

DISCOVER-AQ Outlook for Friday, July 21, 2011

High surface temperatures of near 100 F today in the study region have led to substantial ozone production as noted by the P-3B aircraft (100 – 116 ppbv) at around 1000 ft. However surface ozone has not reached such elevated values. Some stations went Code Orange for PM2.5 today, which is the first time that has occurred during DISCOVER-AQ. South and SW winds today have minimized the effects of the Bay breeze. Substantial fair weather Cu were observed during today's flight, especially over Beltsville, with little cloudiness at Edgewood and Fair Hill. These meteorological conditions will continue tomorrow, with possibly even slightly higher temperatures. Expect significant Cu again tomorrow with some small risk of afternoon and evening thunderstorms. Therefore, we recommend flying again tomorrow. The outlook for Saturday through Monday is rather muddled. The NAM-MOS gives us near 50% cloud cover Saturday, with 60-70% on Sunday and Monday, as a frontal system stalls over the region. Shower activity is likely the greatest on Sunday, with lesser probability on Monday. Some models show clearing possible on Monday. We will be updating the weekend and early next week outlooks tomorrow.

Recommendations July 22st-25th

July 22, Friday: Can Fly – PM Clouds

July 23, Saturday: No Fly

July 24, Sunday: No Fly

July 25, Monday: Clouds?

This Afternoon	Tonight	Friday	Friday Night	Saturday	Saturday Night	Sunday	Sunday Night	Monday
								
Hot	Mostly Clear	Slight Chc Tstms	Slight Chc Tstms	Chance Tstms	Slight Chc Tstms	Chance Tstms	Mostly Cloudy	Partly Sunny
Hi 100 °F	Lo 78 °F	Hi 102 °F	Lo 80 °F	Hi 100 °F	Lo 77 °F	Hi 94 °F	Lo 73 °F	Hi 90 °F

Baltimore-Washington International Airport

Lat: 39.19 Lon: -76.67 Elev: 148

Last Update on Jul 21, 10:54 am EDT

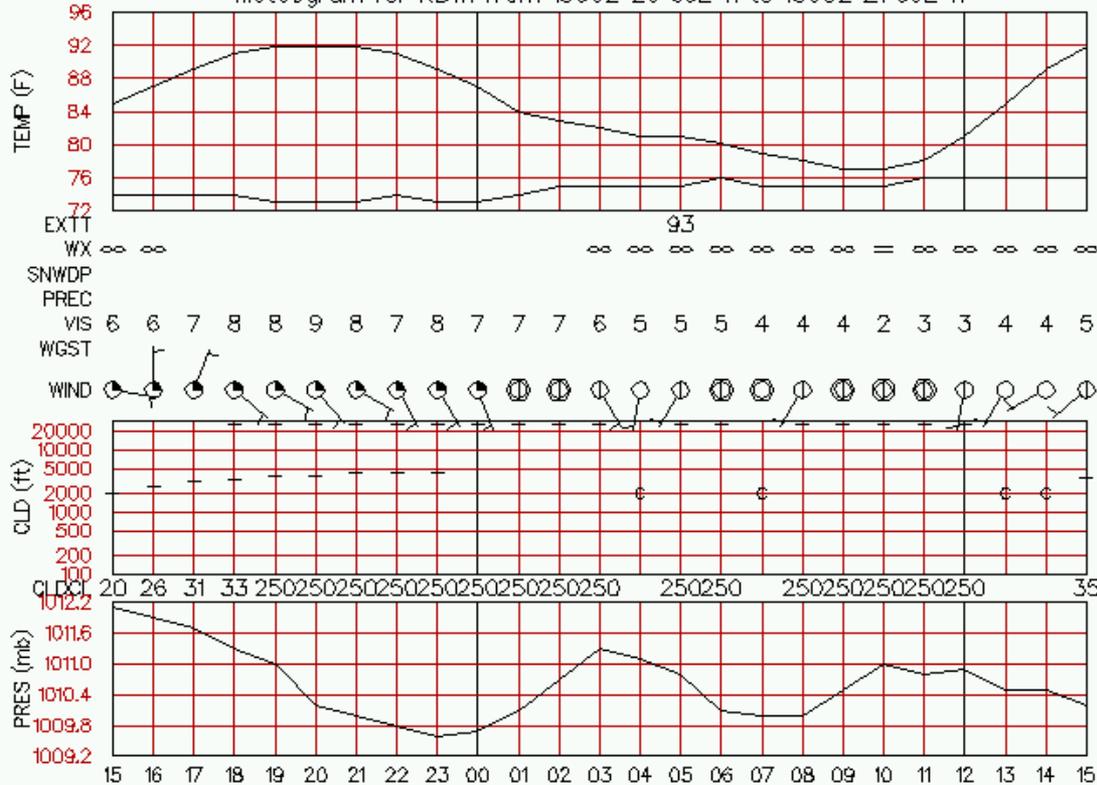
**A Few Clouds
with Haze**

**92 °F
(33 °C)**

Humidity:	60 %
Wind Speed:	SW 5 MPH
Barometer:	29.84" (1010.2 mb)
Dewpoint:	76 °F (24 °C)
Heat Index:	104 °F (40 °C)
Visibility:	5.00 mi.

Plymouth State Weather Center

Meteorgram for KBWI from 1500Z 20 JUL 11 to 1500Z 21 JUL 11



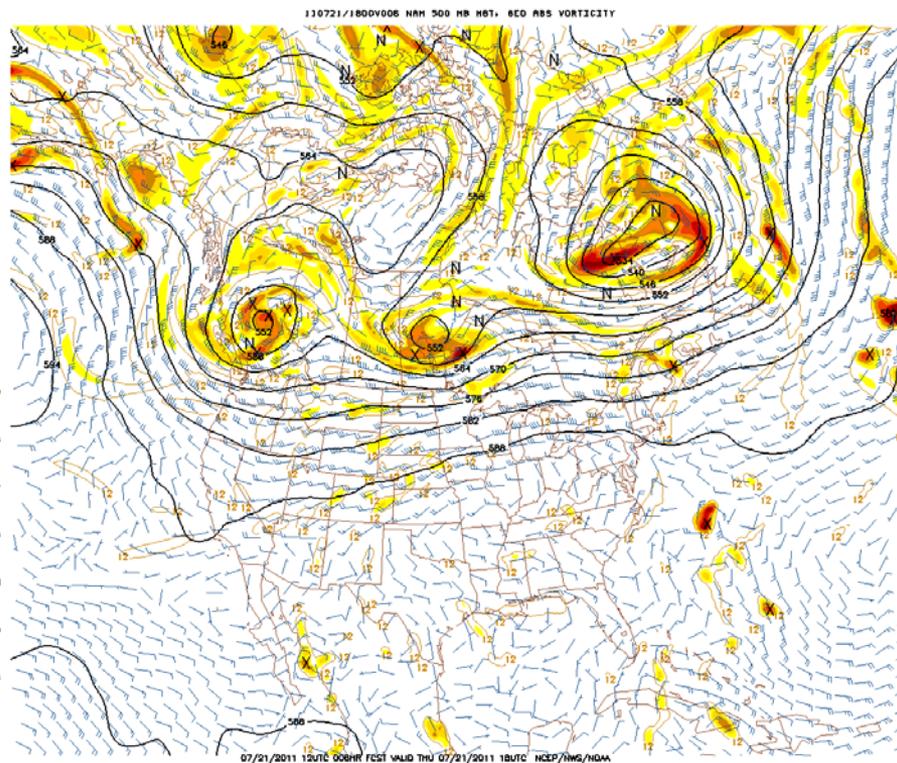
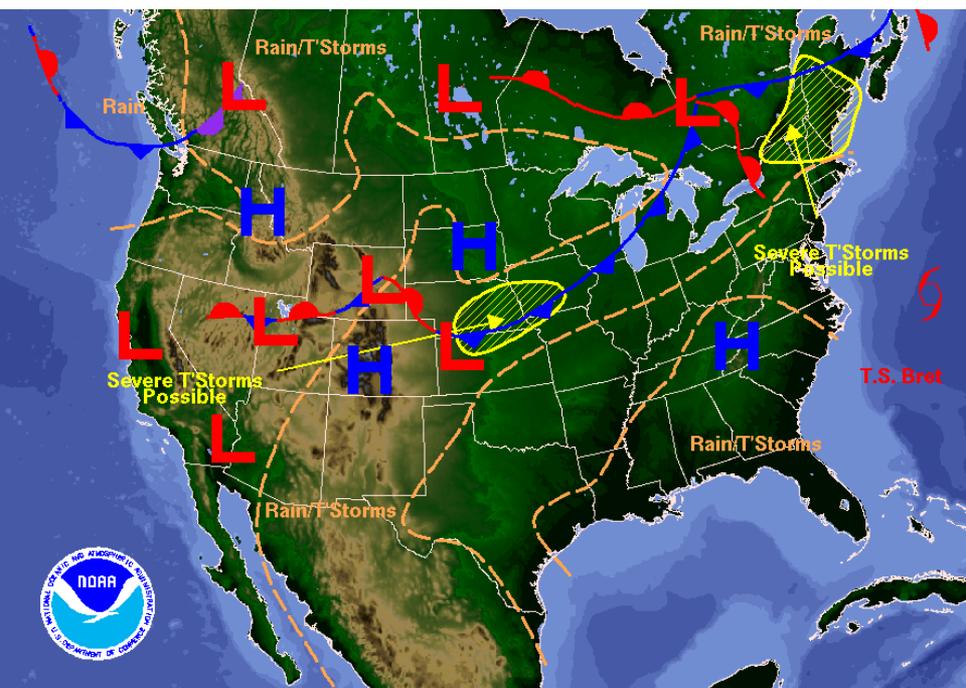
Hourly AQI (Combined PM_{2.5} and O₃)

Thursday, July 21, 2011 12:00 PM EDT



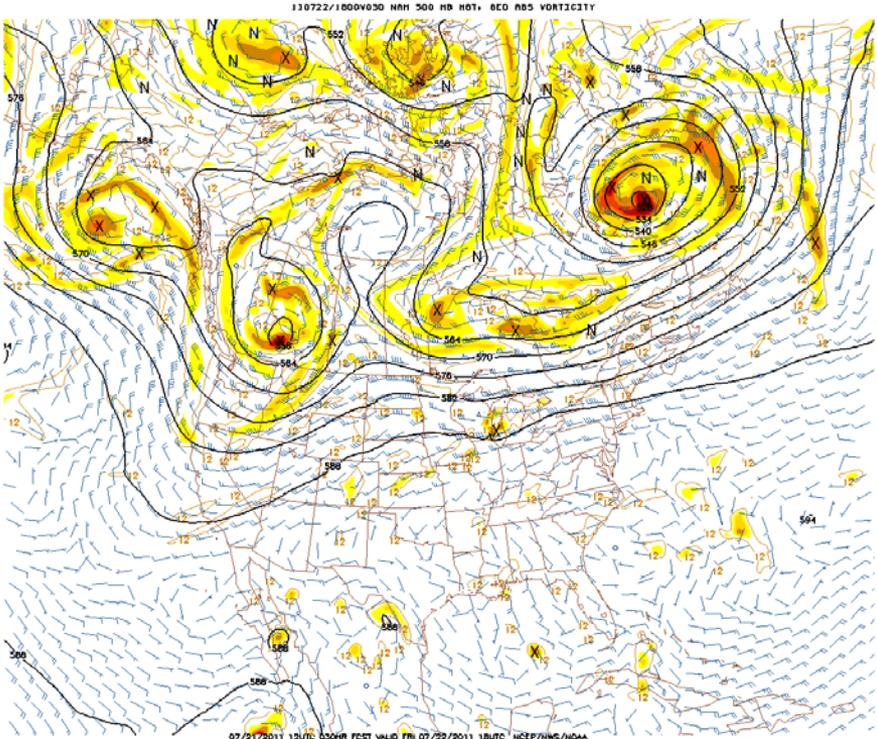
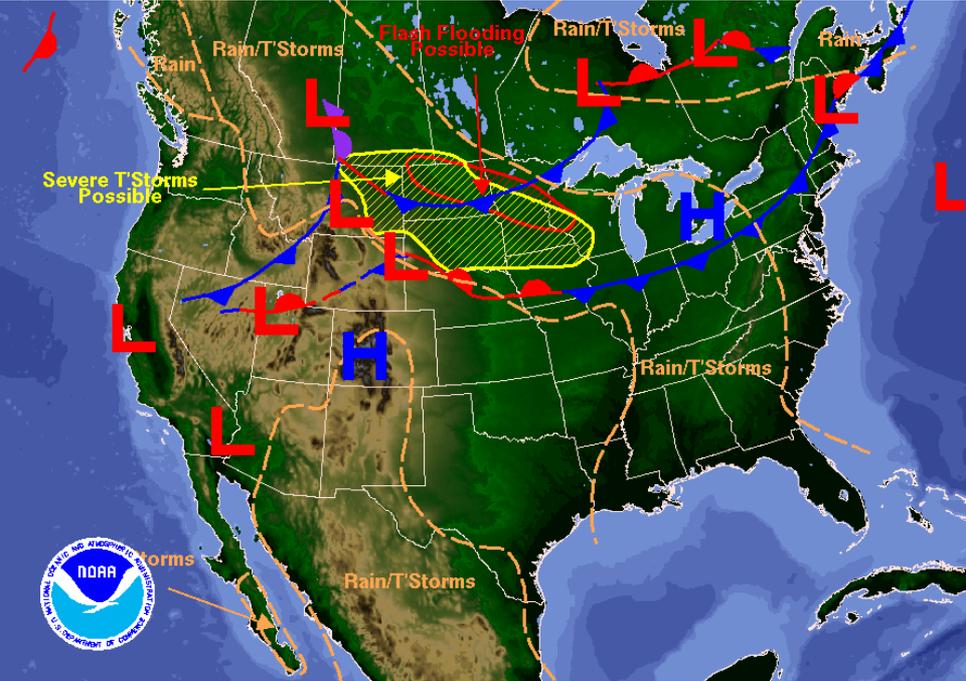
Today : Strong subsidence associated with upper level high suppresses convection. No precipitation expected. Southerly winds continue to bring moisture into our region.

500 mb NAM at 2 PM.



Tomorrow: Upper level trough approaching our region brings increasing clouds throughout the day.

500 mb NAM at 2 PM.

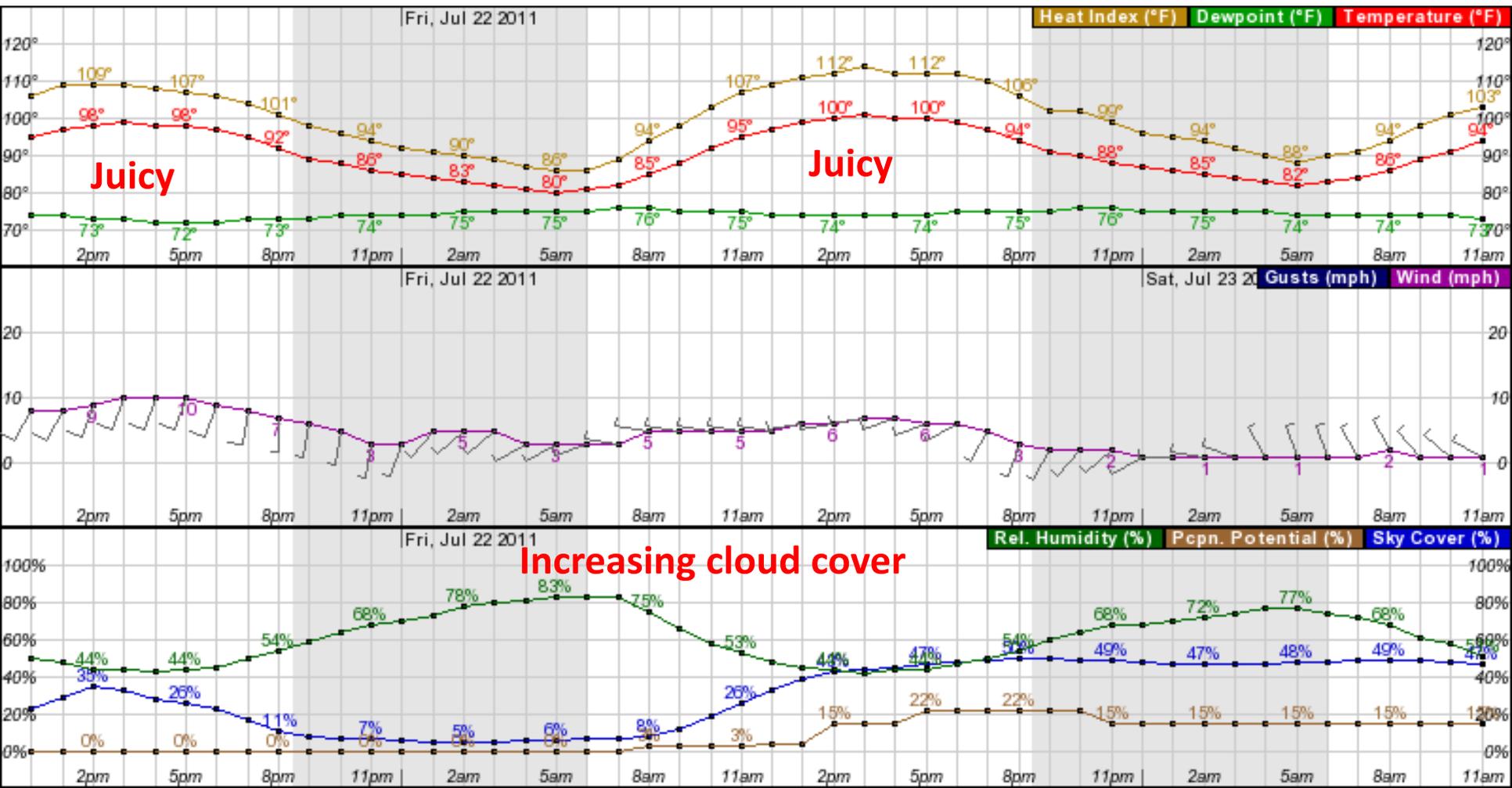


Today: Southerly flow with hazy, hot, humid conditions.

Friday: Cloud cover on the rise throughout the day.

