DISCOVER-AQ Outlook for Thursday, July 28, 2011

Very clean and dry air was encountered on today's flight (perhaps the cleanest of the mission) under the generally northwesterly flow. Tomorrow should start out rather clean in terms of O3 and aerosol. However, by midday the winds will shift to southerly bringing in warmer and more humid air. Increased temperatures should lead to greater O3 production in the afternoon and somewhat greater aerosol optical depth. Deep convection is quite active over the Great Lakes region today and cirrus outflow began showing up in our study region by late afternoon. We will need to assess the upper level cloud situation in the morning to determine if these clouds present an obstacle to our flights tomorrow. Conditions on Friday will become even hotter, more humid and more polluted. However, again we will need to assess the cloud situation, both convective outflow from upstream and mid-level clouds that may result from passage just to our north of small vorticity maxima. Local thunderstorm activity will likely develop Friday afternoon/evening, and we will also need to keep watch of that. A frontal system will likely become stationary over the region on Saturday and Sunday, leading to considerable clouds and shower activity.

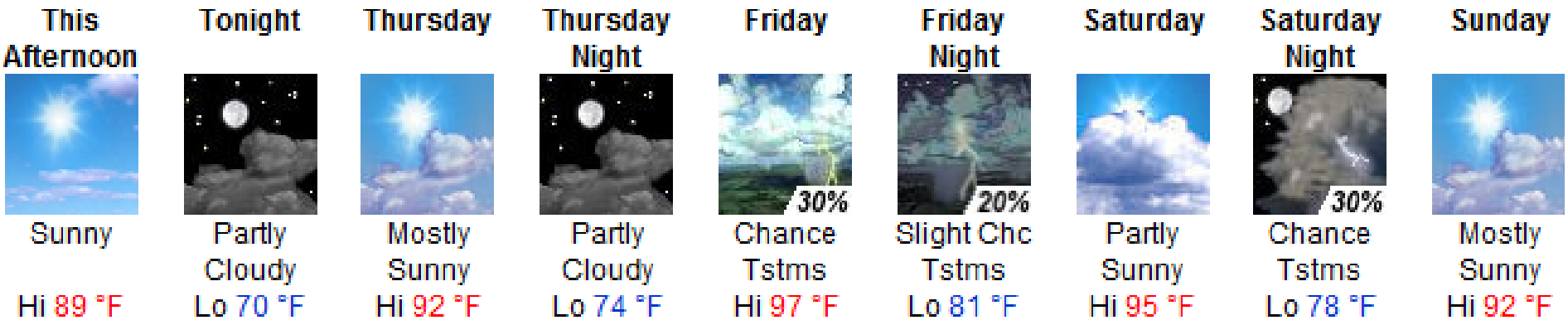
Recommendations July 28th-31st

July 28, Thursday: Can Fly – Early morning cloud check – still clean in A.M. and buildup in P.M.

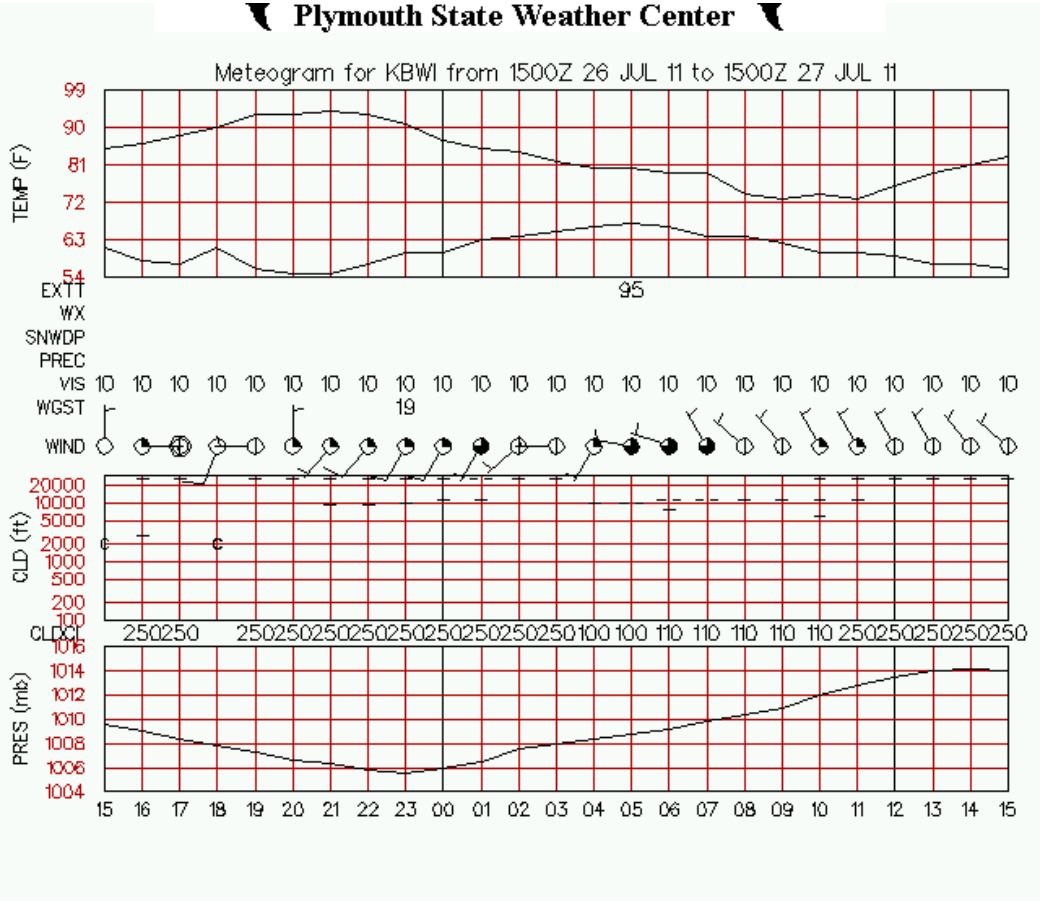
July 29, Friday: Can Fly – Early morning cloud check – chance of t-storms

July 30, Saturday: Front approaching – t-storms

July 31, Sunday: Maybe behind front



Current Conditions at BWI, 11 am



Current Conditions

[Move Up]

view Yesterday's Weather

Baltimore-Washington International Airport

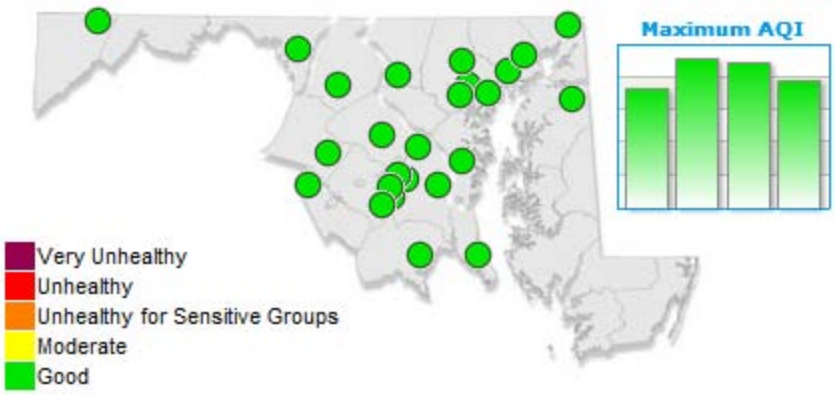
Lat: 39.19 Lon: -76.67 Elev: 148

Last Update on Jul 27, 10:54 am EDT

A Few Clouds

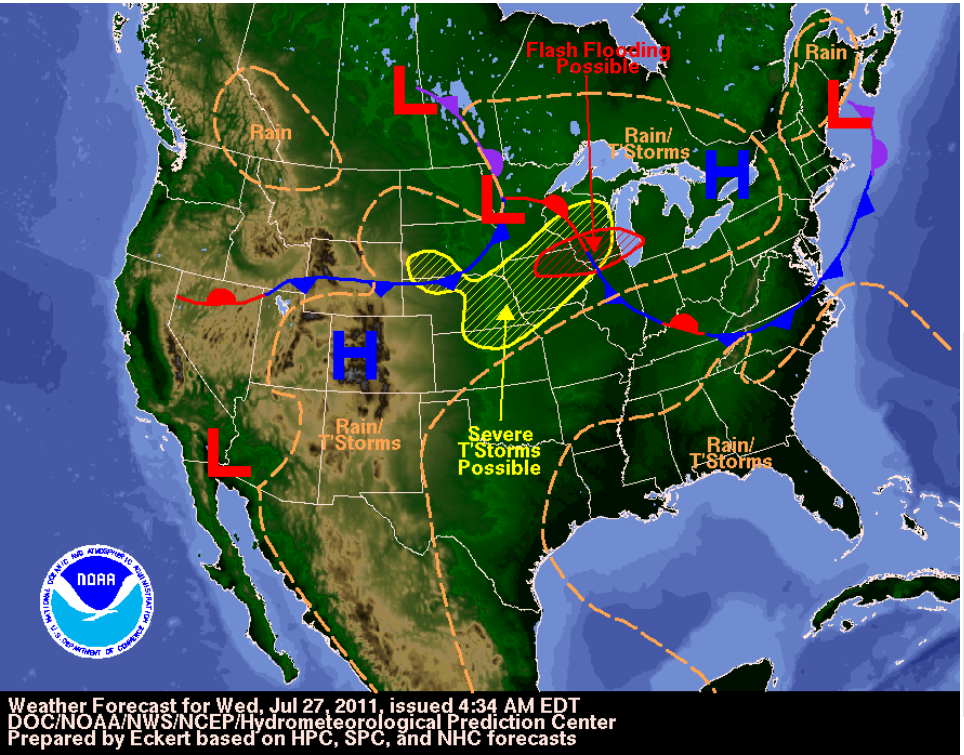
83 °F (28 °C)

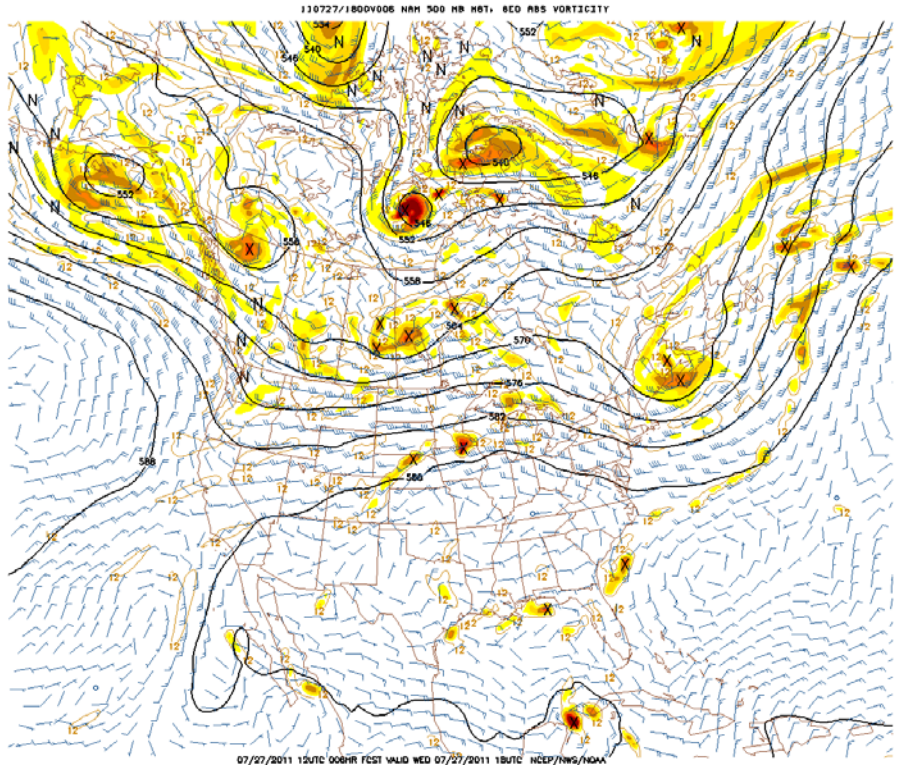
Humidity:	40 %
Wind Speed:	NW 6 MPH
Barometer:	29.95" (1014.0 mb)
Dewpoint:	56 °F (13 °C)
Heat Index:	82 °F (28 °C)
Visibility:	10.00 mi.



Today : Surface high pressure and northerly winds provide mostly sunny skies and low humidity.

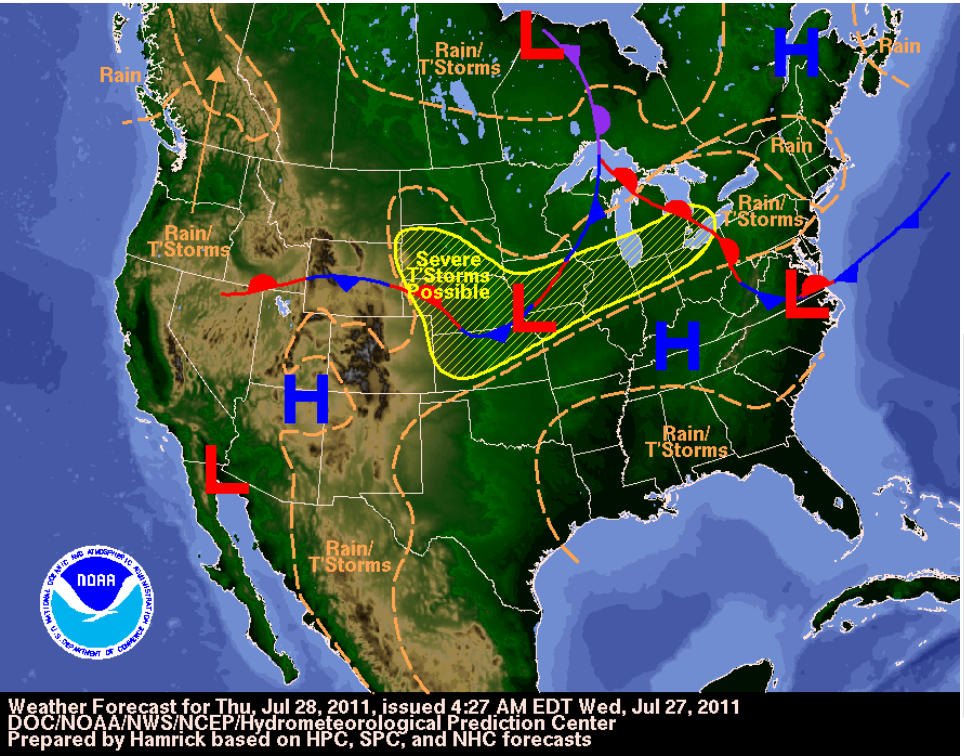
500 mb NAM at 2 PM.

