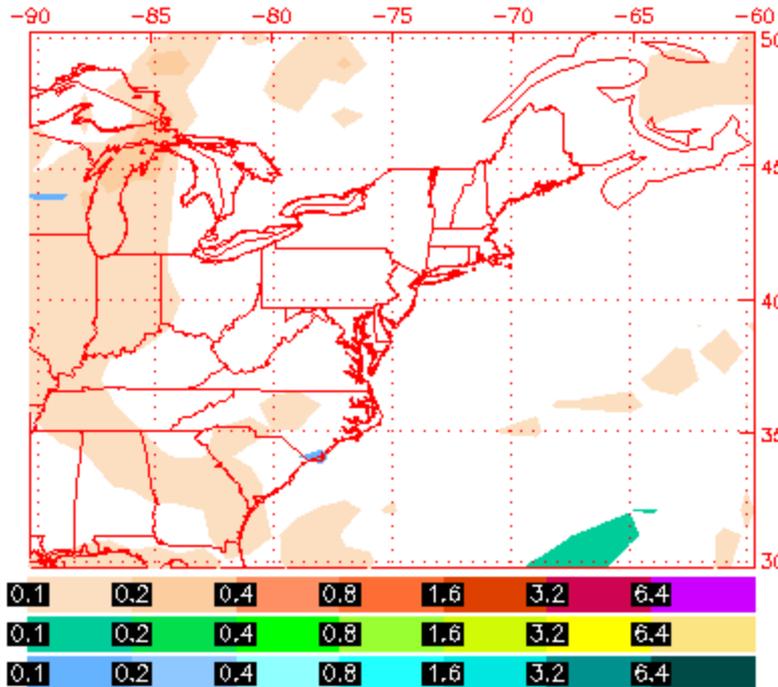


Sulfate Surface Concentration ( $\mu\text{g}/\text{m}^3$ )  
for 18:00Z 26 Jul 2011