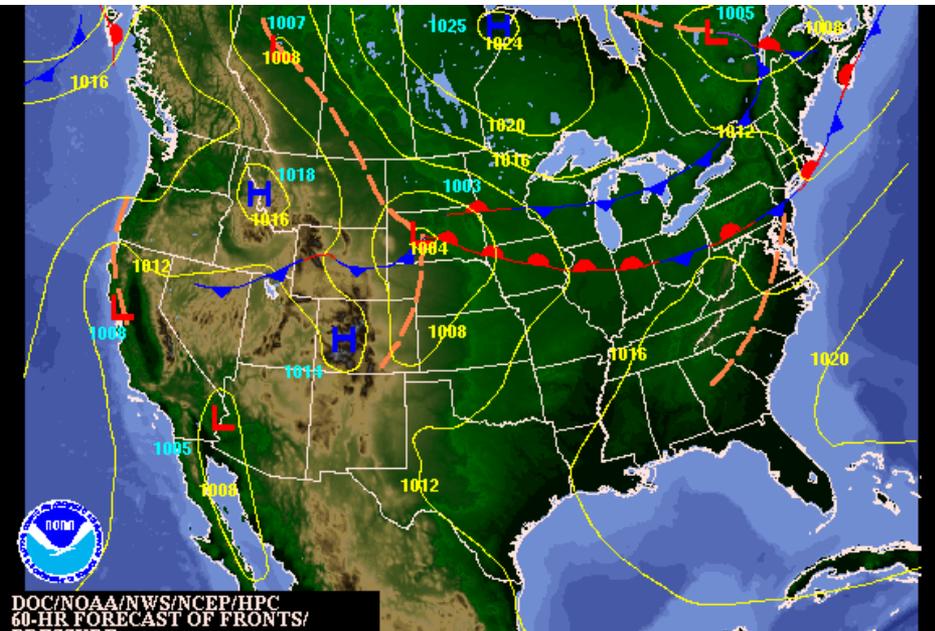
Today →

Friday →

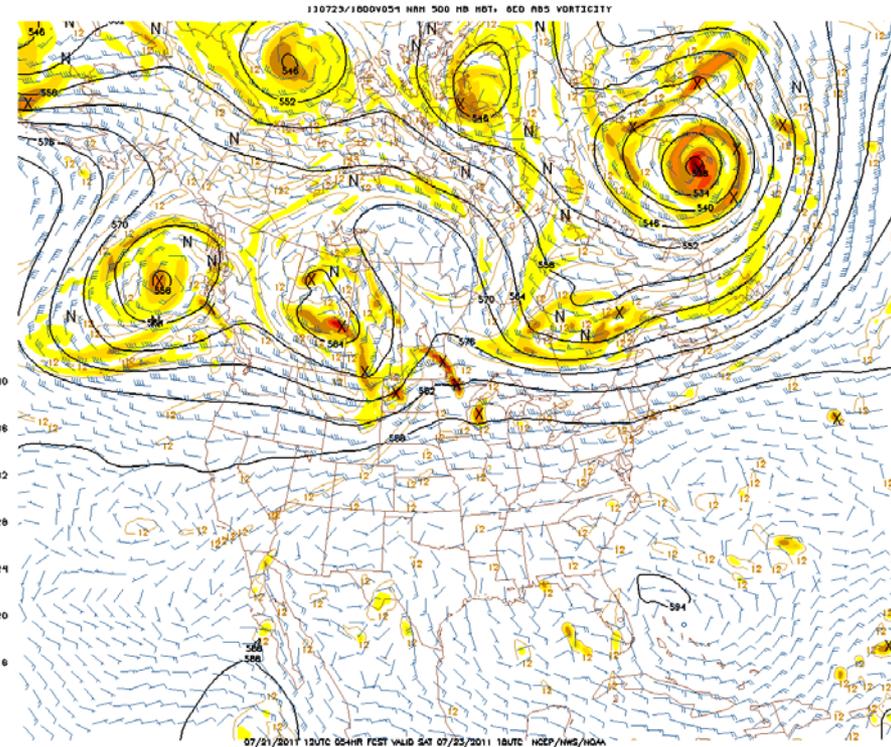


Saturday: Shortwave trough passing to our north gives us a chance of isolated thunderstorms.

500 mb NAM at 2 PM.



DOC/NOAA/NWS/NCEP/HPC
60-HR FORECAST OF FRONTS/
PRESSURE
ISSUED: 0729Z THU JUL 21 2011
VALID: 1200Z SAT JUL 23 2011
FORECASTER: OTTO

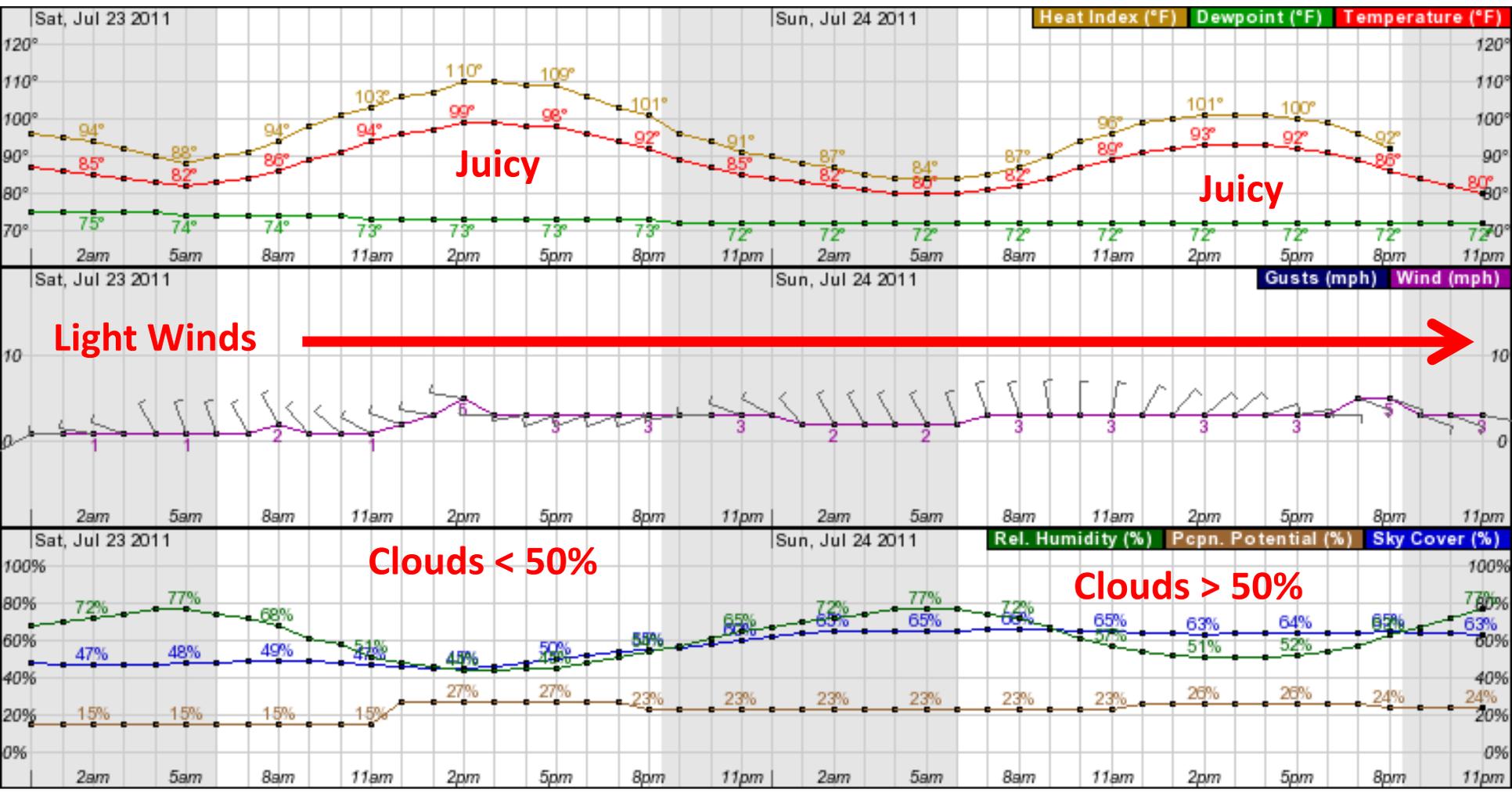


07/21/2011 12UTC 05-HR FCST VALID SAT 07/23/2011 18UTC HPC/NWS/NOAA

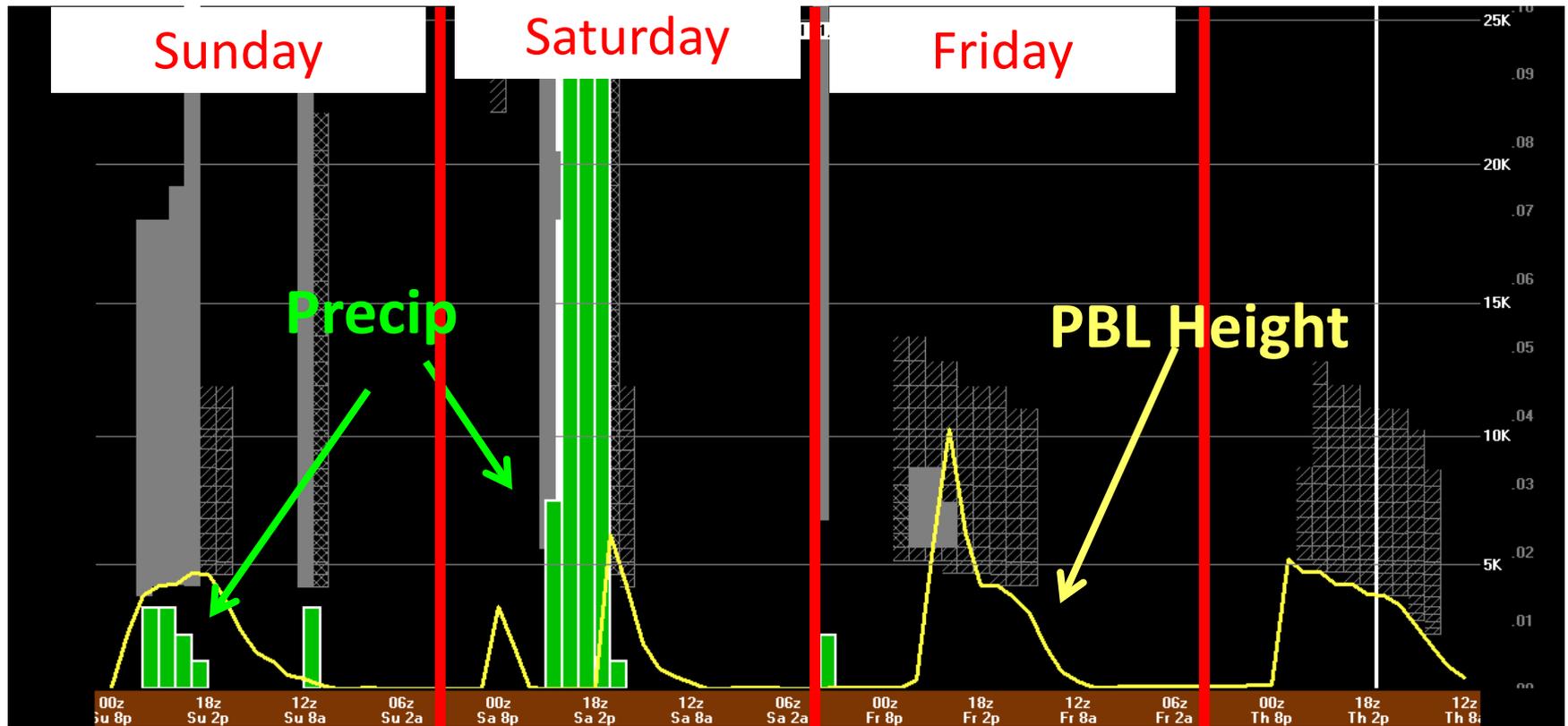
Saturday: Heat and humidity sticks around.
Sunday: Hot, sticky, and cloud coverage > 50%.

Saturday →

Sunday →



BUFKIT – NAM (12 UTC 21 July)



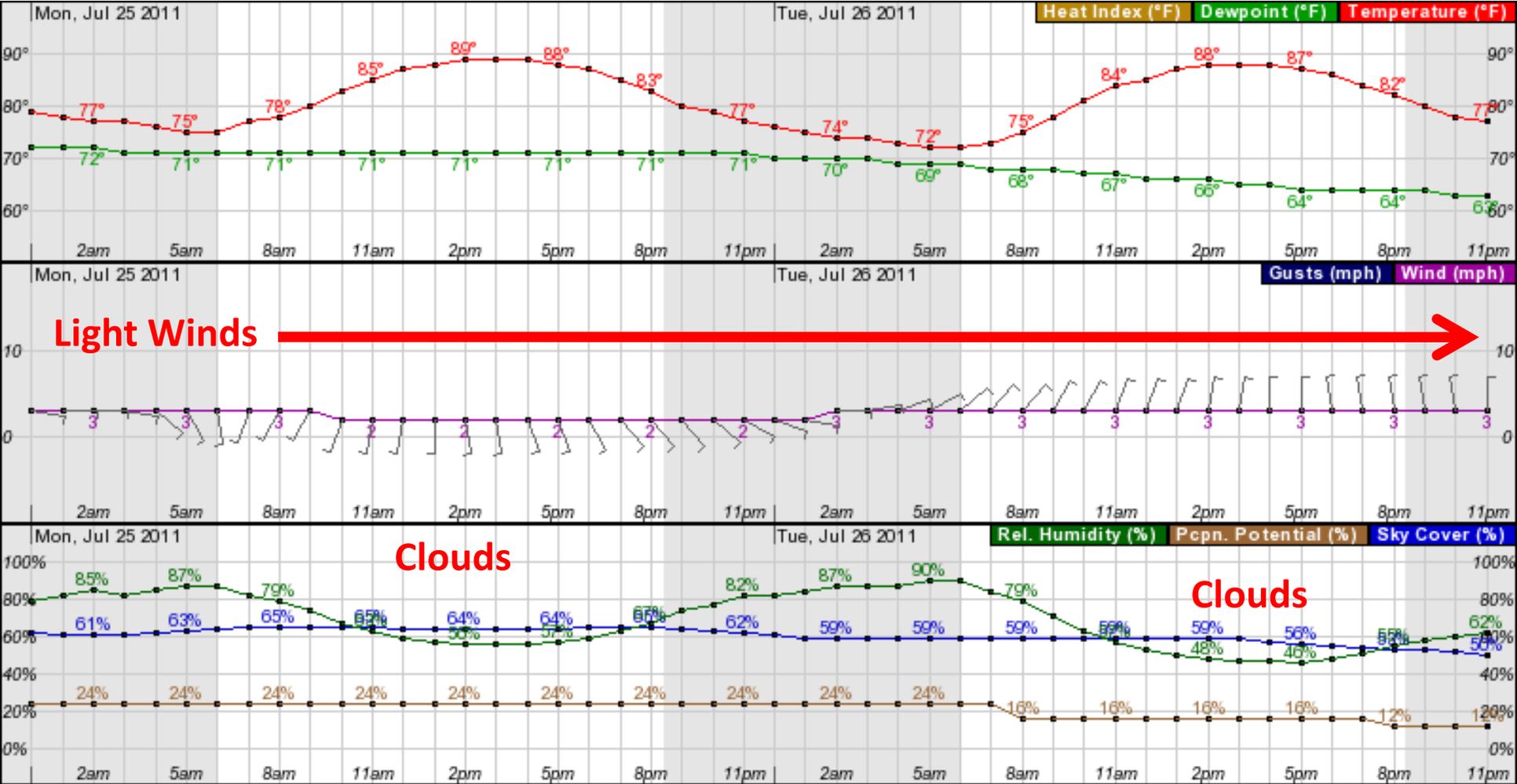
- Cloud coverage increases throughout the day Friday.
- Chance of precip Saturday.
- Cloudy Sunday.

Monday: Humid and cloud cover < 50%.

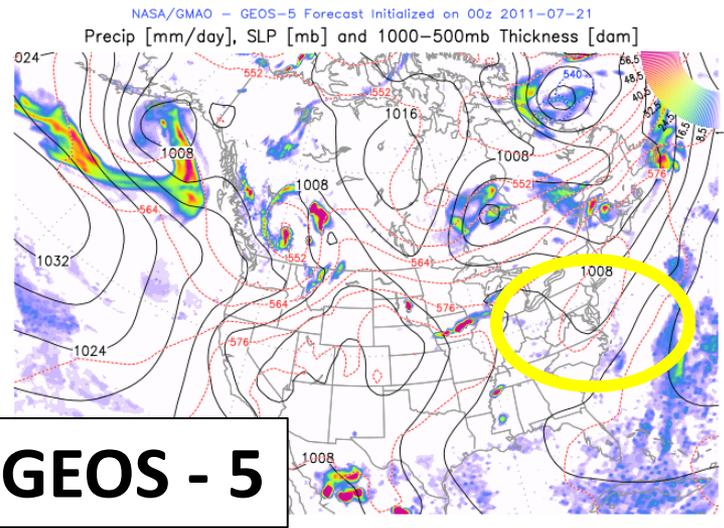
Tuesday: Humidity decreasing and cloud cover around 50%.