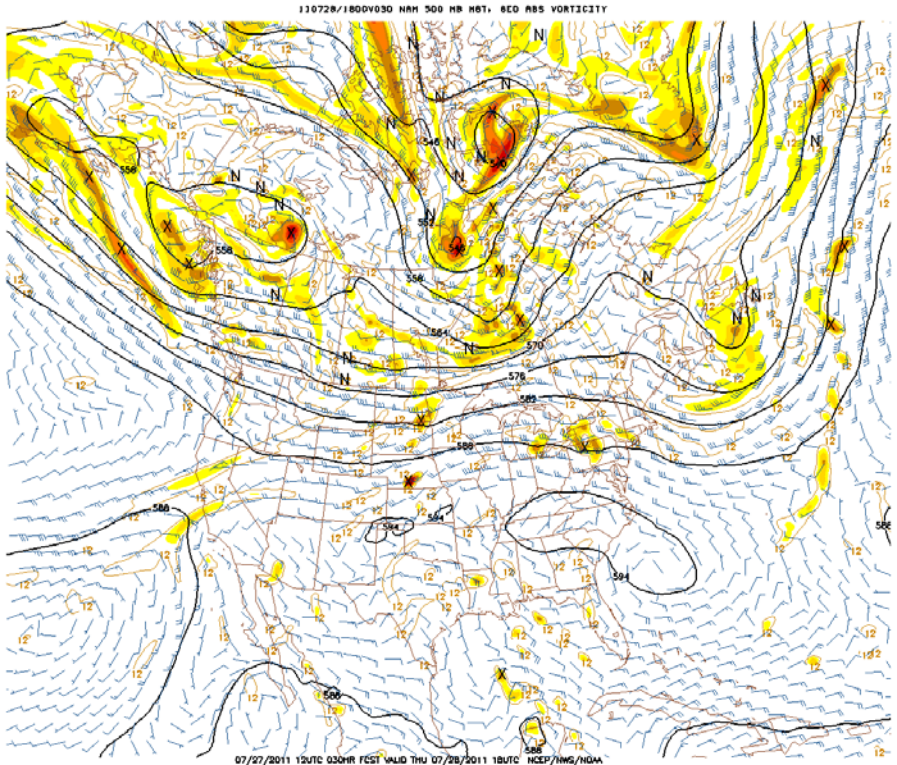




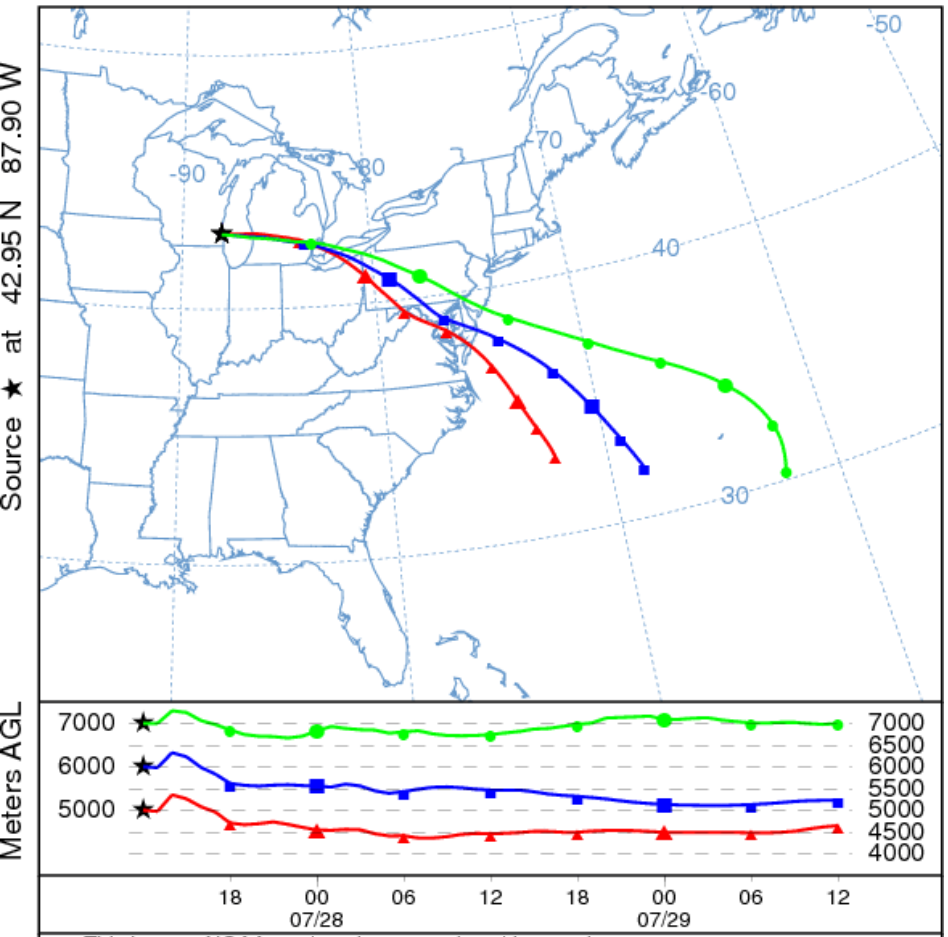
Tomorrow: Southerly flow brings in moisture. Outflow from thunderstorms in the upper midwest may move over our region.

500 mb NAM at 2 PM.



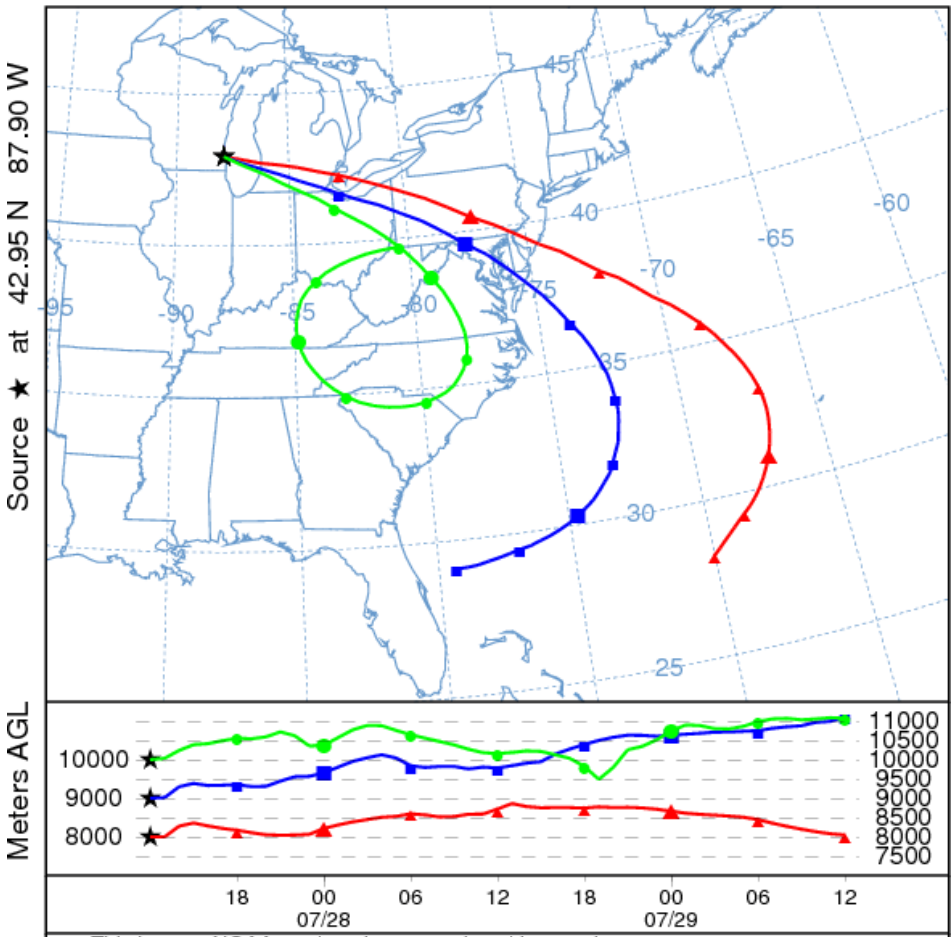


NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 27 Jul 11
12 UTC 27 Jul NAM Forecast Initialization



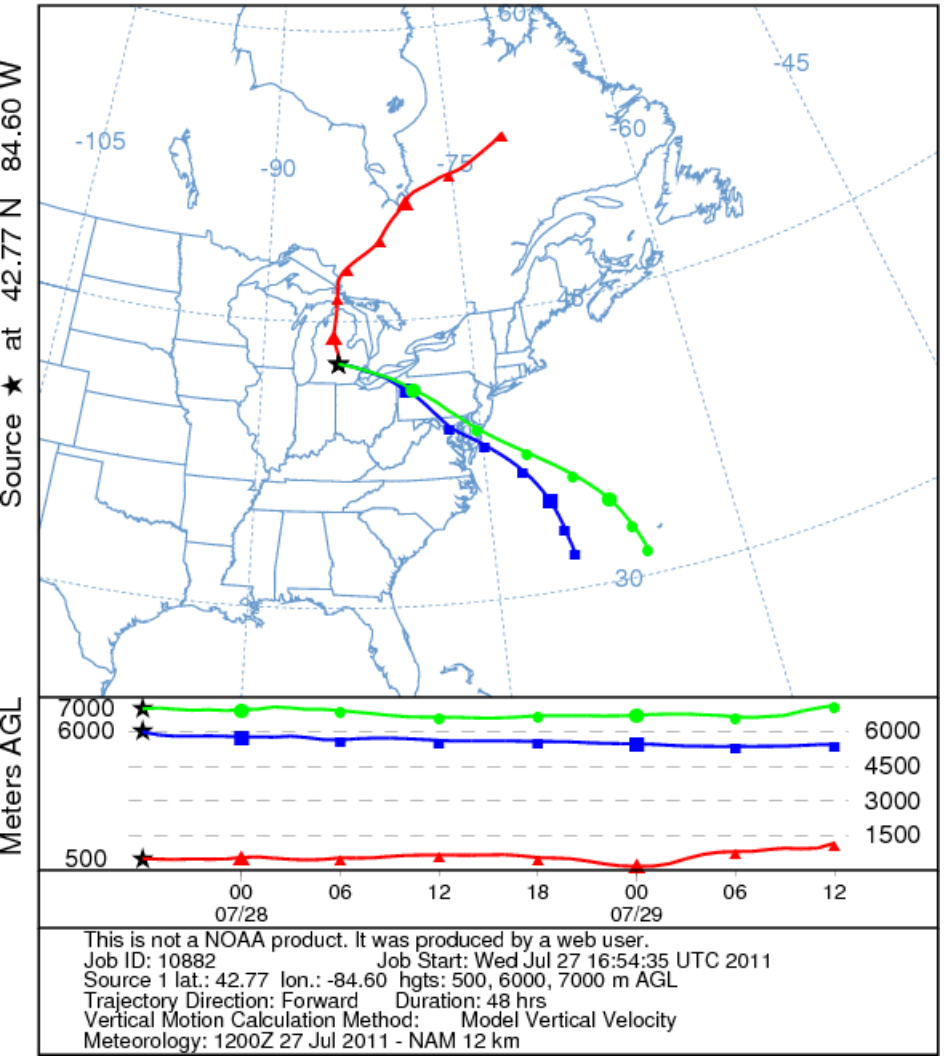
This is not a NOAA product. It was produced by a web user.
Job ID: 19876 Job Start: Wed Jul 27 16:51:07 UTC 2011
Source 1 lat.: 42.95 lon.: -87.90 hgts: 5000, 6000, 7000 m AGL
Trajectory Direction: Forward Duration: 48 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 1200Z 27 Jul 2011 - NAM 12 km

NOAA HYSPLIT MODEL
Forward trajectories starting at 1200 UTC 27 Jul 11
12 UTC 27 Jul NAM Forecast Initialization



This is not a NOAA product. It was produced by a web user.
Job ID: 17878 Job Start: Wed Jul 27 16:52:24 UTC 2011
Source 1 lat.: 42.95 lon.: -87.90 hgts: 8000, 9000, 10000 m AGL
Trajectory Direction: Forward Duration: 48 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 1200Z 27 Jul 2011 - NAM 12 km

NOAA HYSPLIT MODEL
Forward trajectories starting at 1800 UTC 27 Jul 11
12 UTC 27 Jul NAM Forecast Initialization



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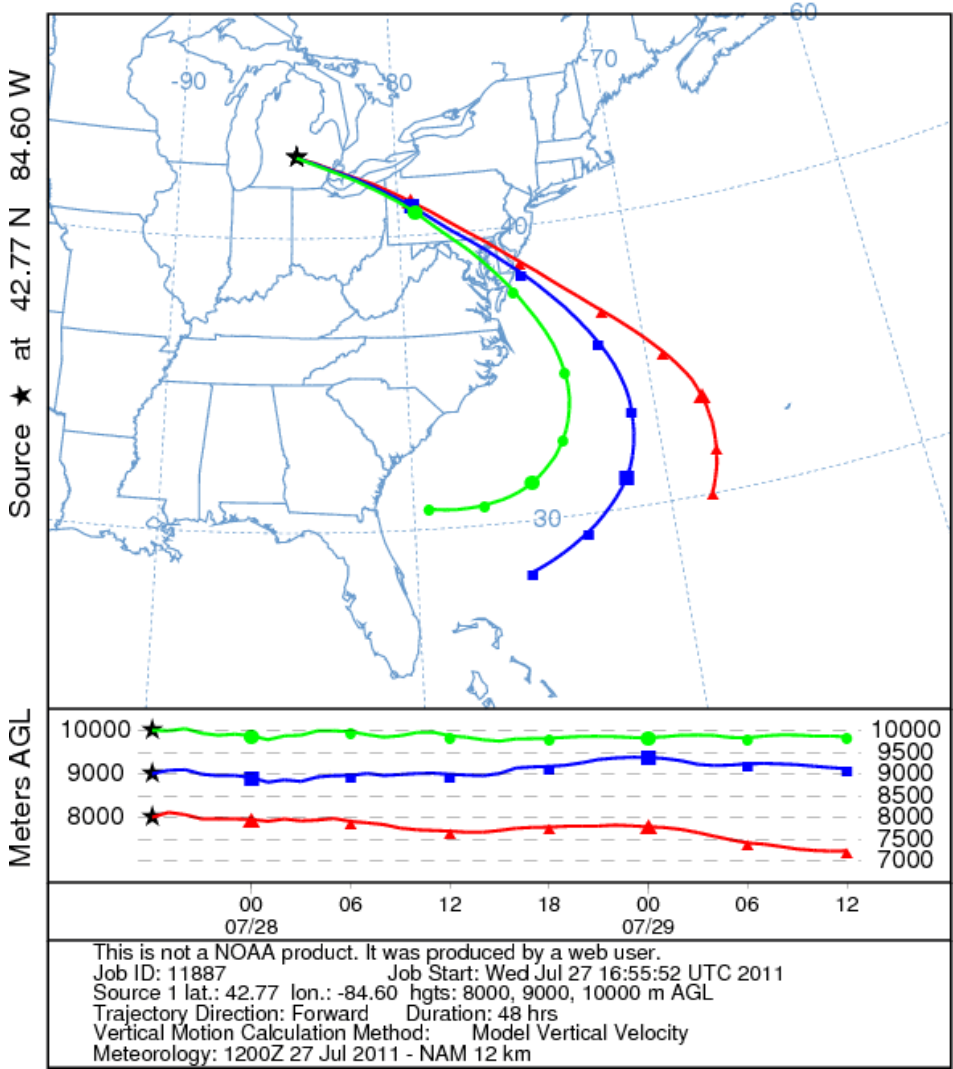
Trajectory Direction: Forward Duration: 48 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 1200Z 27 Jul 2011 - NAM 12 km

NOAA HYSPLIT MODEL
Forward trajectories starting at 1800 UTC 27 Jul 11
12 UTC 27 Jul NAM Forecast Initialization