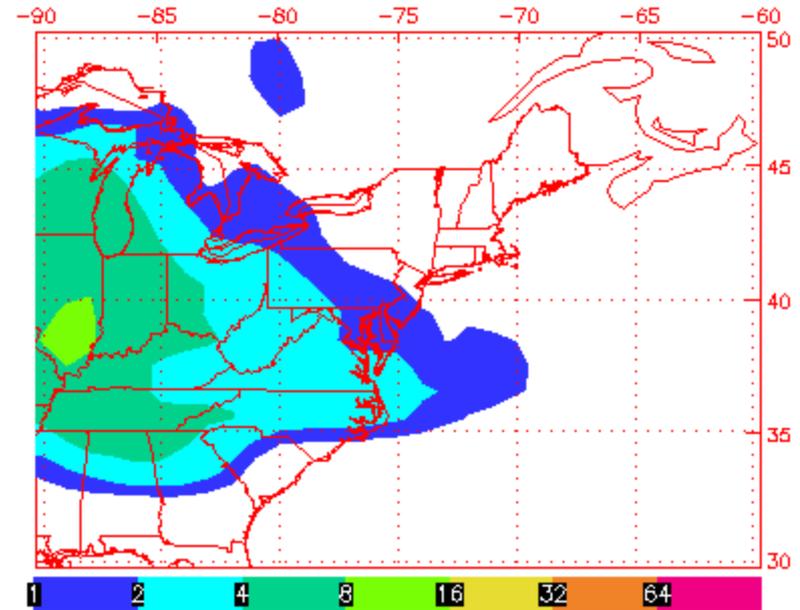


# Wednesday 2 PM

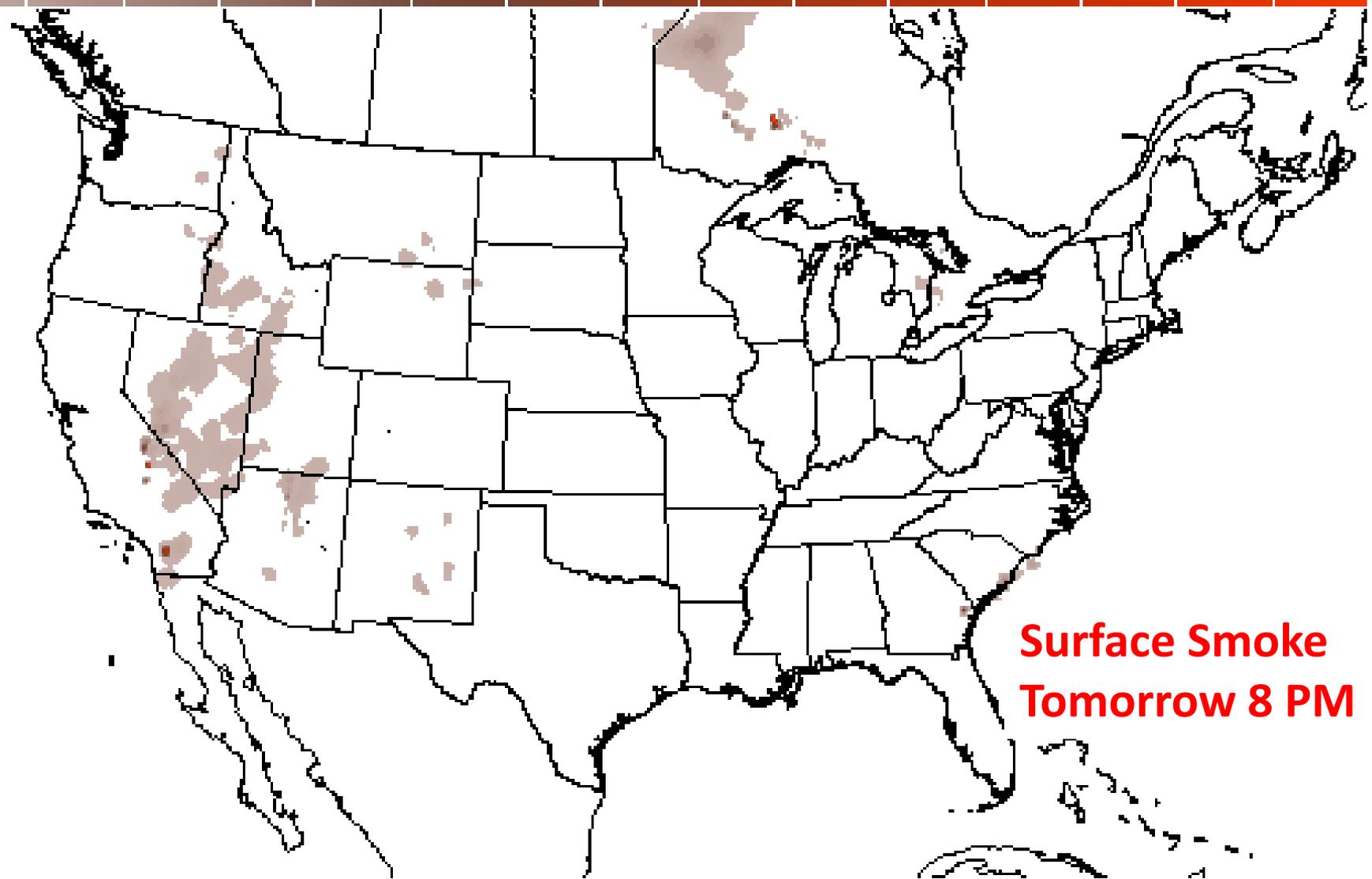
NAAPS Total Optical Depth for 18:00Z 27 Jul 2011  
Sulfate: Orange/Red, Dust: Green/Yellow, Smoke: Blue



Sulfate Surface Concentration ( $\mu\text{g}/\text{m}^3$ )  
for 18:00Z 27 Jul 2011



10 20 30 40 50 60 70 80 90 100 110 120 130 140



**Surface Smoke  
Tomorrow 8 PM**

1Hr Surface Smoke (micrograms/m<sup>3</sup>) Mon Jul 25 2011 8PM EDT  
(Tue Jul 26 2011 00Z)



**National Digital Guidance Database**

06z model run      Graphic created-Jul 24 7:51AM EDT

AREA FORECAST DISCUSSION  
NATIONAL WEATHER SERVICE BALTIMORE MD/WASHINGTON DC  
1030 AM EDT SUN JUL 24 2011

.SYNOPSIS... A COLD FRONT DROPS SOUTH FROM THE GREAT LAKES TODAY...ENTERING NORTHERN MARYLAND THIS EVENING. THE COLD FRONT MOVES SOUTH OF THE REGION BY MONDAY NIGHT...WITH HIGH PRESSURE BUILDING TUESDAY AND LASTING THROUGH THE REMAINDER OF THE WEEK.

.NEAR TERM /THROUGH TONIGHT/... CONVECTION FROM WEST VIRGINIA HAS WEAKENED UPON MOVING ACROSS THE APPALACHIANS HOWEVER AN AREA OF SHOWERS LOOK TO STRETCH THROUGH THE SHENANDOAH VALLEY THROUGH THE REST OF THE MORNING. IN ADDITION...CLOUD COVER FROM THIS AREA HAS EXPANDED EAST INTO THE WASHINGTON METRO AREA.

CHALLENGES TODAY REVOLVE AROUND TEMPERATURES/HEAT INDICES AND CONVECTIVE POTENTIAL.

CLOUD COVER IS INHIBITING WARMING MORE THAN IT HAS IN RECENT DAYS. THUS HIGH TEMPERATURES MAY TOO WARM AND THEREFORE HEAT INDICES MAY BE TOO HIGH. HAVE KNOCKED DOWN MAX T A DEGREE OR TWO SO FAR...BUT THAT MAY NOT BE ENOUGH. HEAT INDEX VALUES ARE STILL FORECAST TO BE BETWEEN 100 TO 105 IN THE HEAT ADVISORY AREA...BUT MAY HAVE TO START CONSIDERING TRIMMING AWAY AT THE HEAT ADVISORY BEFORE TOO LONG. DO NOT SEE CLOUDS BREAKING UP MUCH INTO THE AFTERNOON SO WARMING WILL CONTINUE TO BE INHIBITED DESPITE THE HIGH JULY SUN ANGLE.