Monday →

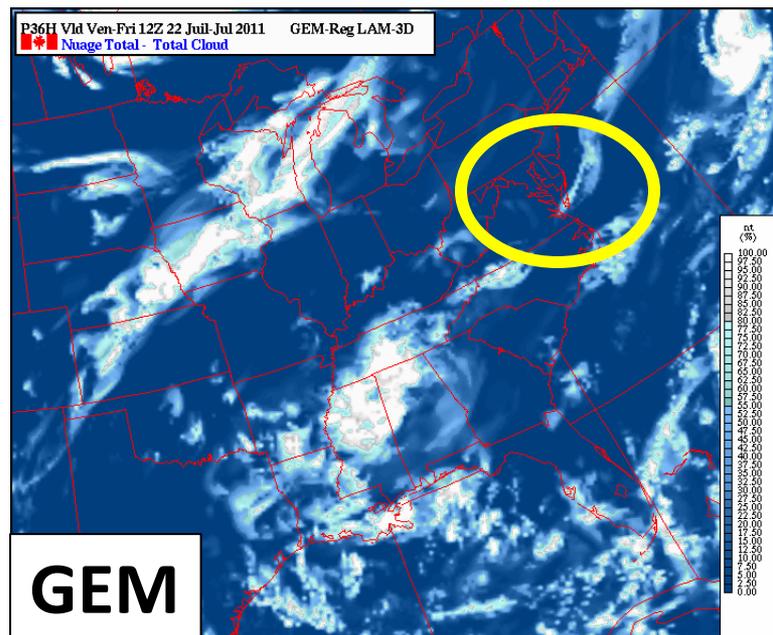
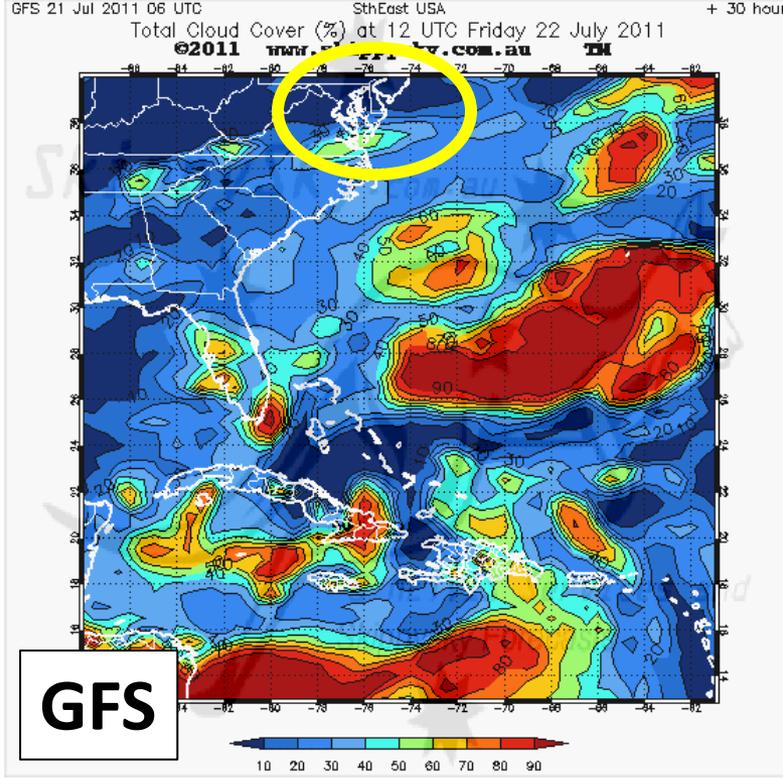
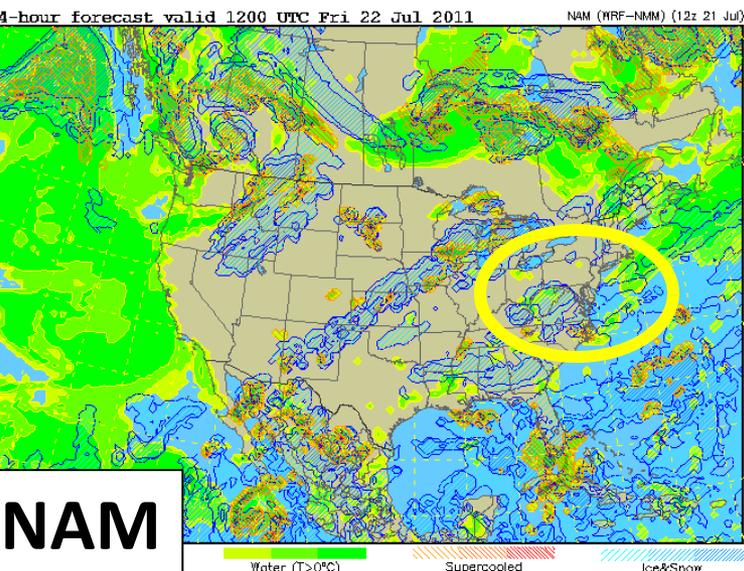
Tuesday →



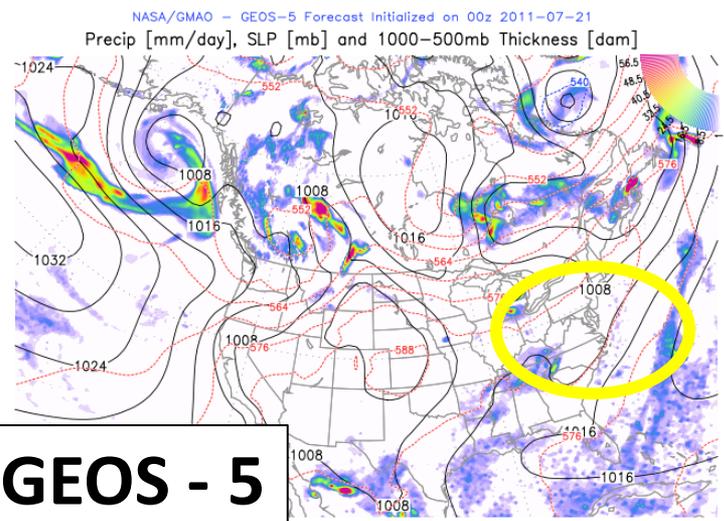
Friday 8 am: Clear skies.



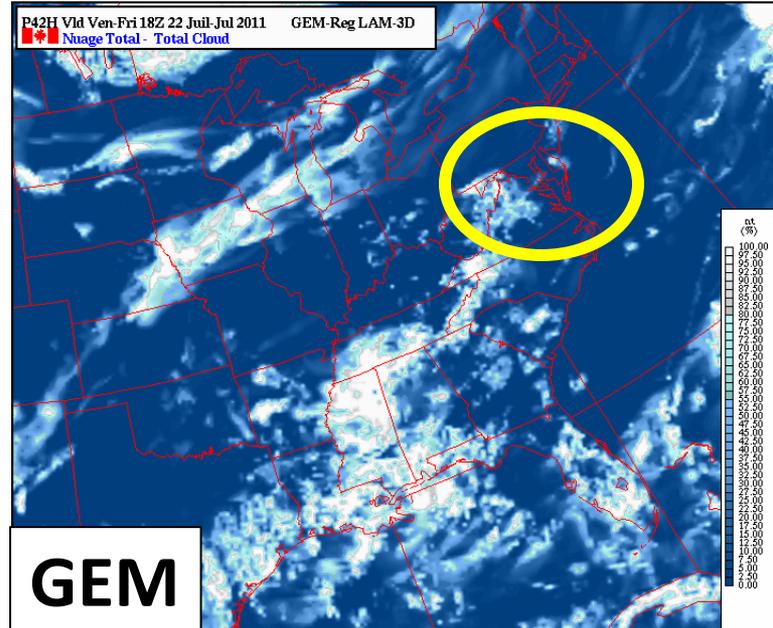
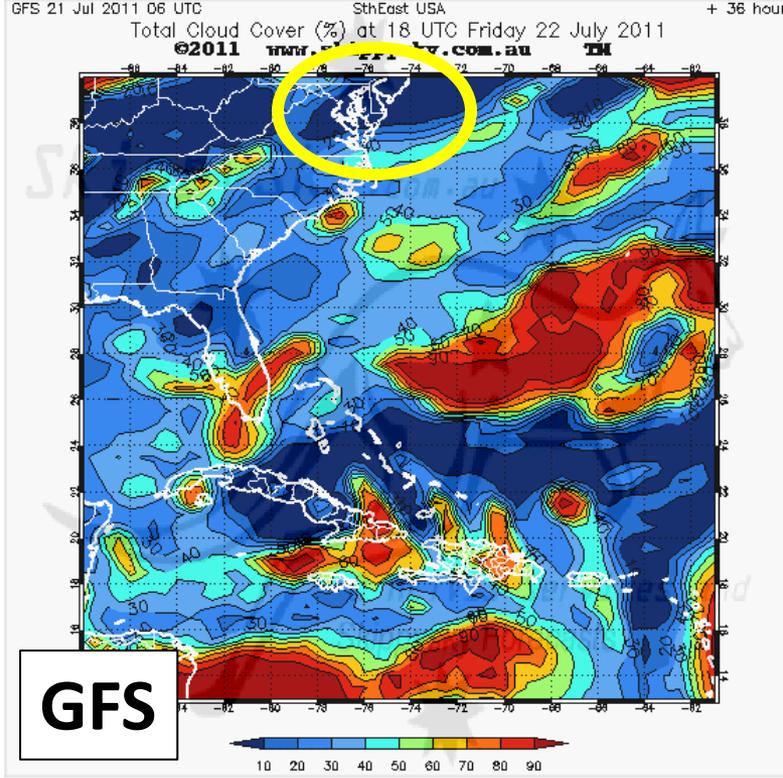
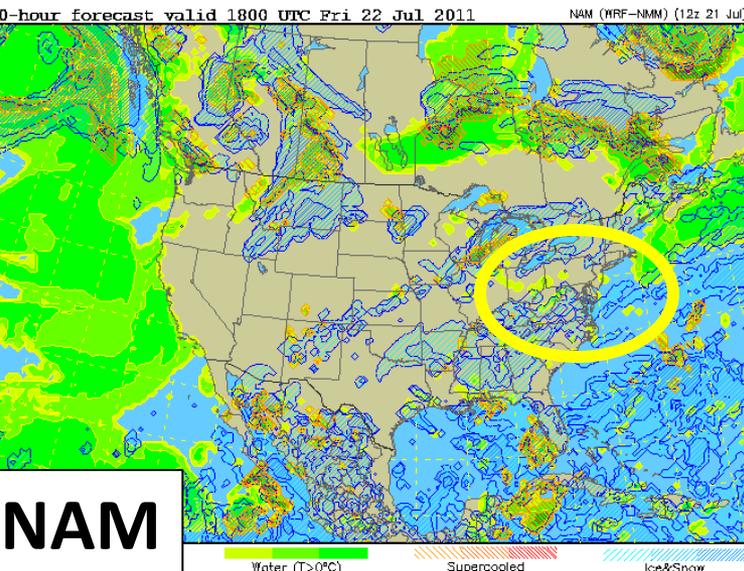
36-hr forecast valid Fri 12z 2011-07-22



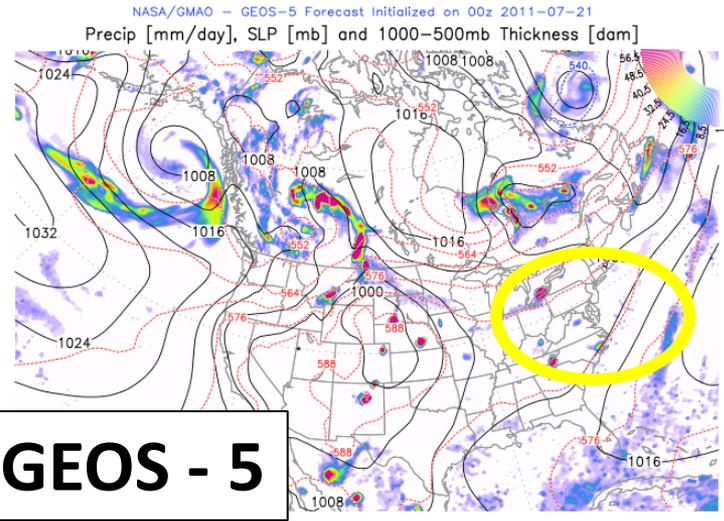
Friday 2 pm: Mostly sunny.



42-hr forecast valid Fri 18z 2011-07-22

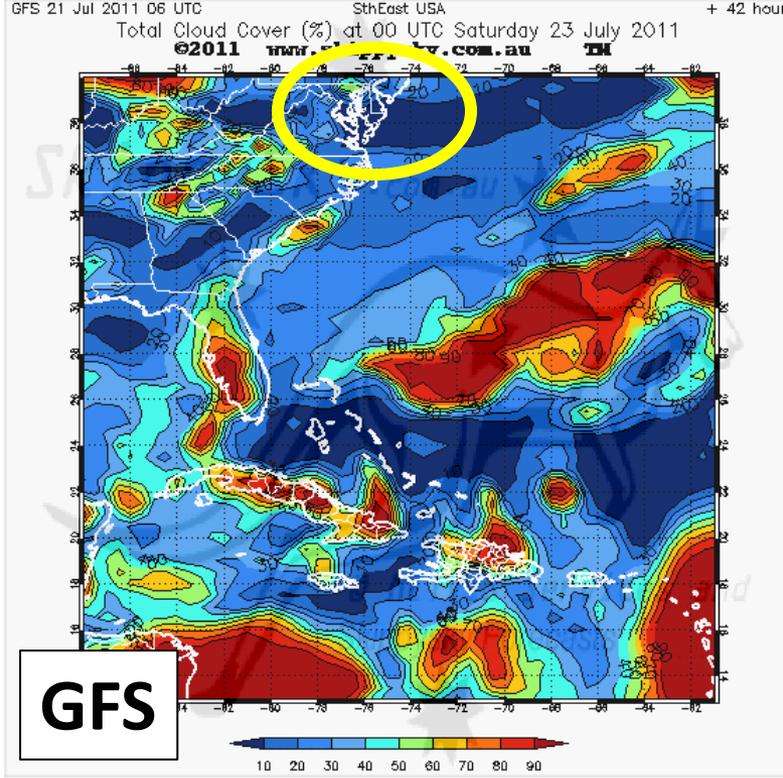


Friday 8 pm: Cloudy.

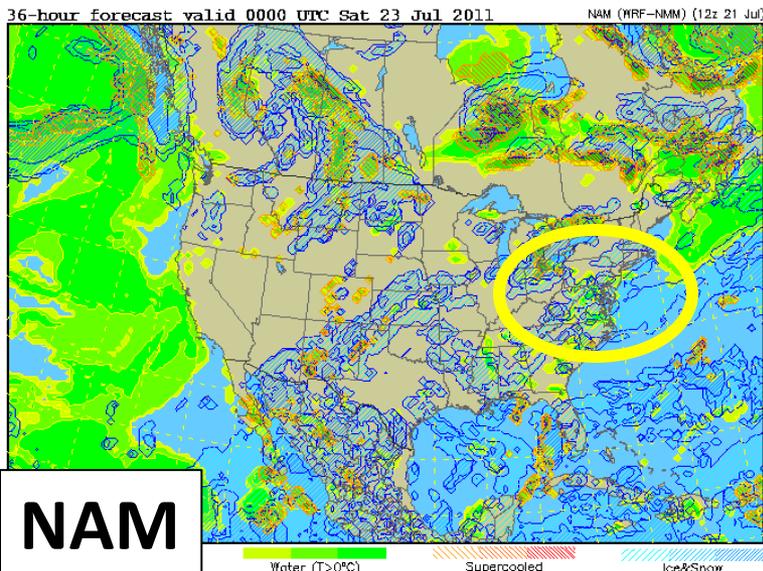


48-hr forecast valid Sat 00z 2011-07-23

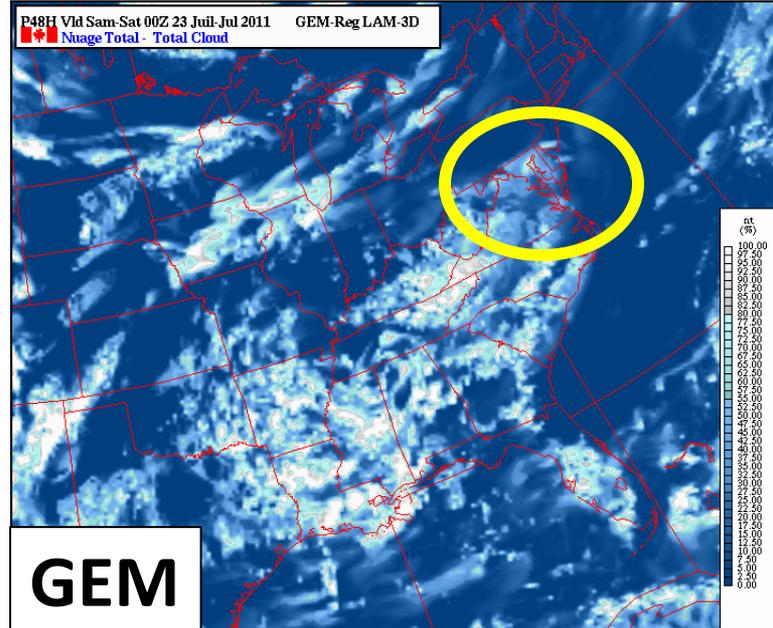
GEOS - 5



GFS

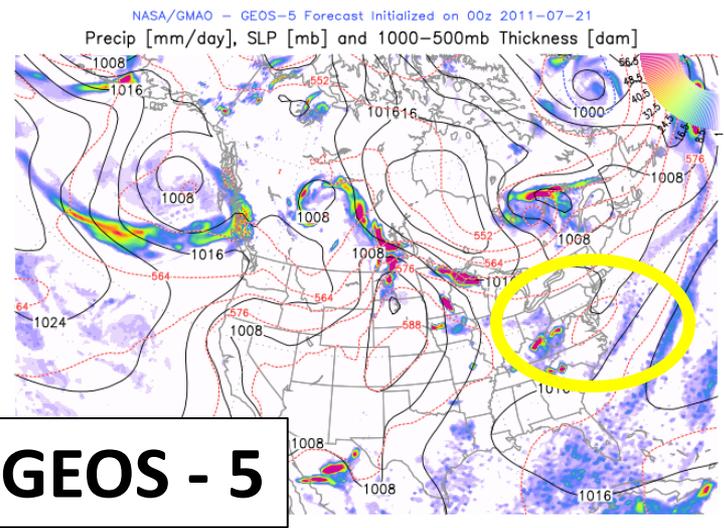


NAM

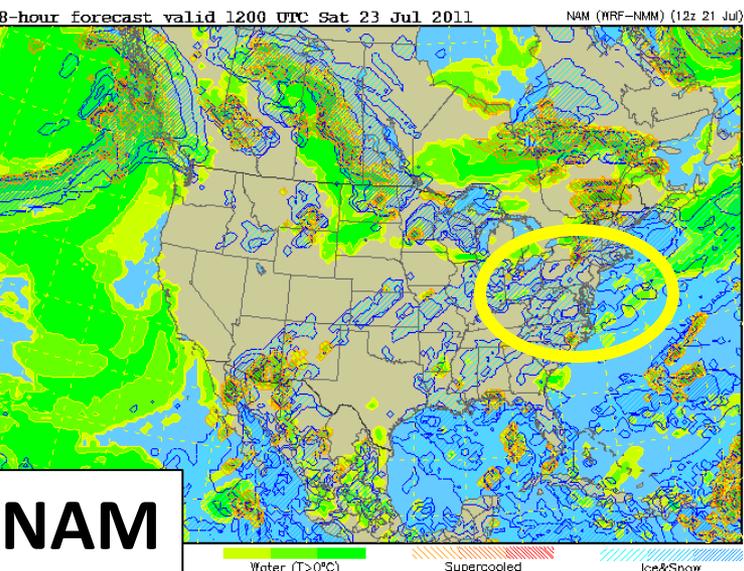
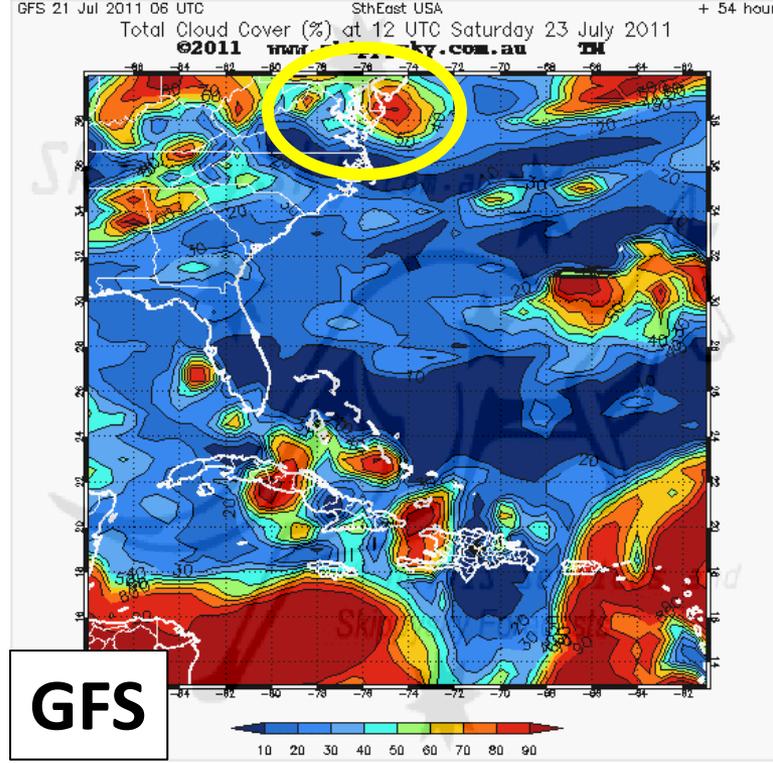


GEM

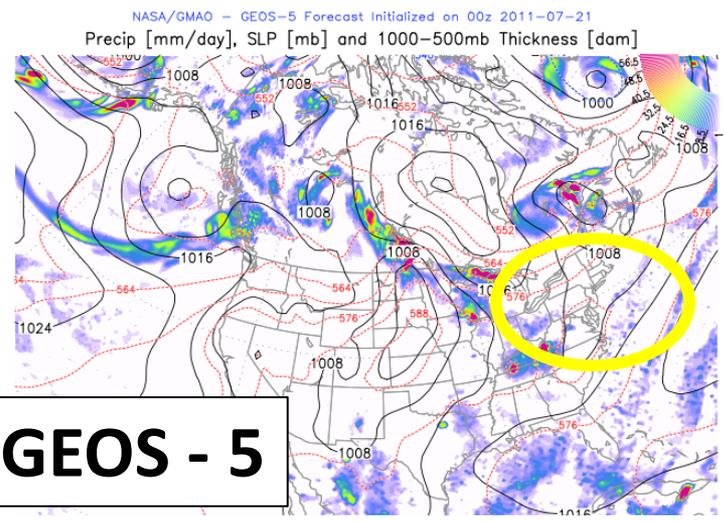
Saturday 8 am: Cloudy.