This is not a NOAA product. It was produced by a web user.
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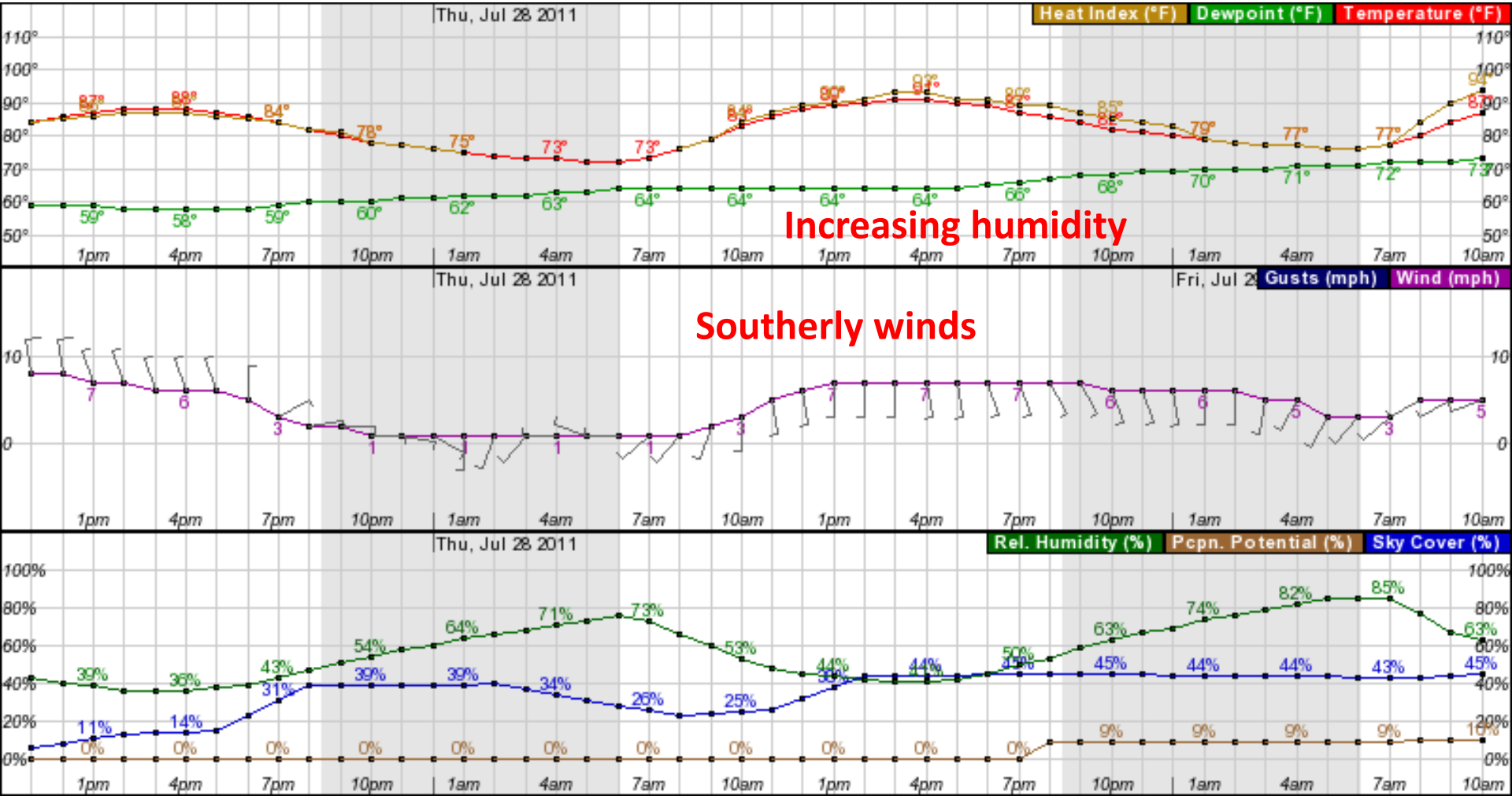
Trajectory Direction: Forward Duration: 48 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 1200Z 27 Jul 2011 - NAM 12 km

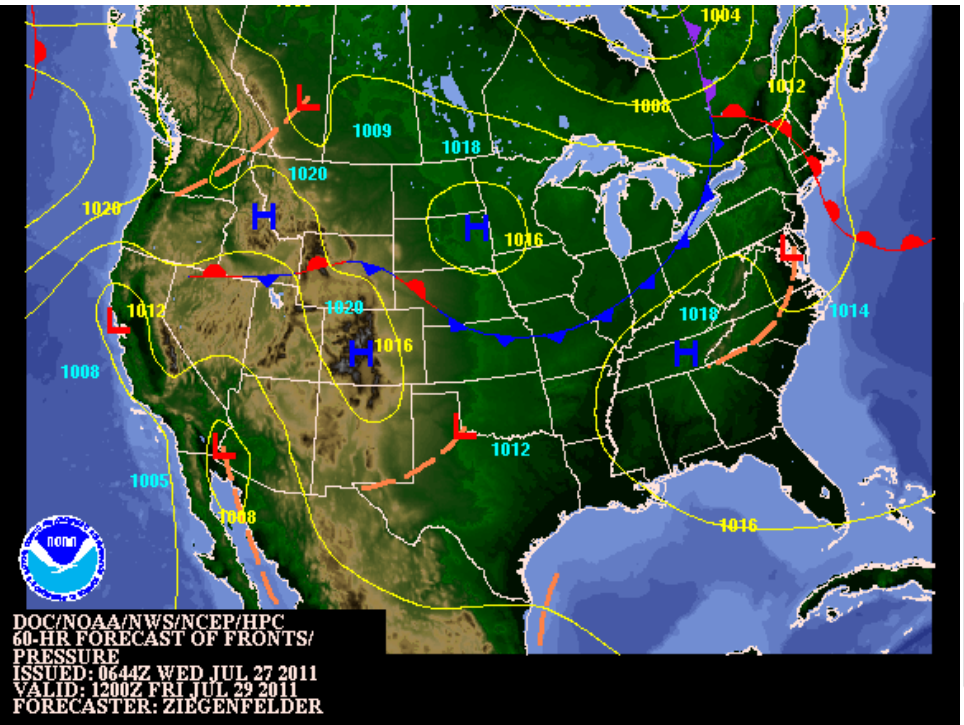
Today: Mostly sunny and low dewpoint temperatures.
Tomorrow: Southerly winds increase dewpoint temperatures.

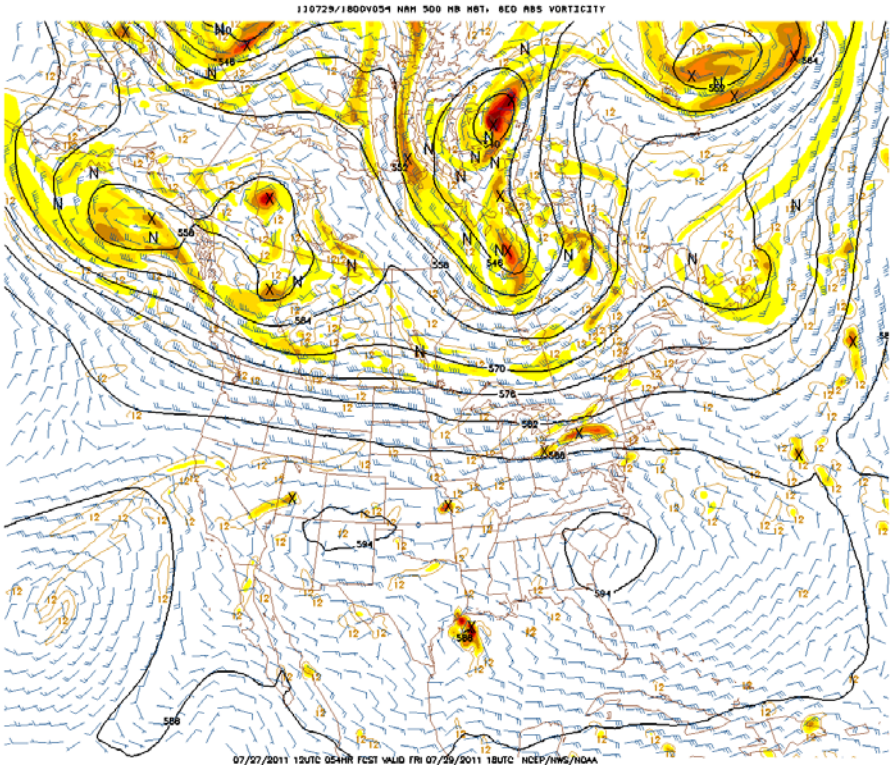
Today → **Tomorrow →**



Friday: Hot and humid. A chance of isolated thunderstorms.

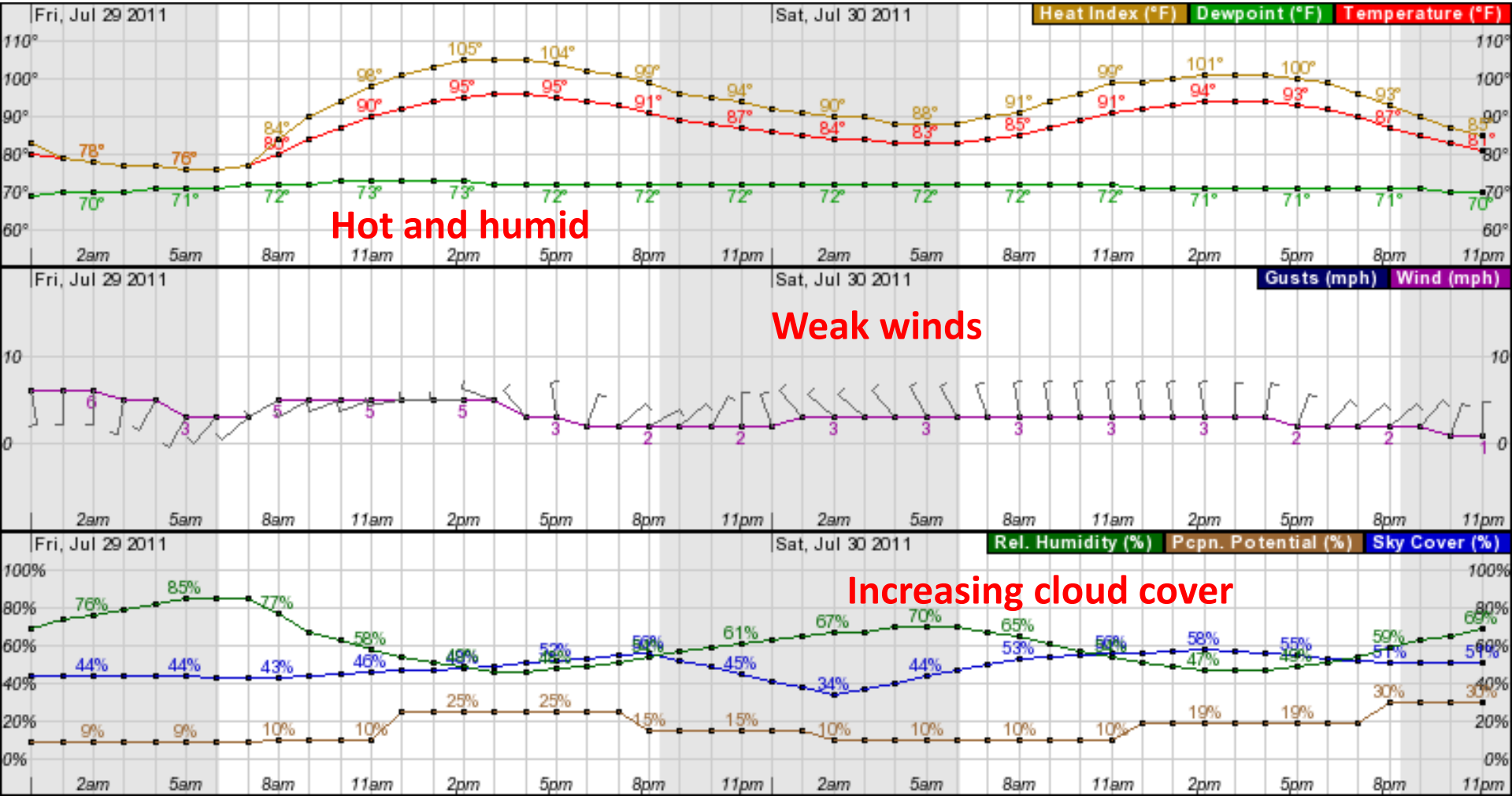
500 mb NAM at 2 PM.



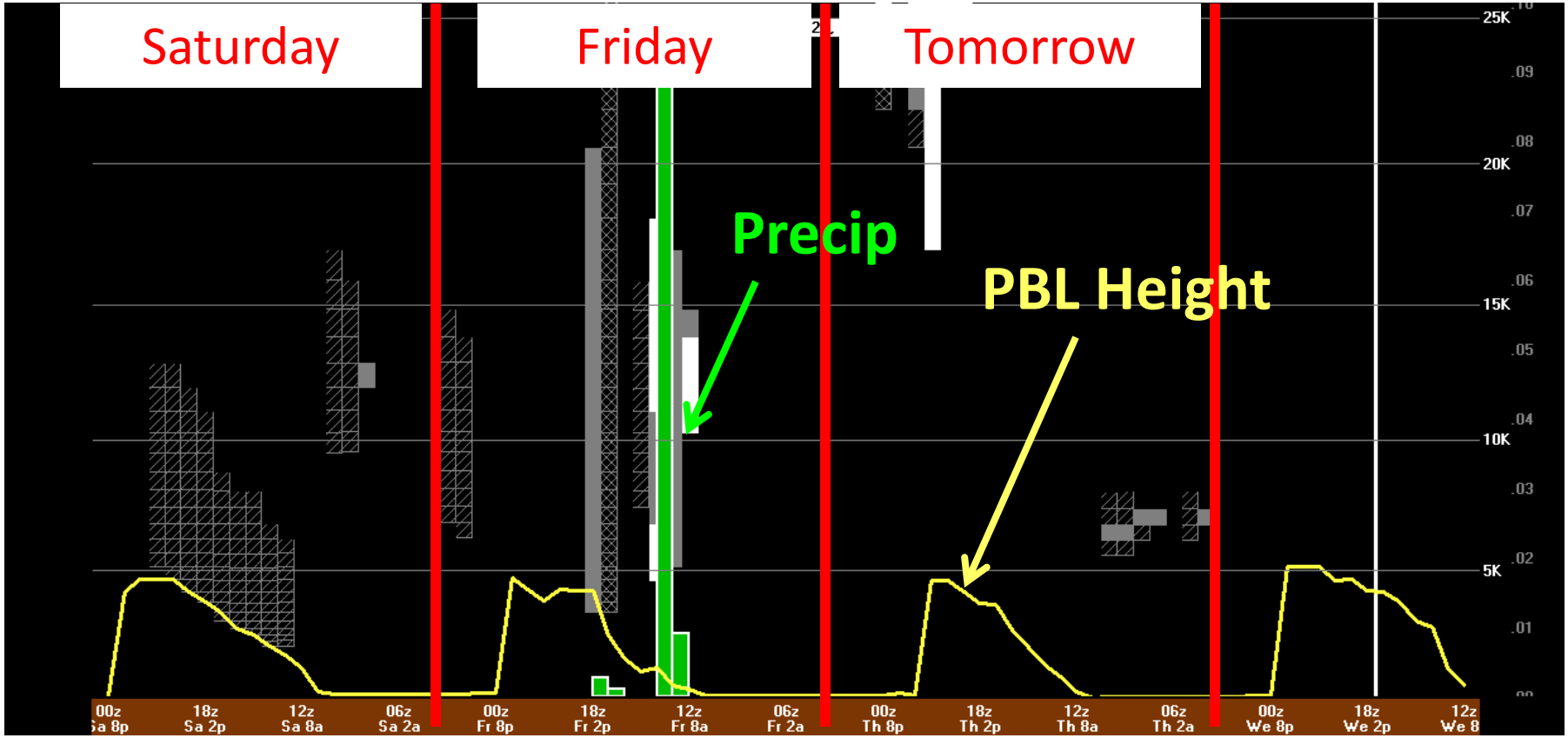


Friday: Hot and humid with a chance of isolated thunderstorms.
Saturday: A chance of thunderstorms as a cold front approaches.

