

DISCOVER-AQ Outlook for Wednesday, July 27, 2011

A frontal system passed through our region overnight and slowly dried out and cleaned out the lower atmosphere during the morning hours. High pressure will dominate tomorrow with continued dry air and relatively clean conditions. Deep convection is firing up in the Northern Plains today and will spread to the Great Lakes region tomorrow. Upper level outflow from these storms is concern for Thursday and Friday. In addition, the increase in humidity for Thursday and Friday could set off isolated local convection. The approach of the next frontal system on Saturday will also lead to more clouds at a variety of levels and increased chance of showers. The exact timing of the frontal passage Saturday evening or on Sunday is yet to be determined. With clear skies, albeit with rather clean conditions, we recommend flying tomorrow.

Recommendations July 27th-30th

July 27, Wednesday: Can Fly

July 28, Thursday: Clouds?

July 29, Friday: Clouds?

July 30, Saturday: Clouds - cold front approaching

| This Afternoon | Tonight | Wednesday | Wednesday Night | Thursday | Thursday Night | Friday | Friday Night | Saturday |
|---|--|--|--|---|--|--|--|--|
|  |  |  |  |  |  |  |  |  |
| Sunny | Partly Cloudy | Sunny | Partly Cloudy | Partly Sunny | Partly Cloudy | Hot | Partly Cloudy | Chance Tstms |
| Hi 94 °F | Lo 72 °F | Hi 90 °F | Lo 65 °F | Hi 94 °F | Lo 76 °F | Hi 99 °F | Lo 77 °F | Hi 95 °F |

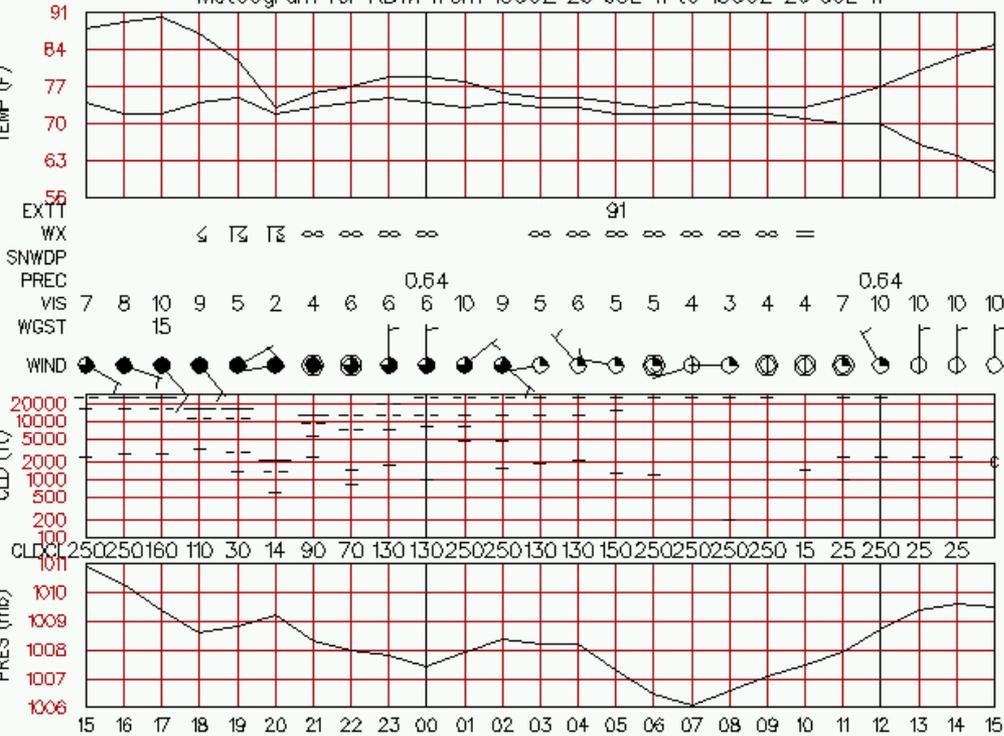
Current Conditions at BWI, 11 am

Current Conditions [\[Move Up\]](#)
[view Yesterday's Weather](#)

Baltimore-Washington International Airport
 Lat: 39.19 Lon: -76.67 Elev: 148
 Last Update on Jul 26, 10:54 am EDT

Plymouth State Weather Center

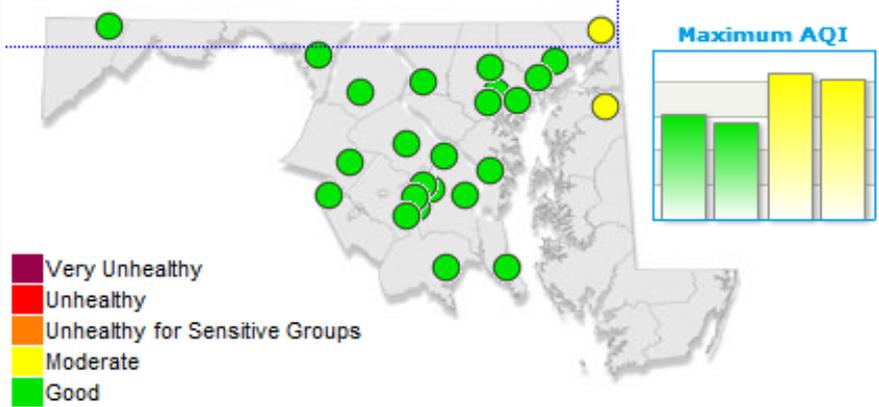
Meteogram for KBWI from 1500Z 25 JUL 11 to 1500Z 26 JUL 11



Fair

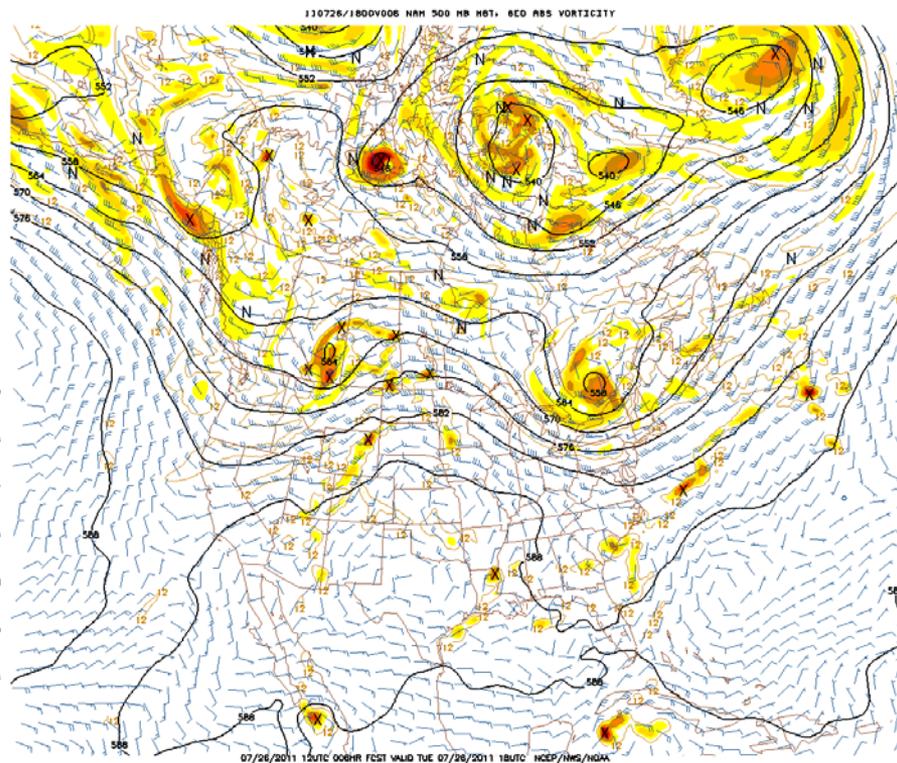
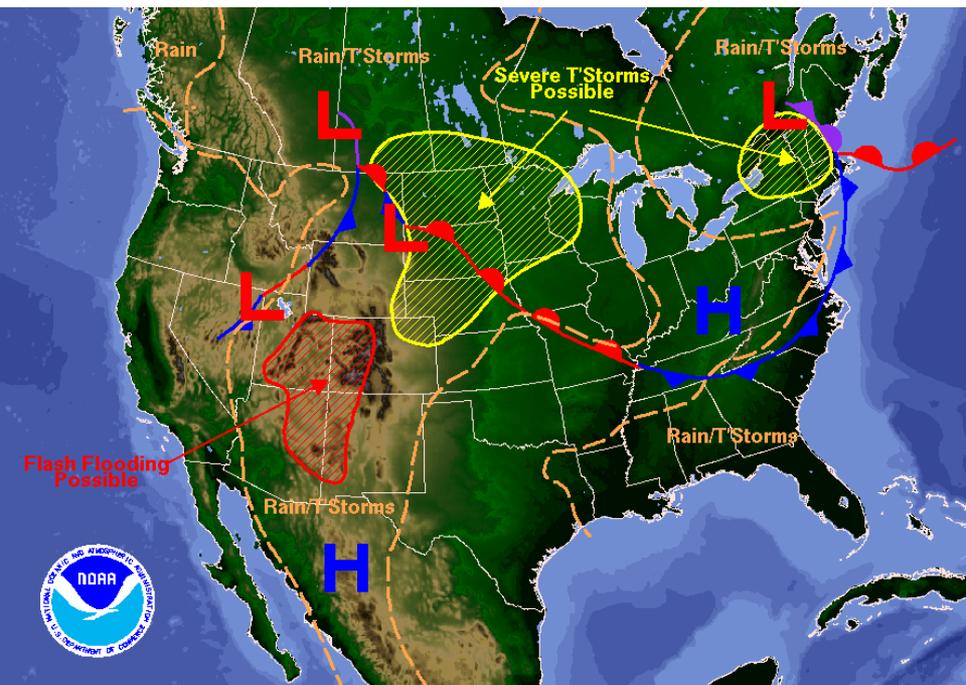
85 °F
(29 °C)

| | |
|-------------|--------------------|
| Humidity: | 45 % |
| Wind Speed: | Vrbl 6 MPH |
| Barometer: | 29.82" (1009.5 mb) |
| Dewpoint: | 61 °F (16 °C) |
| Heat Index: | 85 °F (29 °C) |
| Visibility: | 10.00 mi. |



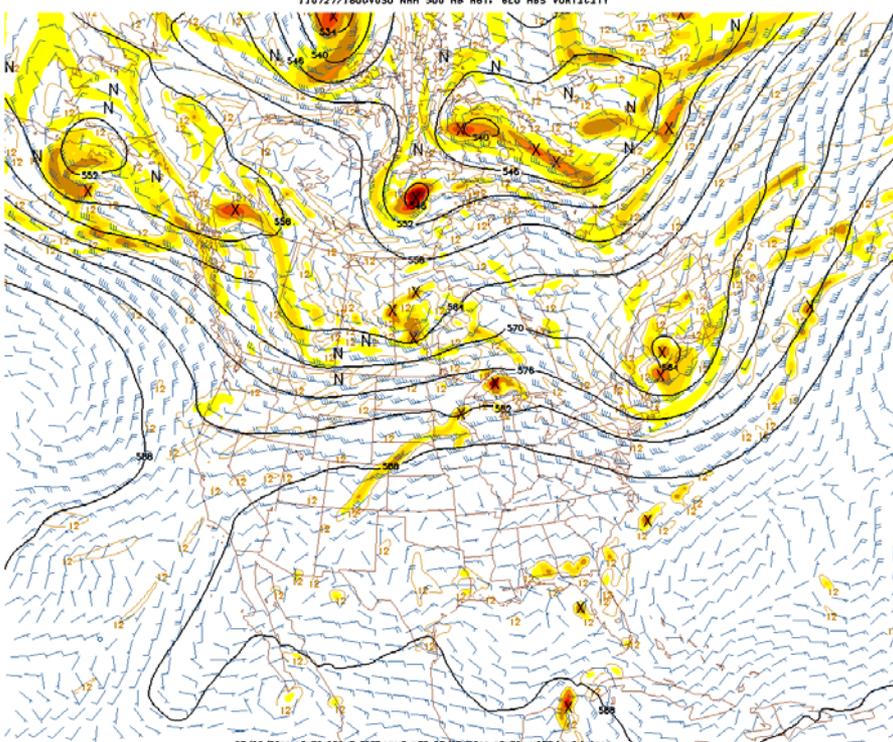
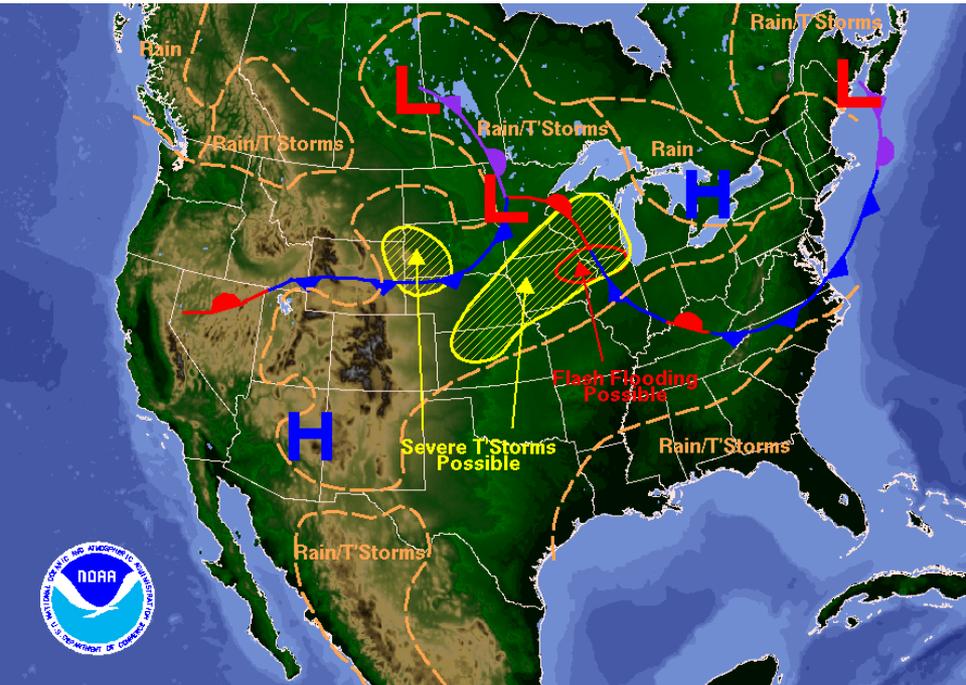
Today : Mostly sunny skies as a surface high pressure system moves toward our region. Winds primarily from the north ushering in dry air.

500 mb NAM at 2 PM.



Tomorrow: Mostly sunny. Northerly winds continue to usher in dry air.

500 mb NAM at 2 PM.

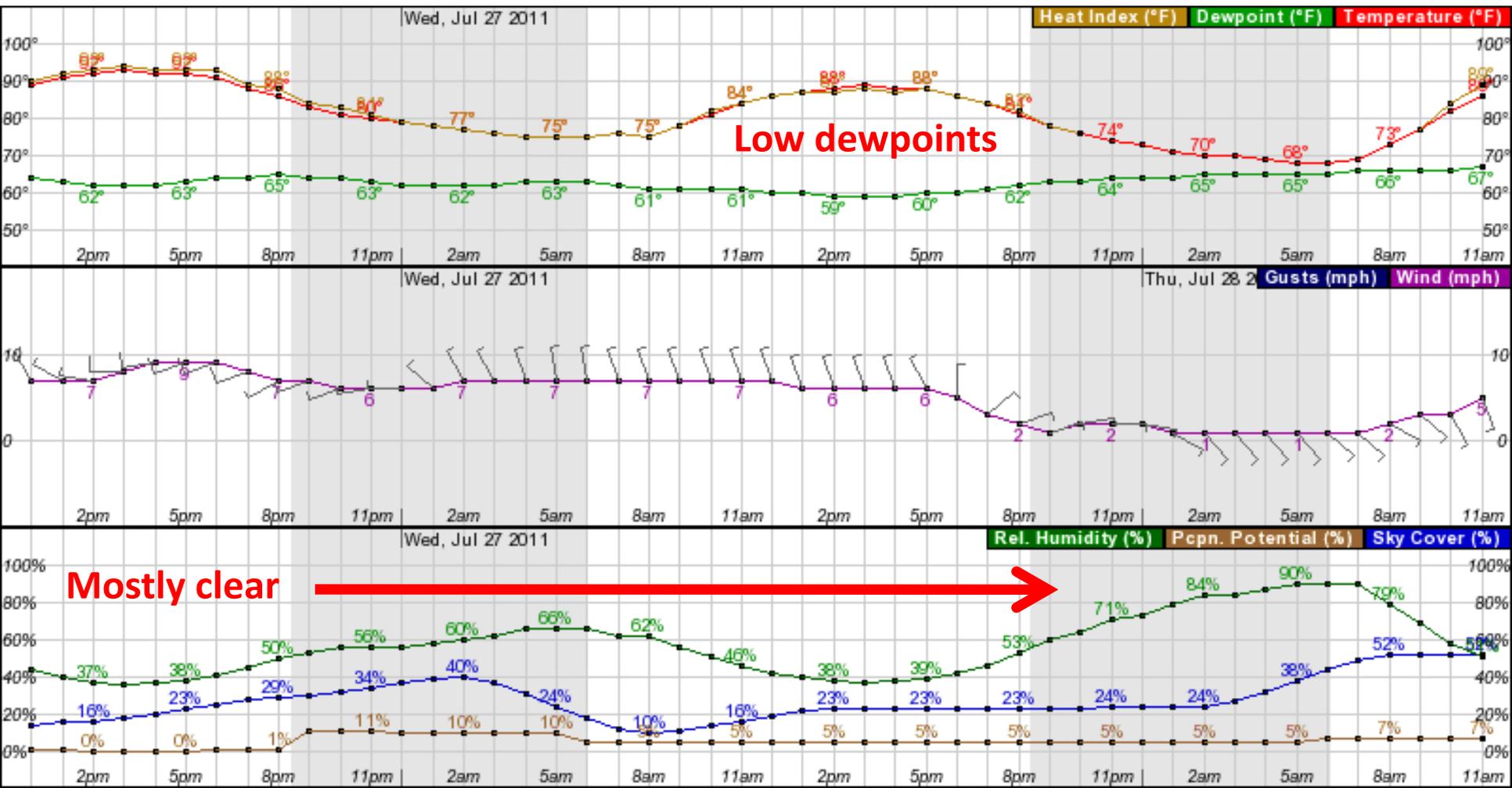


Today: A brief period of southerly flow ahead of a trough before turning back to a northerly direction.