60-hr forecast valid Sat 12z 2011-07-23

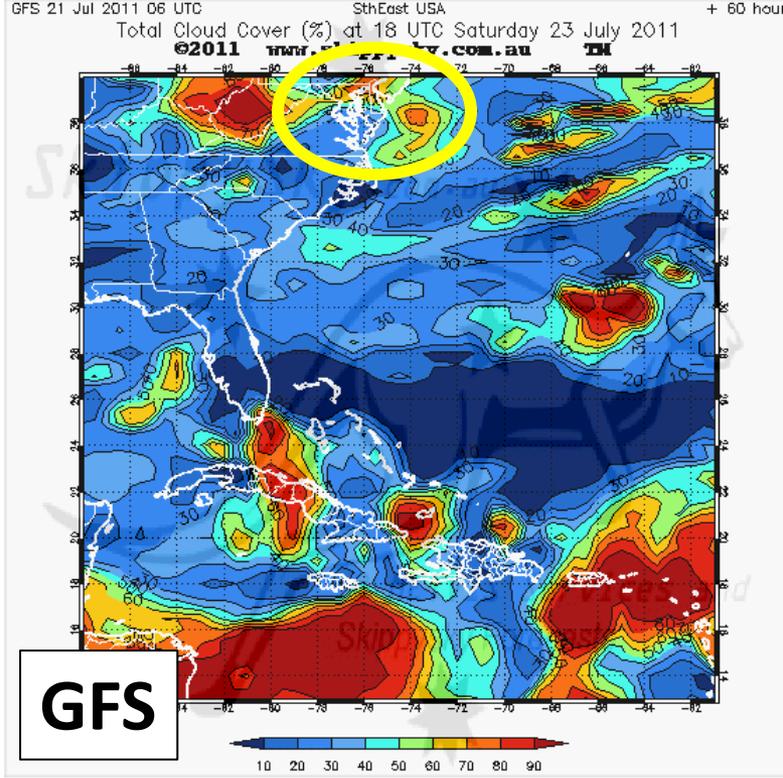


Saturday 2 pm: Cloudy.



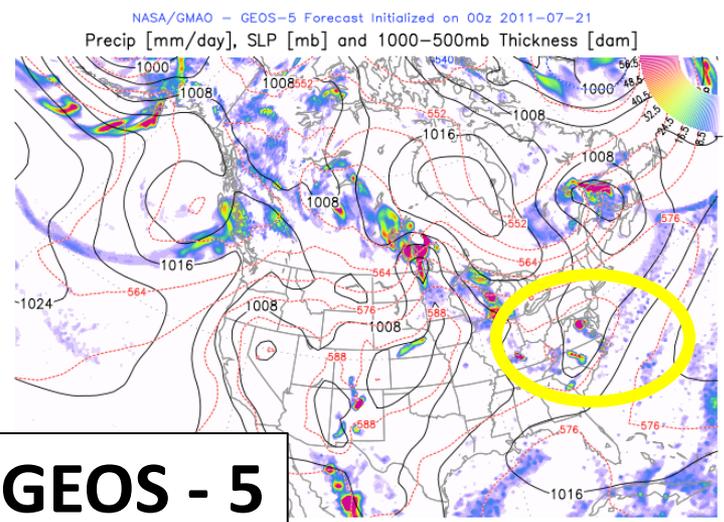
GEOS - 5

66-hr forecast valid Sat 18z 2011-07-23



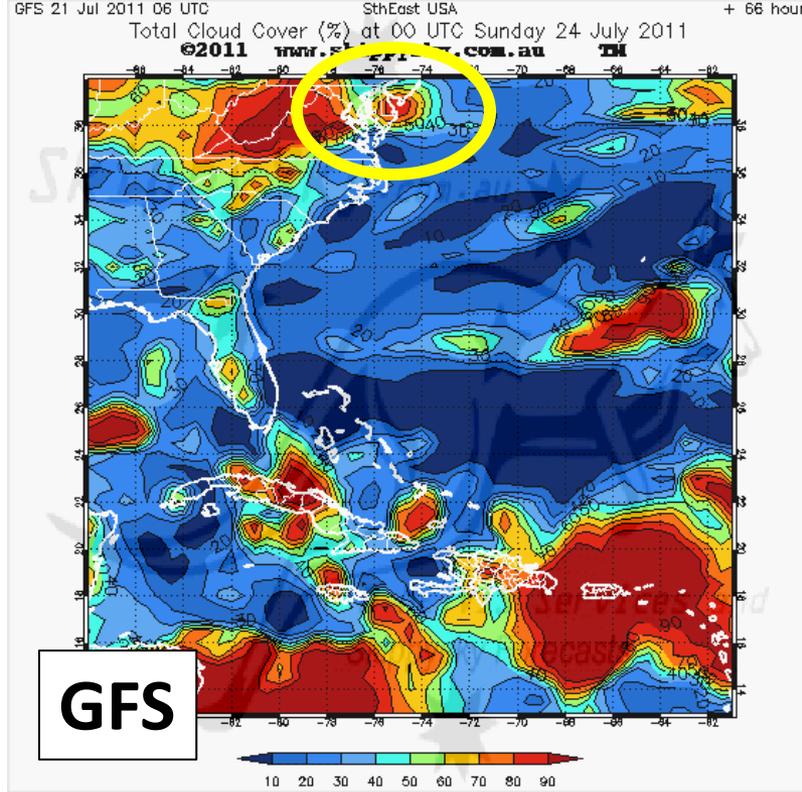
GFS

Saturday 8 pm: Cloudy.



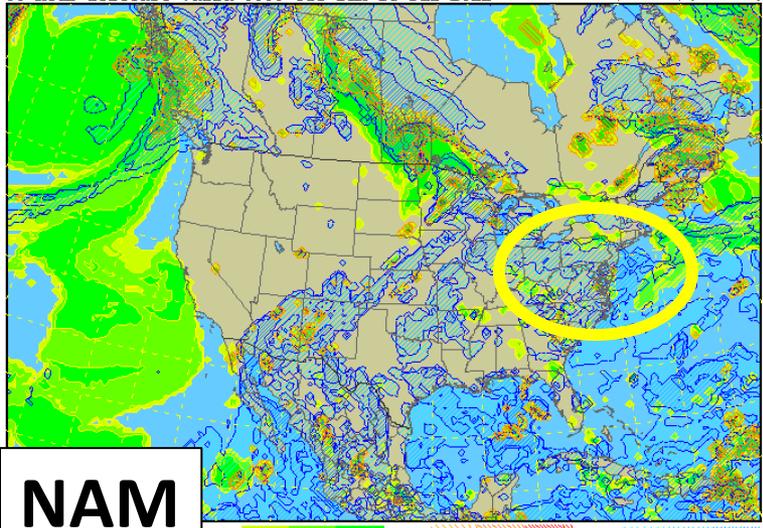
GEOS - 5

72-hr forecast valid Sun 00z 2011-07-24



GFS

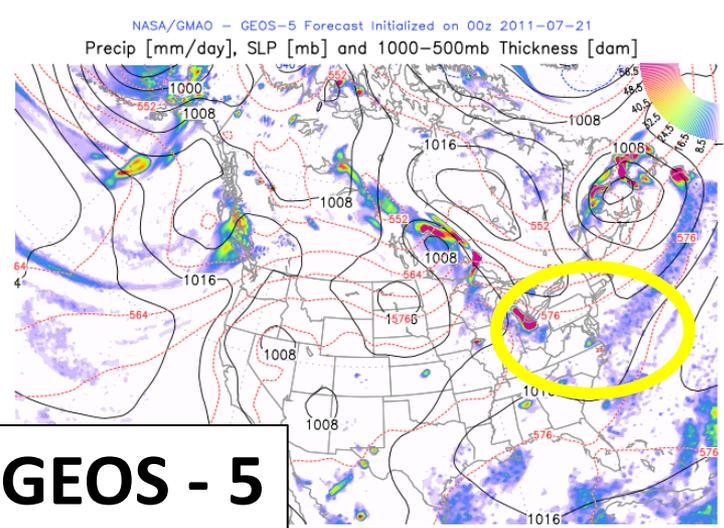
60-hour forecast valid 0000 UTC Sun 24 Jul 2011 NAM (MRF-NMM) (12z 21 Jul)



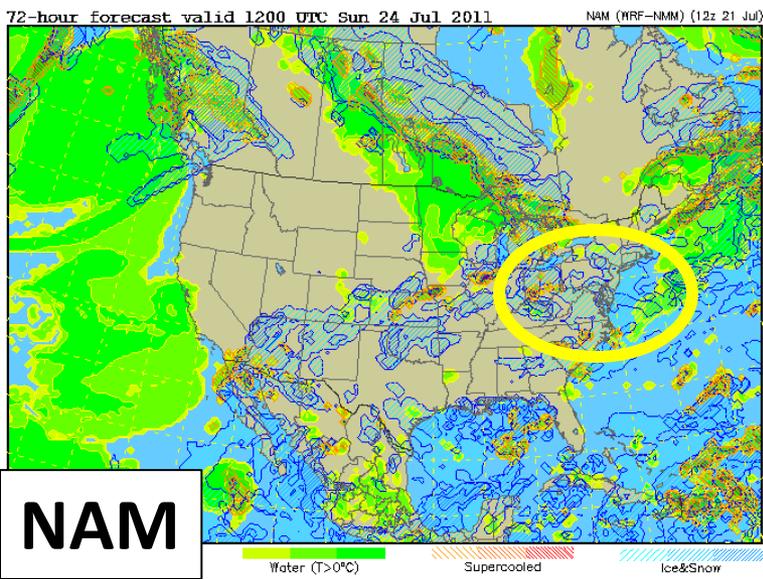
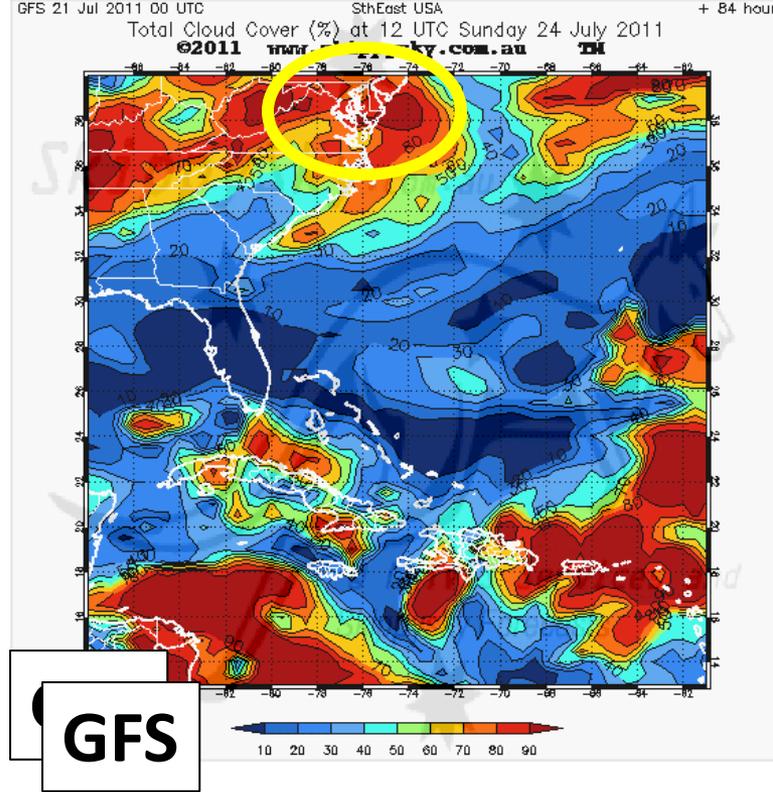
NAM

Water (>0°C) Supercooled Ice&Snow

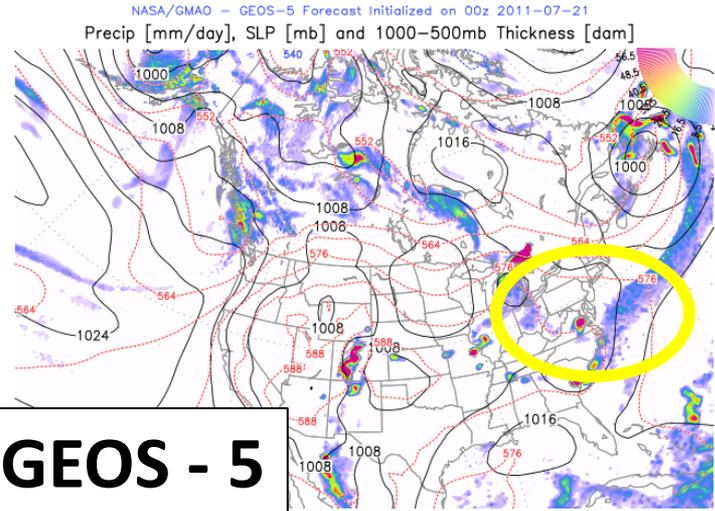
Sunday 8 am: Cloudy.



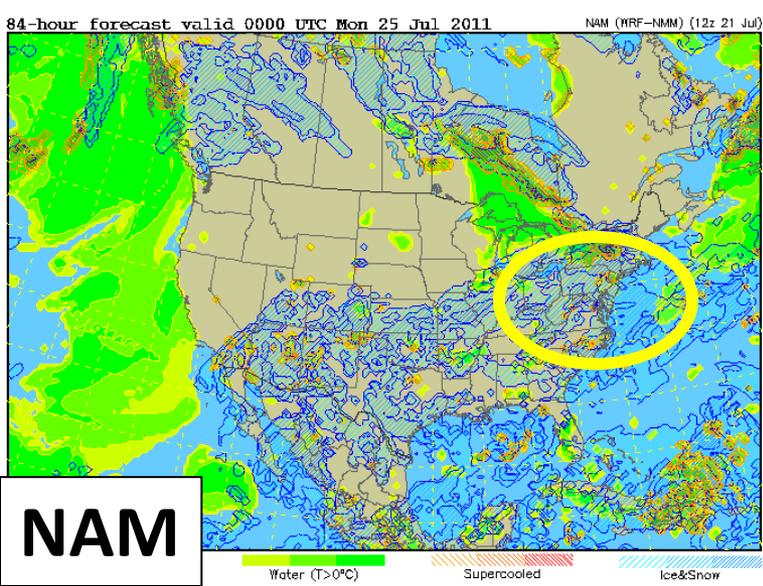
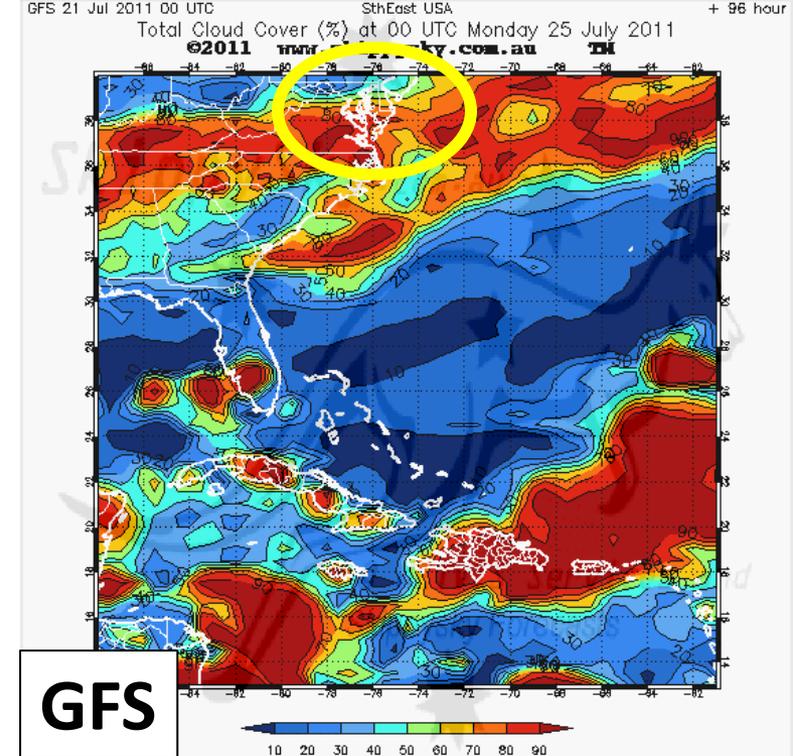
84-hr forecast valid Sun 12z 2011-07-24



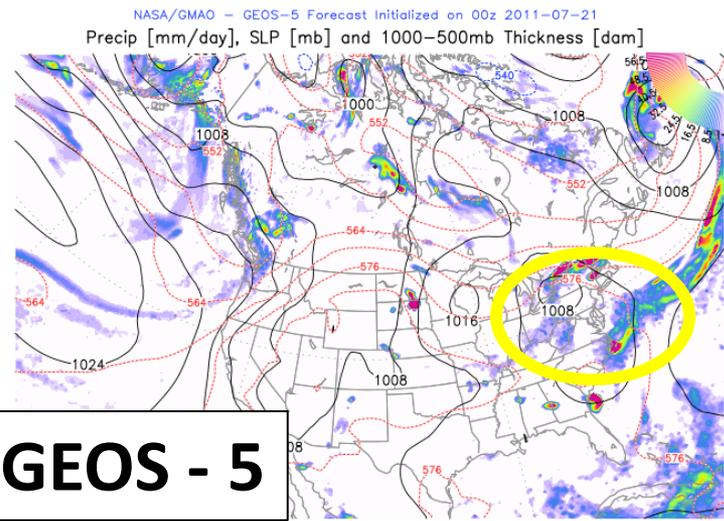
Sunday 8 pm: Cloudy.