Friday→ **Saturday→**



BUFKIT – NAM (12 UTC 27 July)

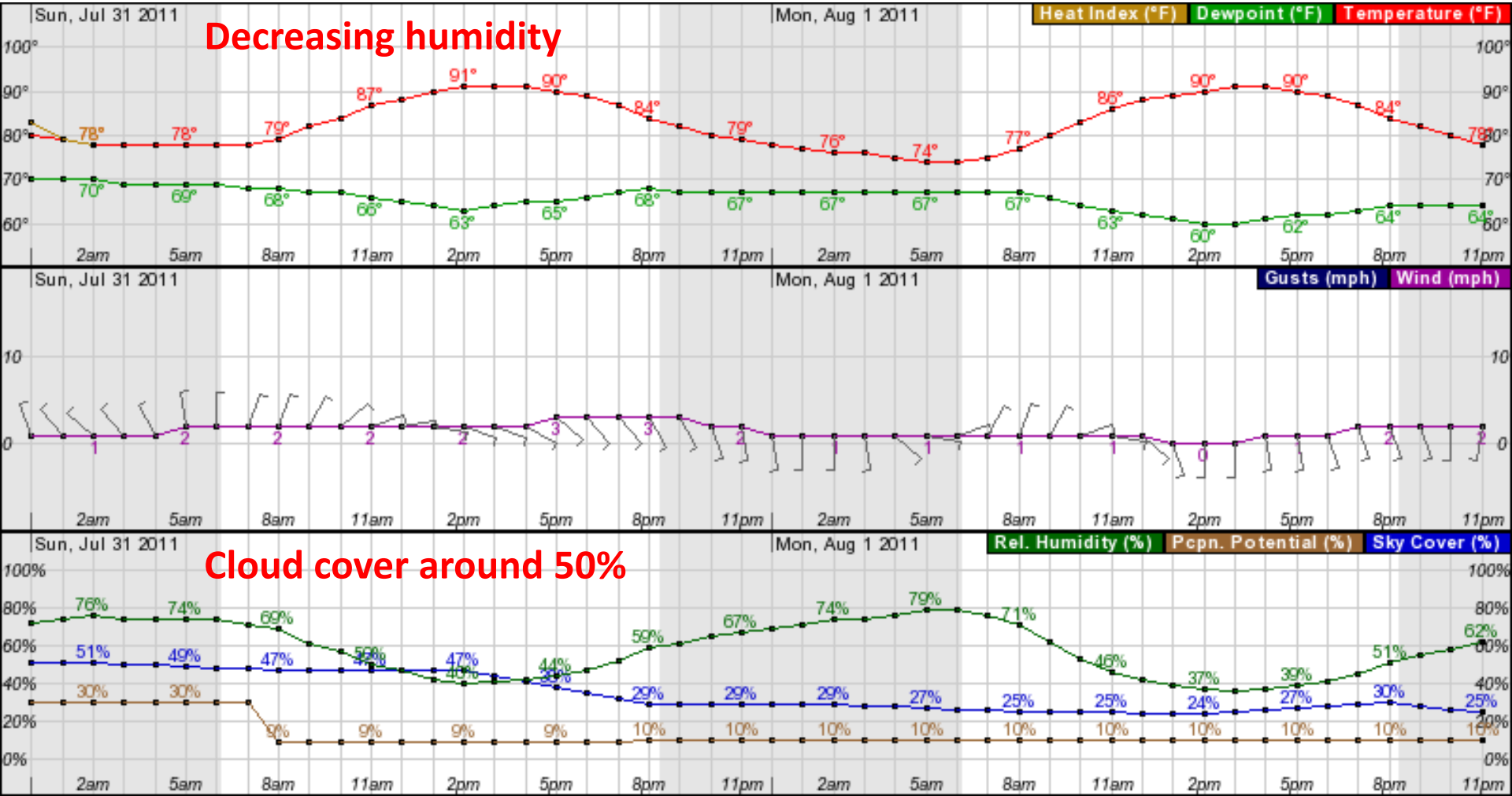


-High clouds Thursday afternoon.

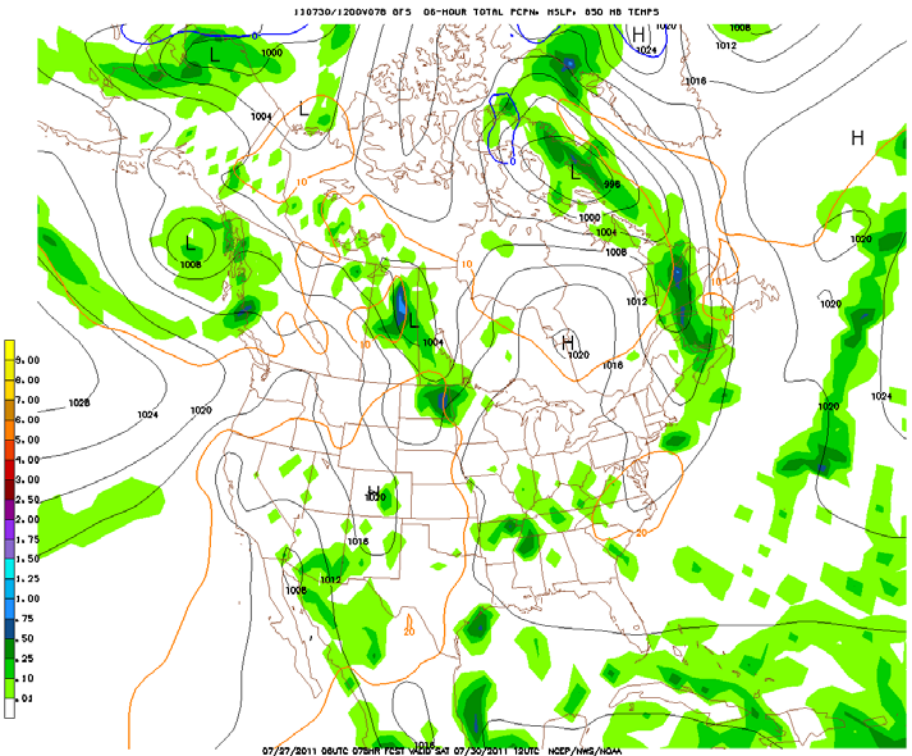
-Precipitation Friday morning.

Sunday: Decreasing humidity after cold front passes.

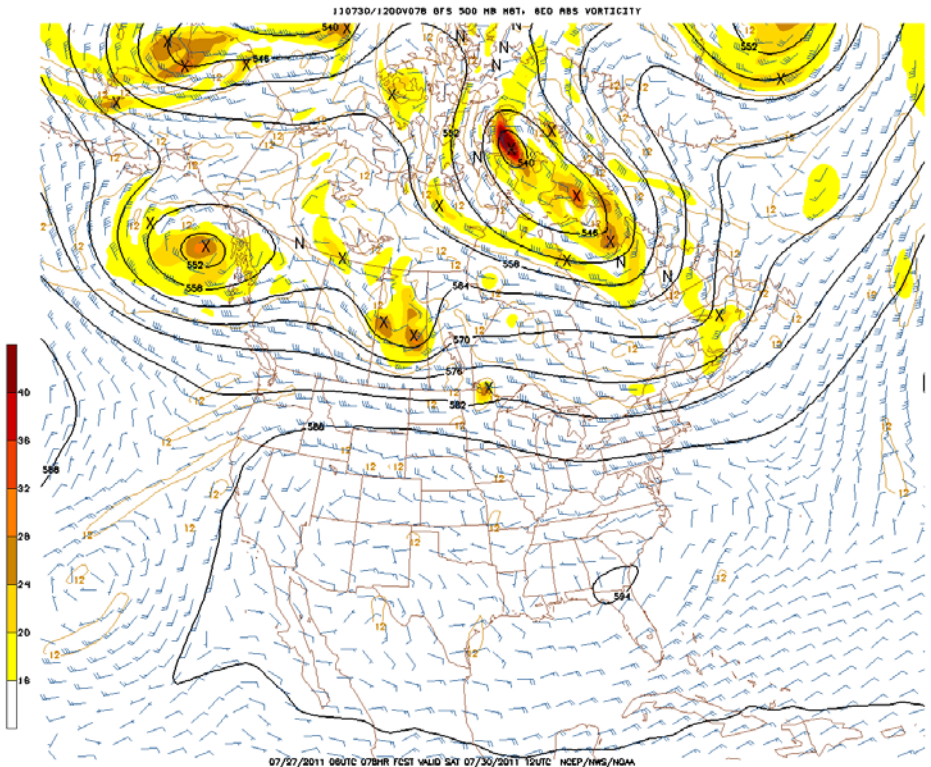
Sunday→ **Monday→**



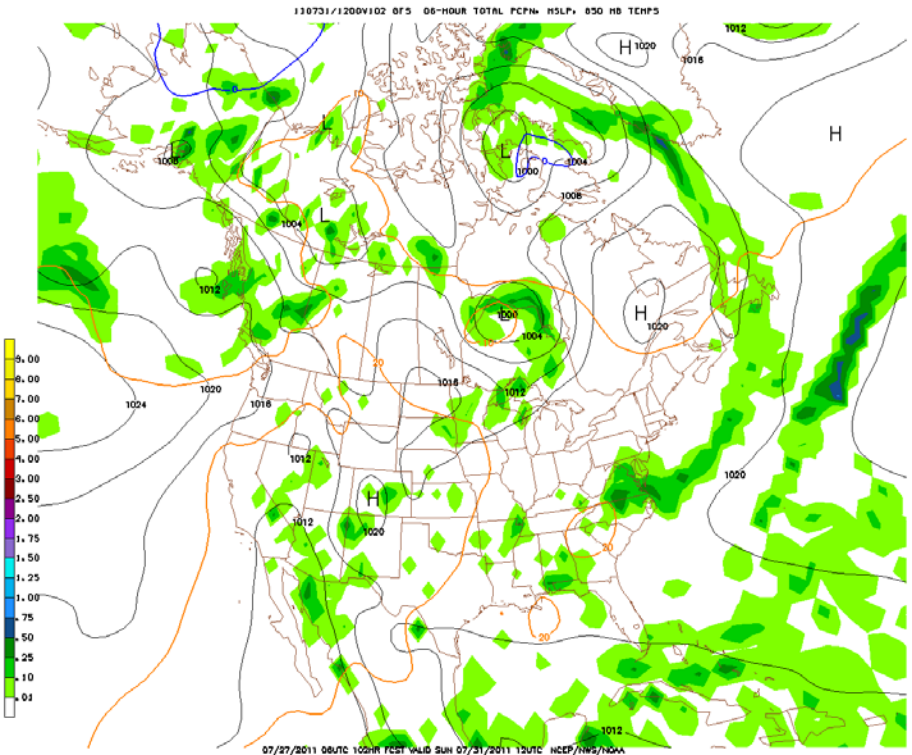
850 mb GFS
Saturday 8 AM



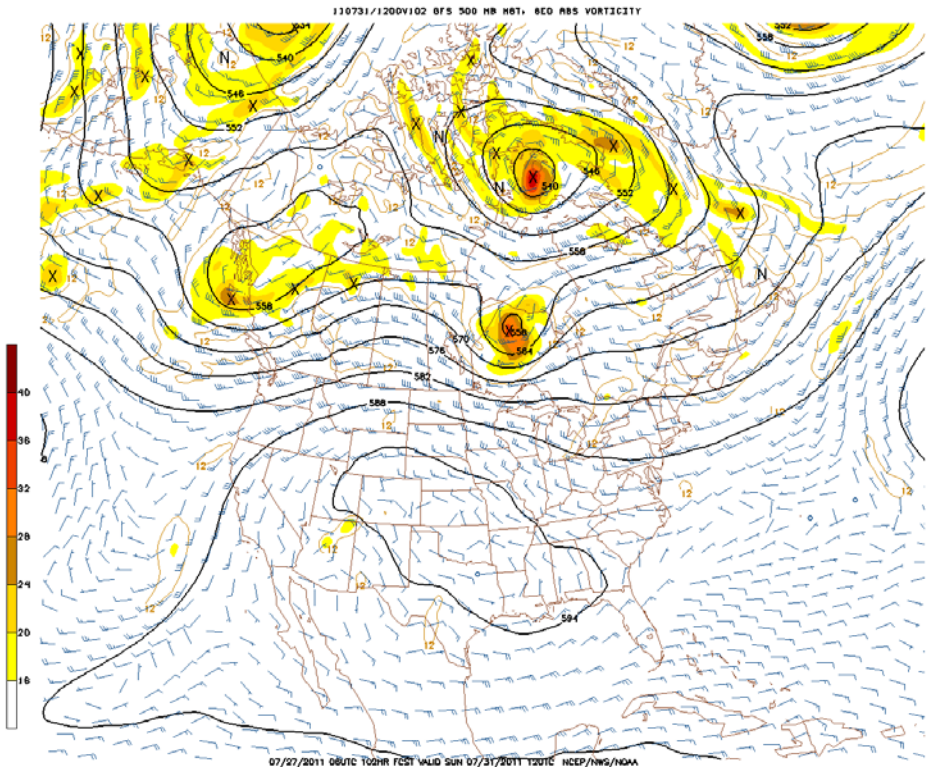
500 mb GFS
Saturday 8 AM



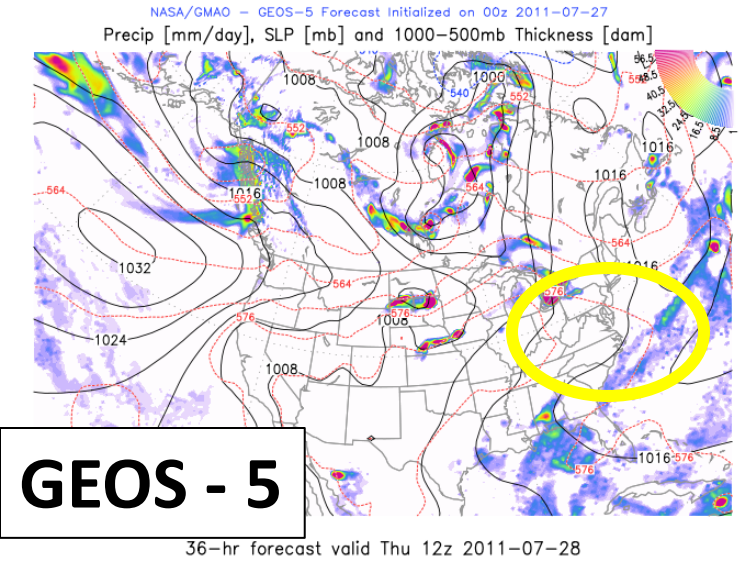
850 mb GFS
Sunday 8 AM



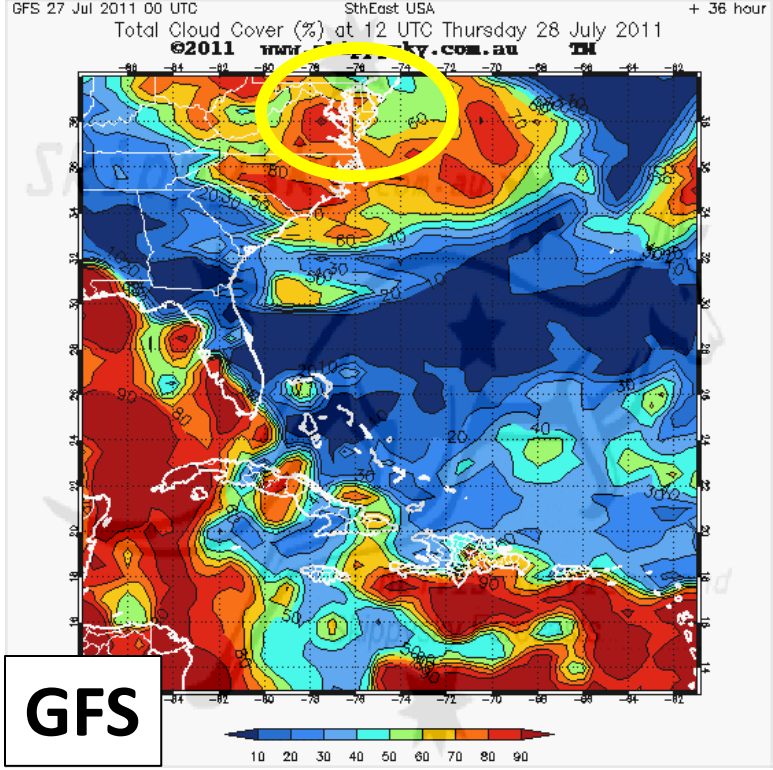
500 mb GFS
Sunday 8 AM



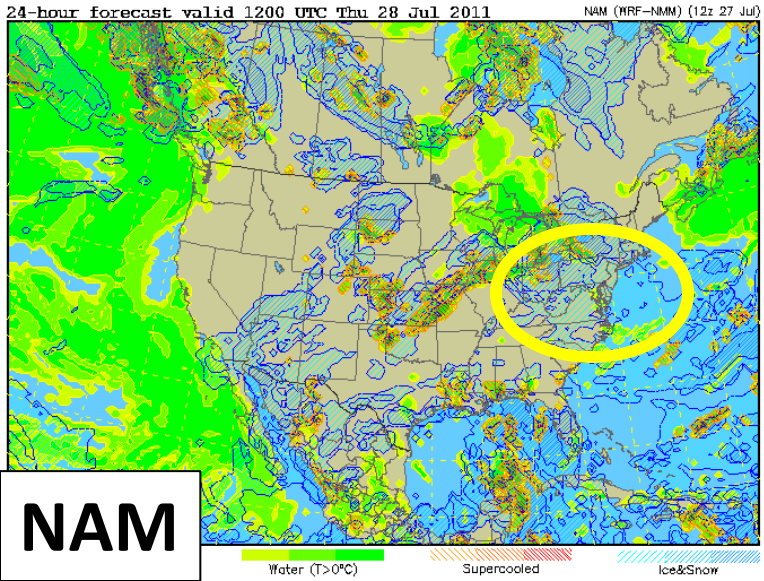
Thursday 8 am: GFS – mostly clouds; GEM – mostly sunny; NAM – high clouds.