Tomorrow: Northerly winds continue to bring in drier air.

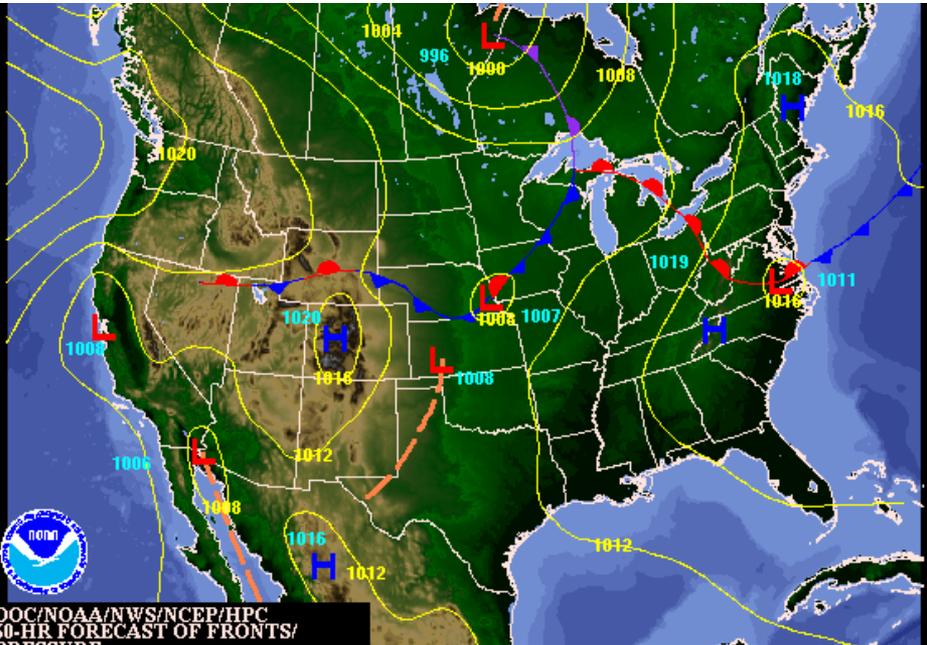
Today →

Tomorrow →

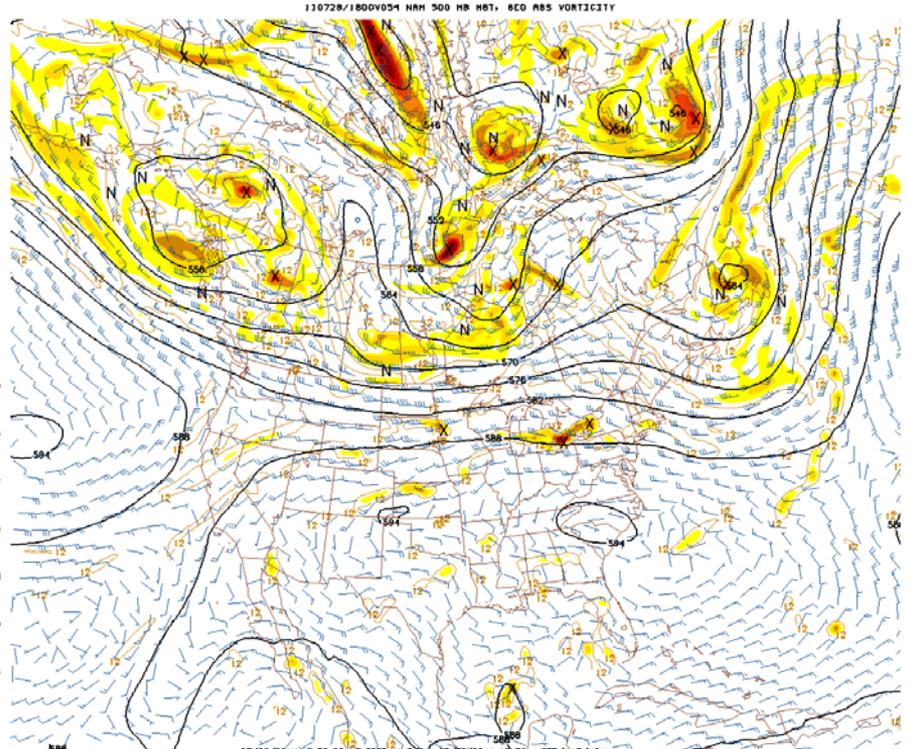


Thursday: Southerly winds cause dewpoints to rise. Vorticity maximums over Ohio, New York, and Pennsylvania may cause our region to experience cloudy conditions. In addition, convective outflow from upper Midwest may be transported over our region.

500 mb NAM at 2 PM.

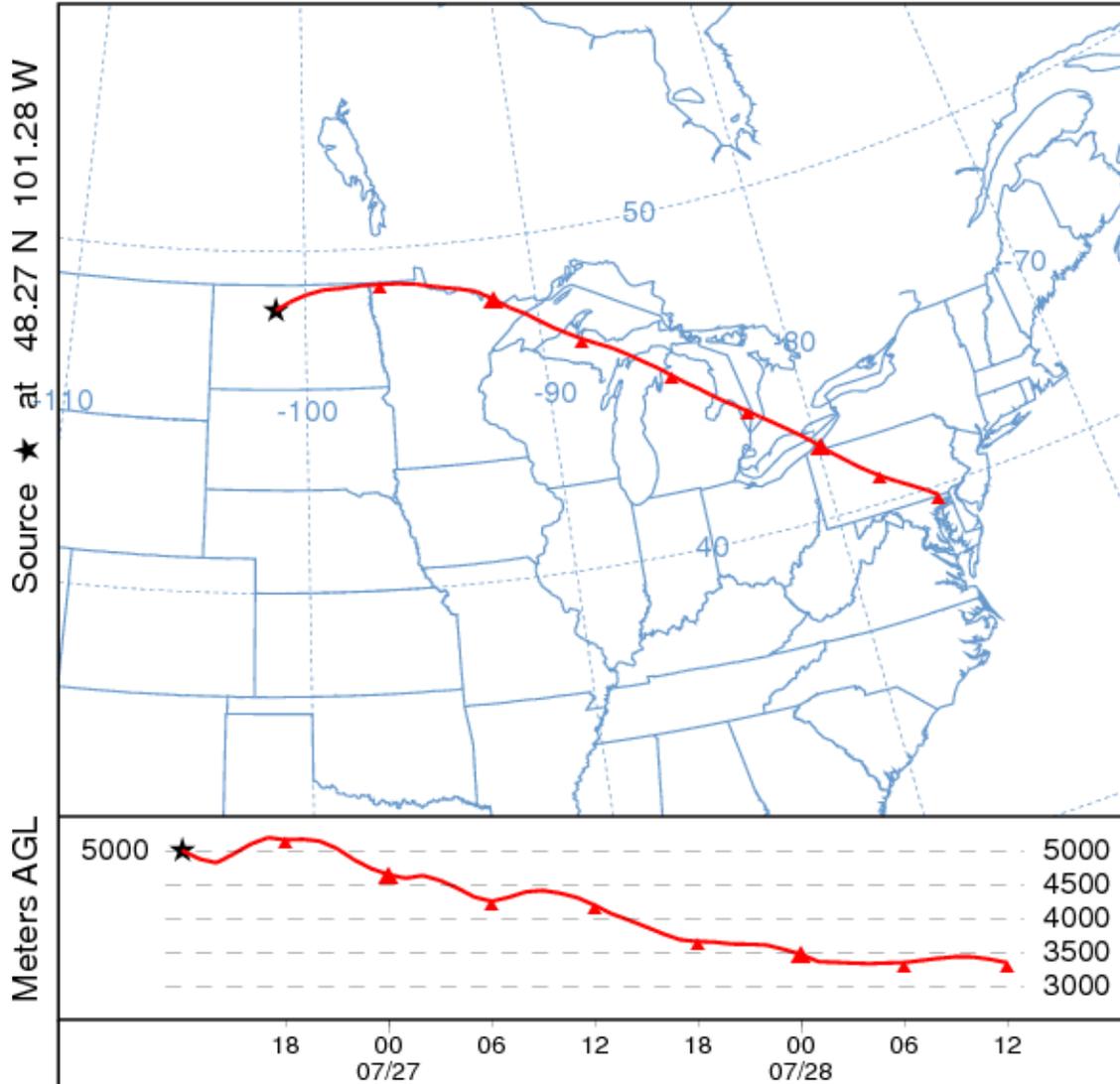


DOC/NOAA/NWS/NCEP/HPC
60-HR FORECAST OF FRONTS/
PRESSURE
ISSUED: 0653Z TUE JUL 26 2011
VALID: 1200Z THU JUL 28 2011
FORECASTER: ZIEGENFELDER



07/26/2011 12UTC 024HR FST VALL THU 07/28/2011 18UTC NCEP/NWS/NDM

NOAA HYSPLIT MODEL
Forward trajectory starting at 1200 UTC 26 Jul 11
12 UTC 26 Jul NAM Forecast Initialization



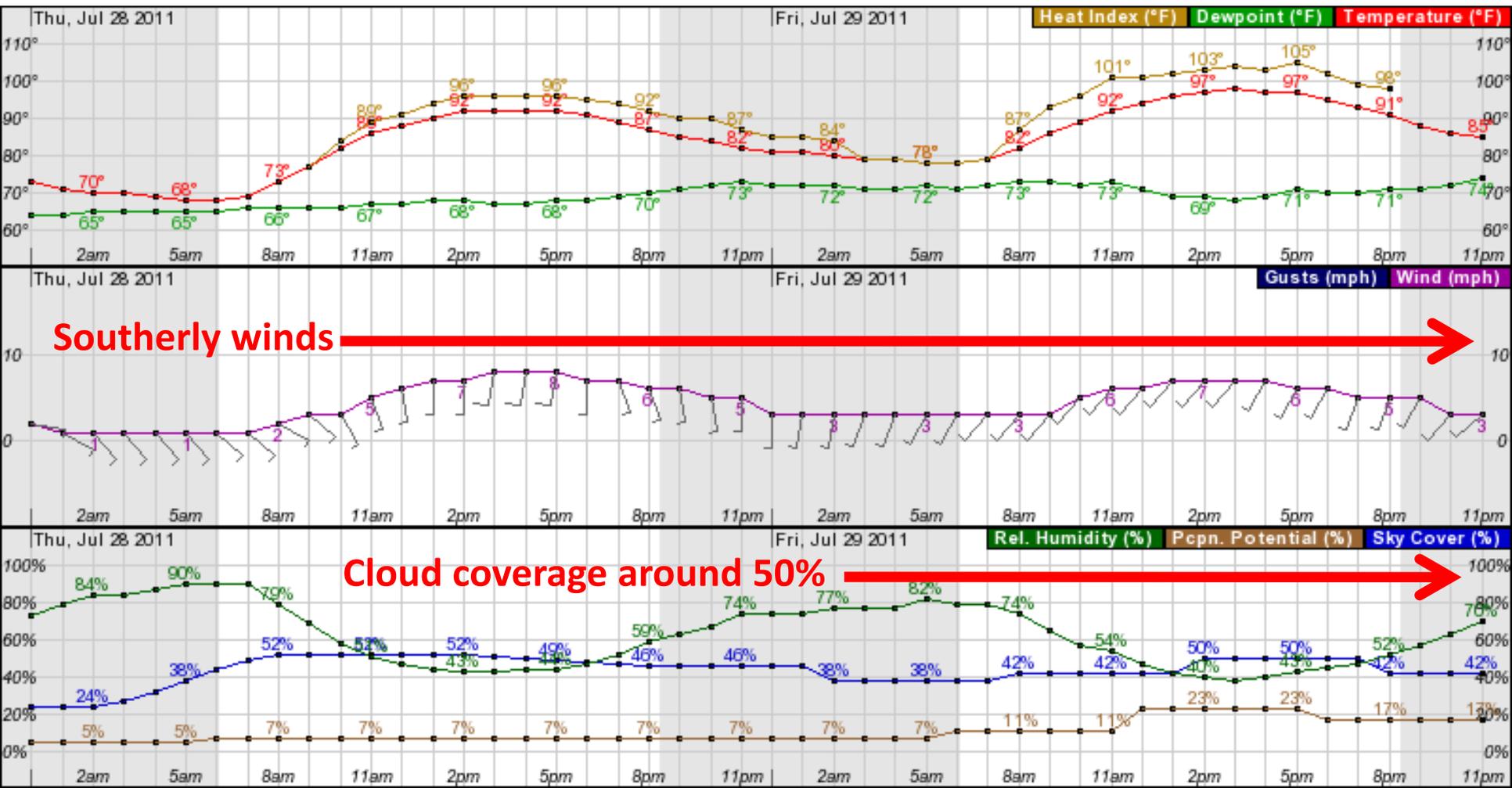
Convective outflow from North Dakota today may be over our region Thursday.

This is not a NOAA product. It was produced by a web user.
Job ID: 19442 Job Start: Tue Jul 26 16:27:58 UTC 2011
Source 1 lat.: 48.27 lon.: -101.28 height: 5000 m AGL
Trajectory Direction: Forward Duration: 48 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 1200Z 26 Jul 2011 - NAM 12 km

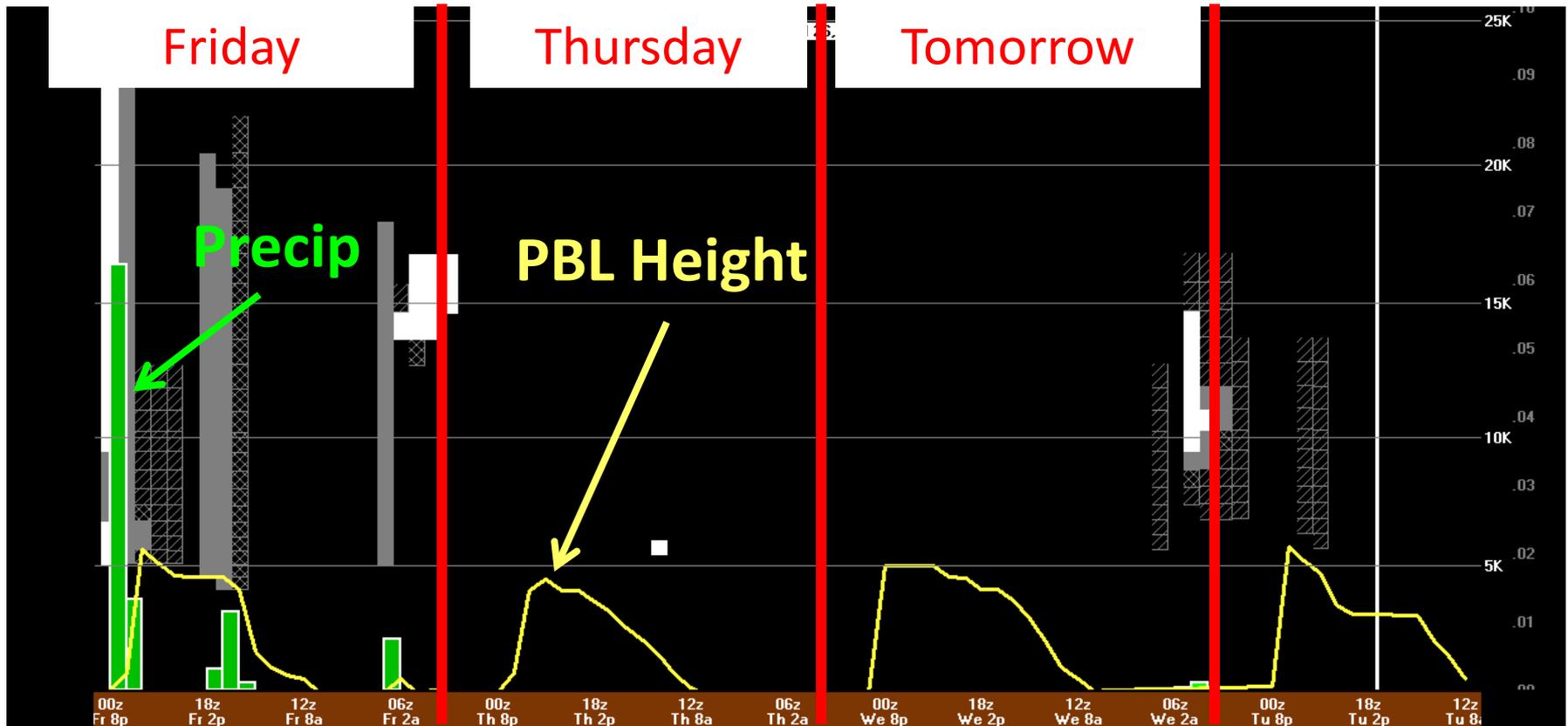
Thursday and Friday: Southerly winds cause dewpoint temperatures to rise. Cloud coverage around 50%.