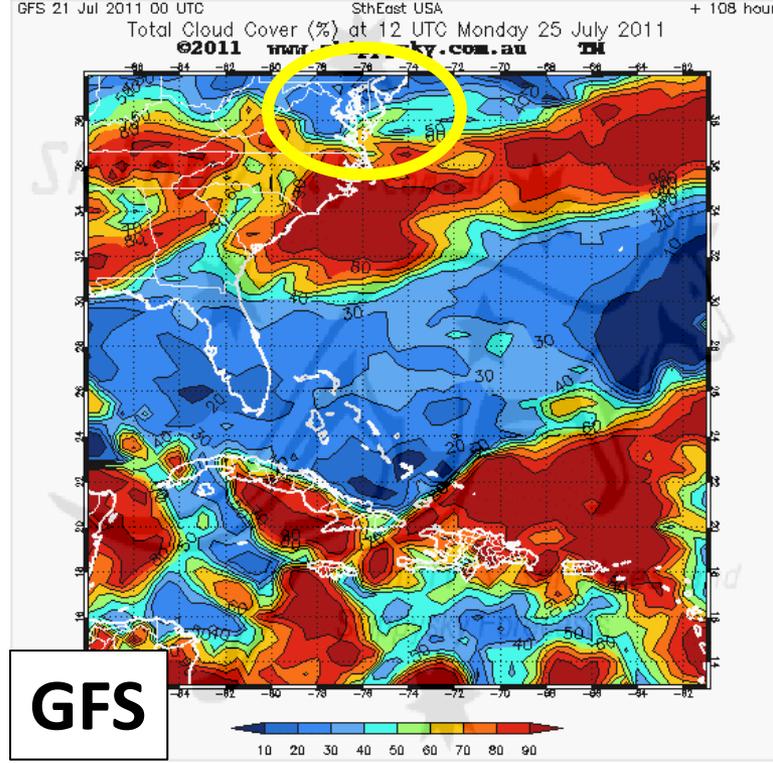
96-hr forecast valid Mon 00z 2011-07-25



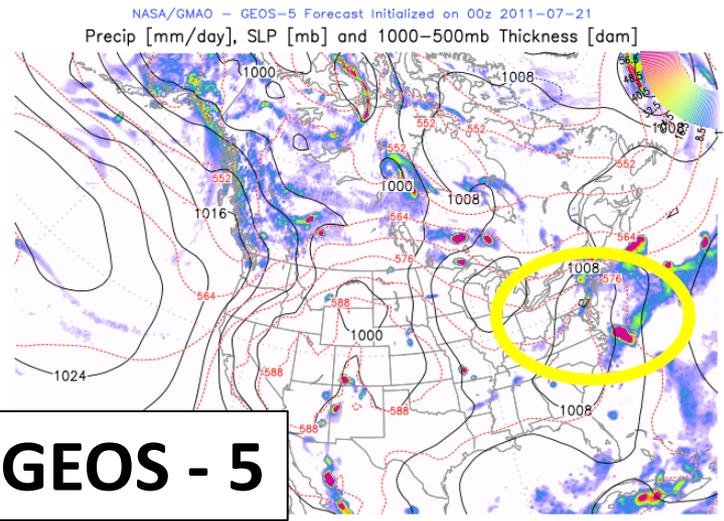
Monday 8 am: Cloud cover diminishing.



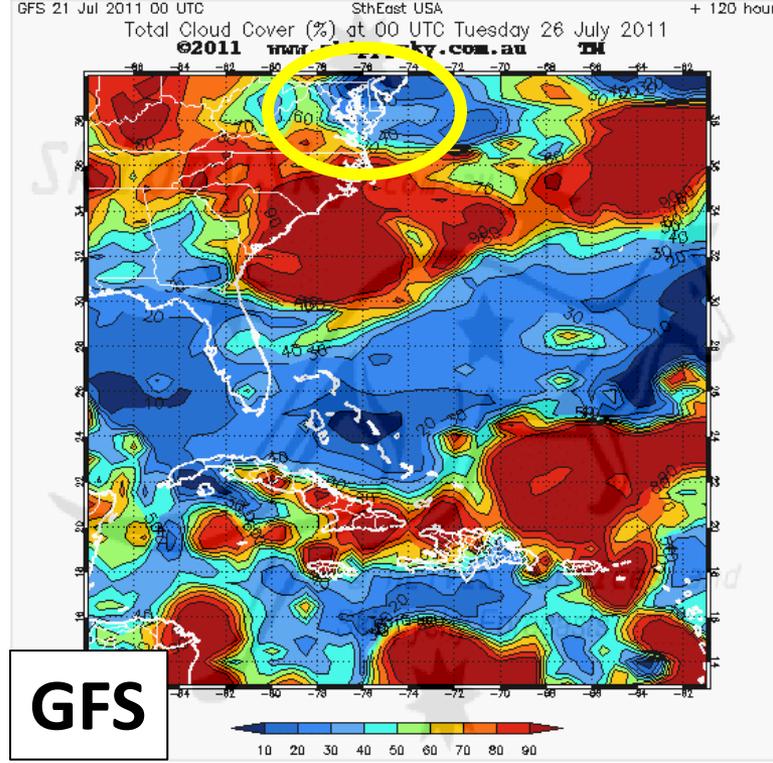
108-hr forecast valid Mon 12z 2011-07-25



Monday 8 pm: Cloud coverage < 50%.



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

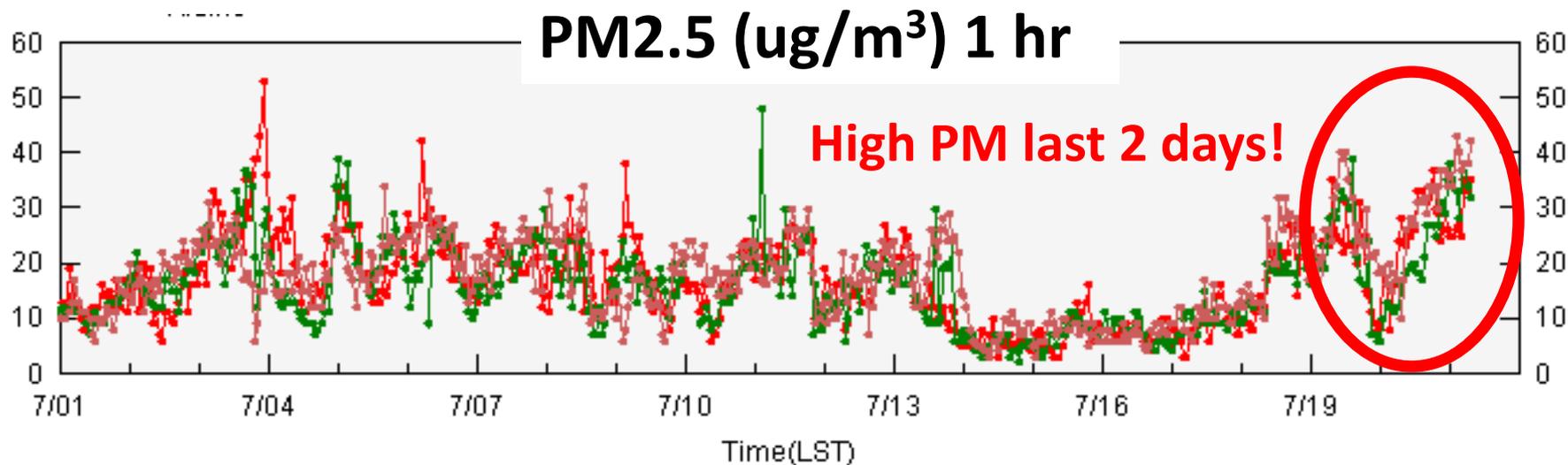
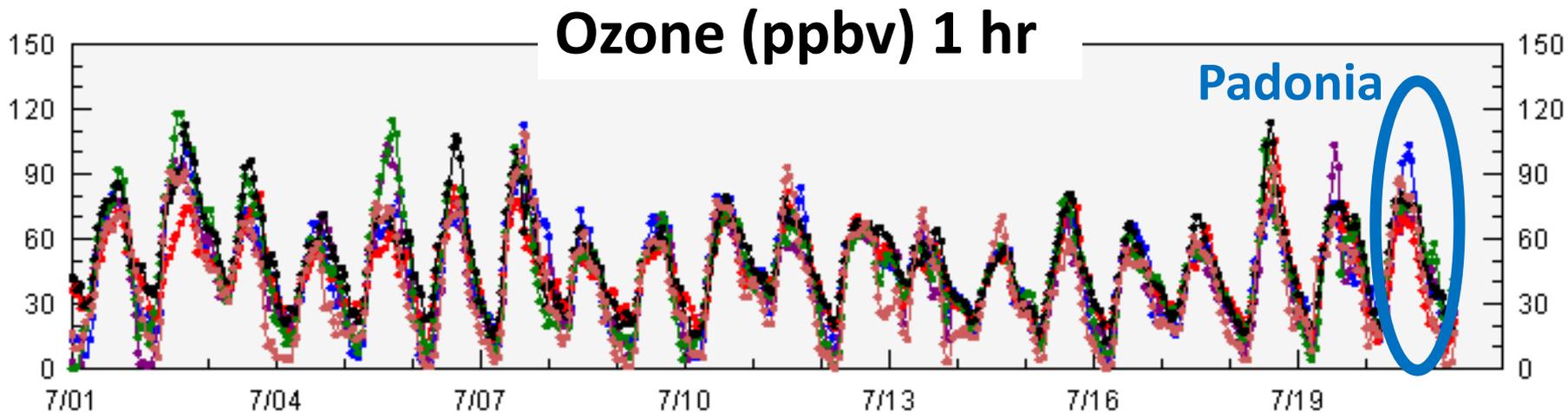


Extended forecast (Monday through Wednesday):

Cold front to our east on Monday moving offshore. High pressure starts to build into our region Tuesday and Wednesday.

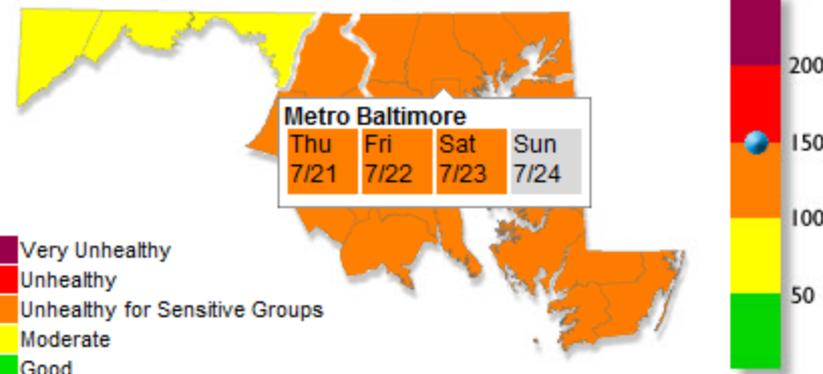
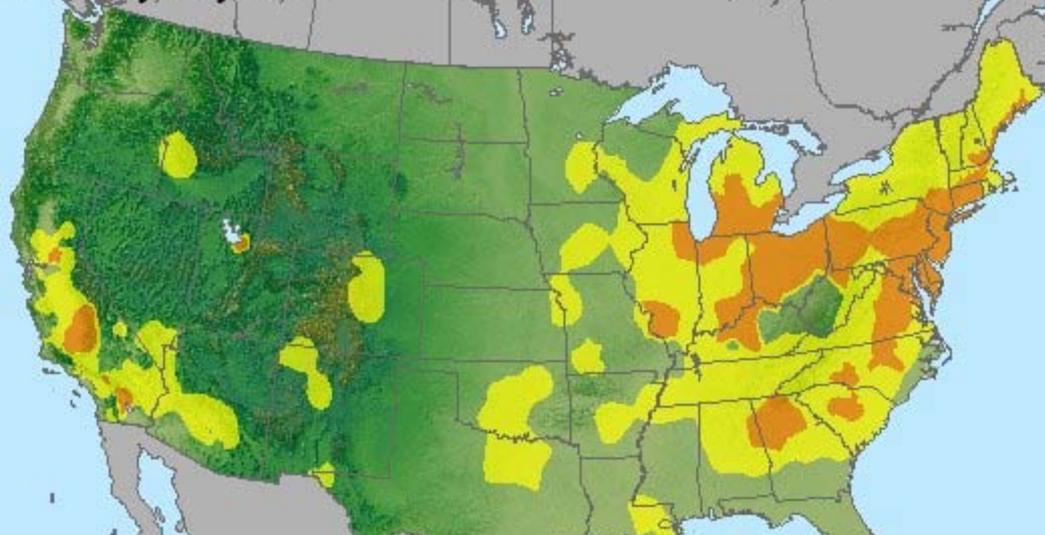
MDE Surface Sites