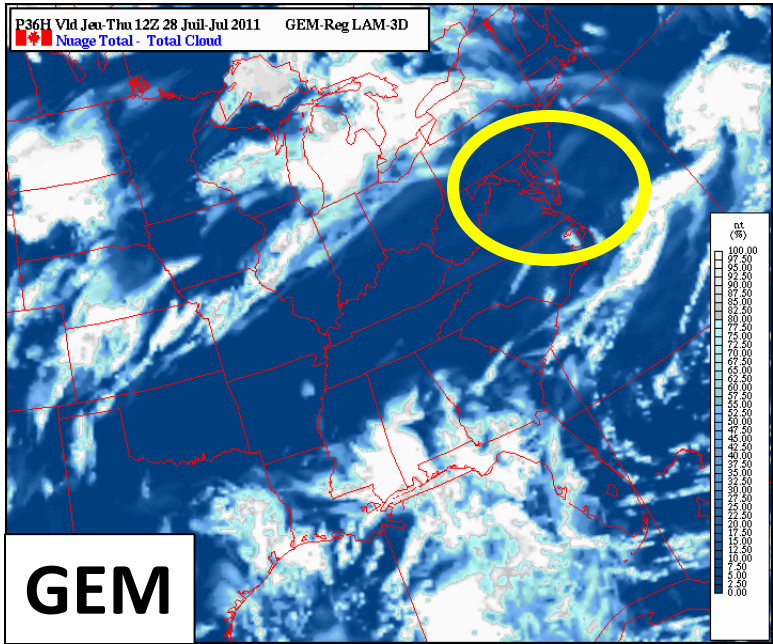
GEOS - 5



GFS

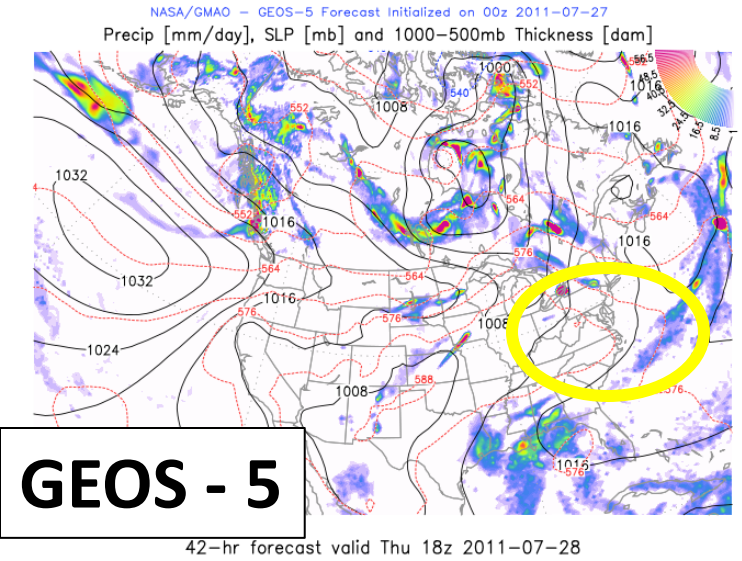


NAM

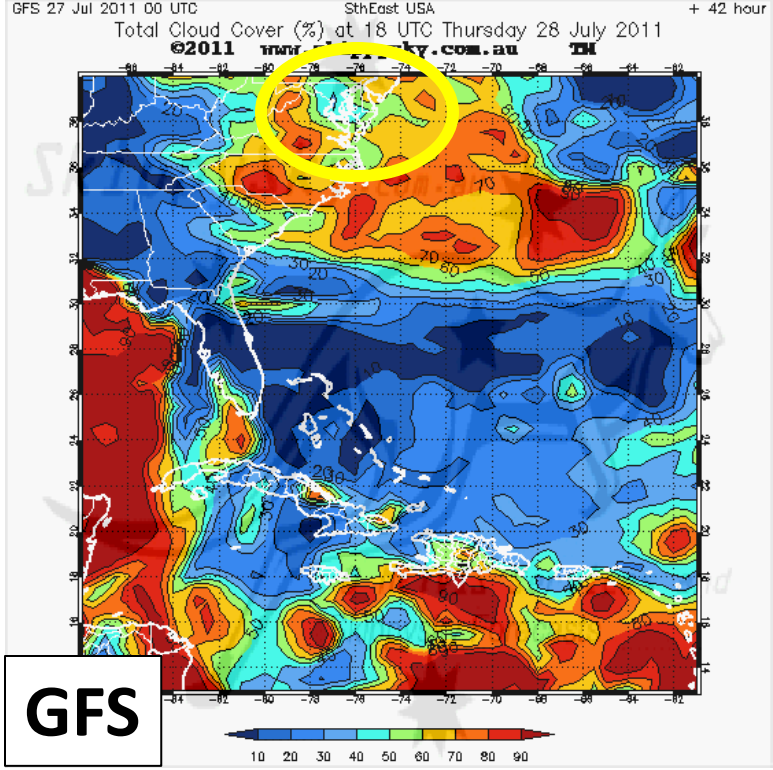


GEM

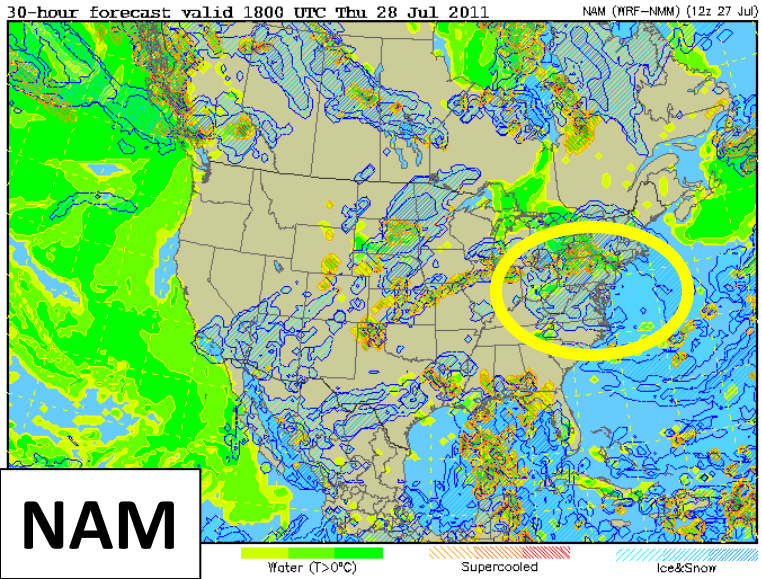
Thursday 2 pm: GFS – mostly clouds; GEM – mostly sunny; NAM – high clouds.



GEOS - 5



GFS



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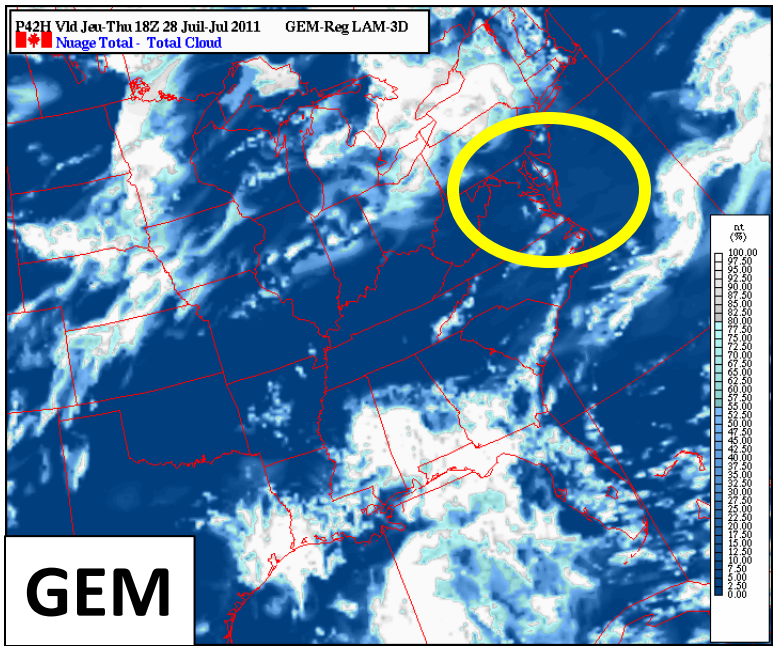
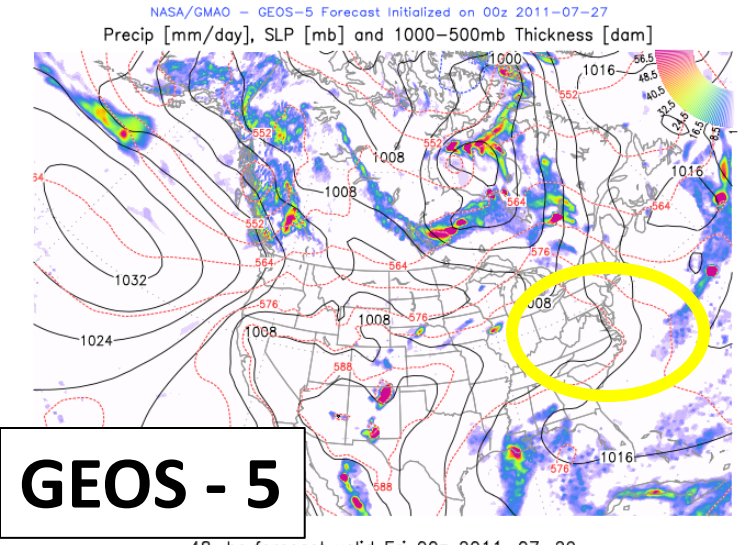
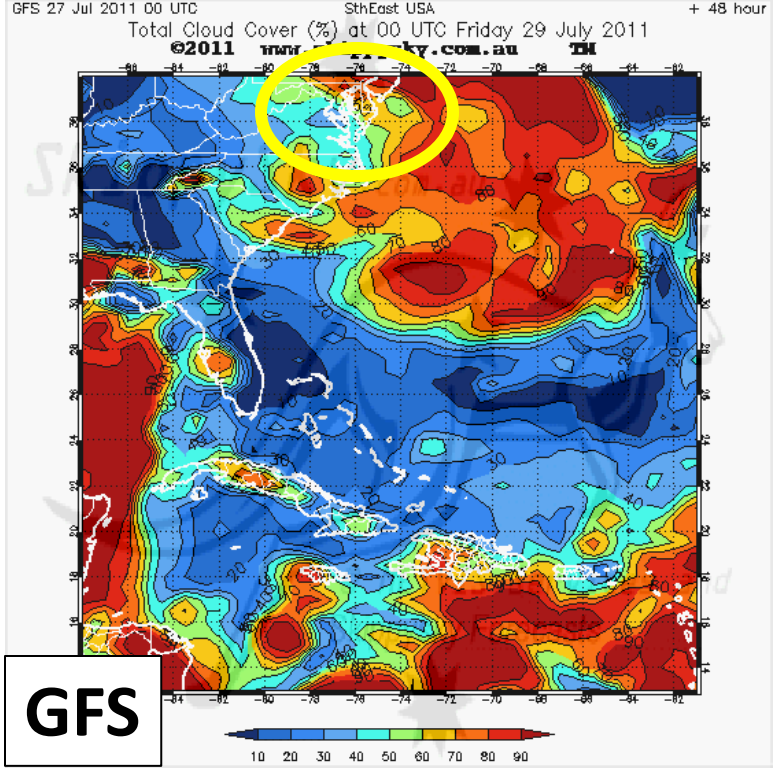


GEM

Thursday 8 pm: GFS – mostly clouds; GEM – mostly sunny; NAM – middle and high clouds.