Thursday →

Friday →



BUFKIT – NAM (12 UTC 26 July)

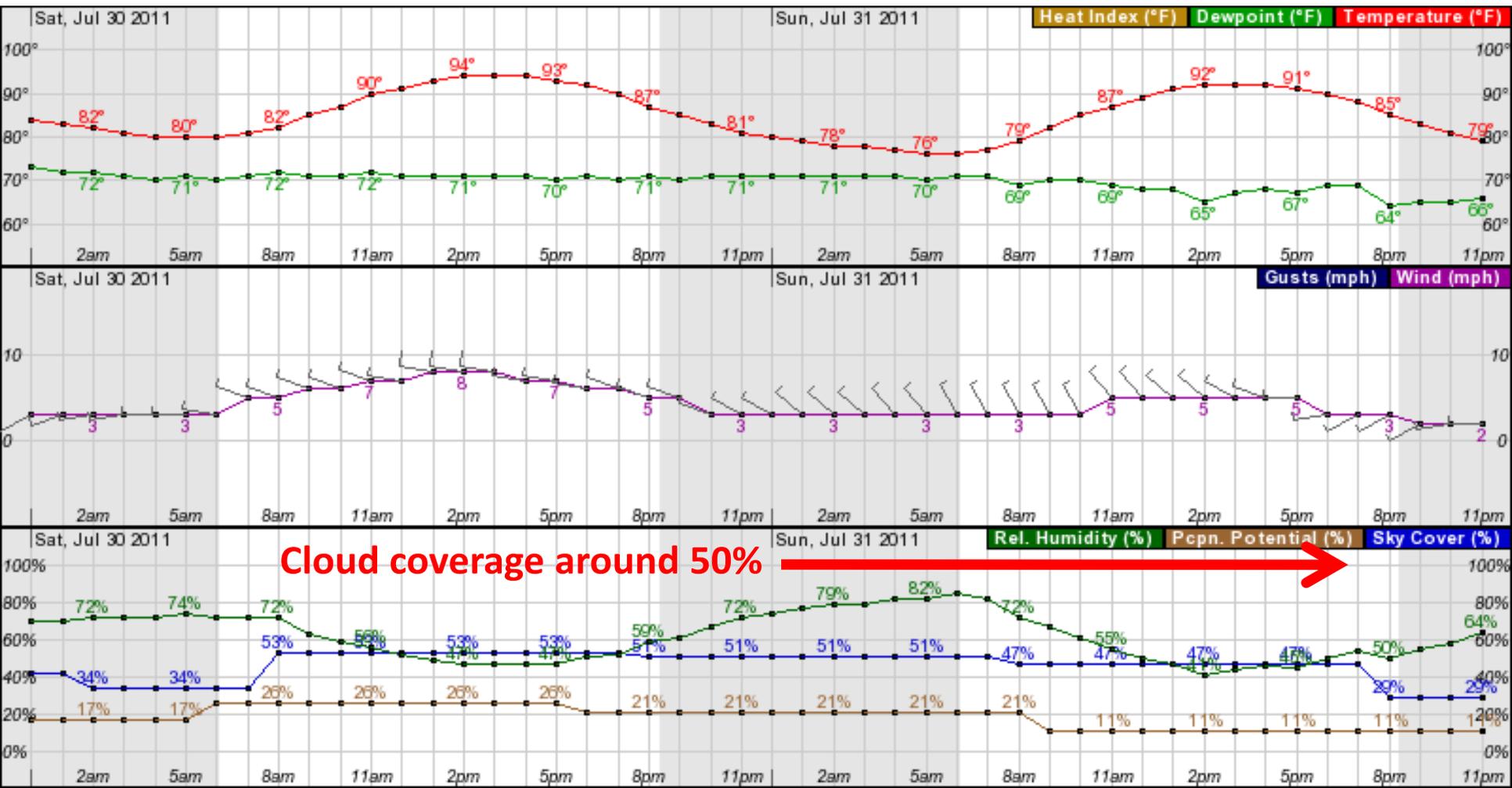


-Mostly sunny Wednesday and Thursday. A chance of precipitation on Friday.

Saturday and Sunday: Chance of thunderstorms as a cold front passes through our region.

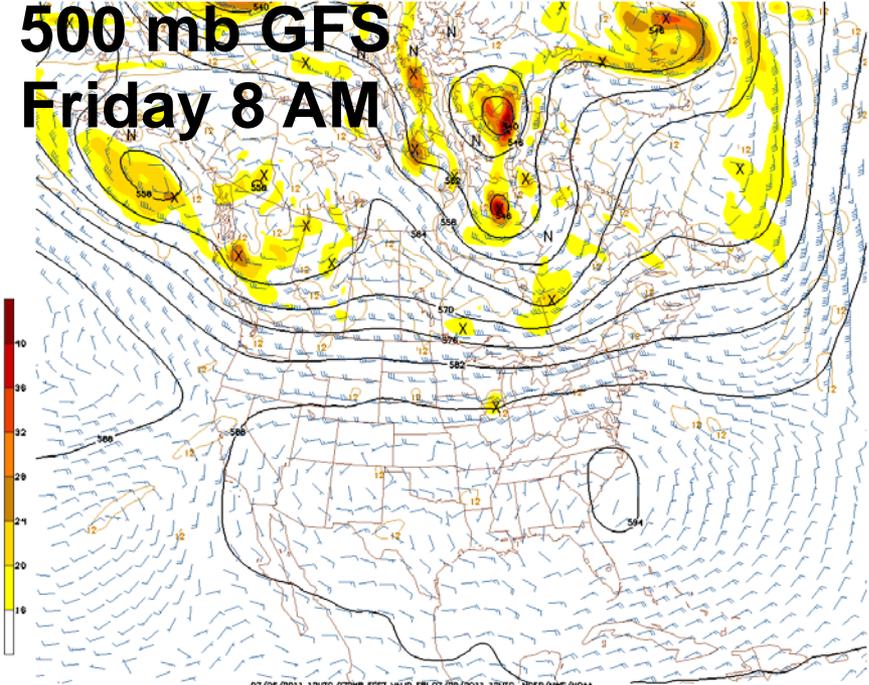
Saturday →

Sunday →



110729/1200V072 GFS 500 MB HBT, QEO ABS VORTICITY

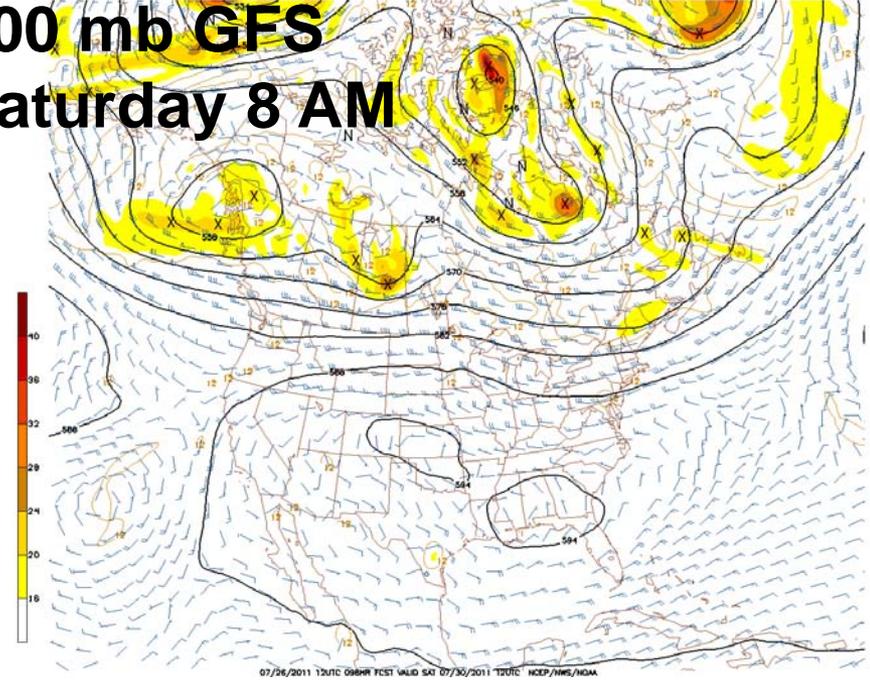
500 mb GFS Friday 8 AM



07/26/2011 12UTC 072HR FCST VALID FRI 07/29/2011 12UTC NCEP/NWS/NOAA

110730/1200V096 GFS 500 MB HBT, QEO ABS VORTICITY

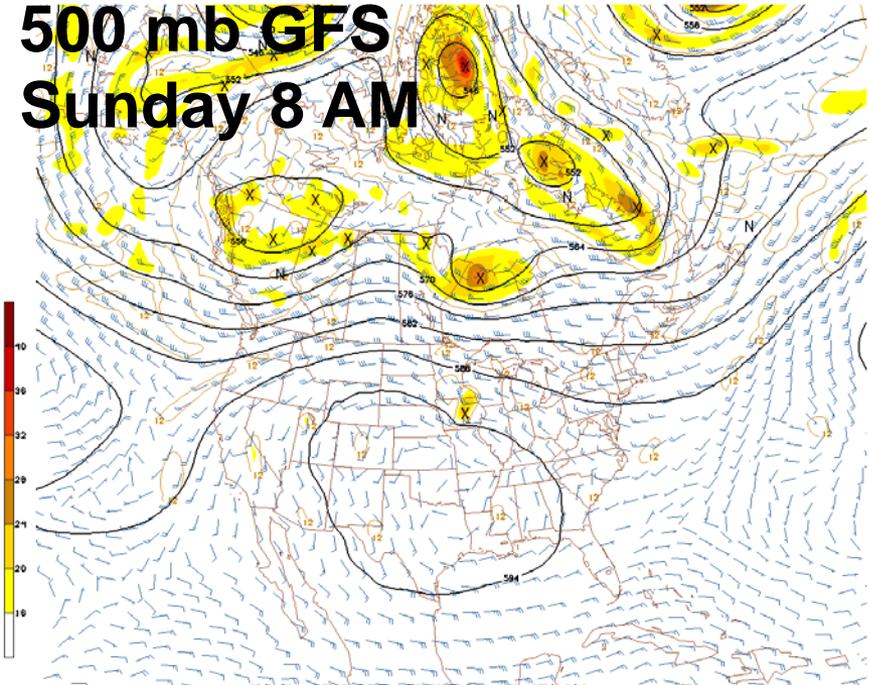
500 mb GFS Saturday 8 AM



07/26/2011 12UTC 096HR FCST VALID SAT 07/30/2011 12UTC NCEP/NWS/NOAA

110731/1800V126 GFS 500 MB HBT, QEO ABS VORTICITY

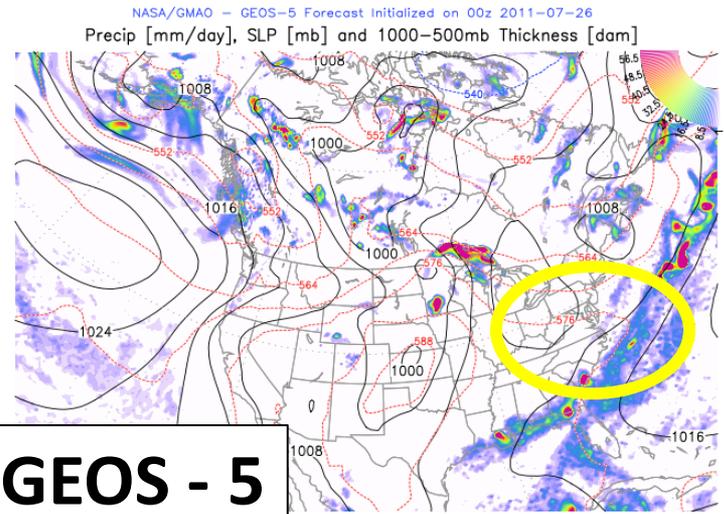
500 mb GFS Sunday 8 AM



07/26/2011 12UTC 126HR FCST VALID SUN 07/31/2011 12UTC NCEP/NWS/NOAA

Wednesday 8 am: Mostly sunny.

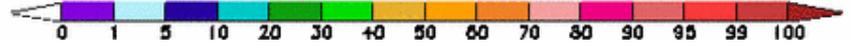
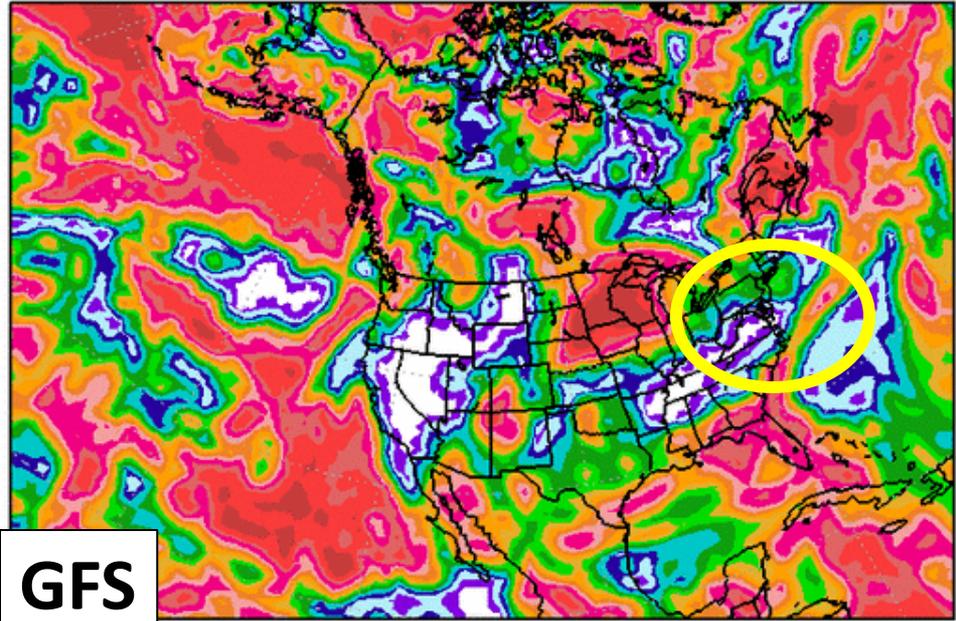
TOTAL CLD FRACT GFS 30H FCST VALID 12Z 27 JUL 2011



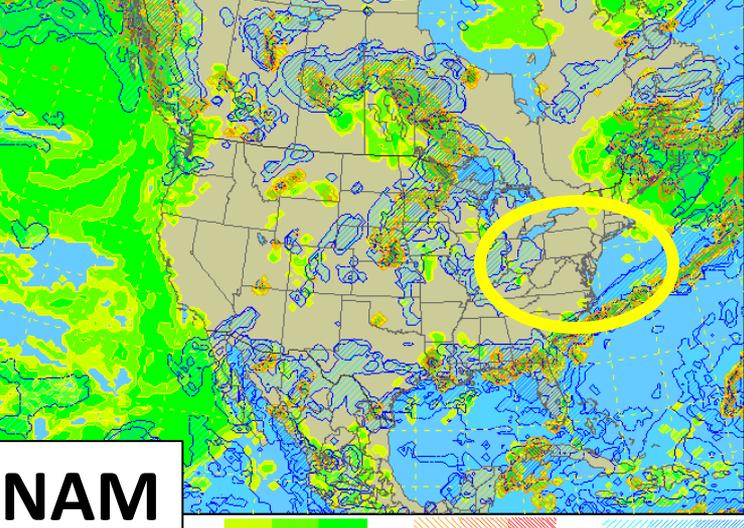
GEOS - 5

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

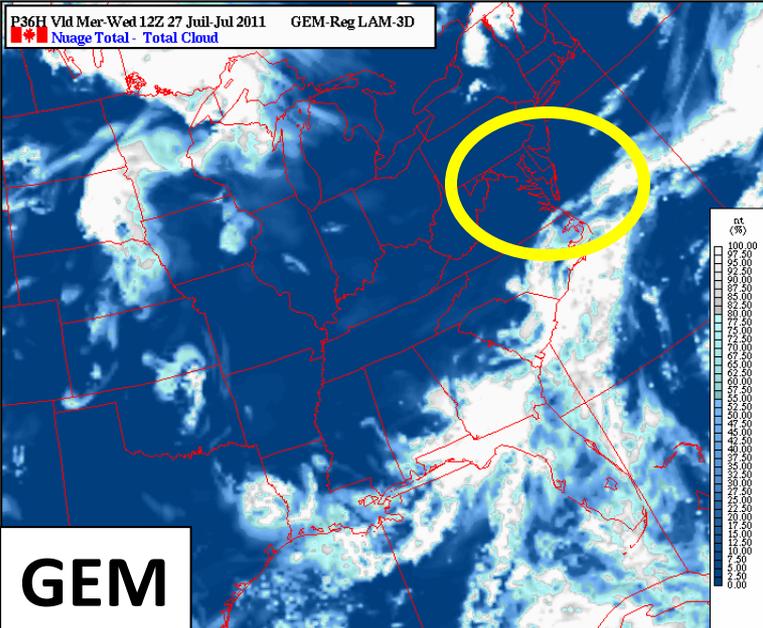
GFS



24-hour forecast valid 1200 UTC Wed 27 Jul 2011 NAM (MRF-NMM) (12z 26 Jul)



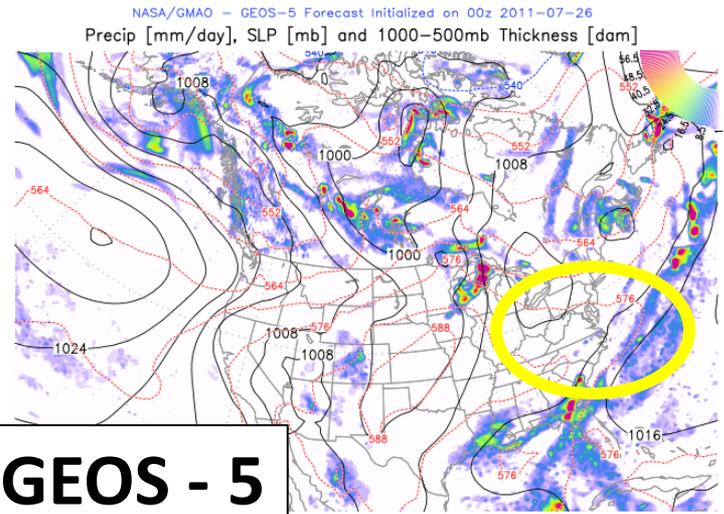
NAM



GEM

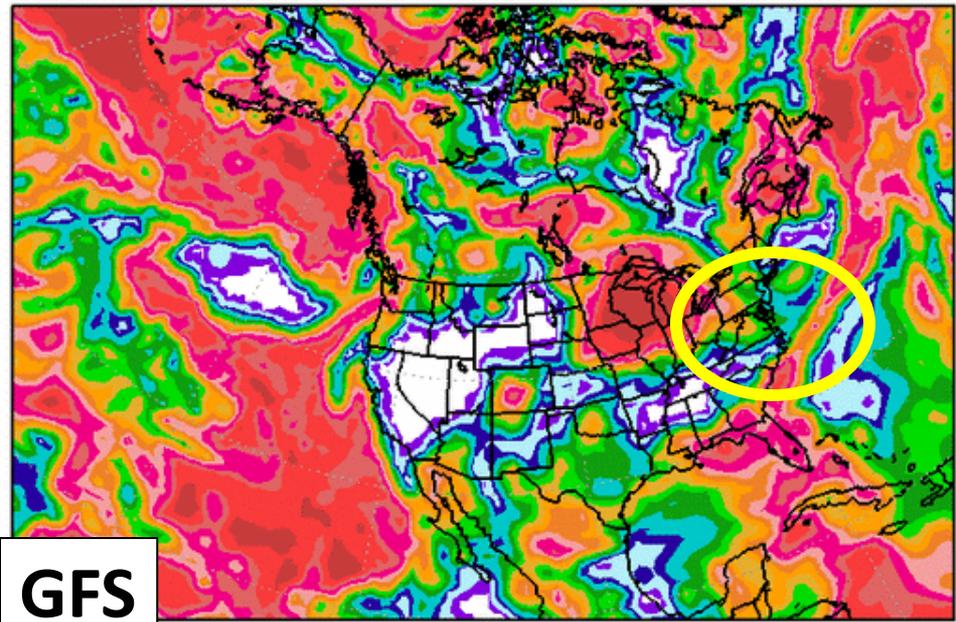
Wednesday 2 pm: Mostly sunny.