Padonia Beltsville Edgewood Aldino Essex Fairhill



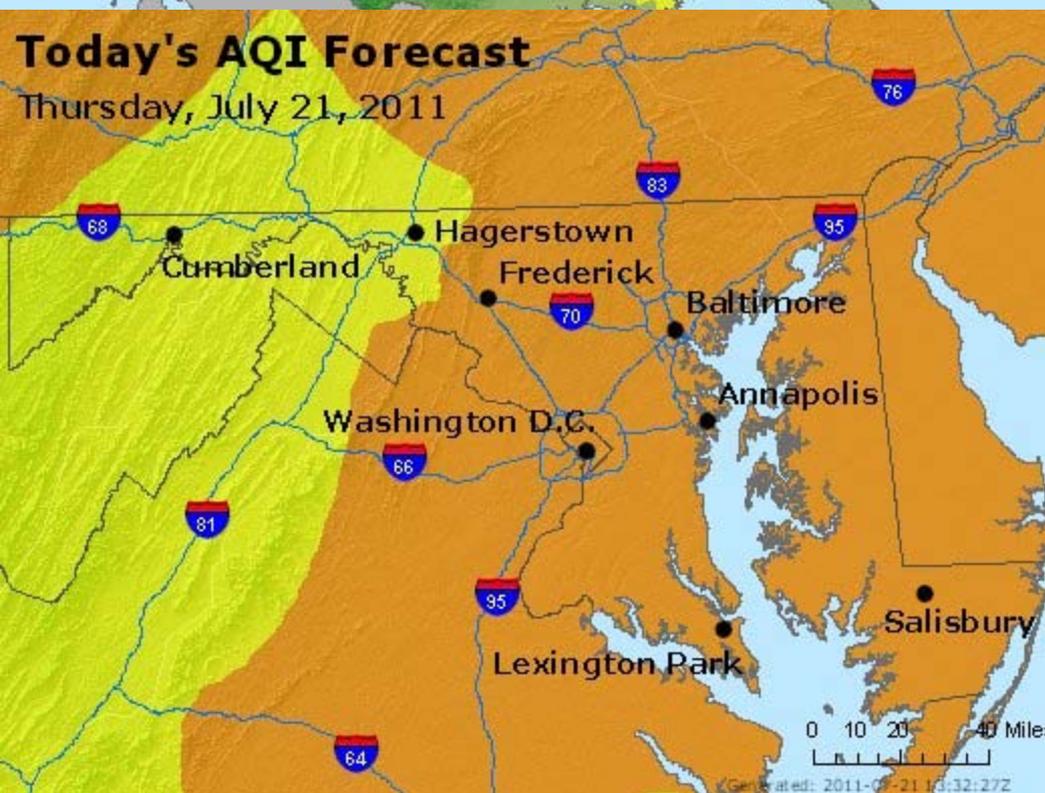
Today's AQI Forecast

Thursday, July 21, 2011

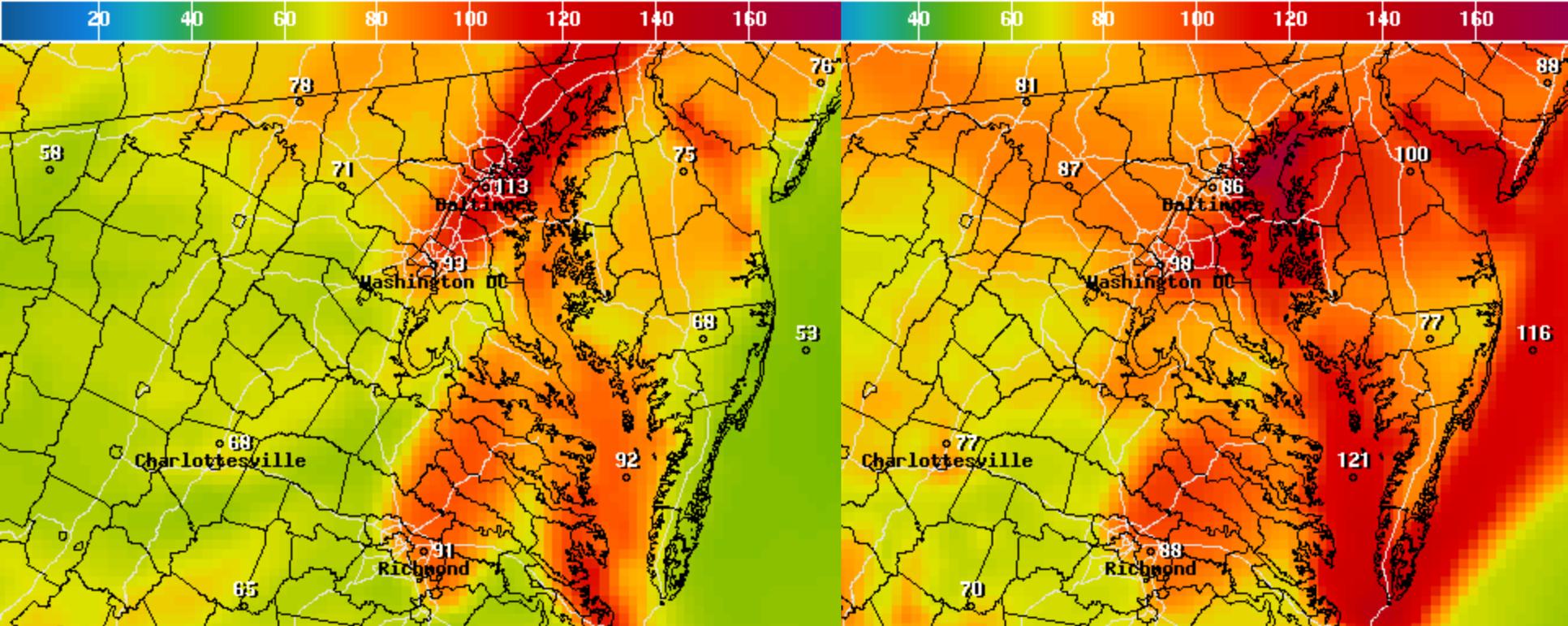


Today's AQI Forecast

Thursday, July 21, 2011



Air Quality Forecast			
Today's High		Tomorrow's High	
Air Quality Index (AQI)		Air Quality Index (AQI)	
150	Unhealthy for Sensitive Groups	137	Unhealthy for Sensitive Groups
Health Message: Active children and adults, and people with lung disease, such as asthma, should reduce prolonged or heavy exertion outdoors.		Health Message: Active children and adults, and people with lung disease, such as asthma, should reduce prolonged or heavy exertion outdoors.	
AQI - Pollutant Details			
Ozone	150 Unhealthy for Sensitive Groups	Ozone	137 Unhealthy for Sensitive Groups
Particles (PM2.5)	92 Moderate	Particles (PM2.5)	99 Moderate
Forecast Discussion: Very hot and humid conditions are in store for the Mid-Atlantic starting Thursday and extending over the next few days due to a high pressure dominating much of the eastern U.S. Temperatures may surpass 100 F. Unhealthy for Sensitive Groups (USG) AQI is expected for ozone for all locations except western Maryland while fine particles should remain in the upper Moderate range. Similar conditions on Friday with an increased chance of thunderstorms in the evening should keep ozone in the upper USG range. At this time, Saturday looks to be cloudier though temperatures and humidity will remain high. A continuation of USG conditions is expected for most locations. - MDE			



Maximum 1Hr Ozone (PPB) Ending Thu Jul 21 2011 11PM EDT
(Fri Jul 22 2011 03Z)

Maximum 1Hr Ozone (PPB) Ending Sat Jul 23 2011 12AM EDT
(Sat Jul 23 2011 04Z)



National Digital Guidance Database
06z model run Graphic created-Jul 21 7:42AM EDT



National Digital Guidance Database
06z model run Graphic created-Jul 21 7:42AM EDT

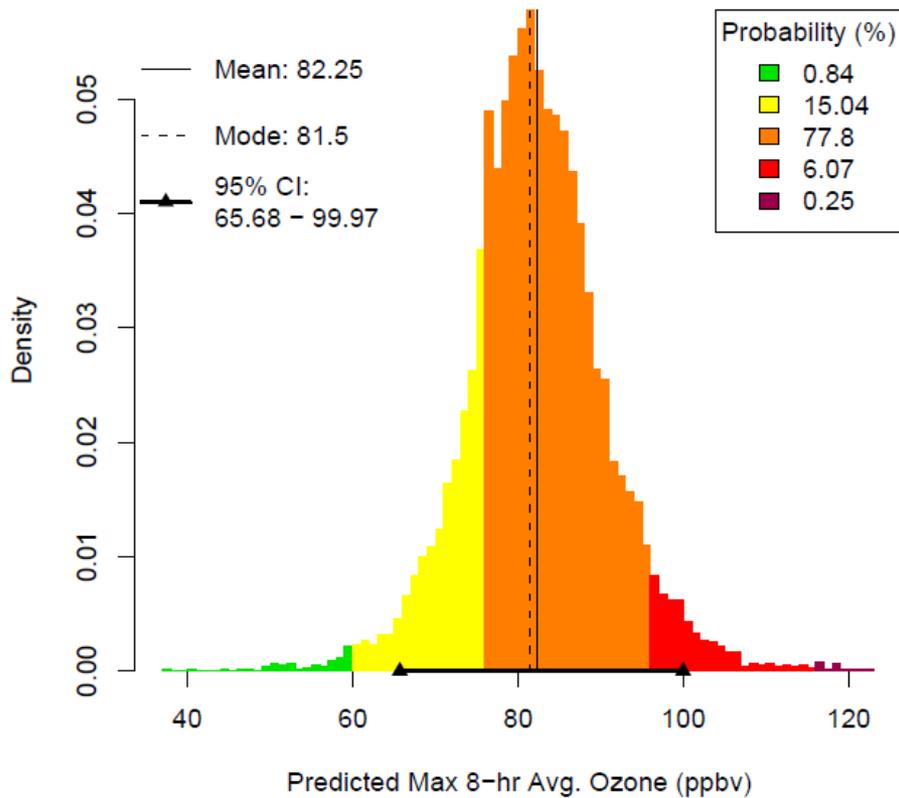


1-hr Max Ozone (ppbv) Thursday

1-hr Max Ozone (ppbv) Friday

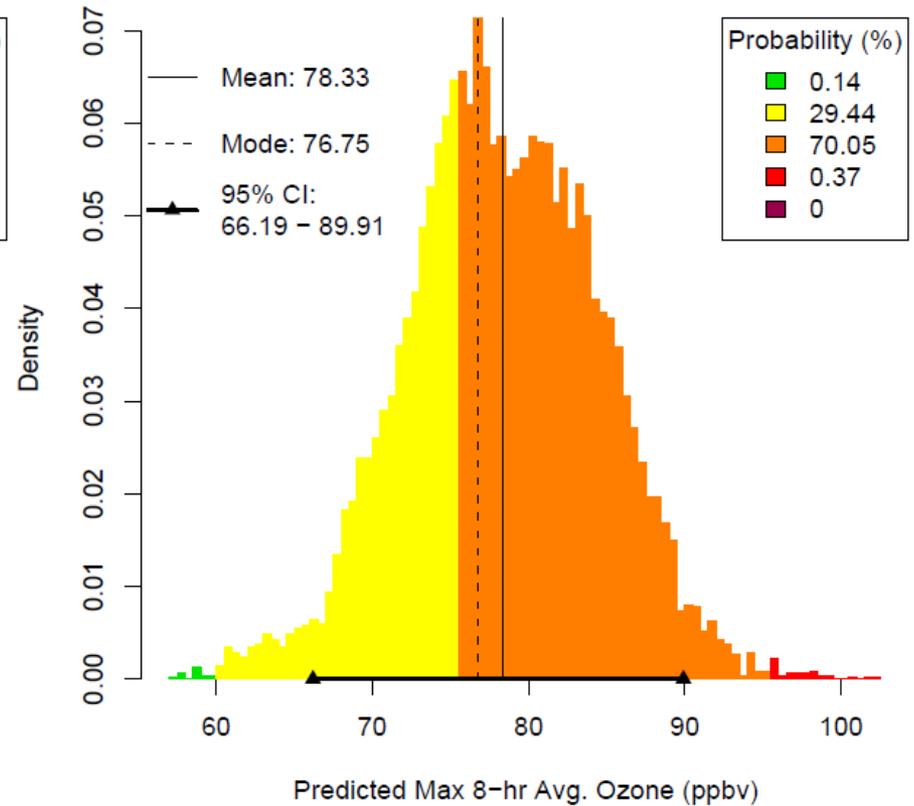
NAQFC-MOS valid for Friday

ID: 240251001 VALID: 2011-07-22



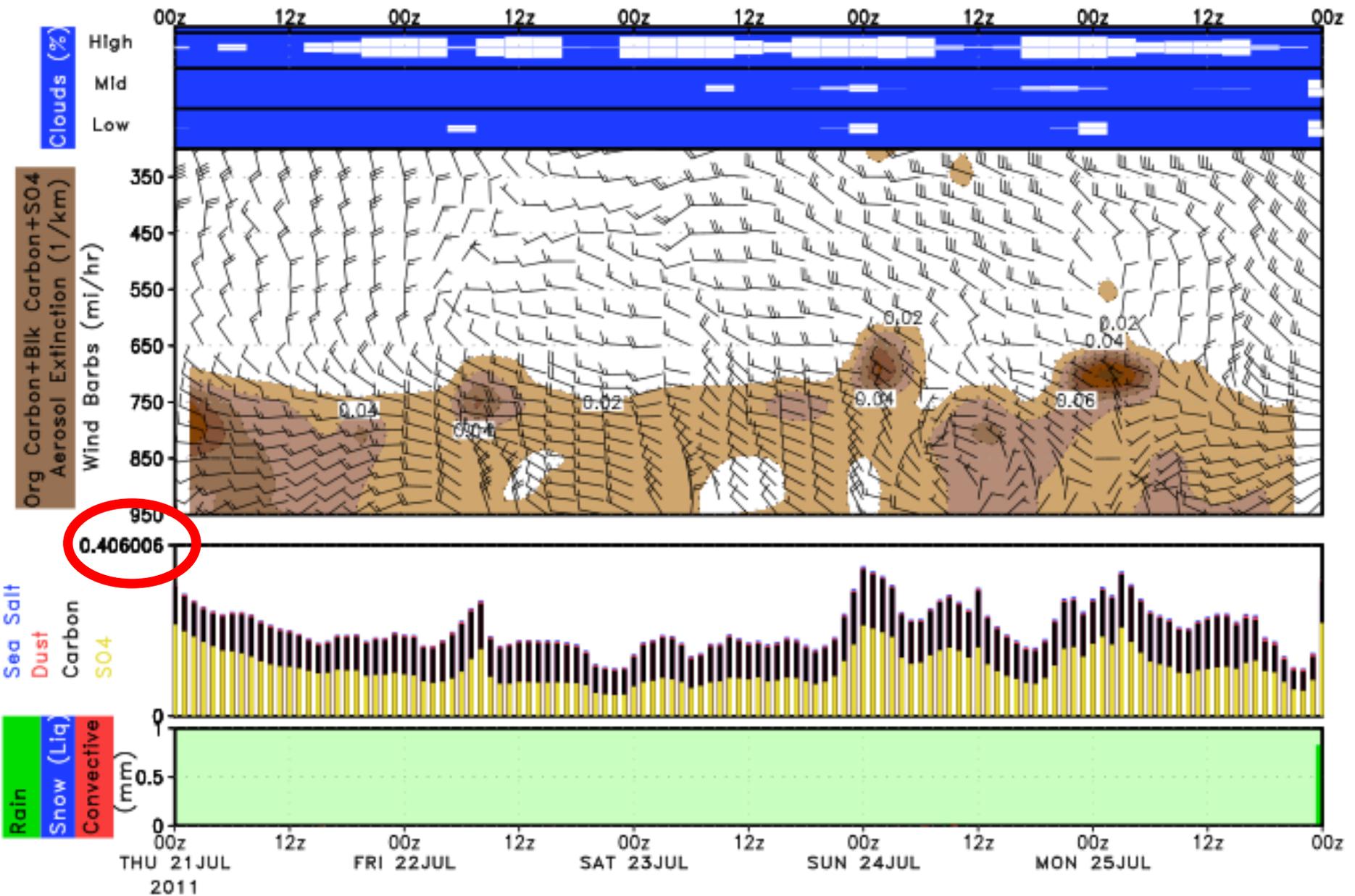
Edgewood

ID: 240330030 VALID: 2011-07-22

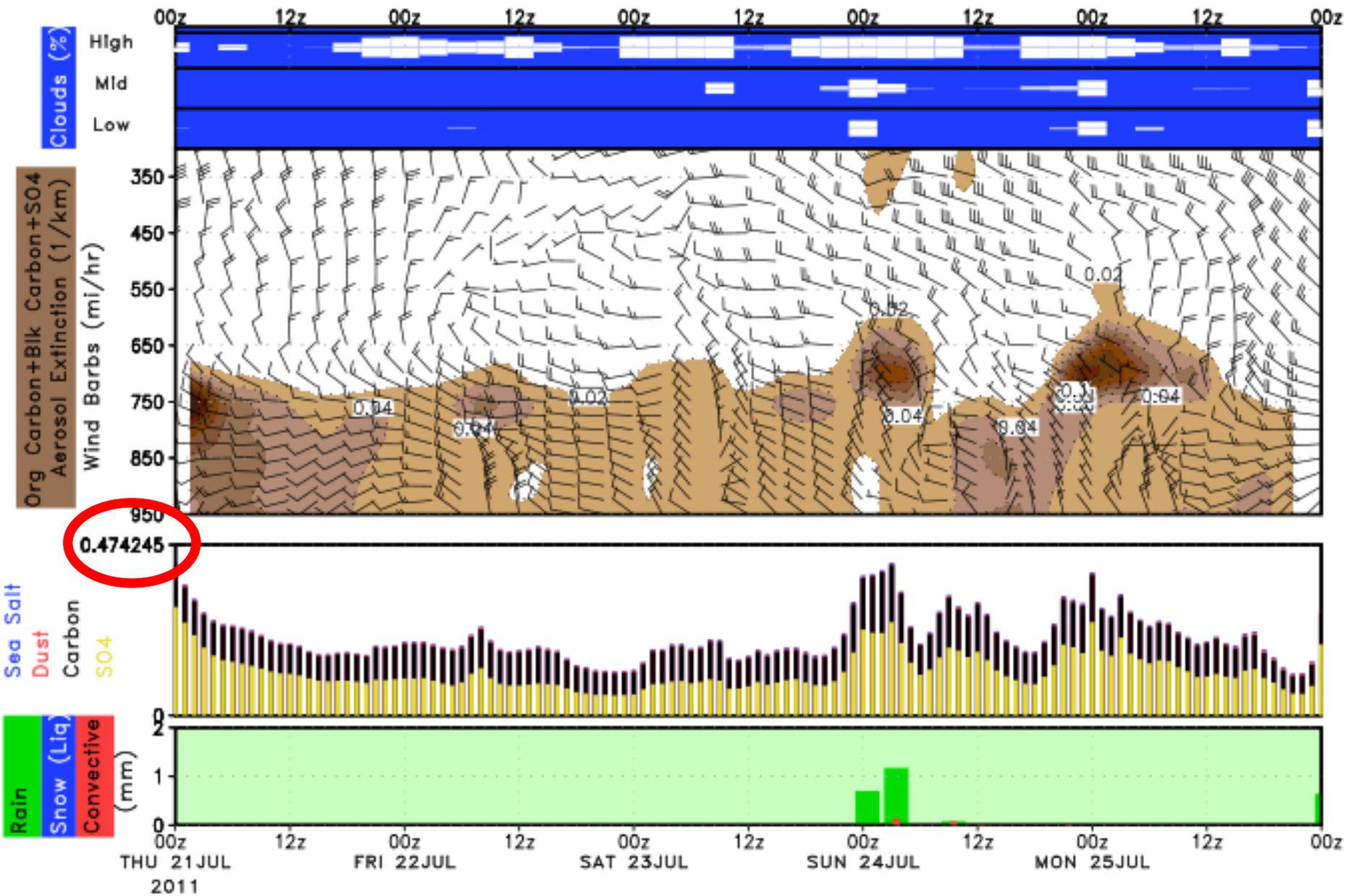


Beltsville

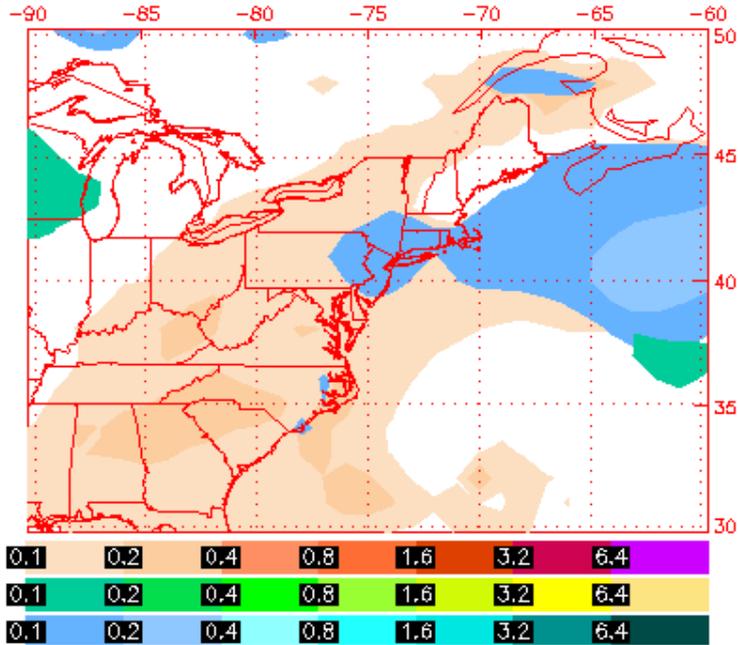
Essex



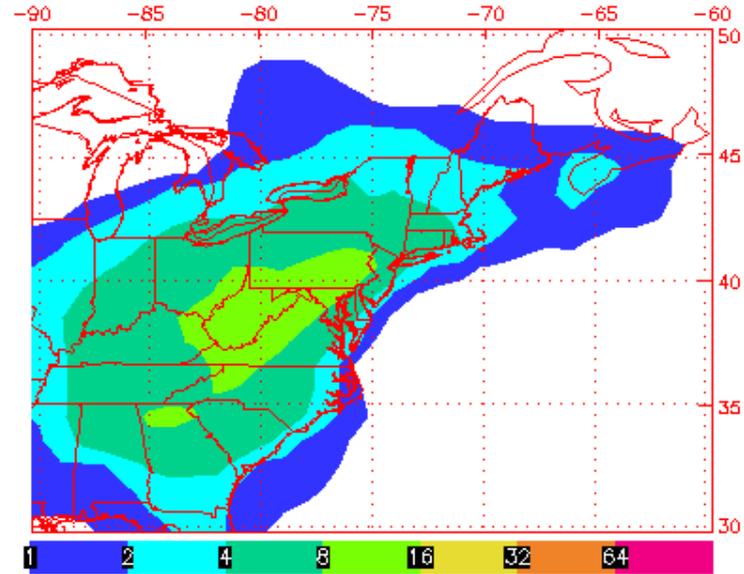
Beltsville



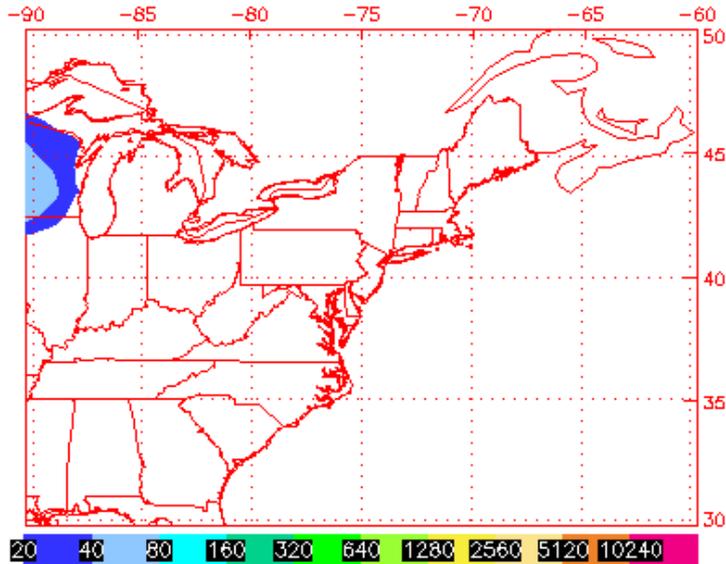
NAAPS Total Optical Depth for 18:00Z 21 Jul 2011
 Sulfate: Orange/Red, Dust: Green/Yellow, Smoke: Blue