GEOS - 5



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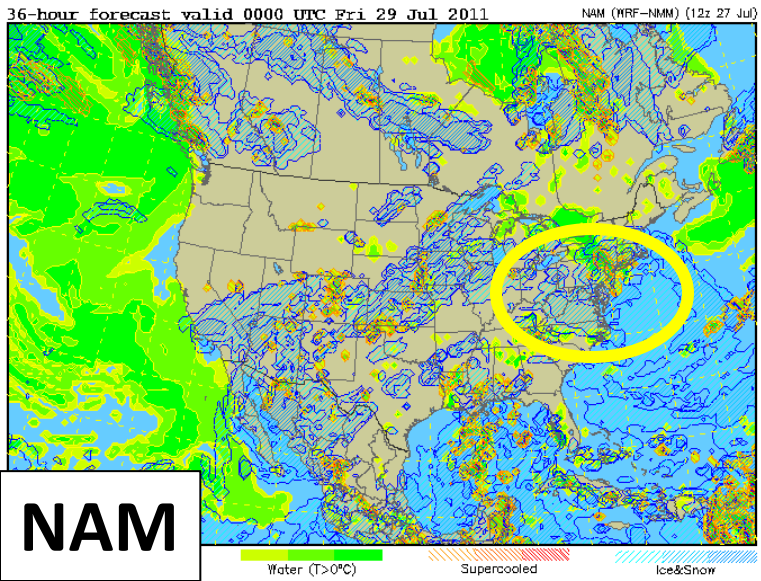

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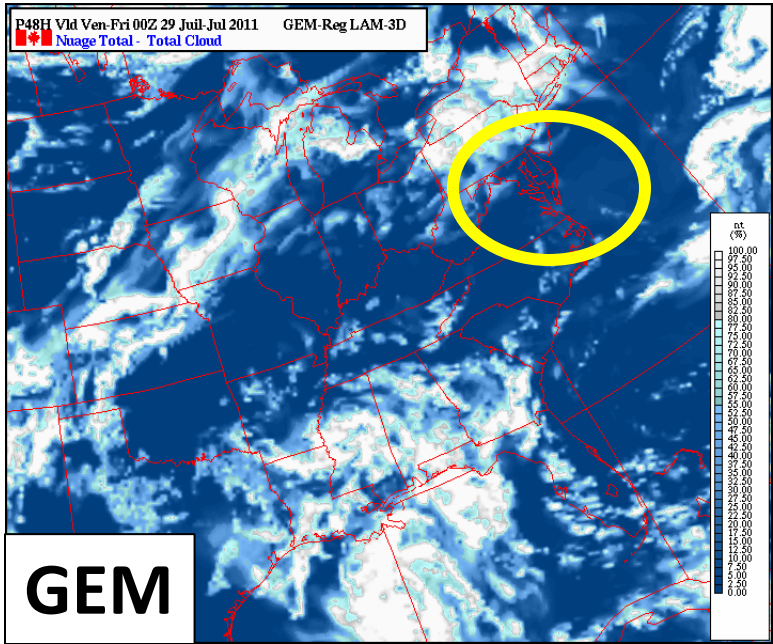
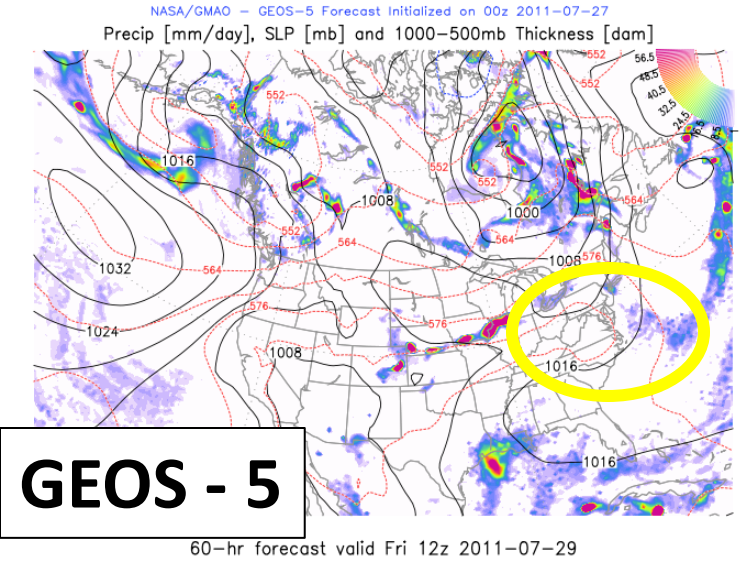
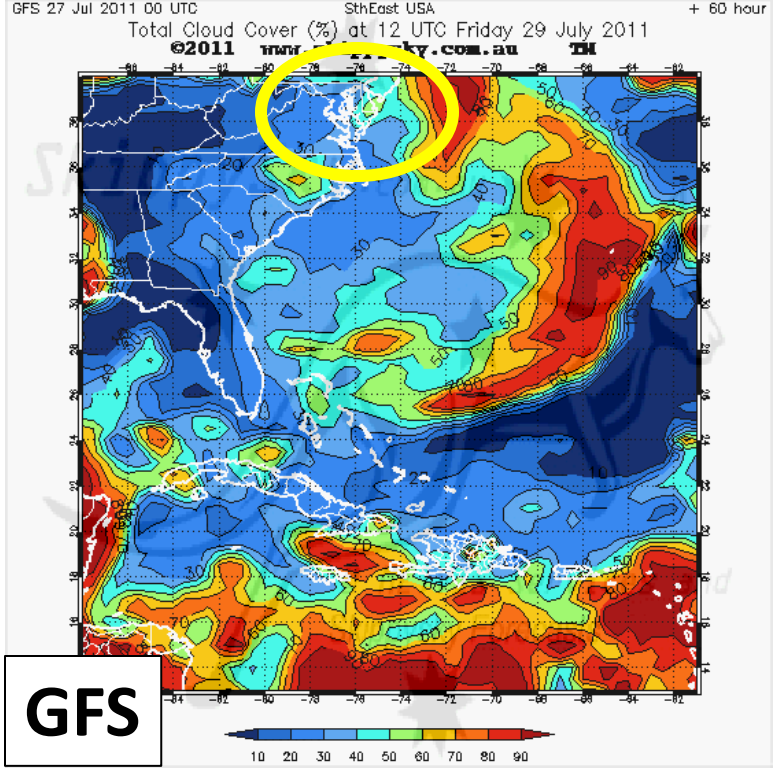


GEM

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



GEOS - 5



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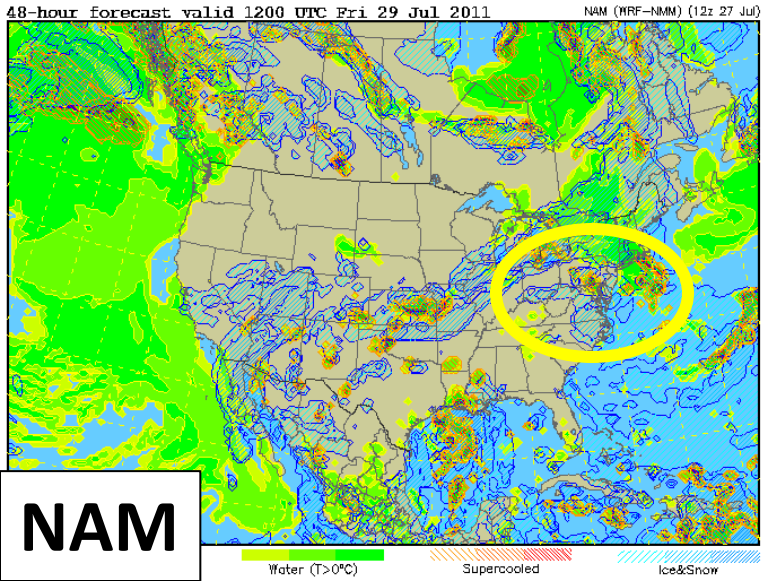
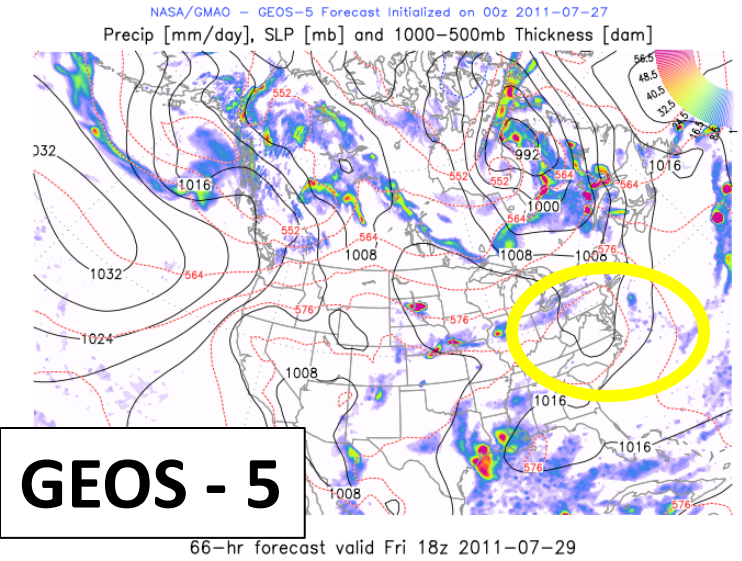
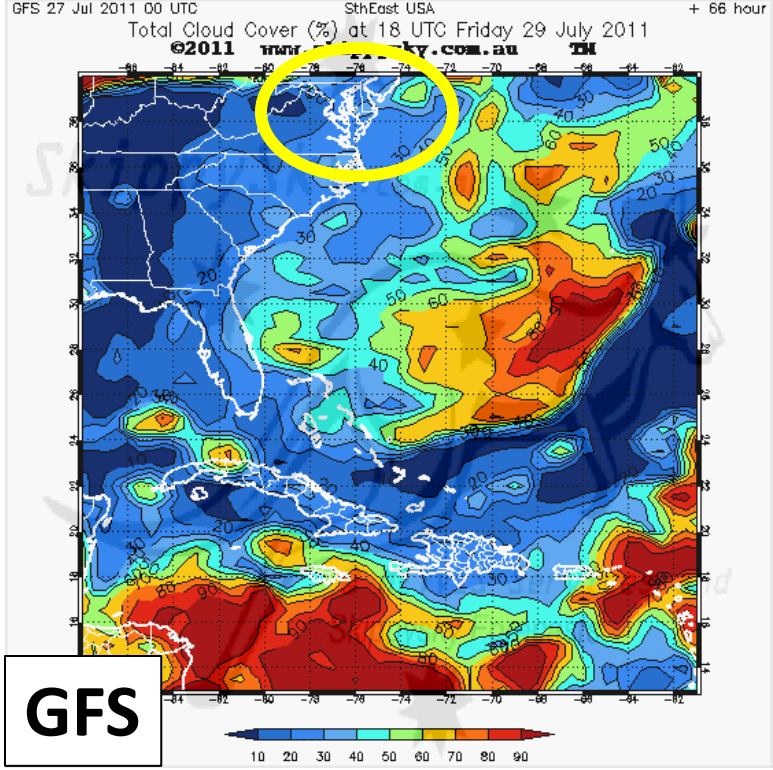


NAM

Friday 2 pm: GFS – mostly sunny.

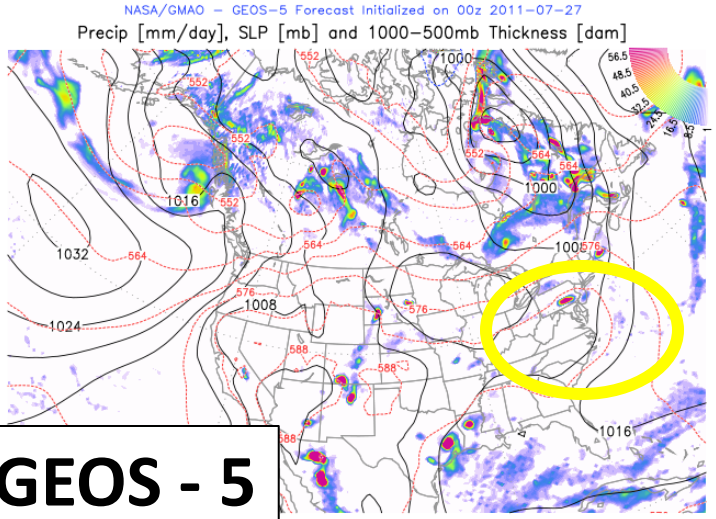


GEOS - 5

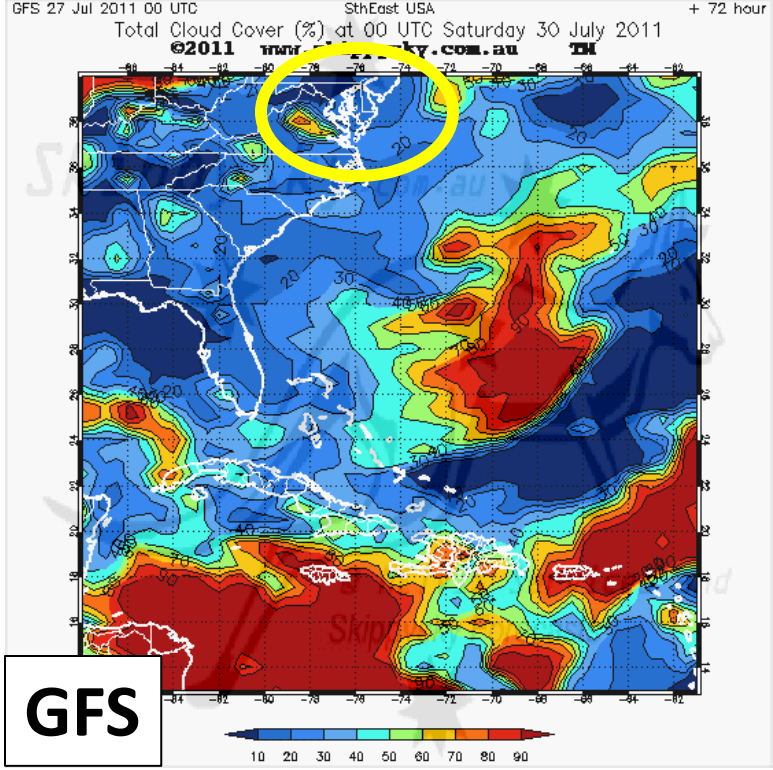


GFS

Friday 8 pm: GFS – mostly sunny.



GEOS - 5



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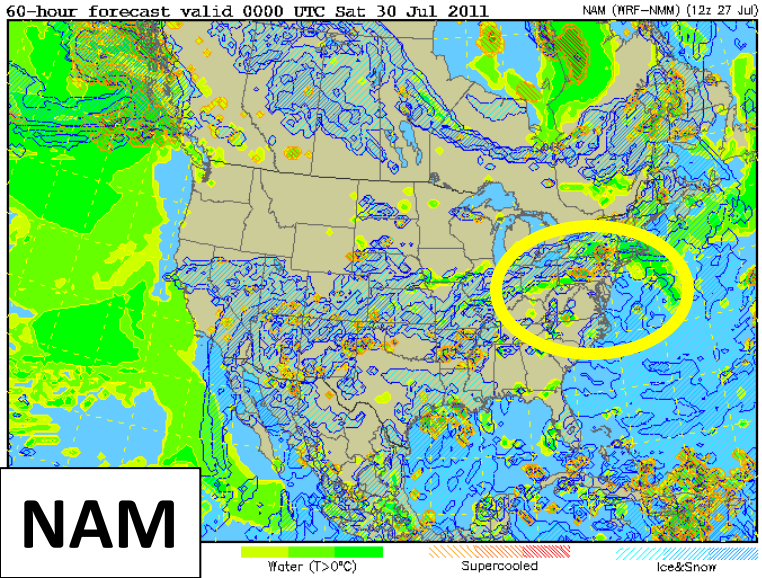
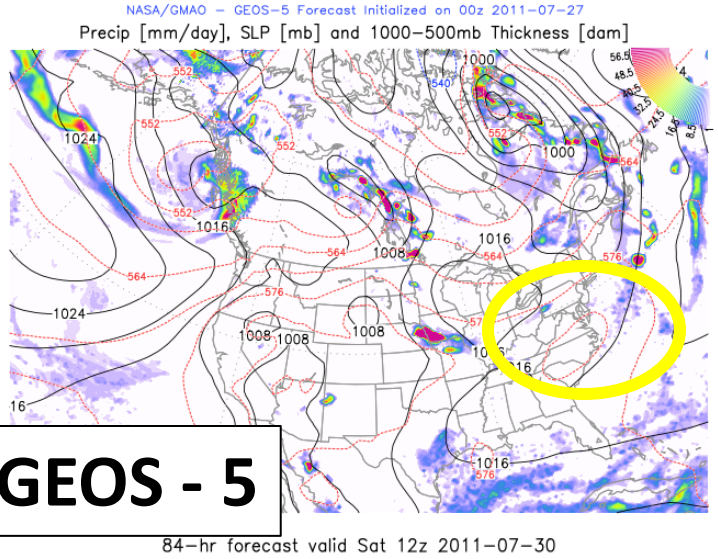
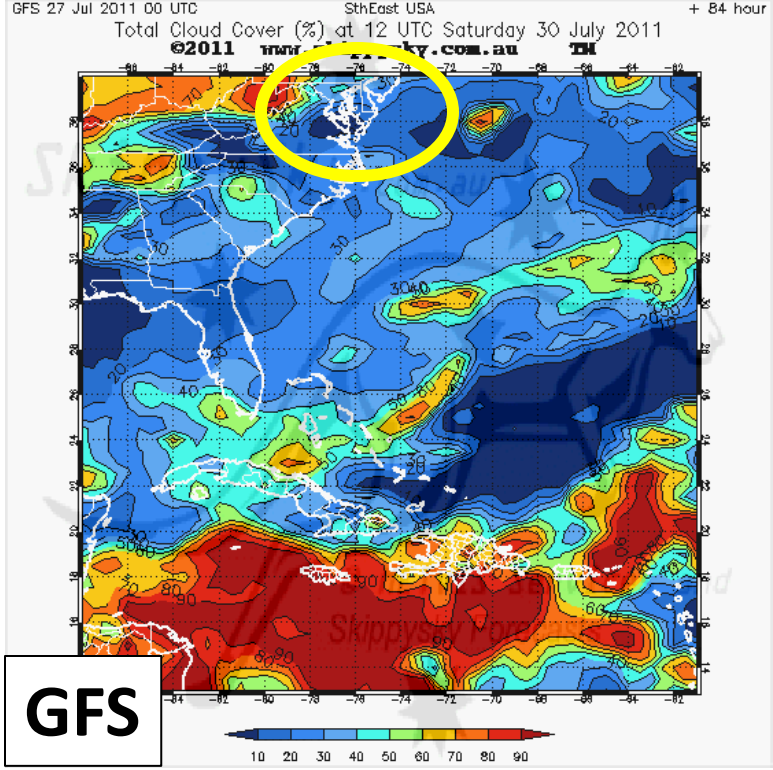


NAM

Saturday 8 am: GFS – mostly sunny.