TOTAL CLD FRACT GFS 36H FCST VALID 18Z 27 JUL 2011

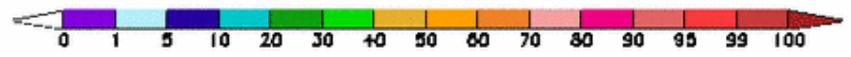


GEOS - 5

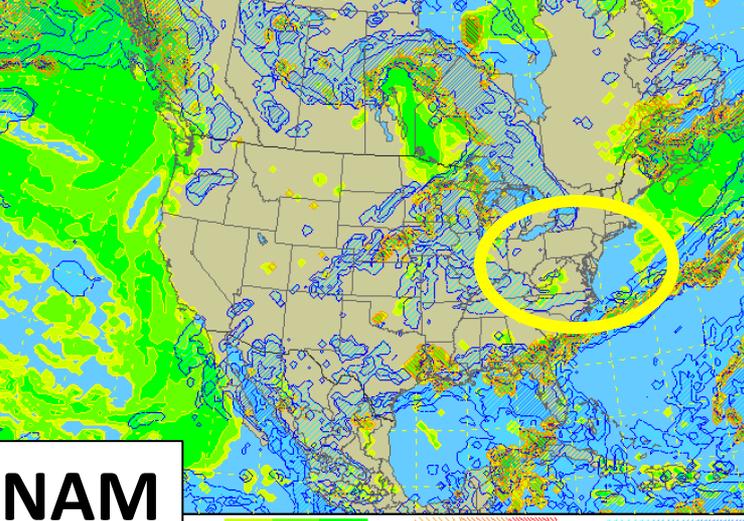
42-hr forecast valid Wed 18z 2011-07-27



GFS

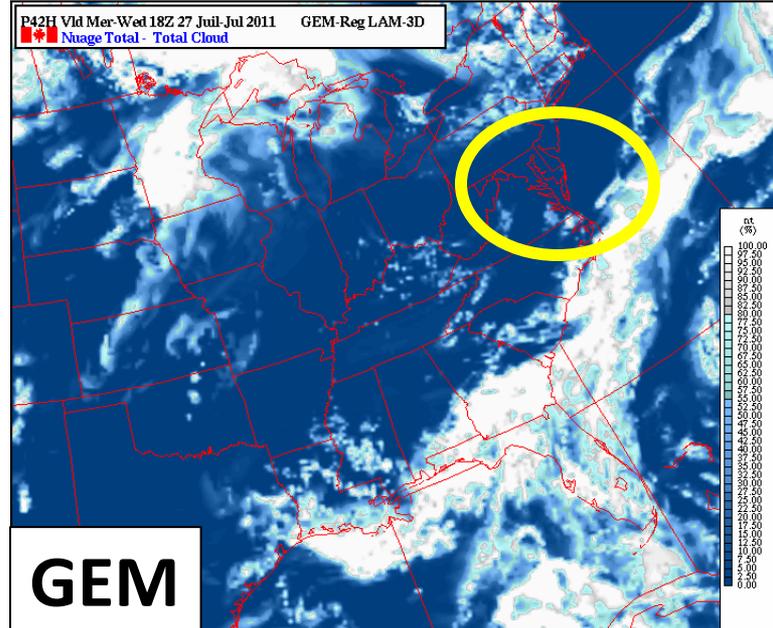


30-hour forecast valid 1800 UTC Wed 27 Jul 2011 NAM (MRF-NMM) (12z 26 Jul)



NAM

Water (T>0°C) Supercooled Ice&Snow

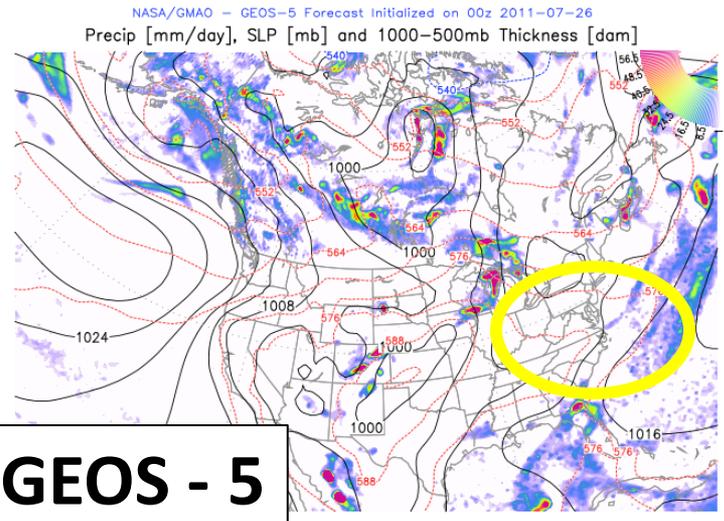


GEM



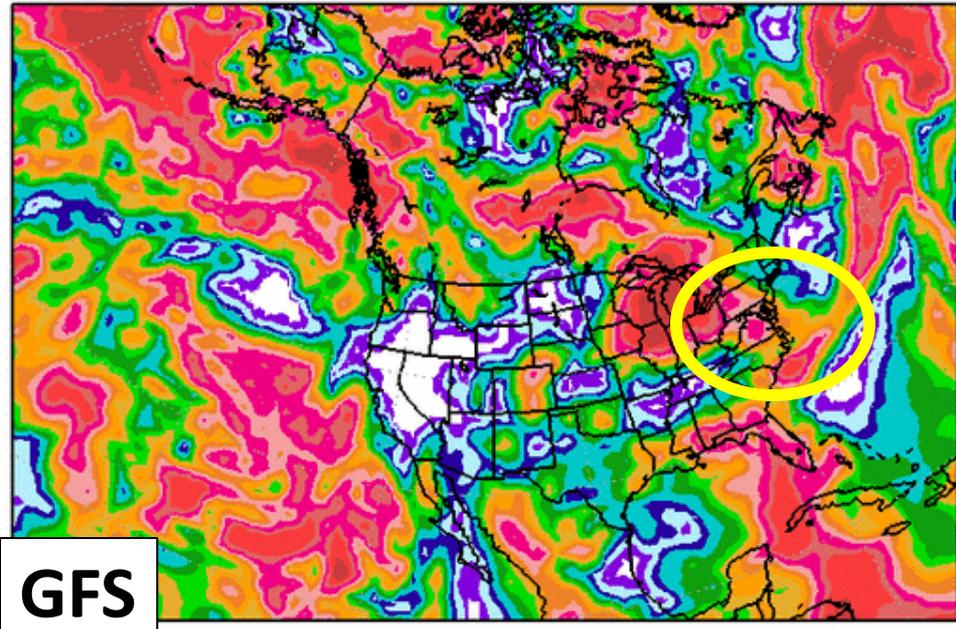
Wednesday 8 pm: GFS – mostly cloudy; GEM – mostly sunny; NAM – high clouds.

TOTAL CLD FRACT GFS 42H FCST VALID 00Z 28 JUL 2011

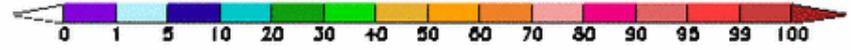


GEOS - 5

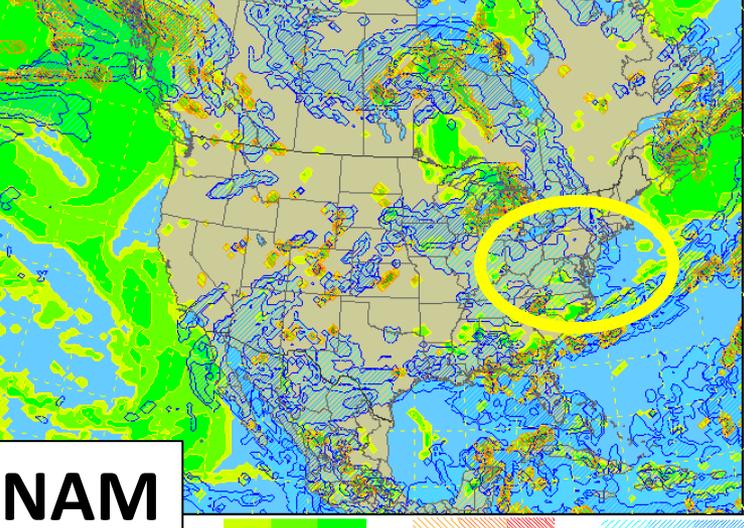
48-hr forecast valid Thu 00z 2011-07-28



GFS

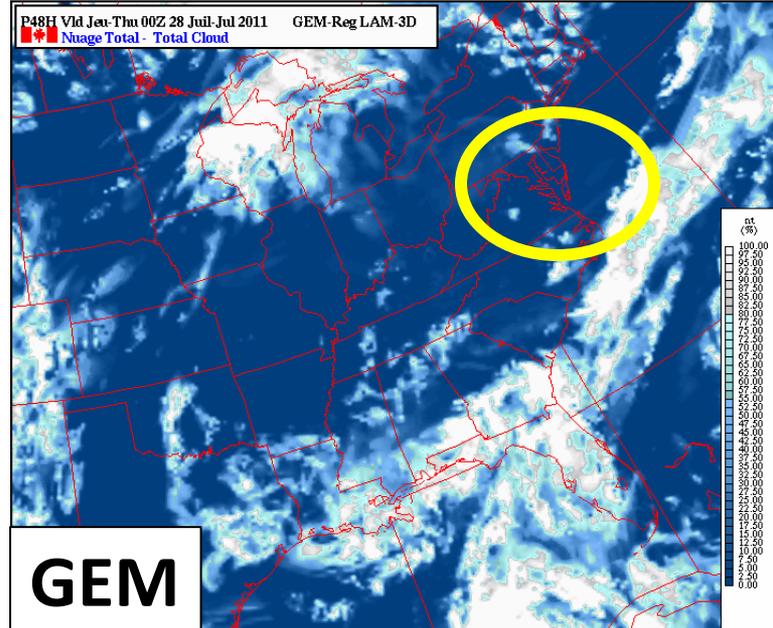


36-hour forecast valid 0000 UTC Thu 28 Jul 2011 NAM (MRF-NMM) (12z 26 Jul)

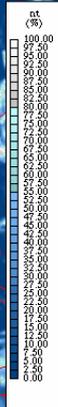


NAM

Water (>0°C) Supercooled Ice&Snow

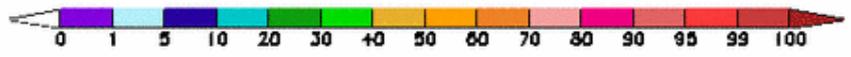
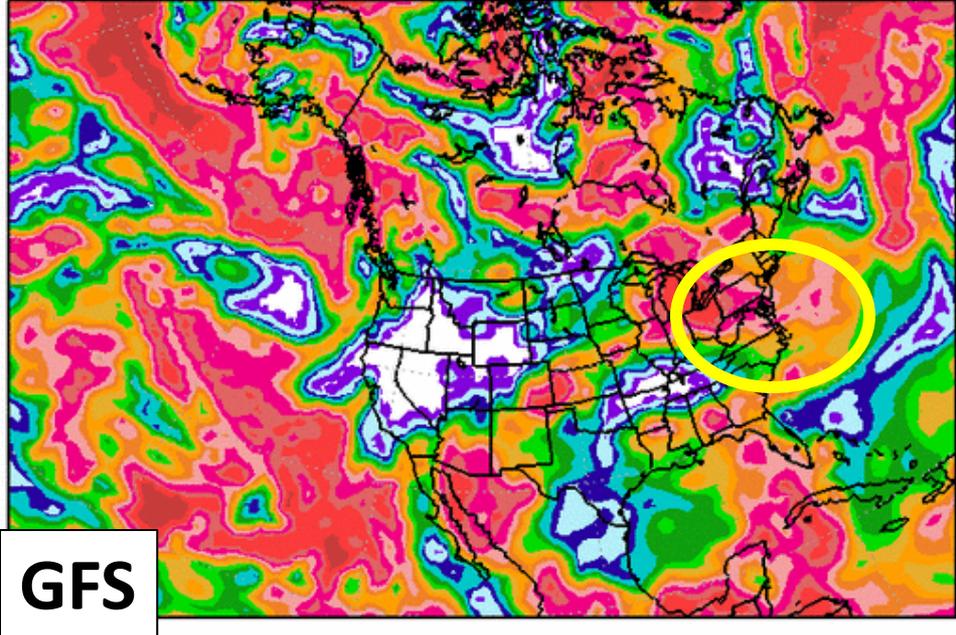
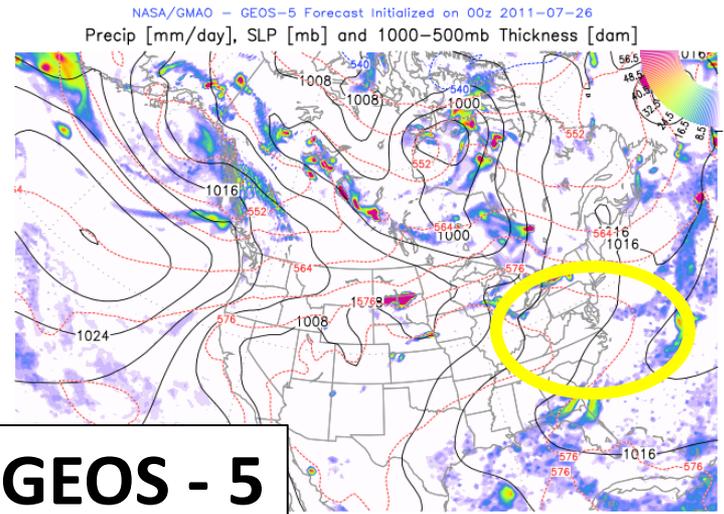


GEM



**Thursday 8 am: GFS – mostly cloudy;
 NAM – high clouds.**

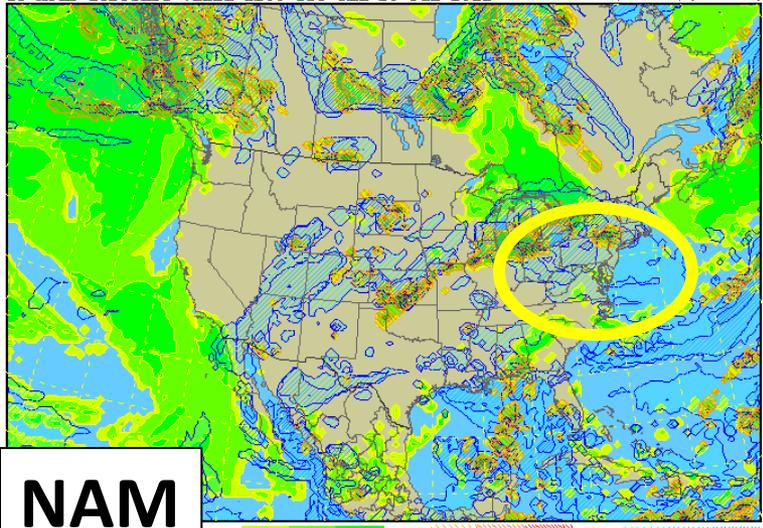
TOTAL CLD FRACT GFS 54H FCST VALID 12Z 28 JUL 2011



GEOS - 5

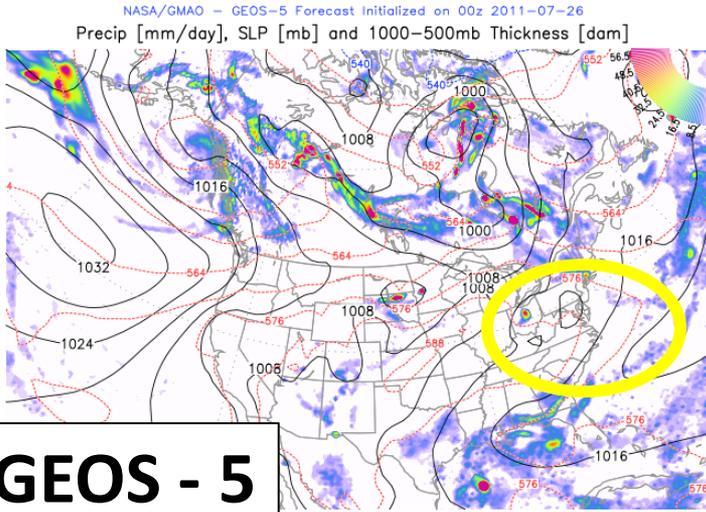
60-hr forecast valid Thu 12z 2011-07-28

48-hour forecast valid 1200 UTC Thu 28 Jul 2011 NAM (MRF-NMM) (12z 26 Jul)



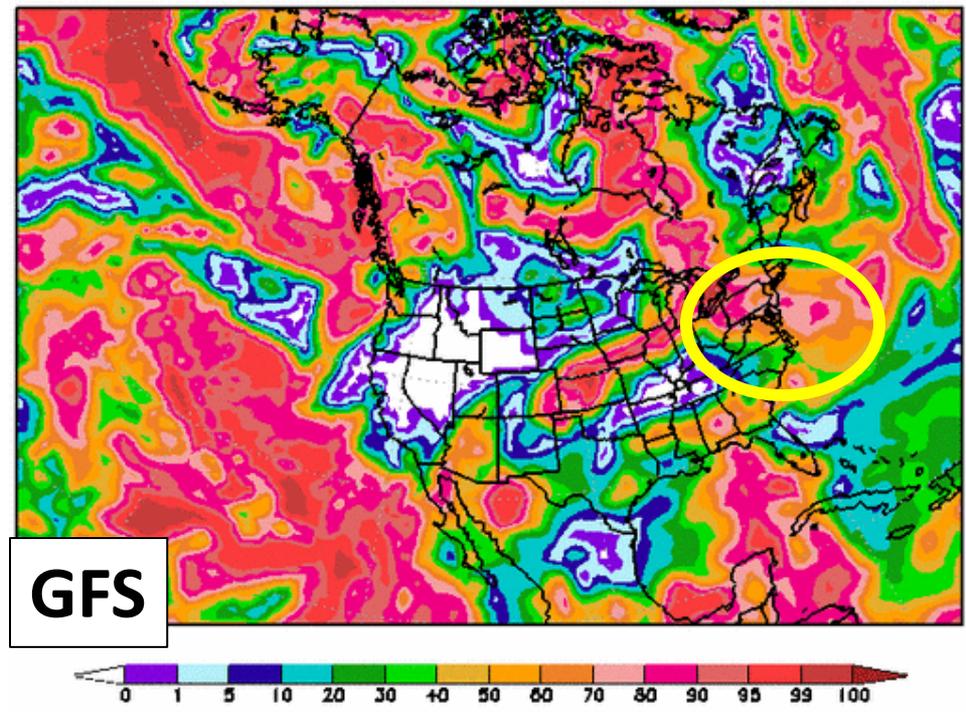
Thursday 2 pm: GFS – mostly cloudy.