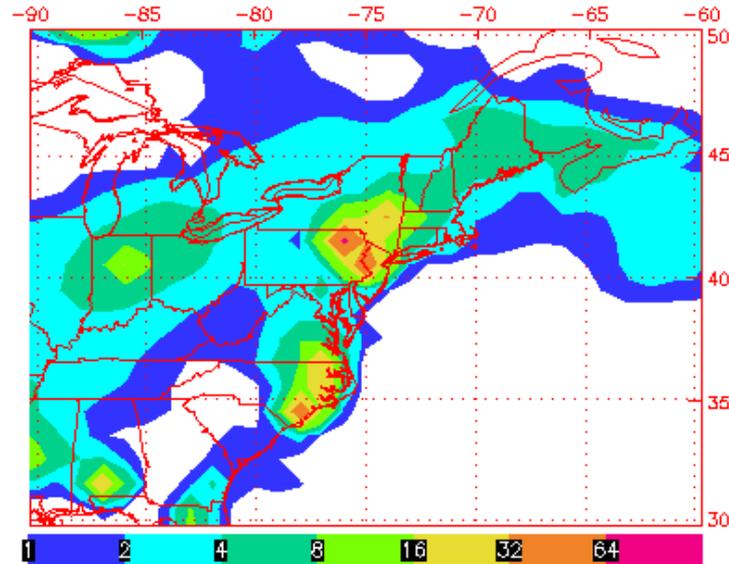
Sulfate Surface Concentration ($\mu\text{g}/\text{m}^3$)
 for 18:00Z 21 Jul 2011



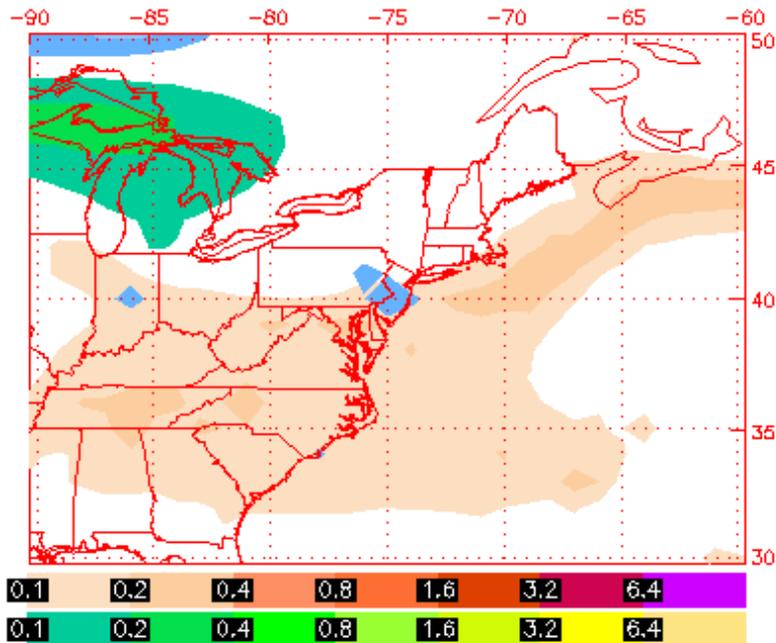
Dust Surface Concentration ($\mu\text{g}/\text{m}^3$)
 for 18:00Z 21 Jul 2011



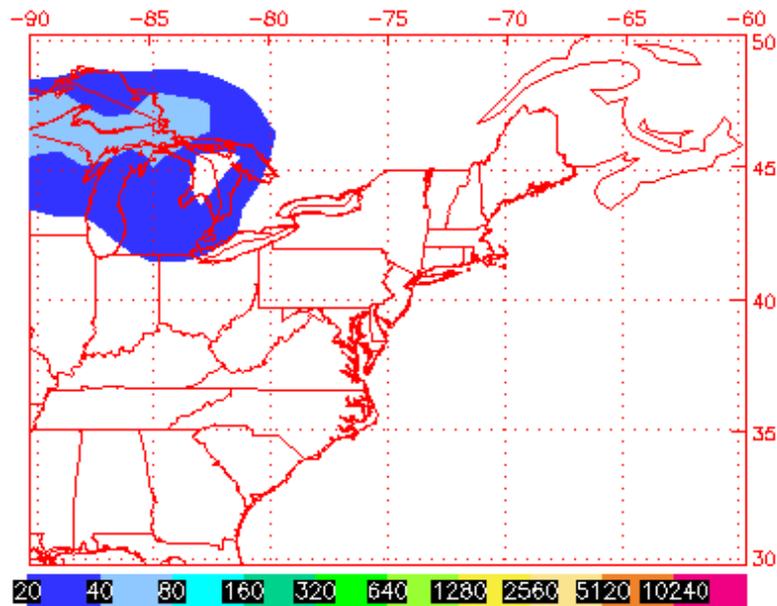
Smoke Surface Concentration ($\mu\text{g}/\text{m}^3$)
 for 18:00Z 21 Jul 2011



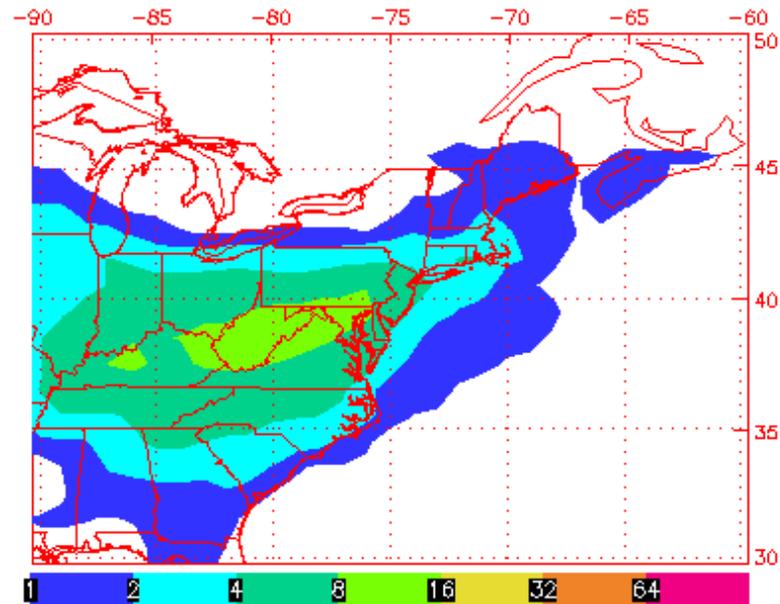
NAAPS Total Optical Depth for 18:00Z 22 Jul 2011
 Sulfate: Orange/Red, Dust: Green/Yellow, Smoke: Blue



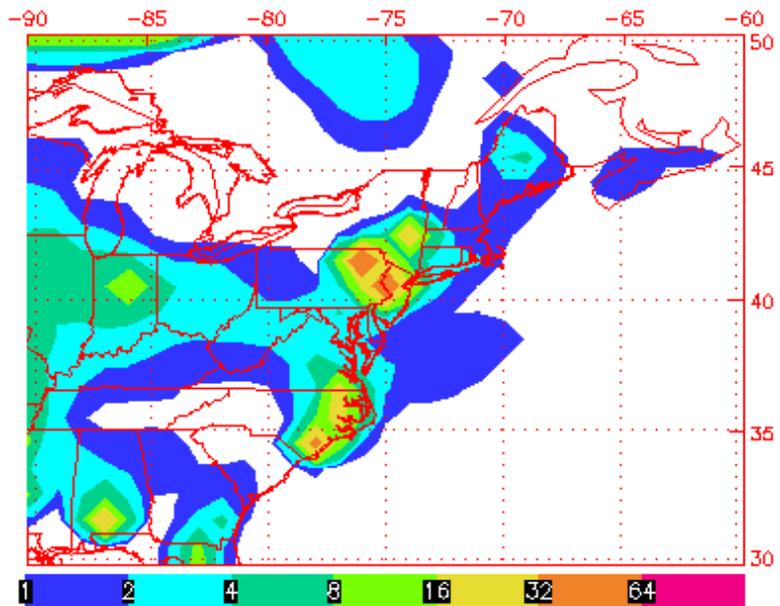
Dust Surface Concentration ($\mu\text{g}/\text{m}^3$)
 for 18:00Z 22 Jul 2011



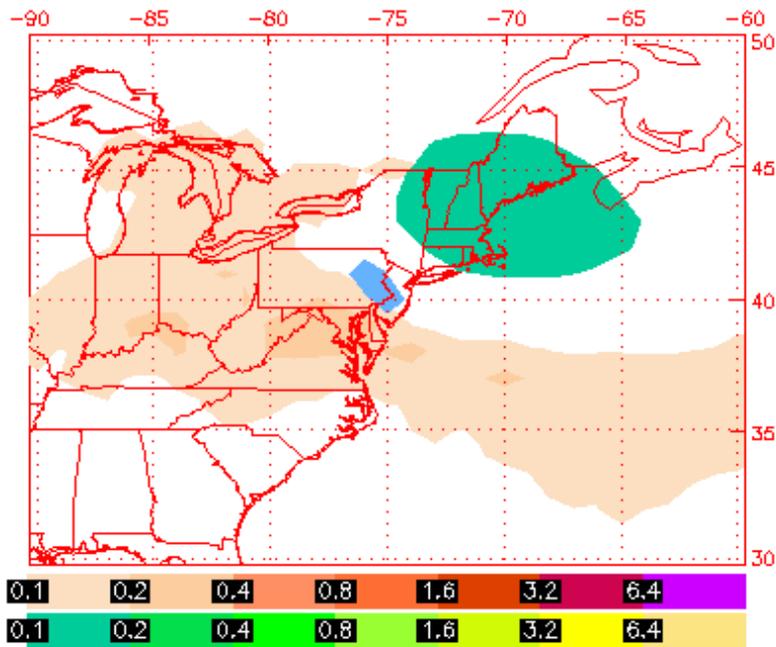
Sulfate Surface Concentration ($\mu\text{g}/\text{m}^3$)
 for 18:00Z 22 Jul 2011



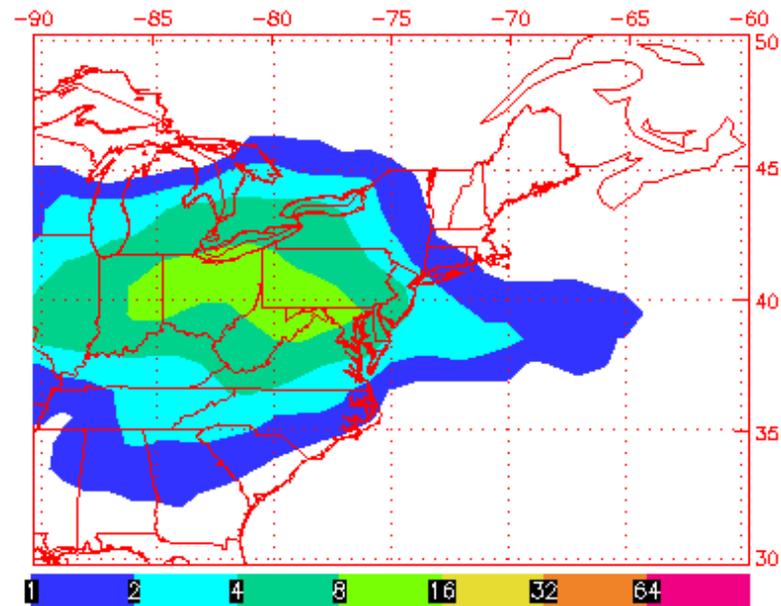
Smoke Surface Concentration ($\mu\text{g}/\text{m}^3$)
 for 18:00Z 22 Jul 2011



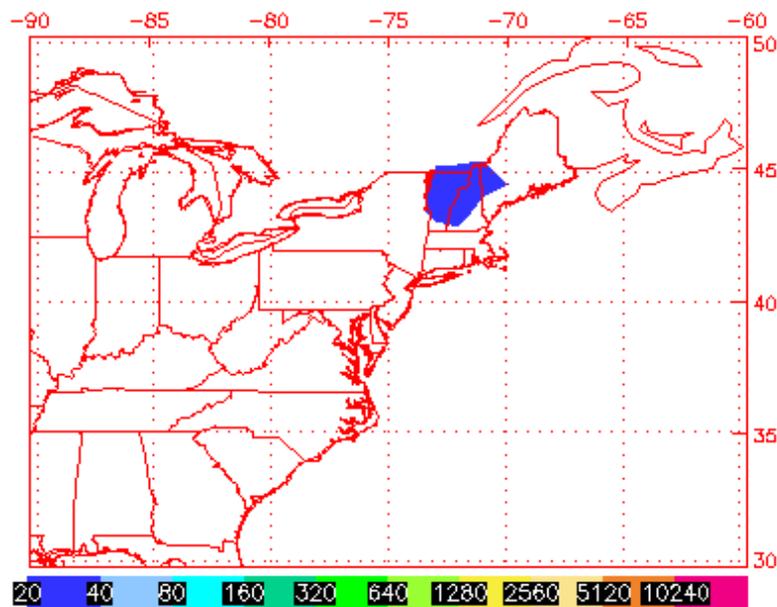
NAAPS Total Optical Depth for 18:00Z 23 Jul 2011
 Sulfate: Orange/Red, Dust: Green/Yellow, Smoke: Blue



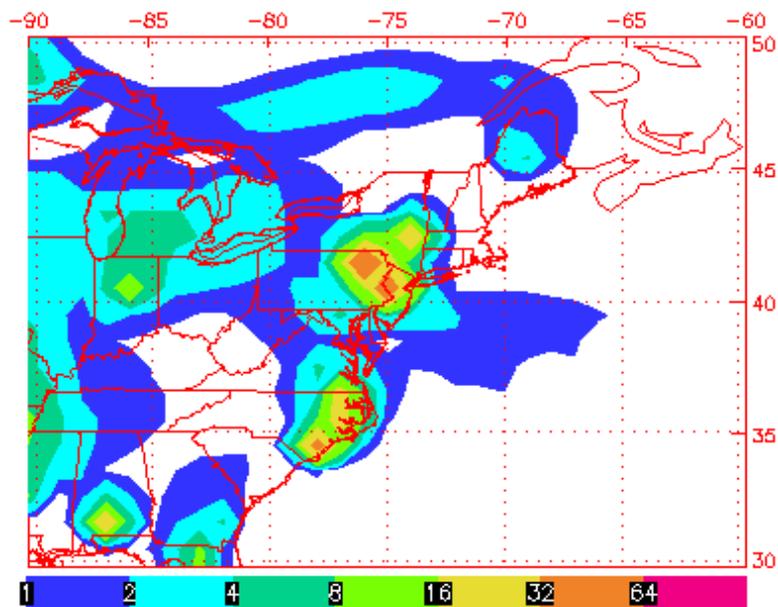
Sulfate Surface Concentration ($\mu\text{g}/\text{m}^3$)
 for 18:00Z 23 Jul 2011



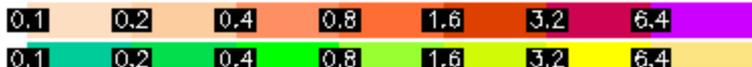
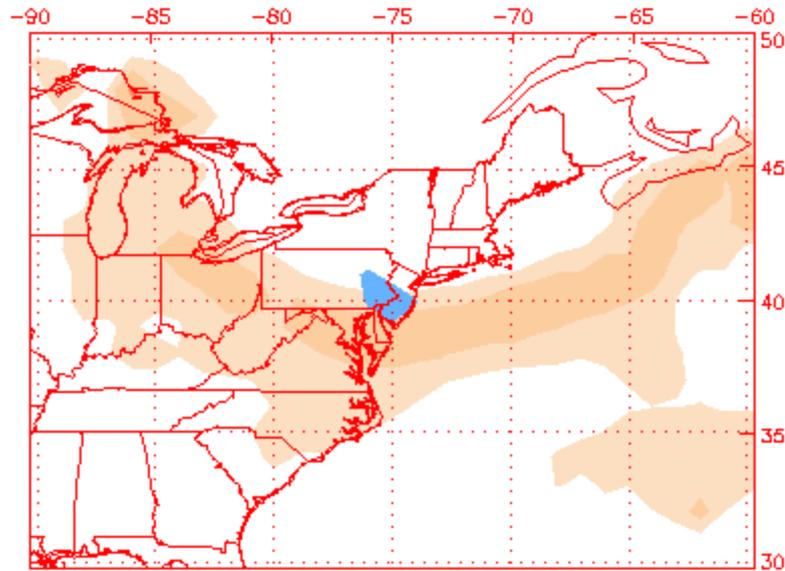
Dust Surface Concentration ($\mu\text{g}/\text{m}^3$)
 for 18:00Z 23 Jul 2011