GEOS - 5



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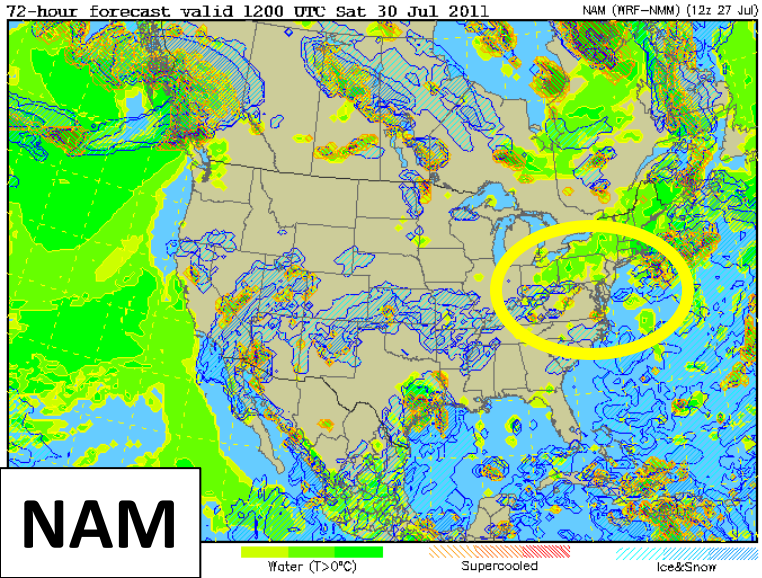
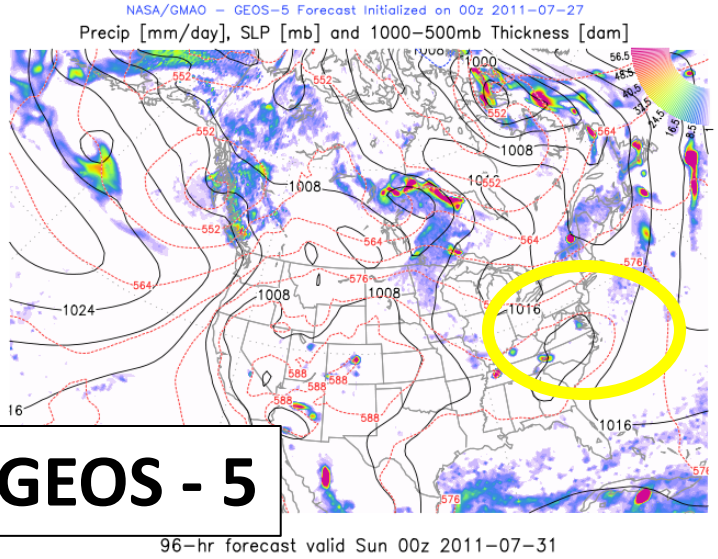
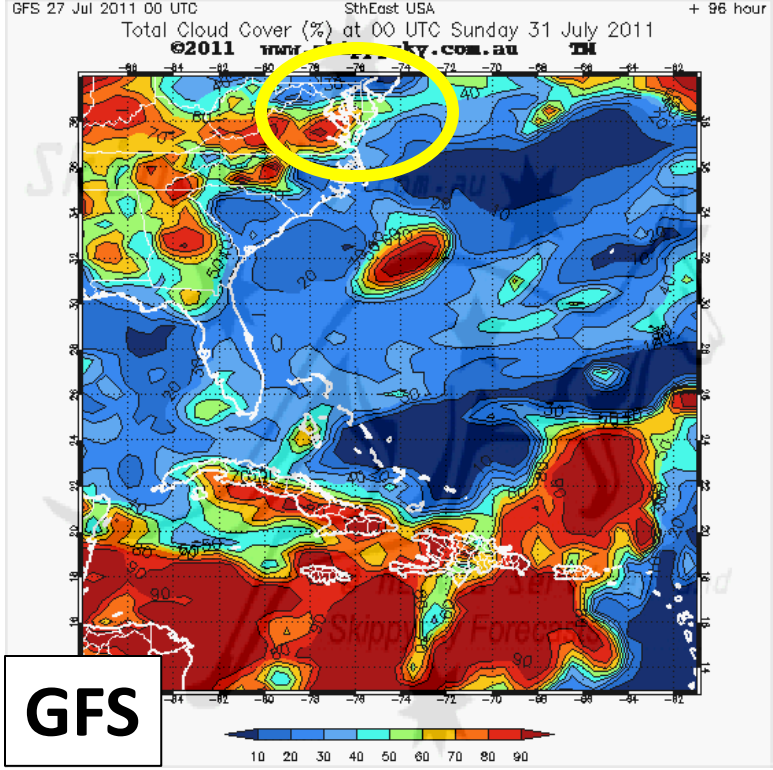


NAM

Saturday 8 pm: GFS – mostly cloudy.



GEOS - 5



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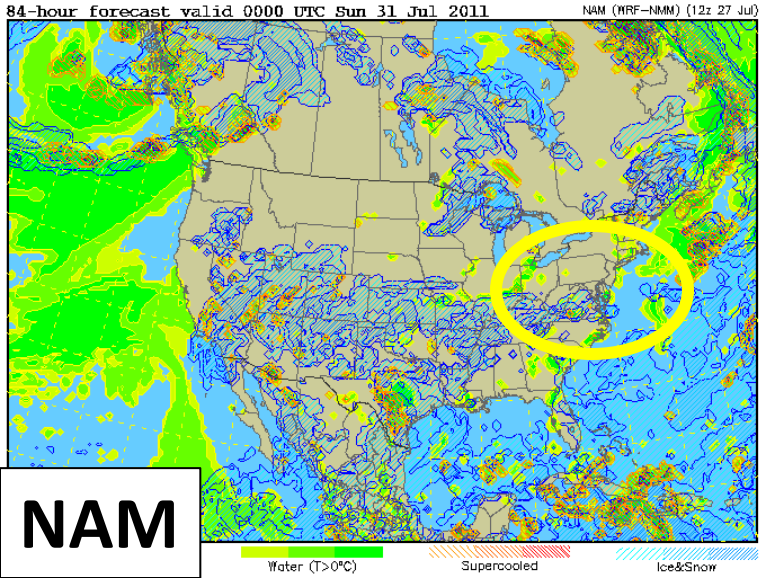
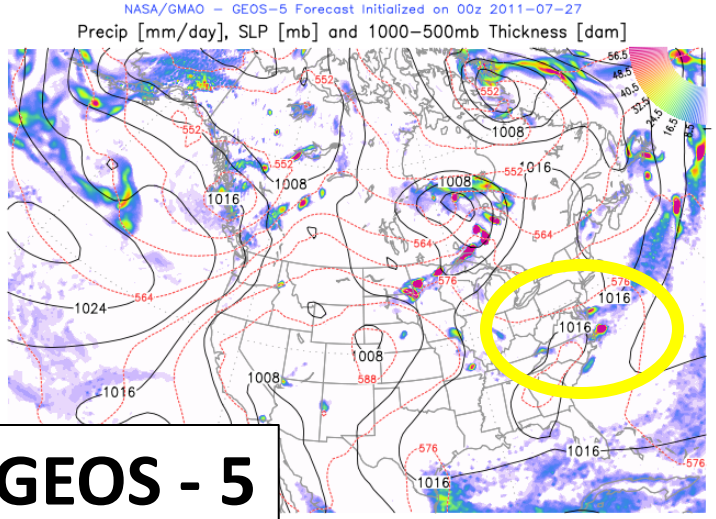
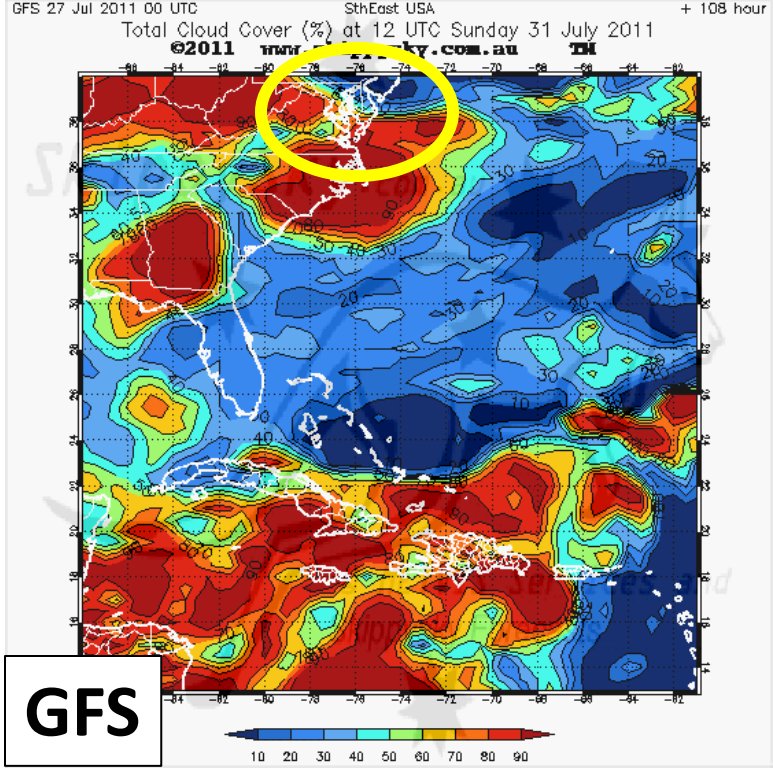


NAM

Sunday 8 am: GFS – mostly cloudy.

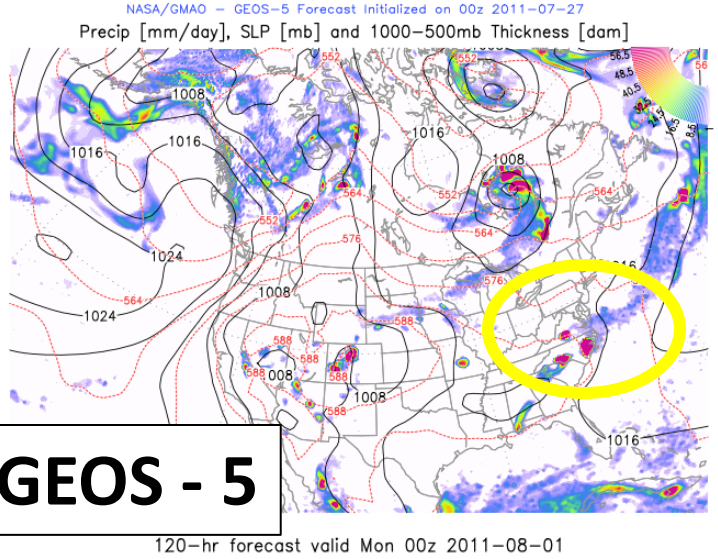


GEOS - 5

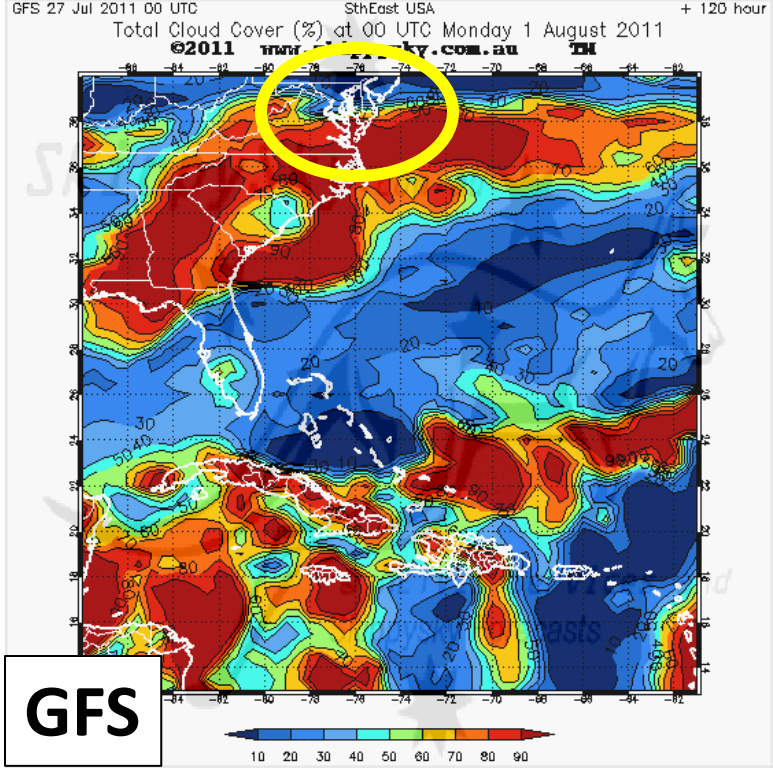


GFS

Sunday 8 pm: GFS – mostly sunny.