TOTAL CLD FRACT GFS 60H FCST VALID 18Z 28 JUL 2011



GEOS - 5

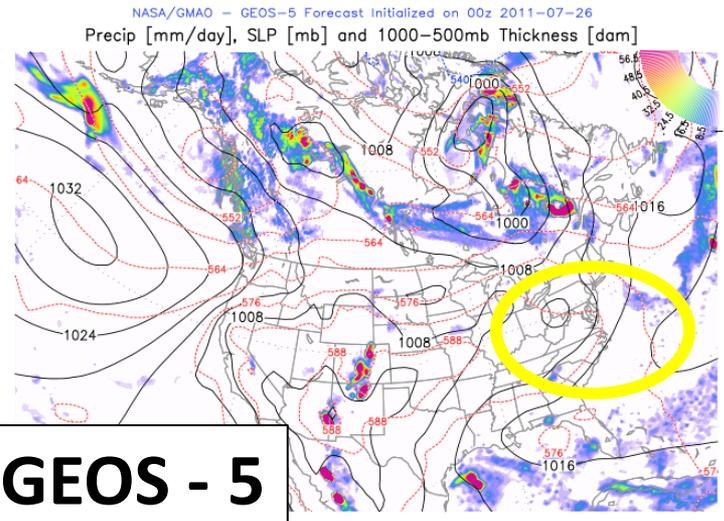
66-hr forecast valid Thu 18z 2011-07-28



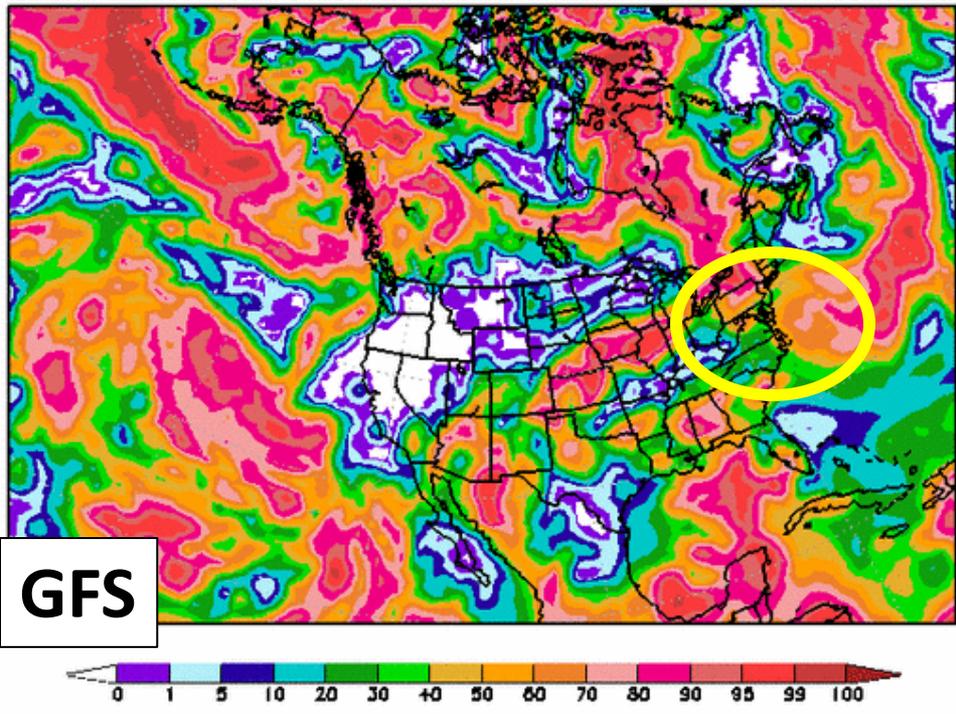
GFS

Thursday 8 pm: GFS – cloud coverage 30-40%; NAM – high clouds.

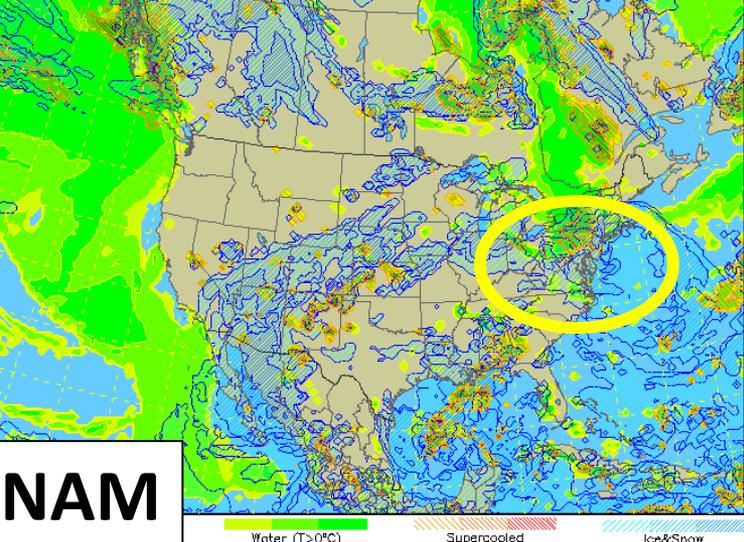
TOTAL CLD FRACT GFS 66H FCST VALID 00Z 29 JUL 2011



72-hr forecast valid Fri 00z 2011-07-29

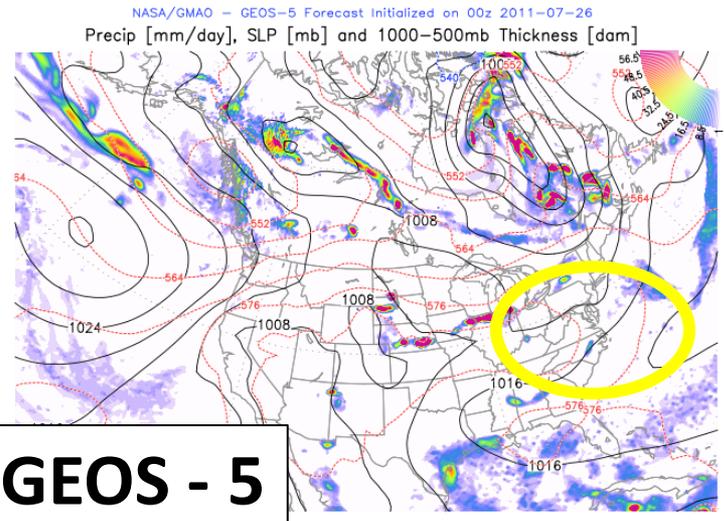


60-hour forecast valid 0000 UTC Fri 29 Jul 2011 NAM (MRF-NMM) (12z 26 Jul)



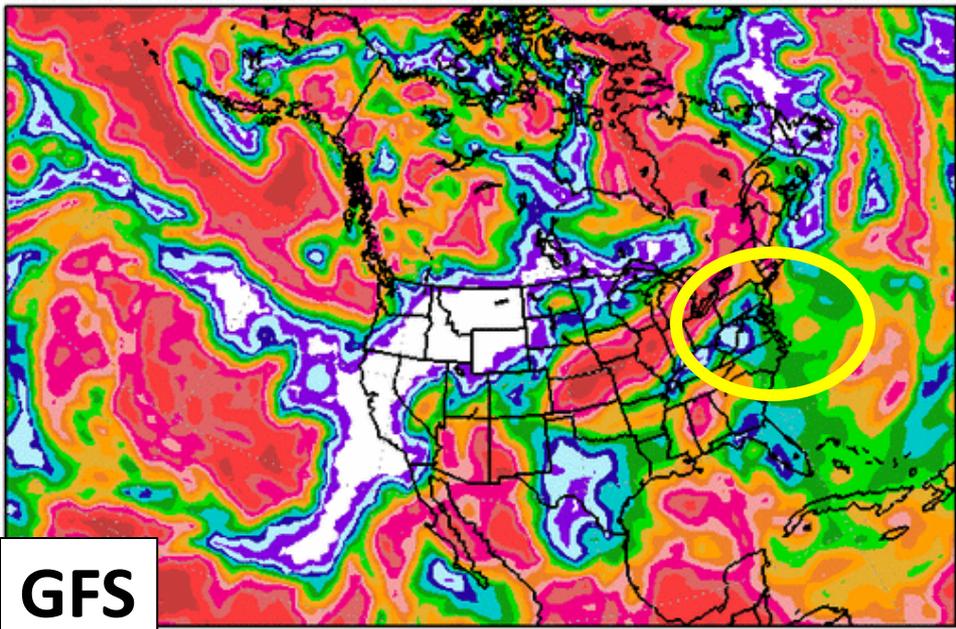
Friday 8 am: GFS – GFS – mostly sunny; NAM – high clouds.

TOTAL CLD FRACT GFS 78H FCST VALID 12Z 29 JUL 2011



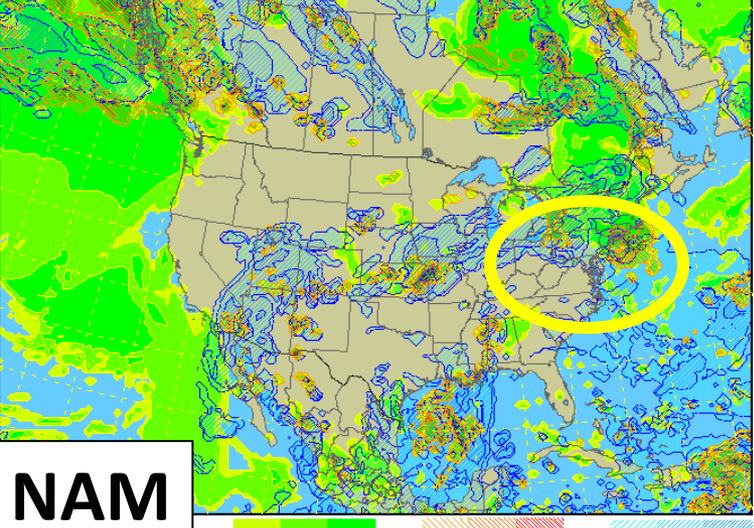
GEOS - 5

84-hr forecast valid Fri 12z 2011-07-29



GFS

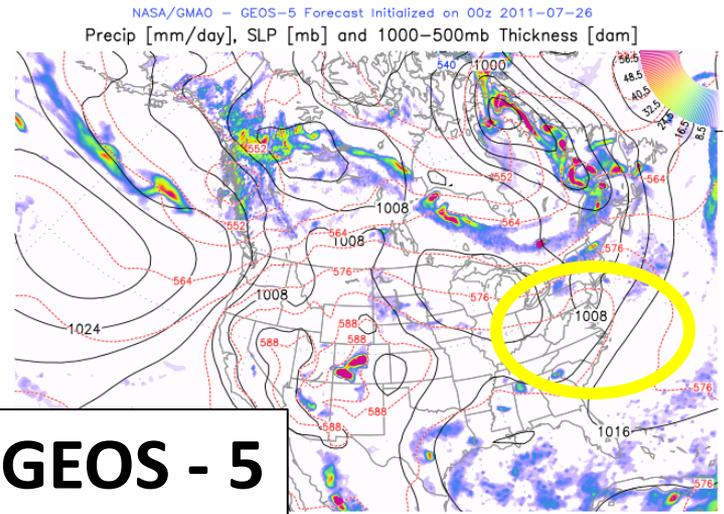
72-hour forecast valid 1200 UTC Fri 29 Jul 2011 NAM (MRF-NMM) (12z 26 Jul)



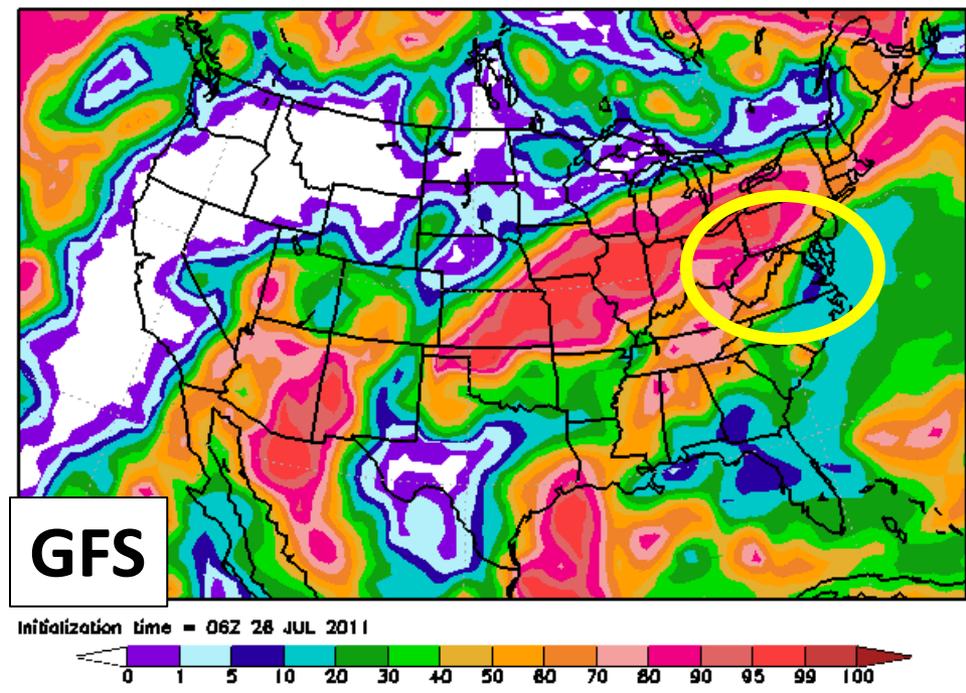
NAM

Friday 8 pm: GFS – mostly sunny; NAM – mid-level clouds.

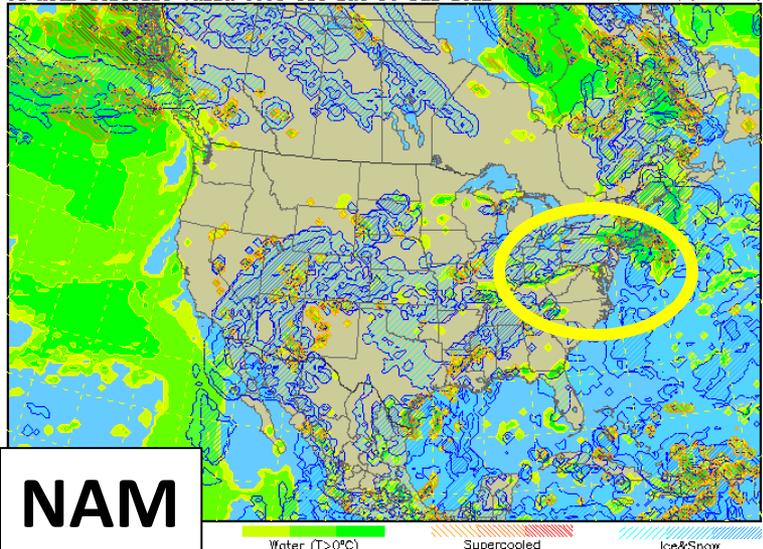
TOTAL CLD FRACT GFS 90H FCST VALID 00Z 30 JUL 2011



96-hr forecast valid Sat 00z 2011-07-30

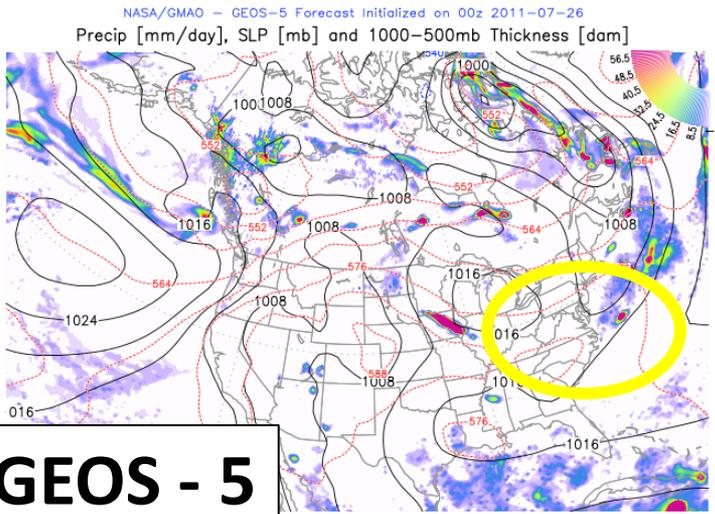


84-hour forecast valid 0000 UTC Sat 30 Jul 2011 NAM (MRF-NMM) (12z 26 Jul)



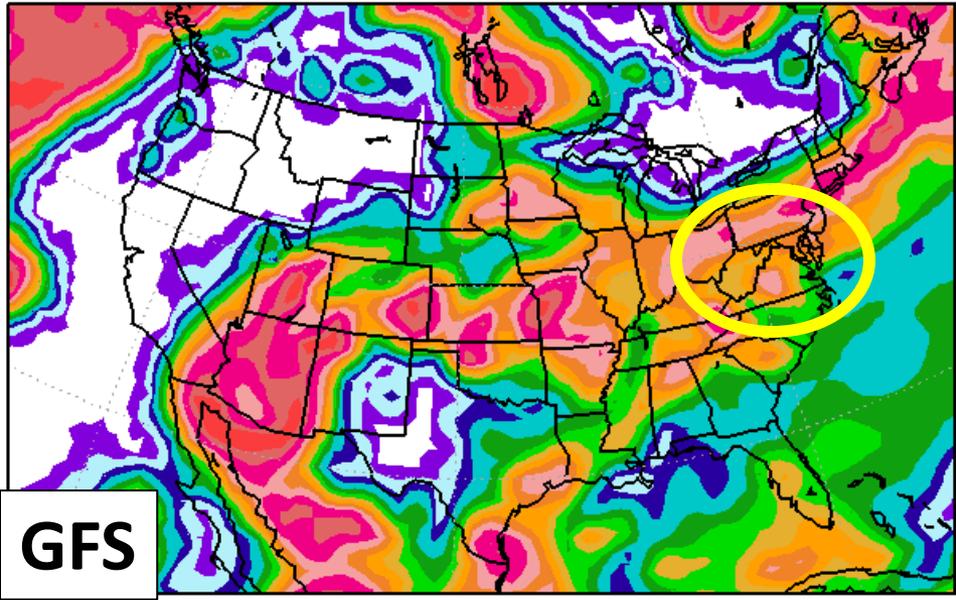
Saturday 8 am: GFS – mostly cloudy.