CLOUD COVER MAY ALSO PLAY A ROLE IN LIMITING WIDESPREAD STRONG CONVECTION THIS AFTERNOON TOO. STILL CANT IGNORE THE 2500 J/KG CAPE FROM THE MODIFIED IAD SOUNDING AND THE 2.05 INCH PRECIPITABLE WATER VALUE. THERE/S A LEE TROUGH AND MESOSCALE/DIFFERENTIAL HEATING BOUNDARIES LURKING AROUND TOO...SO DESPITE CLOUDS SCATTERED SHOWERS AND THUNDERSTORMS ARE STILL EXPECTED INTO THE AFTERNOON/EVENING PER HIGH RES MODELS. HEAVY RAINFALL/ISOLATED FLASH FLOODING AND WET MICROBURSTS REMAIN A CONCERN IN THE STRONGEST CONVECTION THAT MAY DEVELOP.

THE BULK OF THE TSRA ACTIVITY SHUD CEASE ONCE THE SUN SETS. BUT... CDFNT WL BE NEARBY OVNGT...WHICH MAY MEAN THAT THE CLUSTER CURRENTLY TRACKING ACRS MIDWEST ATTM MAY BE TRACKING ACRS THE MID ATLCN INSTEAD LT TNGT. HV OPTED NOT TO LEAVE A DRY FCST BHD. NO CAA WL BE REALIZED YET...AND DEWPTS NOT GOING ANYWHERE SINCE MSTR POOLING LKLY ALNG BNDRY...SO IT/LL BE YET ANTHR MUGGY NGT. GOING MIN-T HIER THAN MOS...WHICH SEEMS LIKE A GOOD FIT.

.SHORT TERM /MONDAY THROUGH TUESDAY/... SCATTERED SHWRS/TSTMS XPCD TO DVLP MON EARLIER THAN NRML MID-AFTN DIURNAL PEAK AS CDFNT WILL LIKELY BE MOVG THRU WRN CWA DURG LATE MRNG. HAVE LIKELY POPS MOST AREAS MON AFTN WHEN LAPSE RATES AND INSTABILITY WILL BE GREATEST. PWATS FCST TO BE NEAR OR JUST ABV 2 INCHES...SO HIGH RAINFALL RATES AND RISK OF FLASH FLOODING CANT BE RULED OUT. ALSO...ENUF INSTABILITY TO WORK WITH MODEST SHEAR TO CREATE GUSTY DOWNDRAFTS...PSBLY DMGG IN STRONGEST CNVCTN. SVR RISK WILL DEPEND ON AMOUNT OF SUNSHINE. ATTM LOOKS LIKE MOSTLY CLOUDY SKIES WILL PERSIST THRU THE DAY ACRS MID-ATLC.

THESE CLOUDS WILL CURB HEATING...THUS MAXIMA FCST TO RANGE IN U80S/L90S. STILL VERY HUMID...SO HEAT INDICES MAY APPROACH 100F...AND ATMOSPHERE WILL SUPPORT WARMER TEMPS IF SUN CAN BREAK OUT FOR PROLONGED PERIOD. MET/MAV GUIDANCE HAS ABOUT A 10F SPREAD FOR MAXIMA...SO CONFIDENCE IN TEMP FCST MON IS NOT HIGH. TRENDED CLOSE TO BLEND OF MET/MAV.

SHWRS/TSTMS SHUD END AFTER MIDNIGHT AS FRONT AND ASSOCIATED UPR SHRTWV TROF MOVE E OF RGN. MUCH DRIER AND SLIGHTLY COOLER AIR BUILDS IN AFTER FROPA. TUE SHUD BE SUNNY AND SEASONABLY WARM...BUT WITH NOTICEABLY LOWER RH.

.LONG TERM /TUESDAY NIGHT THROUGH SATURDAY/... SFC RDG DOMINATES TUE NGT/WED...THEREFORE XCPTG SUNNY SKIES WITH MINIMA IN 60S/L70S AND MAXIMA IN U80S/L90S. SFC HIPRES MOVES E BY THU/FRI...BRINGING SLY FLOW AND RETURN TO HIGHER HUMIDITY. LRG UPR RDG BUILDS IN FROM SRN PLAINS DURG THIS PERIOD WITH HEIGHT RISES SIGNALLY TEMPS RISING WELL INTO 90S. RISK OF HEAT HEADLINES FOR THU/SAT TIMEFRAME TUE TO HIGH TEMP/RH COMBINATION. NEXT CHC FOR PRECIP NOT UNTIL SAT WHEN SFC TROF MAY AFFECT AREA.