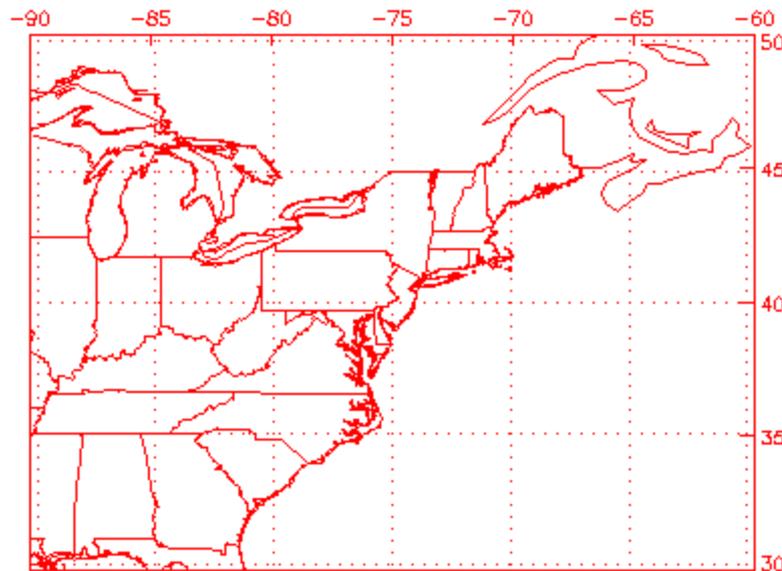
Smoke Surface Concentration ($\mu\text{g}/\text{m}^3$)
 for 18:00Z 23 Jul 2011



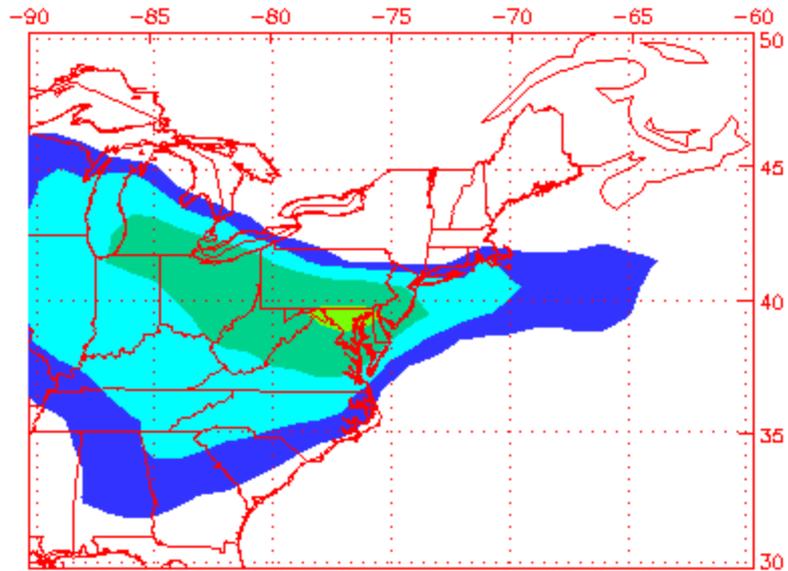
NAAPS Total Optical Depth for 18:00Z 24 Jul 2011
 Sulfate: Orange/Red, Dust: Green/Yellow, Smoke: Blue



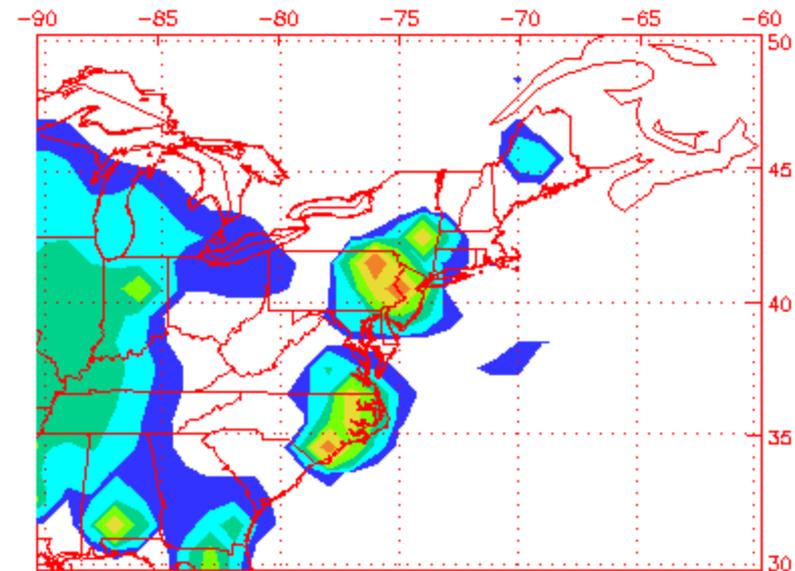
Dust Surface Concentration ($\mu\text{g}/\text{m}^3$)
 for 18:00Z 24 Jul 2011

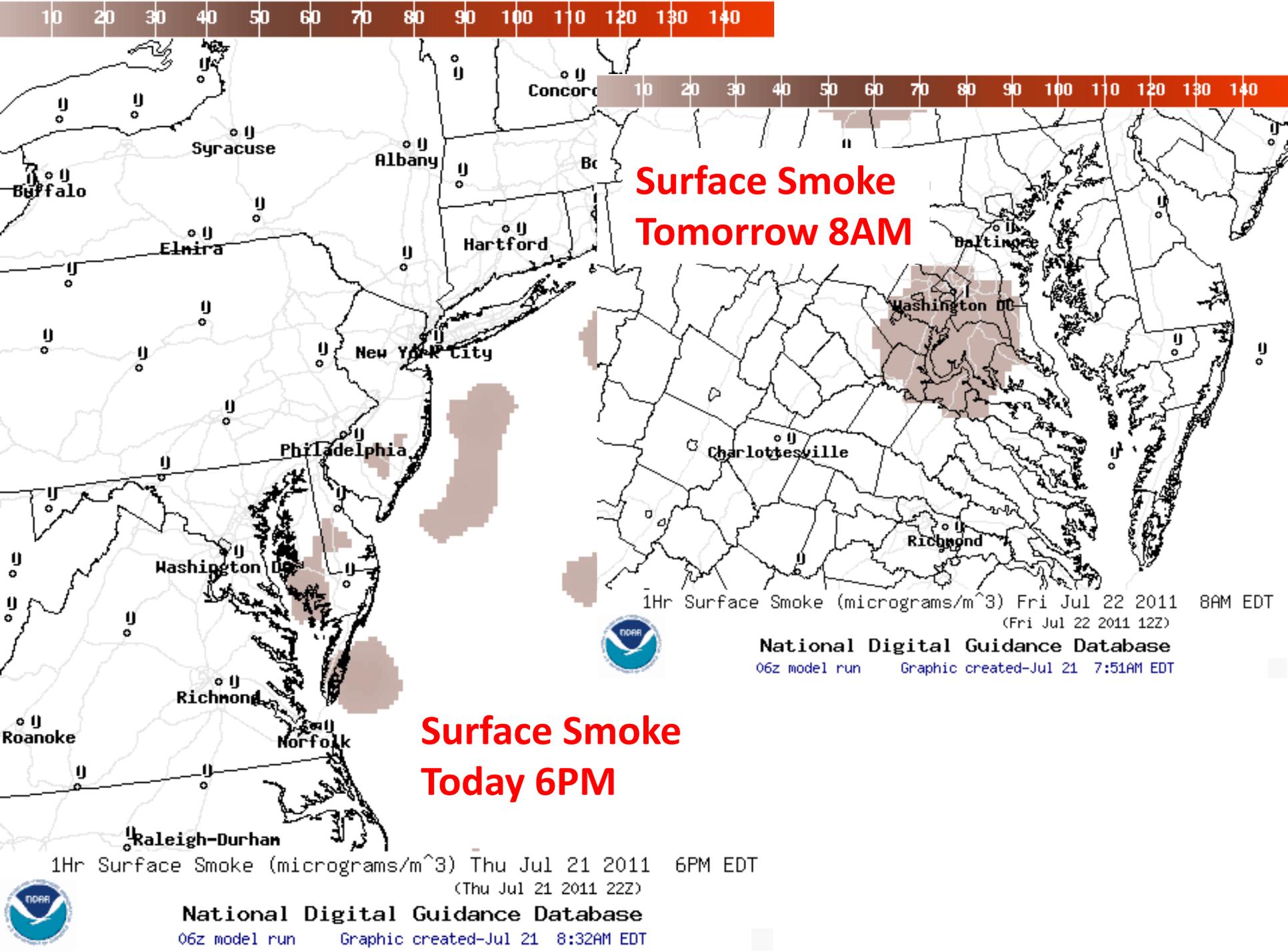


Sulfate Surface Concentration ($\mu\text{g}/\text{m}^3$)
 for 18:00Z 24 Jul 2011



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





Surface Smoke Tomorrow 8AM

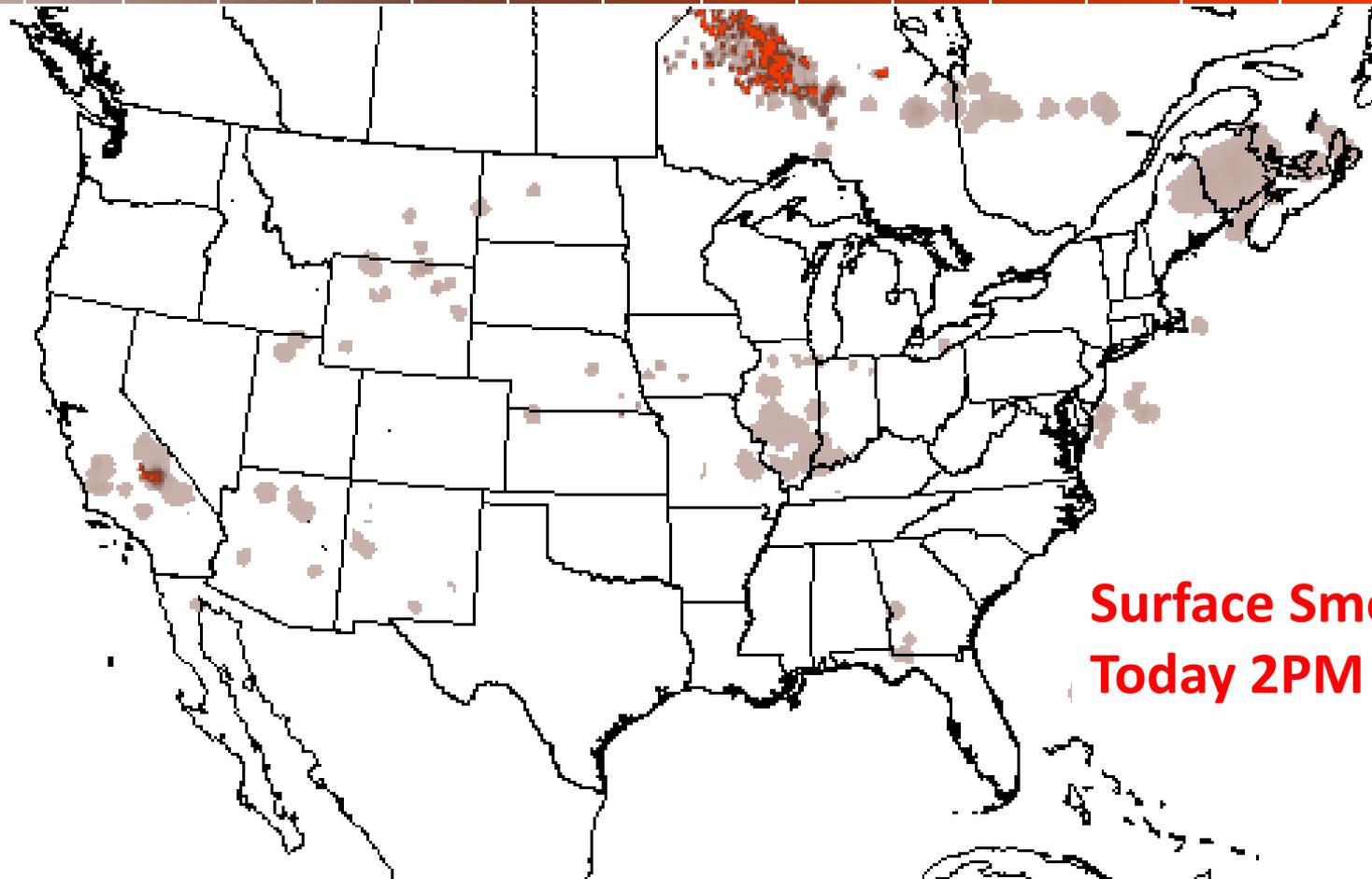
1Hr Surface Smoke (micrograms/m³) Fri Jul 22 2011 8AM EDT
(Fri Jul 22 2011 12Z)

National Digital Guidance Database
06z model run Graphic created-Jul 21 7:51AM EDT

Surface Smoke Today 6PM

1Hr Surface Smoke (micrograms/m³) Thu Jul 21 2011 6PM EDT
(Thu Jul 21 2011 22Z)

National Digital Guidance Database
06z model run Graphic created-Jul 21 8:32AM EDT



**Surface Smoke
Today 2PM**

1Hr Surface Smoke (micrograms/m³) Thu Jul 21 2011 2PM EDT
(Thu Jul 21 2011 18Z)



National Digital Guidance Database

06z model run Graphic created-Jul 21 8:06AM EDT

AREA FORECAST DISCUSSION

NATIONAL WEATHER SERVICE BALTIMORE MD/WASHINGTON DC

1013 AM EDT THU JUL 21 2011

.SYNOPSIS... HOT AND HUMID CONDITIONS ARE EXPECTED THROUGH SATURDAY AS UPPER HIGH PRESSURE STRENGTHENS. A FRONT SETTLES OVER THE AREA SUNDAY INTO EARLY NEXT WEEK...WITH SURFACE HIGH PRESSURE BUILDING BY MID-WEEK.

.NEAR TERM /THROUGH TONIGHT/... UPPER-LEVEL HIGH PRESSURE OVER THE OHIO VALLEY THIS MORNING WILL BUILD OVERHEAD THIS AFTERNOON. STRONG SUBSIDENCE ASSOCIATED WITH THE UPPER-LEVEL HIGH WILL CAUSE EXTREMELY HOT CONDITIONS THIS AFTERNOON. MAX TEMPS WILL RANGE FROM THE MID AND UPPER 80S IN THE MOUNTAINS TO NEAR 100 ACROSS MANY OTHER LOCATIONS. A LIGHT SOUTHERLY WILL CONTINUE TO USHER IN LOW-LEVEL MOISTURE ACROSS THE REGION. DEWPOINTS WILL BE IN THE LOWER TO MIDDLE 70S ACROSS MOST LOCATIONS...BUT 60S IN THE MOUNTAINS. THE COMBINATION OF THE HOT AND HUMID CONDITIONS WILL CAUSE HEAT INDICES BETWEEN 110 AND 115 DEGREES FROM THE SHENANDOAH VALLEY EASTWARD. FURTHER WEST TOWARD THE POTOMAC HIGHLANDS...SLIGHTLY COOLER TEMPS AND DEWPOINTS WILL CAUSE HEAT INDICES AROUND 105 ACROSS THE VALLEY CITIES. AN EXCESSIVE HEAT WARNING WILL CONTINUE FOR THIS AFTERNOON INTO THIS EVENING FROM THE SHENANDOAH VALLEY EASTWARD. THE HEAT ADVISORY WILL CONTINUE FOR PORTIONS OF THE ALLEGHENY AND POTOMAC HIGHLANDS.

WITH STRONG INSOLATION AND ELEVATED OVNGT MINIMA...AMS SHUD HAVE LITTLE DIFFICULTY REALIZING MAXIMA IN UPR 90S-LWR 100S. HIGH HUMIDITY WILL LEAD TO HEAT INDICES OF AT LEAST 105-110F THIS AFTN AND EARLY THIS EVE. EXCESSIVE HEAT WRNG AND ADZY CONT WITH NO CHG.

TEMPS WILL BE SLOW TO COOL TNGT OWING TO CONTD HIGH DEWPPTS. TEMPS MAY NOT FALL BLW 80F FOR MUCH OF TNGT...WITH HEAT INDICES IN THE CITIES RMNG ABV 90F.

SUBSIDENCE AND CAP WILL SUPPRESS DP CNVCTN. NO PCPN XPCD THRU TNGT.

.SHORT TERM /FRIDAY THROUGH SATURDAY NIGHT/... ANOMALOUS UPR RDG CONTS TO DOMINATE WEATHER THRU SAT...WITH H8 TEMPS NEAR 25C TRANSLATING TO SFC TEMPS ABV 100F MOST AREAS BOTH FRI/SAT AFTNS. WITH DEWPOINTS REMAINING IN U70S TO AROUND 80F... HEAT INDICES WILL SPEND MUCH OF THE DAYTIME HOURS AROUND 110F FOR ALL BUT HIGHER ELEVATIONS...WITH PEAK HEAT INDICES POISED TO EXCEED 115F EAST OF THE BLUE RIDGE BOTH AFTNS. MINIMA IN MANY AREAS NOT BELOW 80F FRI NGT...WITH HEAT INDICES AOA 90F EVEN DURG OVNGT E OF BLUE RIDGE. EXCESSIVE HEAT WARNING IN EFFECT FRI AND LIKELY WILL BE WARRANTED SATURDAY. DAILY RECORDS FOR HIGH MAXIMA AND MINIMA TEMPERATURES WILL BE THREATENED BOTH DAYS AT ALL THREE MAJOR CLIMATE SITES. SEE CLIMATE SECTION BELOW.

EXTREME INSTABILITY AND STEEP LAPSE RATES ACRS MID-ATLC FRI/SAT. CNVCTN LIKELY WILL BE FOCUSED ALONG SVRL AREAS OF ENHANCED FORCING...MAINLY ASSOCIATED WITH UPR SHRTWV TROF PASSING N OF RGN AND LEE TROF ACRS CWA. ACTIVITY SHUD BE SCATTERED IN NATURE...BUT ANY THAT DVLPS WILL HAVE PTNL TO PRODUCE WET MICROBURSTS/DMGG WINDS.

.LONG TERM /SUNDAY THROUGH WEDNESDAY/... UPR RDG FLATTENS AND CNTR RETROGRADES TWD SRN PLAINS SUN INTO ERY NEXT WEEK...ALLOWING WLY UPR FLOW TO INTRUDE INTO NERN CONUS. A COLD FRONT SHUD SLIDE INTO THE AREA SUN AND RMN IN VICINITY AT LEAST THRU MON. THIS WILL PROVIDE SOME MODERATION IN TEMPS AND HIGHER POPS. STILL...HEAT INDICES ABV 100F LIKELY ON SUN. PRECIP CHCS DIMINISH TUE/WED AS HIGH PRESSURE BUILDS BACK INTO THE MID-ATLC.