TOTAL CLD FRACT GFS 102H FCST VALID 12Z 30 JUL 2011

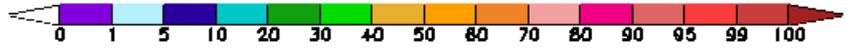


GEOS - 5

108-hr forecast valid Sat 12z 2011-07-30

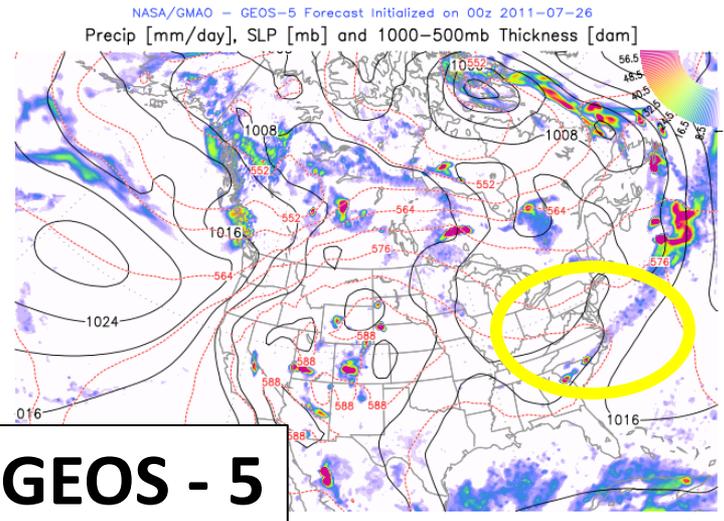


Initialization time = 06Z 28 JUL 2011



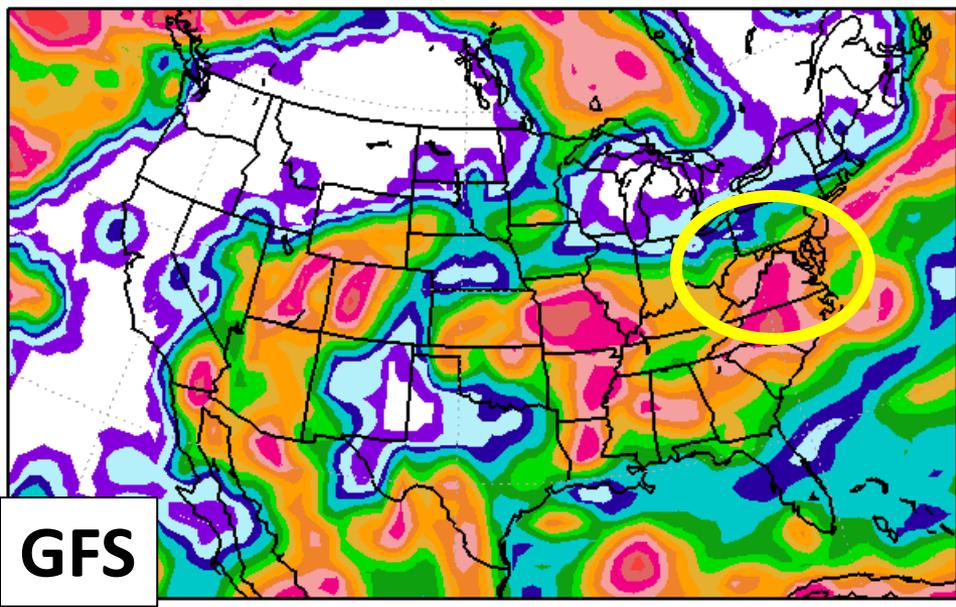
Saturday 8 pm: GFS – mostly cloudy.

TOTAL CLD FRACT GFS 114H FCST VALID 00Z 31 JUL 2011



GEOS - 5

120-hr forecast valid Sun 00z 2011-07-31



Initialization time = 06Z 28 JUL 2011



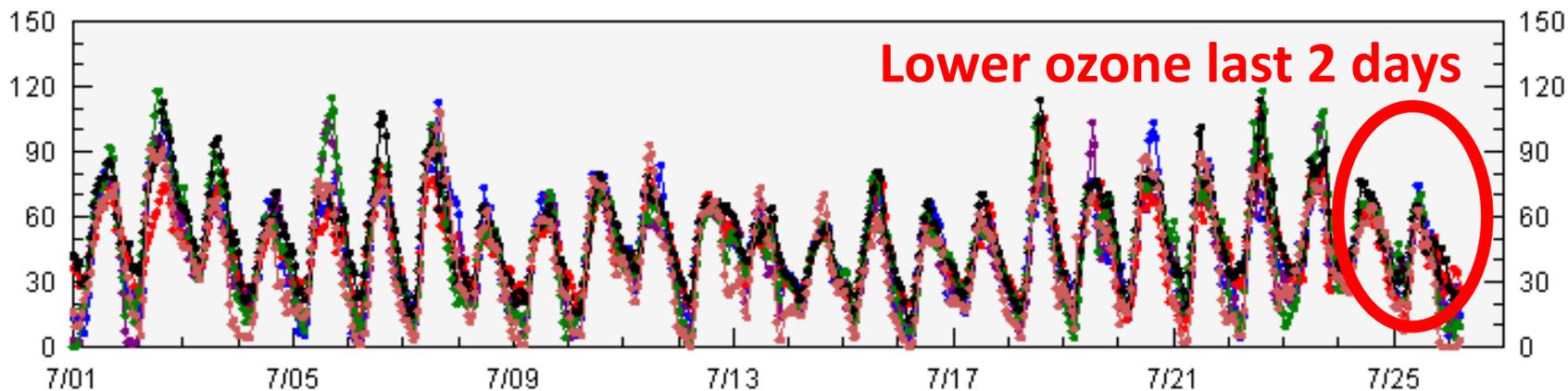
Extended forecast (Saturday and Sunday):

Timing of cold front passage is uncertain. The front will pass through our region Saturday or Sunday. Thunderstorms are expected ahead and along the front.

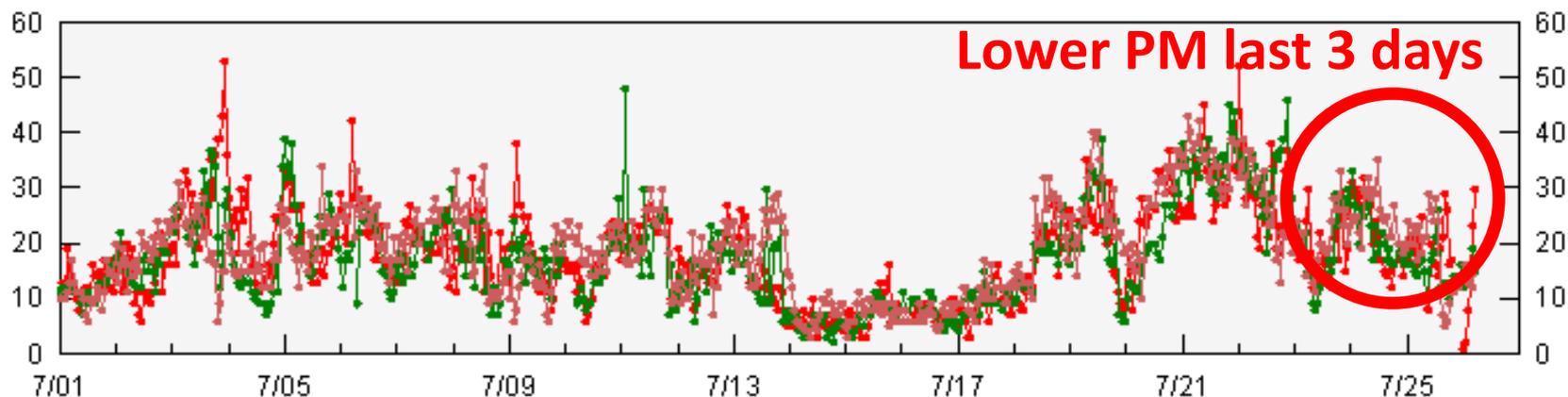
MDE Surface Sites

Padonia Beltsville Edgewood Aldino Essex Fairhill

Ozone (ppbv) 1 hr

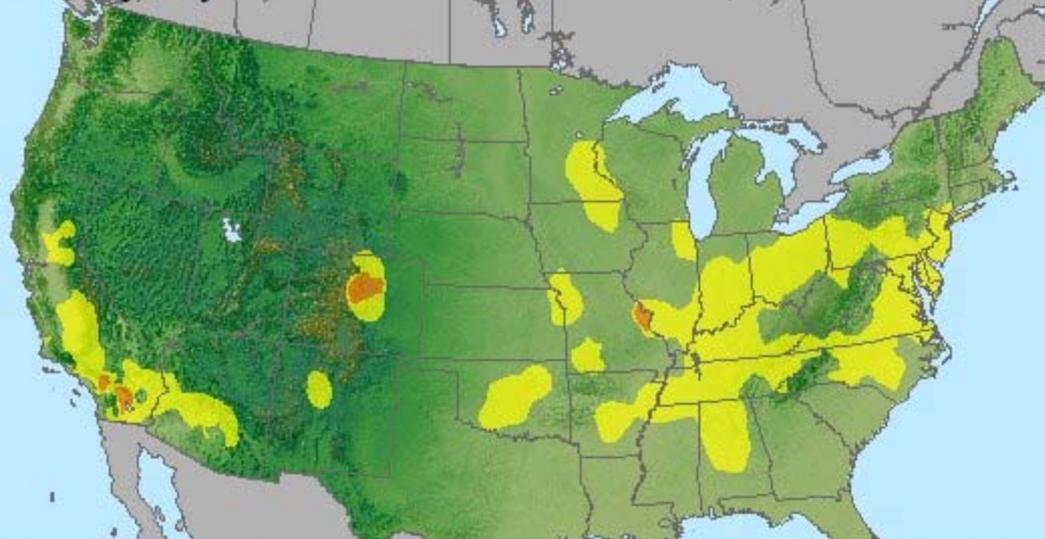


PM2.5 (ug/m³) 1 hr



Today's AQI Forecast

Tuesday, July 26, 2011



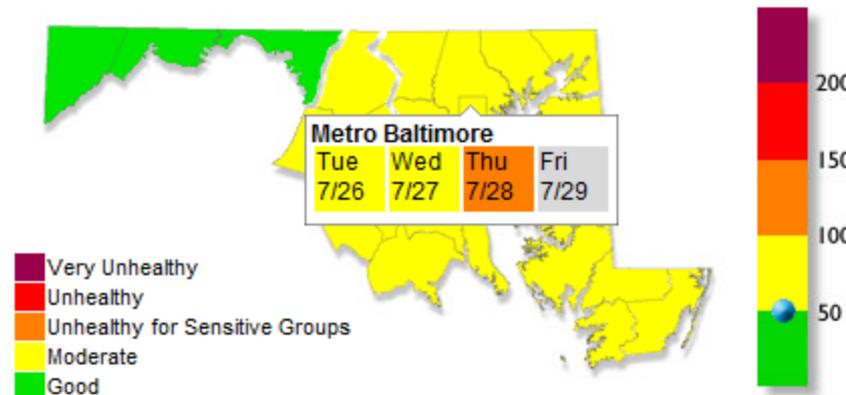
Today's AQI Forecast

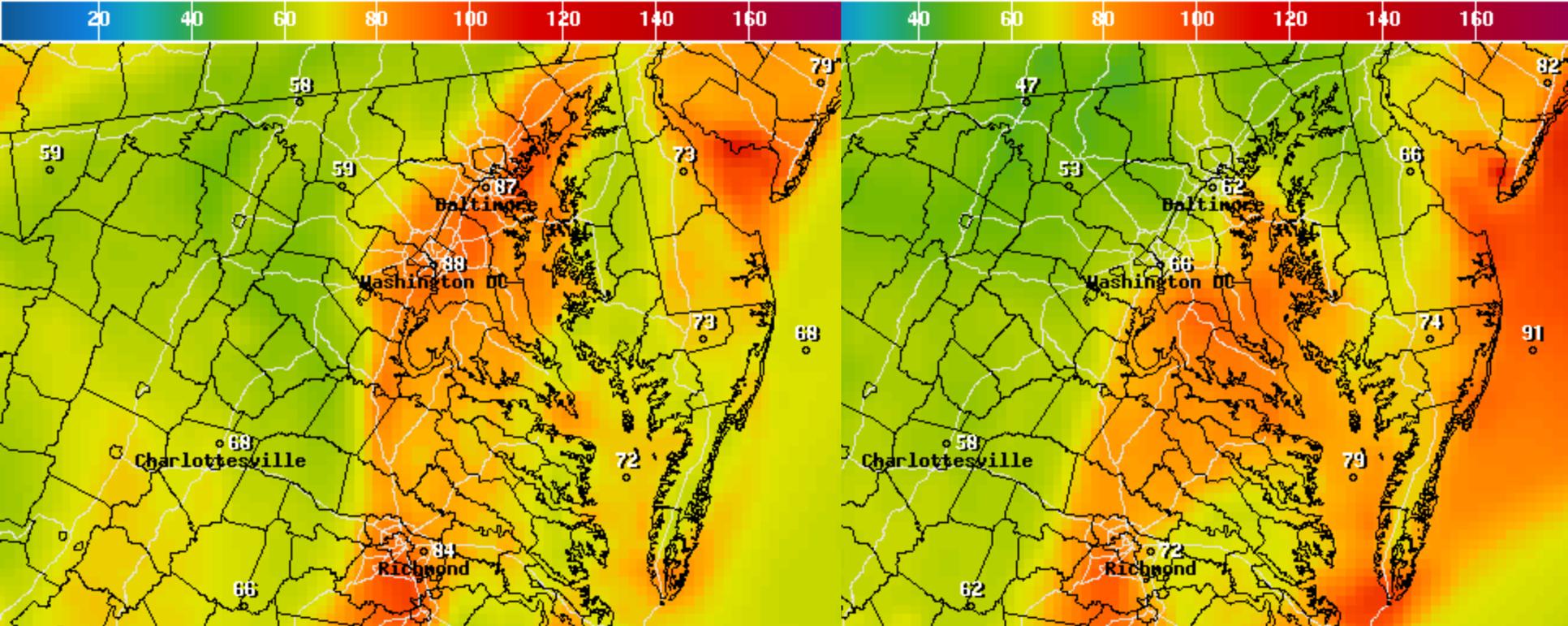
Tuesday, July 26, 2011



| Air Quality Forecast | | | |
|--|--------------------|--|--------------------|
| Today's High | | Tomorrow's High | |
| Air Quality Index (AQI) | | Air Quality Index (AQI) | |
| 51 | Moderate | 84 | Moderate |
| Health Message: Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors. | | Health Message: Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors. | |
| AQI - Pollutant Details | | | |
| Ozone | 51 <u>Moderate</u> | Ozone | 84 <u>Moderate</u> |
| Particles (PM2.5) | 49 <u>Good</u> | Particles (PM2.5) | 49 <u>Good</u> |

Forecast Discussion: A cooler and drier air-mass is in store on Tuesday following the frontal passage tonight. Maximum temperatures will still be in the low 90s although they will be much cooler as compared to this past week. In regards to air quality, most locations will observe ozone levels in the Good to low Moderate range. Particle pollution will likely be in the Good range given a clean air-mass upwind. A high pressure will build overhead on Wednesday. This system will bring seasonable temperatures, mostly clear skies and light surface. These conditions will cause ozone levels to be Moderate in most locations. On Thursday, this high pressure system moves offshore. This will a hot and humid air-mass to return and likely initiate another heat wave (although less severe than last one). Ozone levels will likely reach the middle to upper Moderate range in most areas with isolated locations along the Baltimore-Washington corridor may observe Unhealthy for Sensitive Groups (USG) conditions. Particle pollution will increase to Moderate range in all areas. - MDE





Maximum 1Hr Ozone(PPB) Ending Tue Jul 26 2011 11PM EDT
(Wed Jul 27 2011 03Z)

Maximum 1Hr Ozone(PPB) Ending Thu Jul 28 2011 12AM EDT
(Thu Jul 28 2011 04Z)



National Digital Guidance Database
06z model run Graphic created-Jul 26 6:47AM EDT



National Digital Guidance Database
06z model run Graphic created-Jul 26 6:47AM EDT



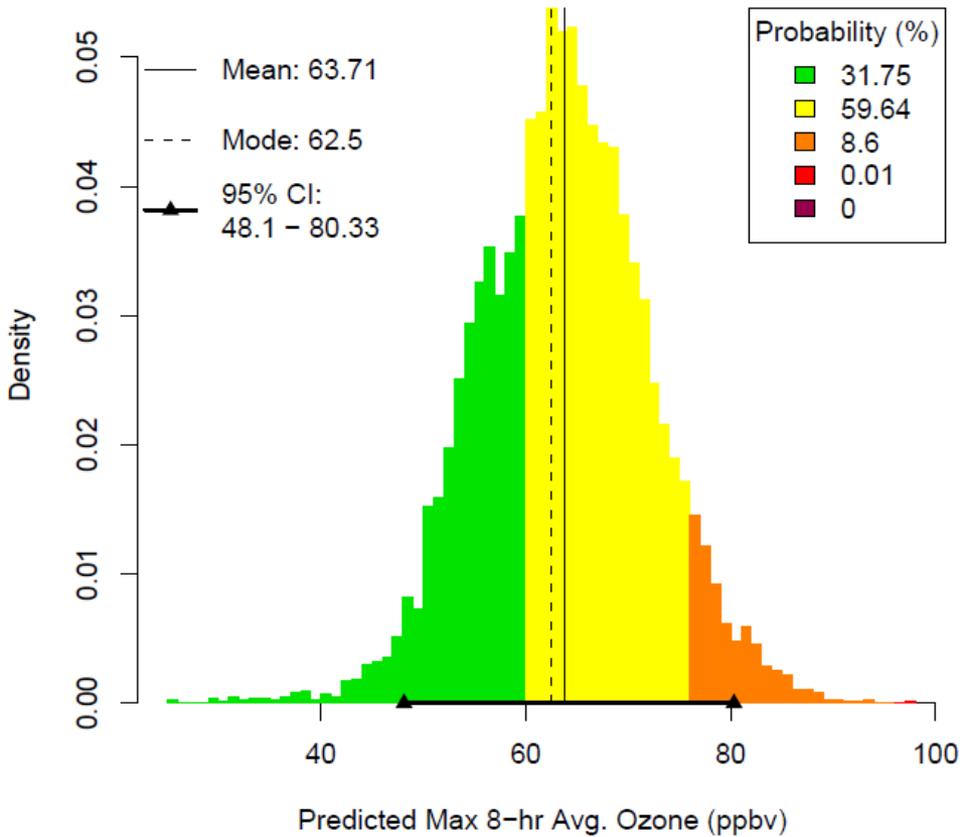
**1-hr Max Ozone (ppbv)
Today**

**1-hr Max Ozone (ppbv)
Tomorrow**

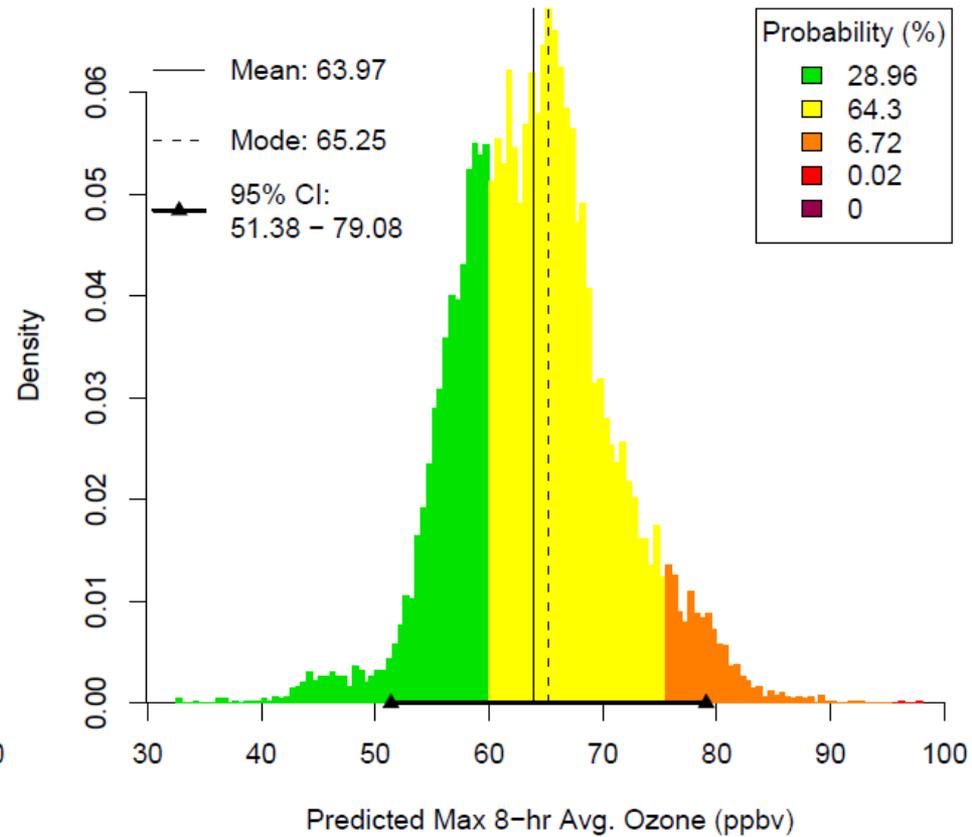
NAQFC-MOS valid for Tomorrow

ID: 240251001 VALID: 2011-07-27

ID: 240330030 VALID: 2011-07-27

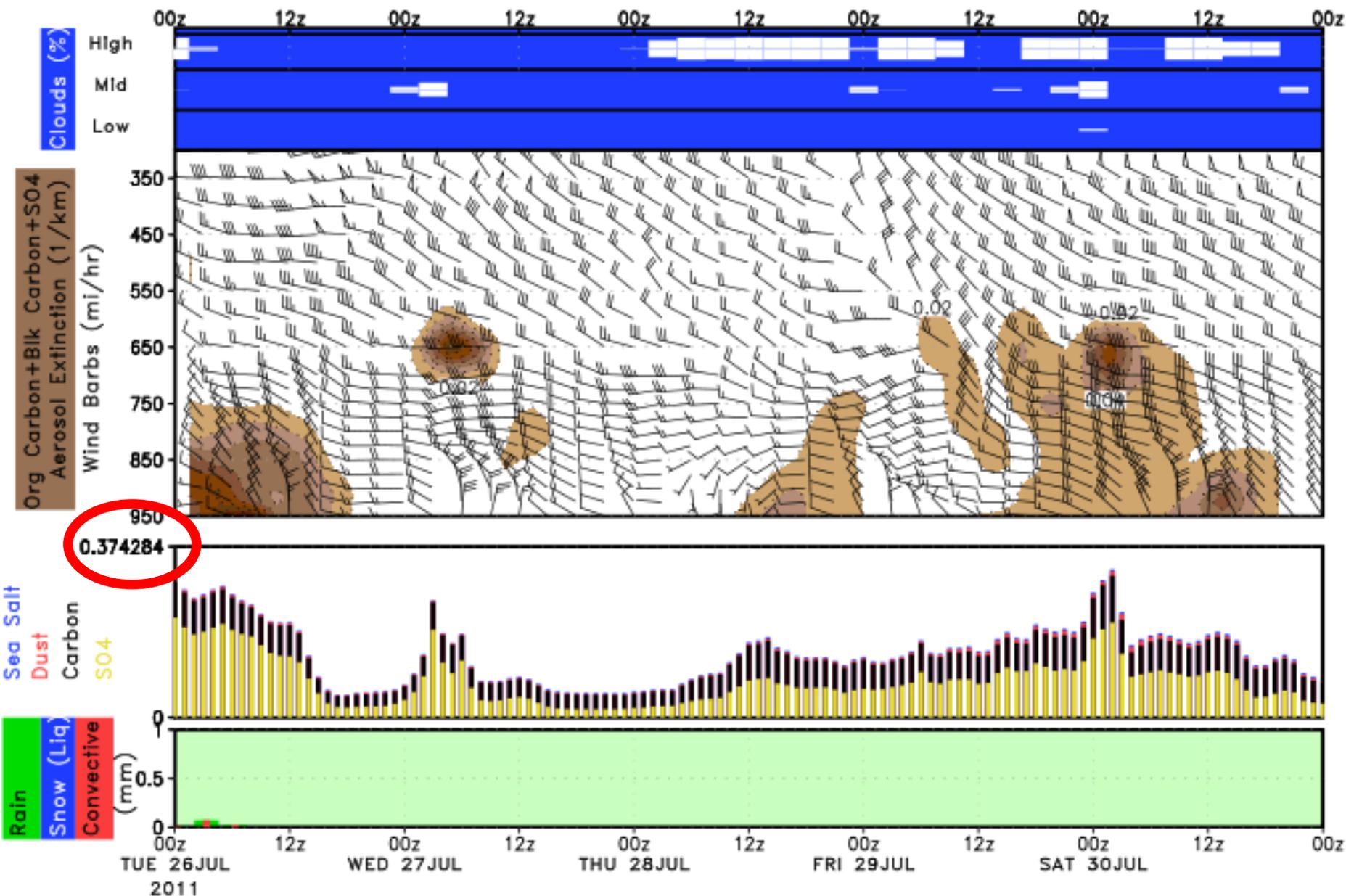


Edgewood

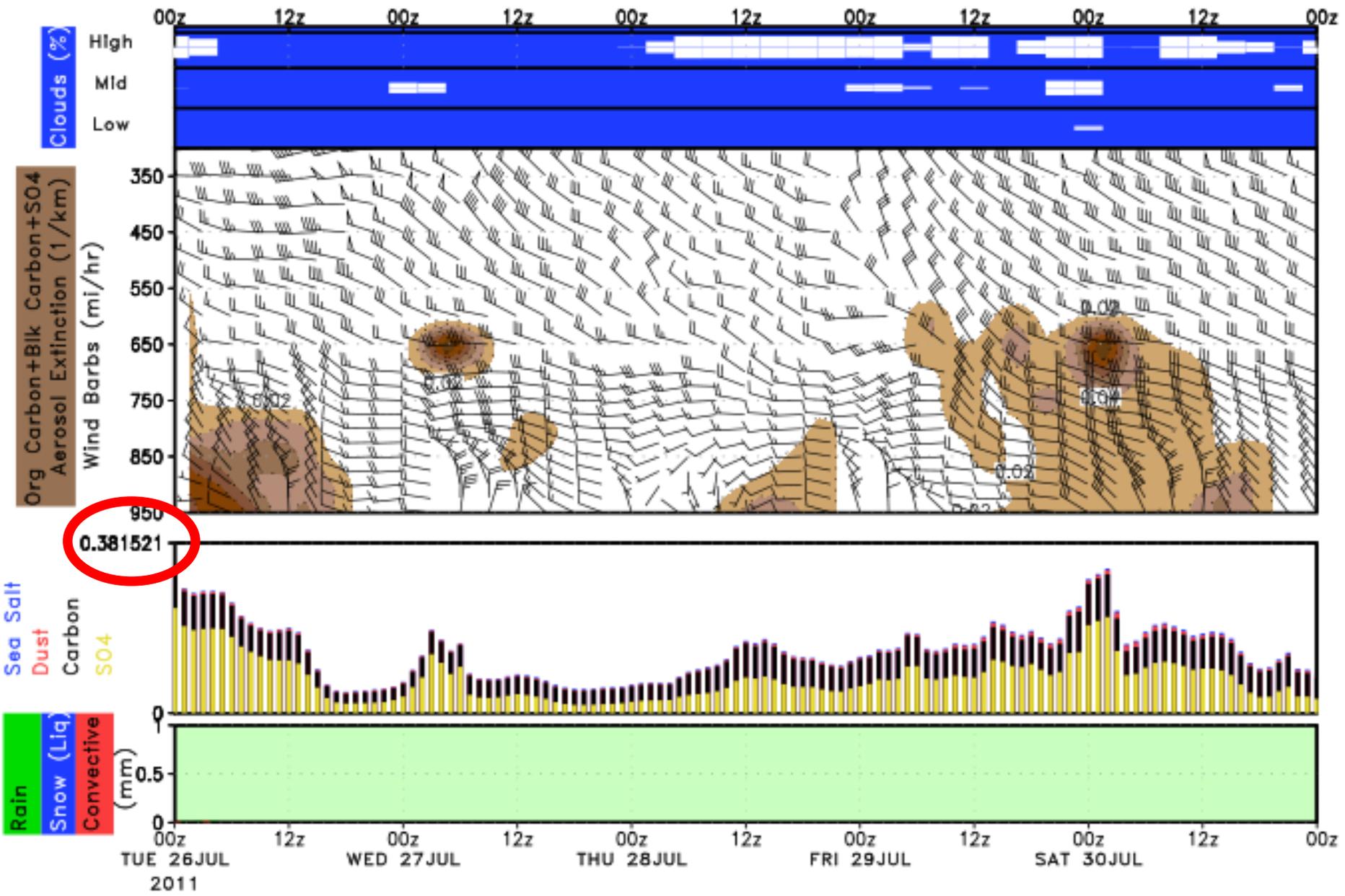


Beltsville

Essex

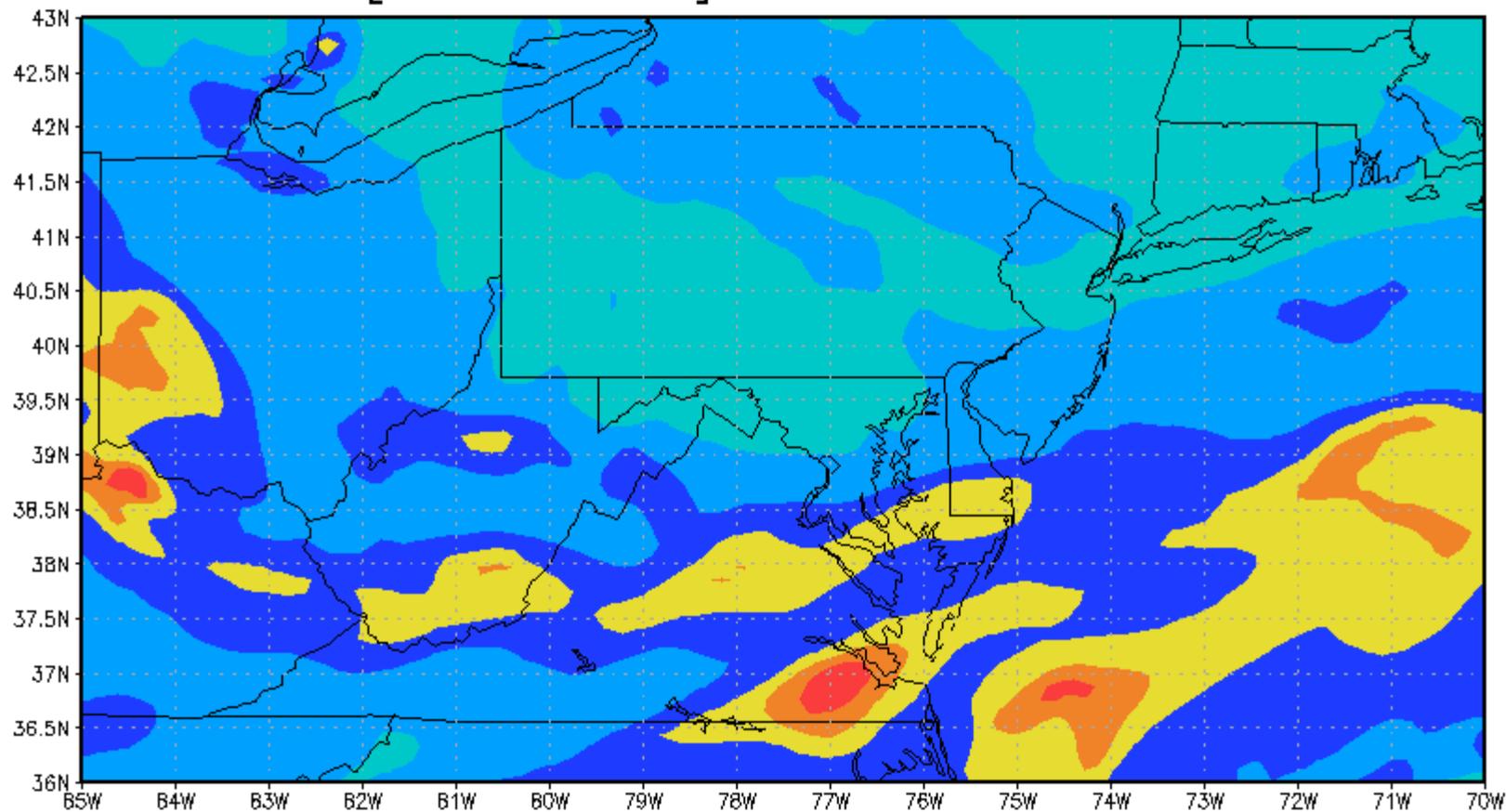


Beltsville



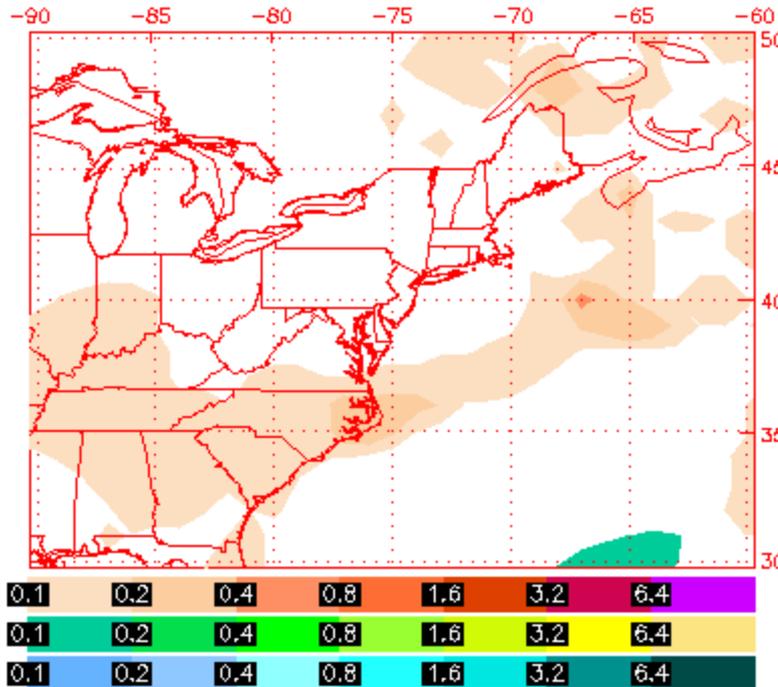
CMAQ AOD at 7 AM Tomorrow

Column AOD [Dimensionless] at surface Valid 11 JUL 27 2011

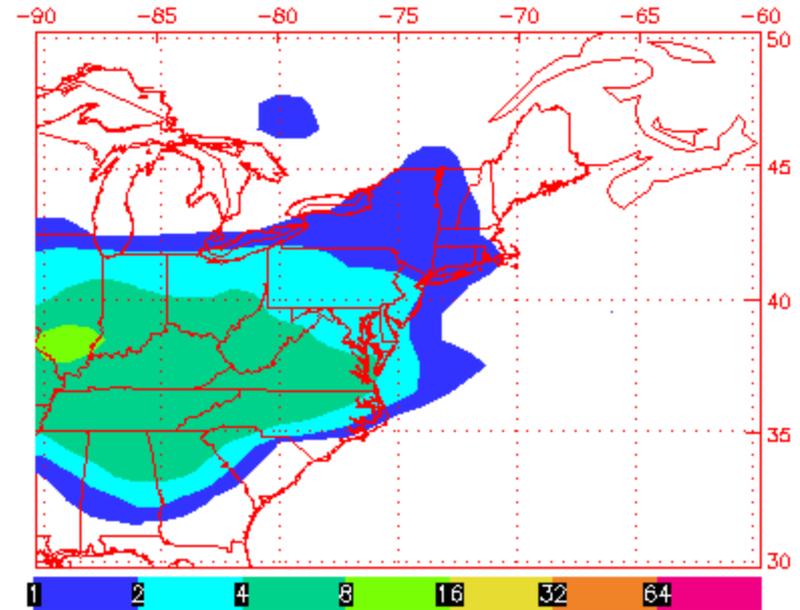


Today 2 PM

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

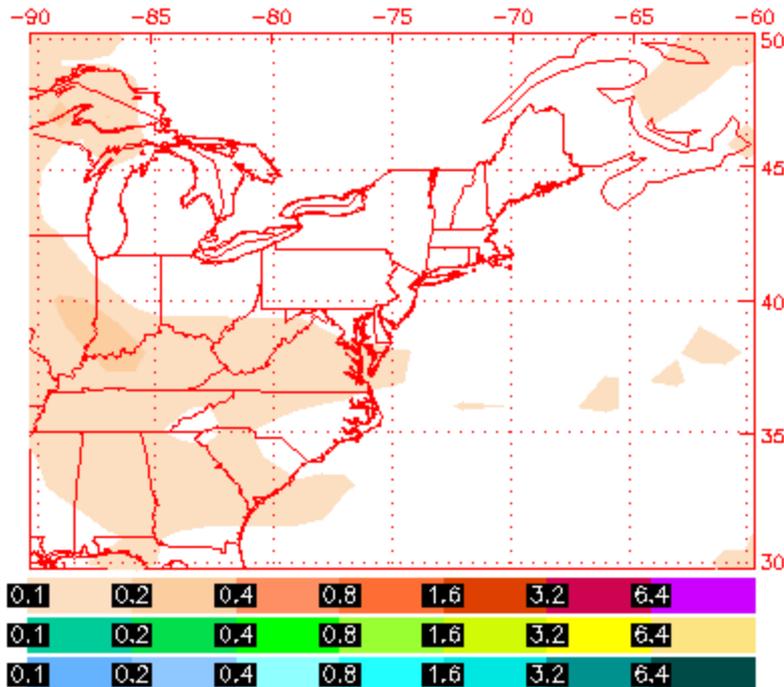


Sulfate Surface Concentration ($\mu\text{g}/\text{m}^3$)
for 18:00Z 26 Jul 2011

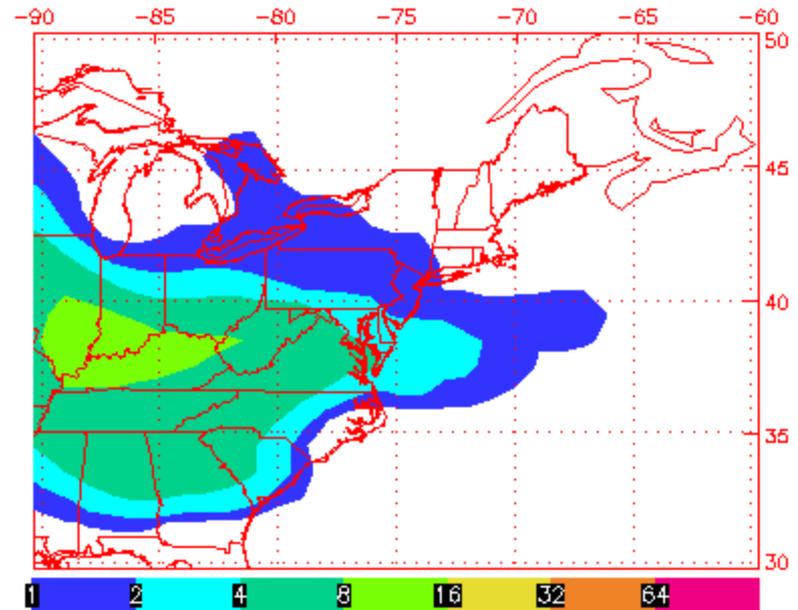


Tomorrow 2 PM

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

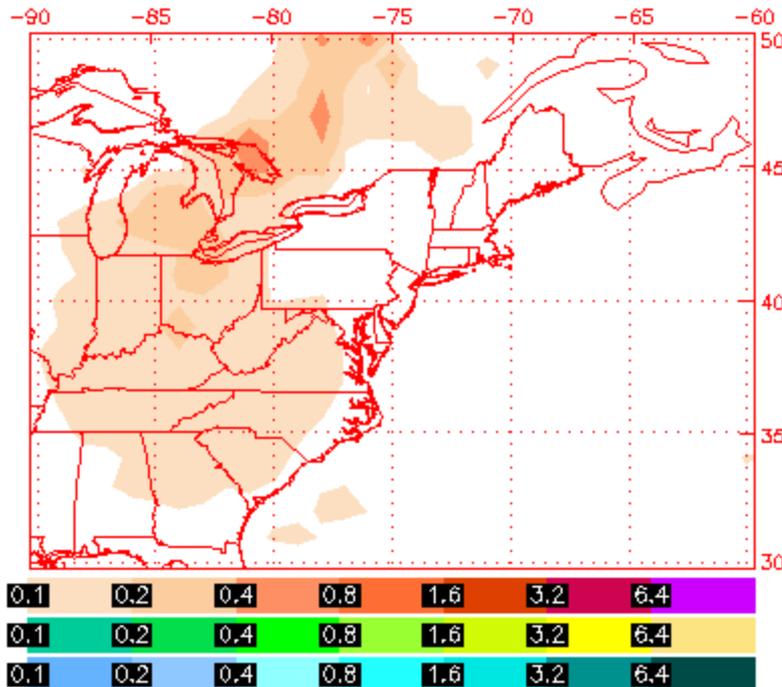


Sulfate Surface Concentration ($\mu\text{g}/\text{m}^3$)
for 18:00Z 27 Jul 2011

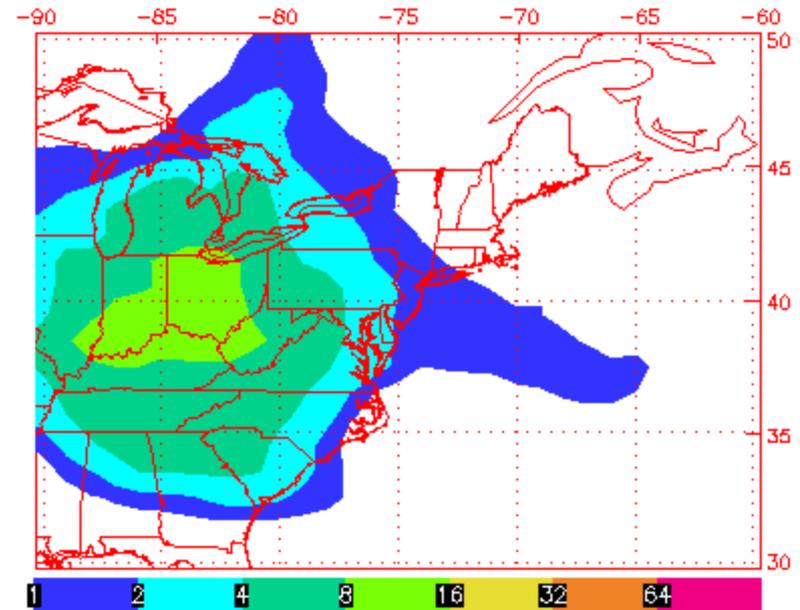


Thursday 2 PM

NAAPS Total Optical Depth for 18:00Z 28 Jul 2011
Sulfate: Orange/Red, Dust: Green/Yellow, Smoke: Blue

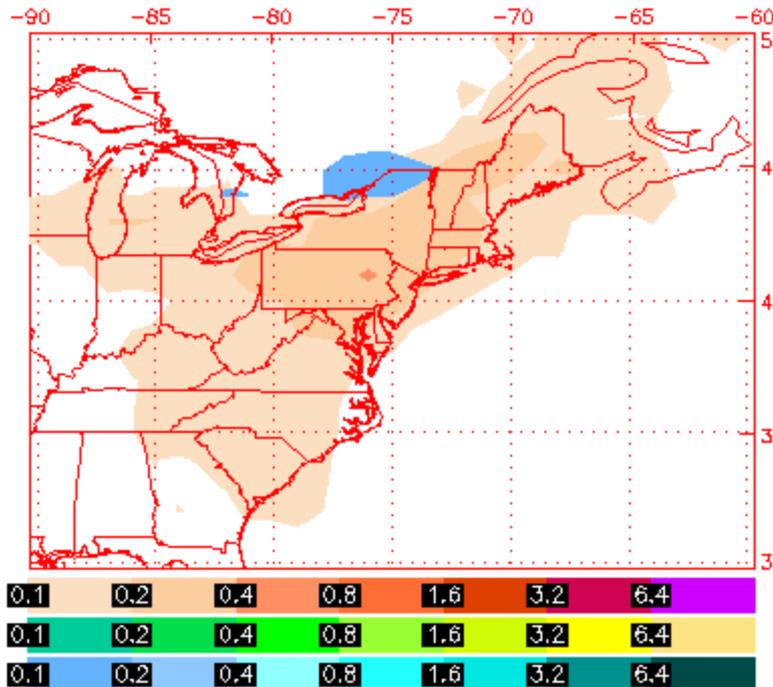


Sulfate Surface Concentration ($\mu\text{g}/\text{m}^3$)
for 18:00Z 28 Jul 2011

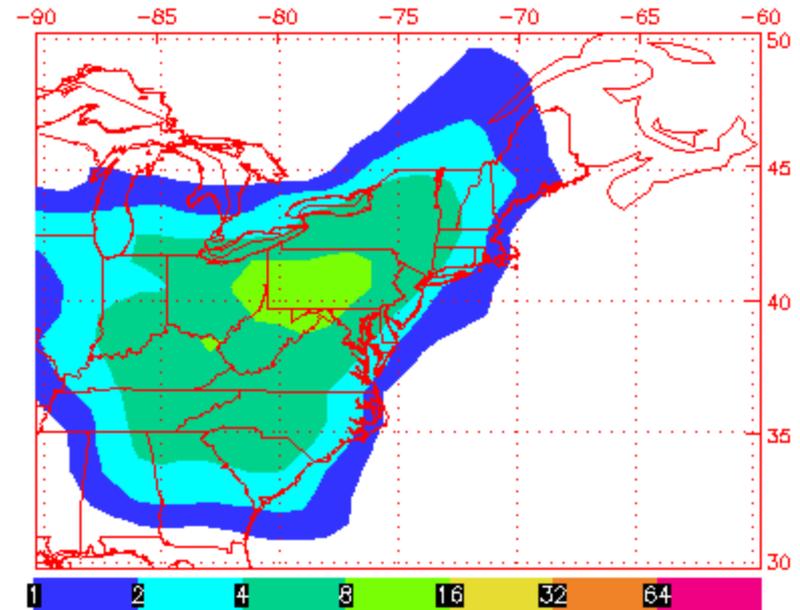


Friday 2 PM

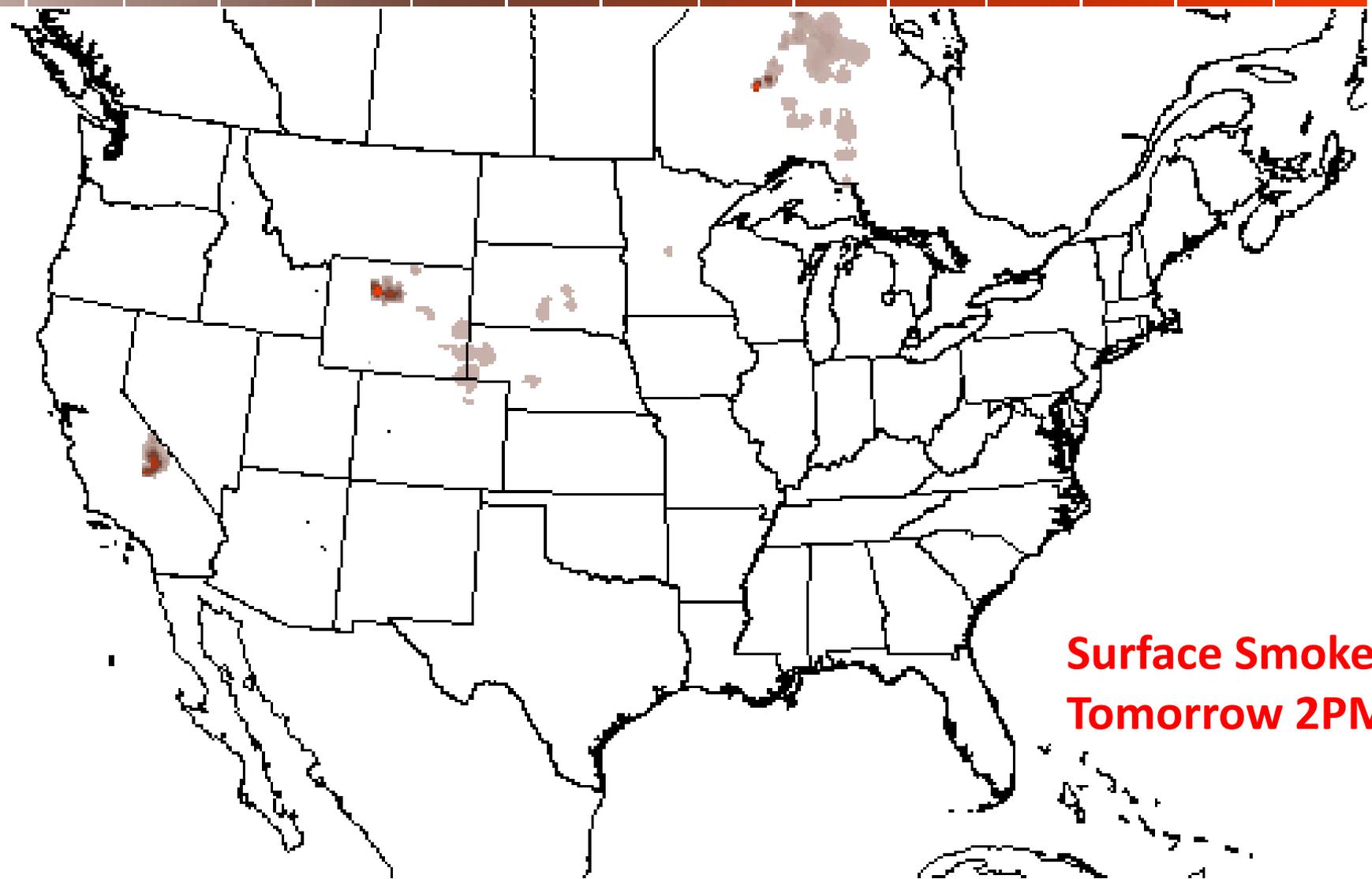
NAAPS Total Optical Depth for 18:00Z 29 Jul 2011
Sulfate: Orange/Red, Dust: Green/Yellow, Smoke: Blue



Sulfate Surface Concentration ($\mu\text{g}/\text{m}^3$)
for 18:00Z 29 Jul 2011



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



**Surface Smoke
Tomorrow 2PM**

1Hr Surface Smoke (micrograms/m³) Wed Jul 27 2011 2PM EDT
(Wed Jul 27 2011 18Z)



National Digital Guidance Database

06z model run Graphic created-Jul 26 7:48AM EDT

AREA FORECAST DISCUSSION...UPDATED
NATIONAL WEATHER SERVICE BALTIMORE MD/WASHINGTON DC
934 AM EDT TUE JUL 26 2011

.SYNOPSIS... HIGH PRESSURE WILL BUILD OVER THE REGION THROUGH WEDNESDAY BEFORE MOVING OFF THE COAST LATE IN THE WEEK. A RETURN FLOW AROUND THE HIGH WILL BRING MORE HOT AND HUMID CONDITIONS FOR LATE IN THE WEEK INTO THE WEEKEND. A COLD FRONT MAY IMPACT THE AREA SUNDAY INTO EARLY NEXT WEEK.

.NEAR TERM /THROUGH TONIGHT/... WINDS ACROSS THE AREA ARE NLY...DEWPOINTS ARE DROPPING AND SKIES HAVE CLEARED OUT - ALL INDICATIONS THE COLD FRONT HAS FINALLY SWEEPED THRU THE AREA ON THE WAY TO BRINGING THE AREA QUIET WX CONDITIONS TODAY. THOUGH TEMPS WILL STILL CLIMB A FEW DEGREES ABOVE NORMAL THIS AFTN...DEWPOINTS WILL BE IN THE L60S. THESE DRIER CONDITIONS WILL MAKE FOR MORE COMFORTABLE CONDITIONS THAN IN PAST DAYS /AND COMPARED TO THE END OF THIS WEEK/.

.SHORT TERM /WEDNESDAY THROUGH WEDNESDAY NIGHT/... SURFACE HIGH PRESSURE WILL REMAIN OVER THE REGION DURING THIS TIME. DRY AND SEASONABLE CONDITIONS ARE EXPECTED WEDNESDAY ALONG WITH PLENTY OF SUNSHINE. DEWPOINTS IN THE 50S AND 60S WILL MAKE IT FEEL NOTICEABLY LESS HUMID COMPARED TO RECENT DAYS.

HIGH PRESSURE OVERHEAD ALONG WITH LOWER DEWPOINTS WILL ALLOW FOR RADIATIONAL COOLING WEDNESDAY NIGHT. MIN TEMPS WILL DROP INTO THE 60S ACROSS MOST LOCATIONS...BUT WARMER IN DOWNTOWN WASHINGTON/BALTIMORE DUE TO THE URBAN HEAT ISLAND.

.LONG TERM /THURSDAY THROUGH MONDAY/... SURFACE HIGH PRESSURE WILL MOVE OFF THE COAST THURSDAY THROUGH SATURDAY WHILE UPPER-LEVEL HIGH PRESSURE BUILDS OVERHEAD. A RETURN FLOW AROUND THE SURFACE HIGH WILL USHER IN MORE HUMID CONDITIONS WHILE SUBSIDENCE ASSOCIATED WITH THE UPPER-LEVEL HIGH BRINGS A RETURN OF HOT CONDITIONS AS WELL. THE COMBINATION OF THE HEAT AND HUMIDITY WILL CAUSE HEAT INDICES TO RISE TO NEAR OR ABOVE 100 DEGREES EACH DAY. HEAT HEADLINES MAY BE WARRANTED FOR THE AFTERNOON AND EARLY EVENING HOURS ESPECIALLY FRIDAY.

THE UPPER-LEVEL HIGH WILL RETROGRADE TO THE WEST ALLOWING FOR A TROUGH OF LOW PRESSURE TO DEVELOP OVER NEW ENGLAND THIS WEEKEND. THE COLD FRONT ASSOCIATED WITH THIS SYSTEM WILL APPROACH THE REGION SATURDAY BEFORE PASSING THROUGH SUNDAY. SHOWERS AND THUNDERSTORMS ARE POSSIBLE ALONG AND AHEAD OF THE FRONT DURING THIS TIME. LESS HUMID CONDITIONS ARE POSSIBLE EARLY NEXT WEEK BEHIND THE FRONT.