GEOS - 5

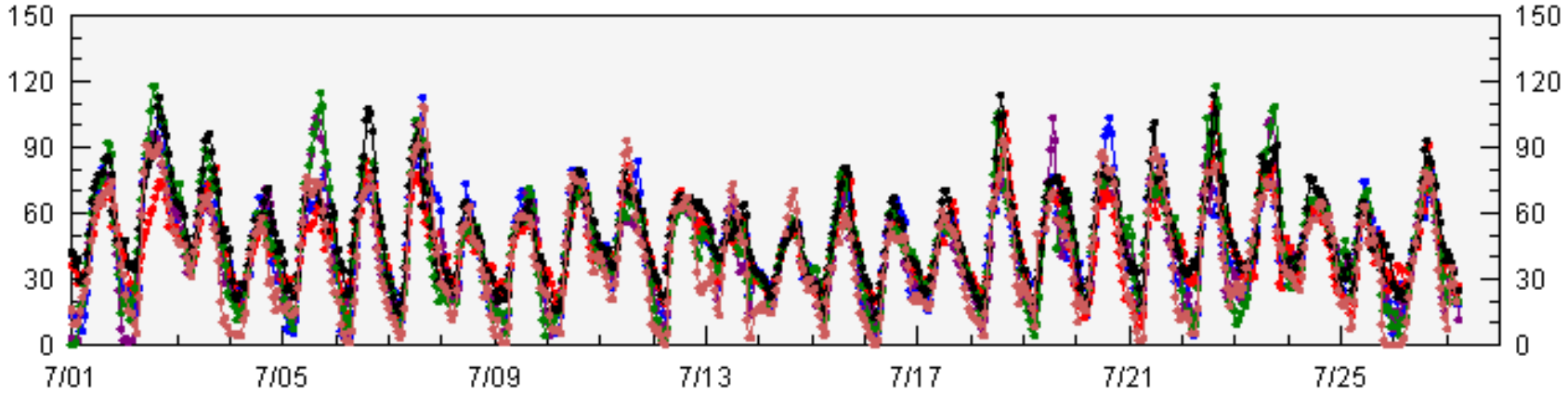


GFS

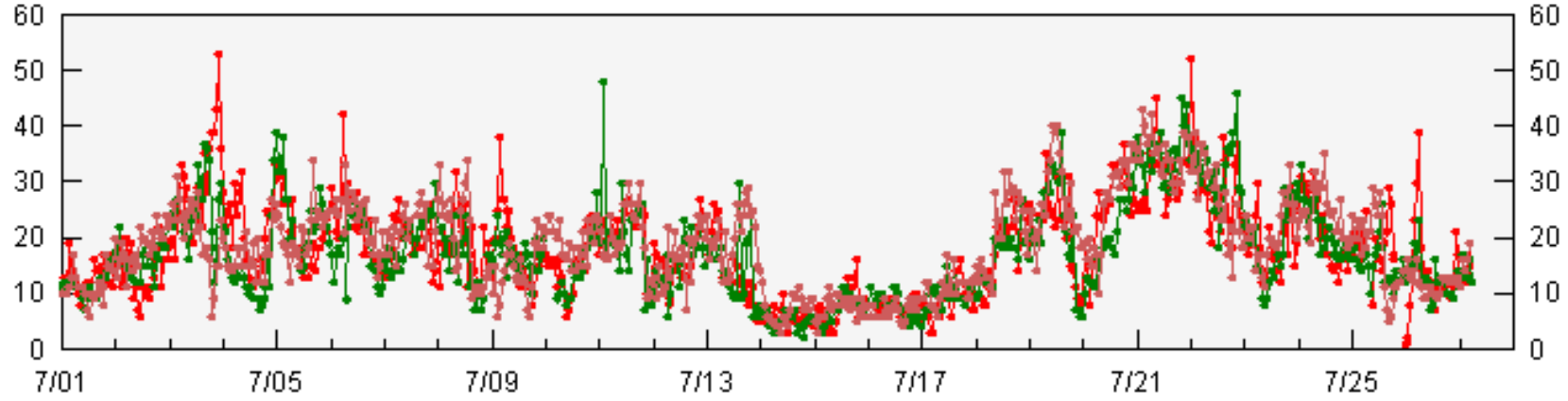
MDE Surface Sites

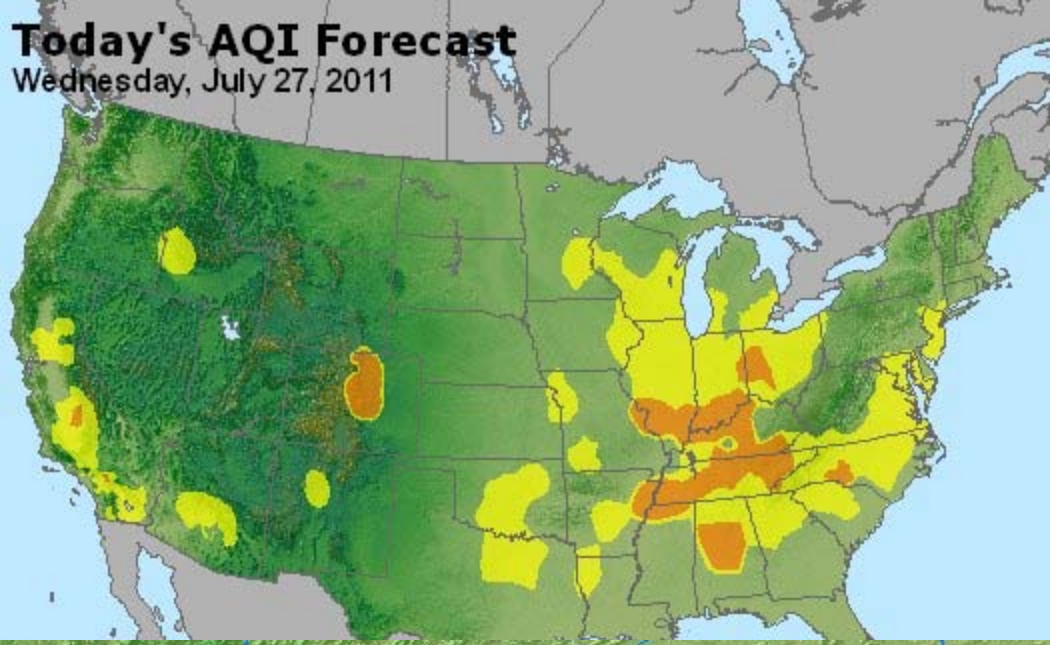
Padonia Beltsville Edgewood Aldino Essex Fairhill

Ozone (ppbv) 1 hr



PM2.5 (ug/m³) 1 hr





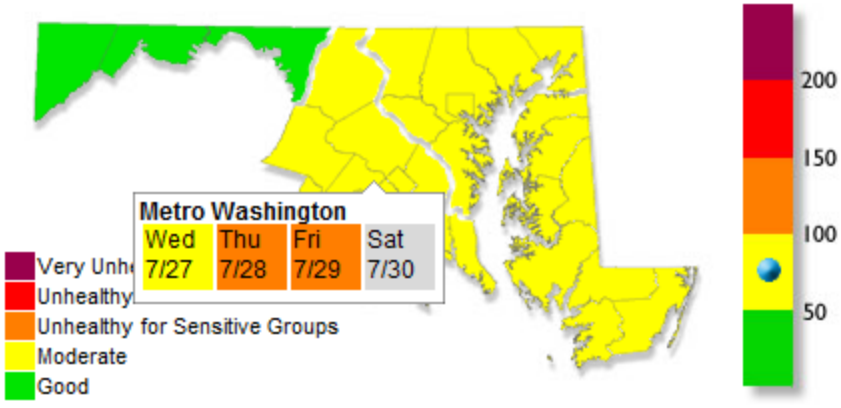
Air Quality Forecast

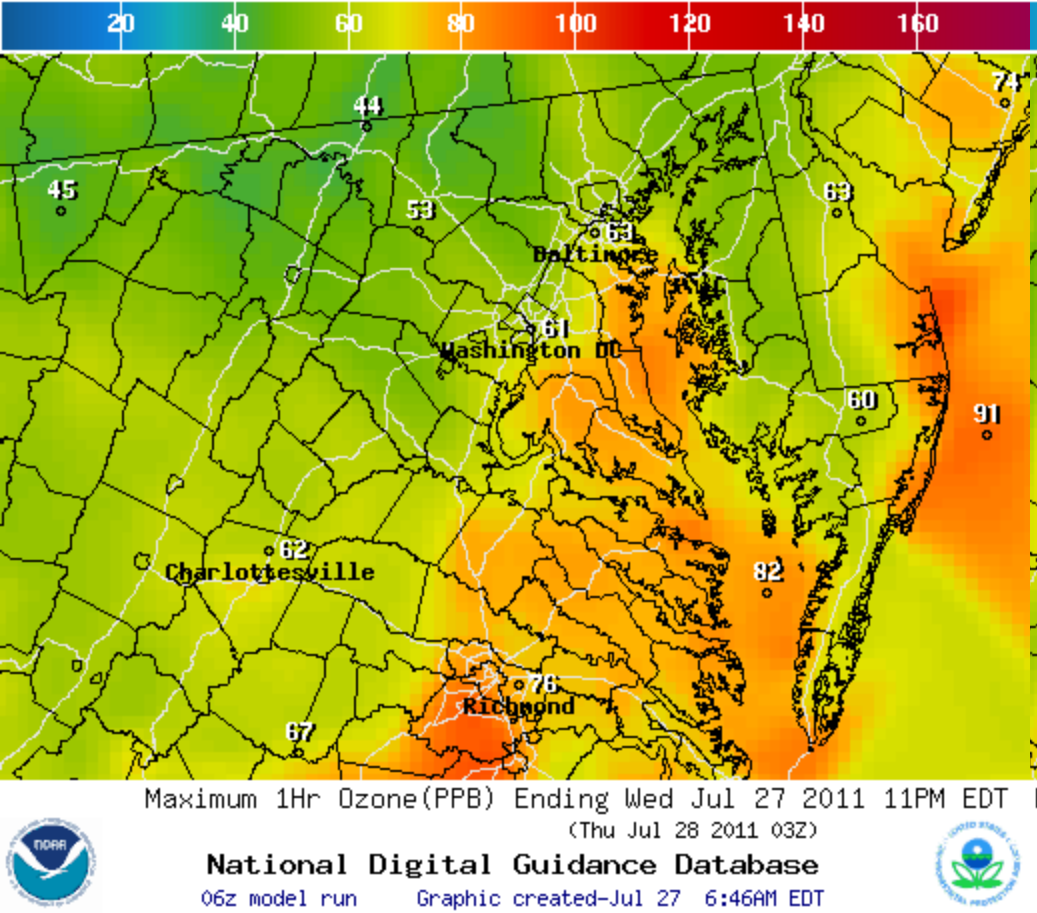
Today's High	Tomorrow's High
Air Quality Index (AQI)	Air Quality Index (AQI)
58 **Moderate**	101 **Unhealthy for Sensitive Groups**
Health Message: Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.	**Health Message:** Active children and adults, and people with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

AQI - Pollutant Details

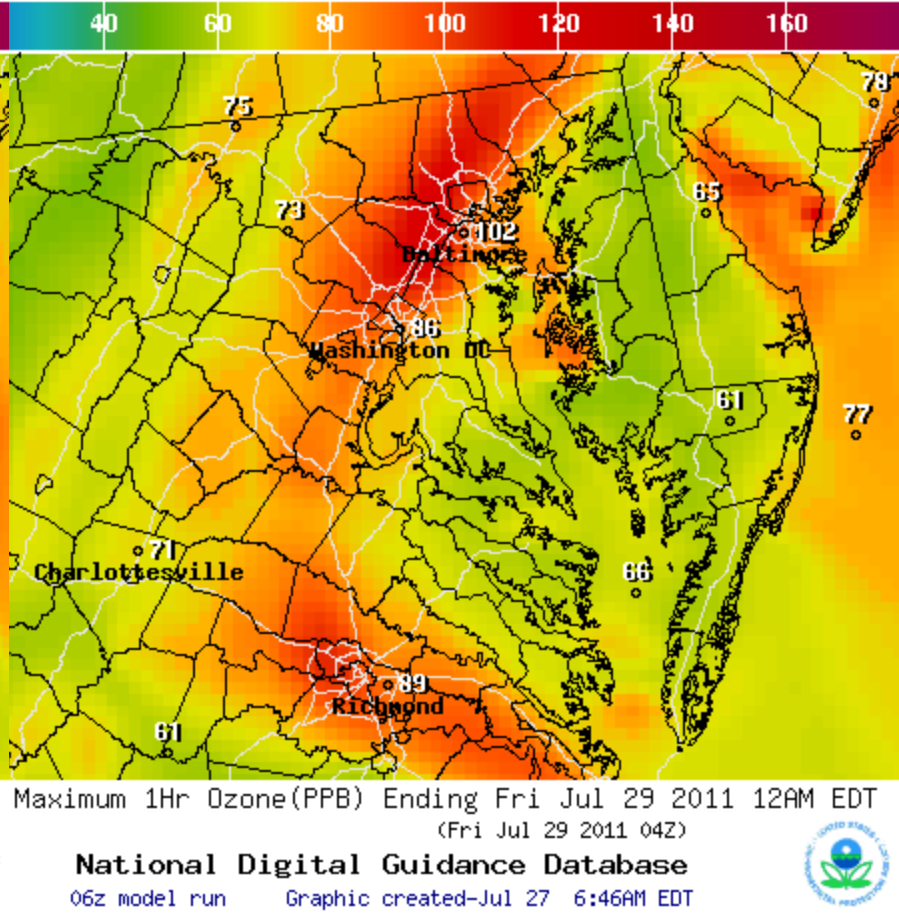
Ozone	58	Moderate	Ozone	101	Unhealthy for Sensitive Groups
Particles (PM2.5)	39	Good	Particles (PM2.5)	55	Moderate

Forecast Discussion: Wednesday will be another nice day with relatively dry and seasonable temperatures as a high pressure remains over the region. Air quality will remain in the low-middle of Moderate range along the I-95 corridor and east of it while particle pollution will continue to be Good. On Thursday, the surface high will move off the coast which will allow a hot and humid air-mass to return. These conditions will cause ozone levels to reach into the middle-upper Moderate range with isolated locations along the Baltimore-Washington corridor may reach into Unhealthy for Sensitive Groups (USG) category. Friday will be the hottest day of the period with heat index likely reaching into the triple digit. Please monitor the NWS for latest forecast and update. In regards to air quality, USG ozone is likely along the Baltimore-Washington corridor and Moderate elsewhere. Particle pollution will further increase into the Moderate range. - MDE



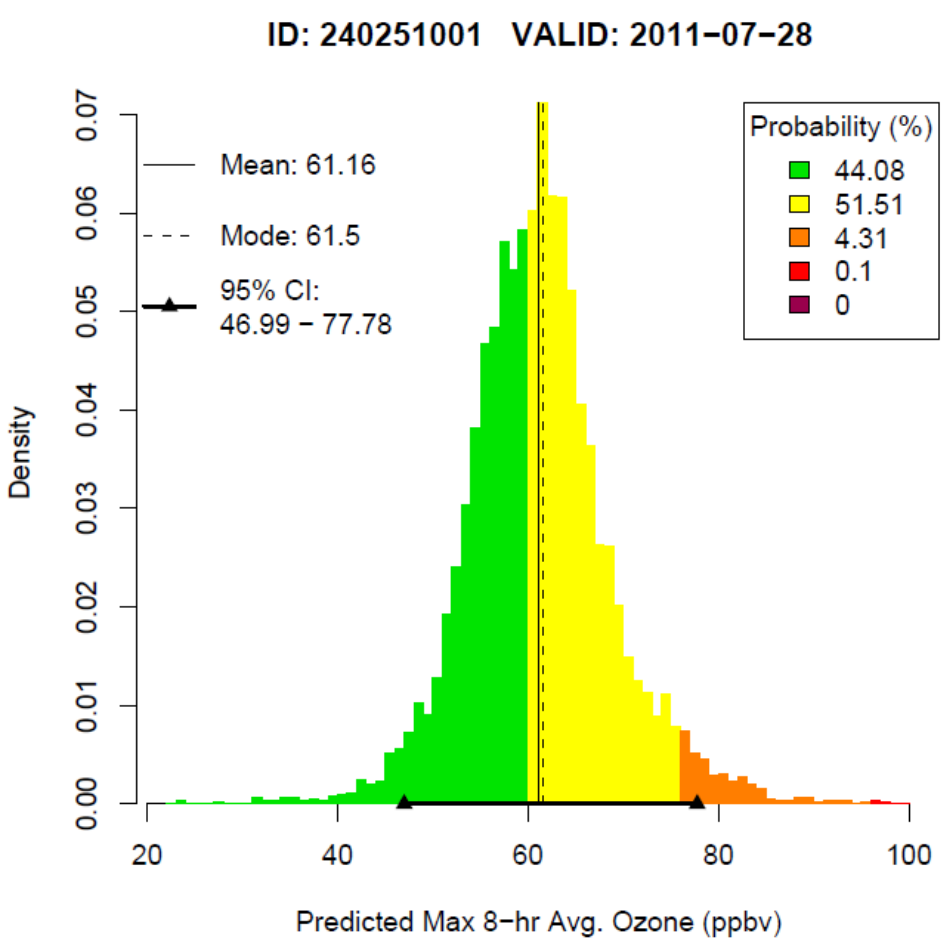


1-hr Max Ozone (ppbv) Today

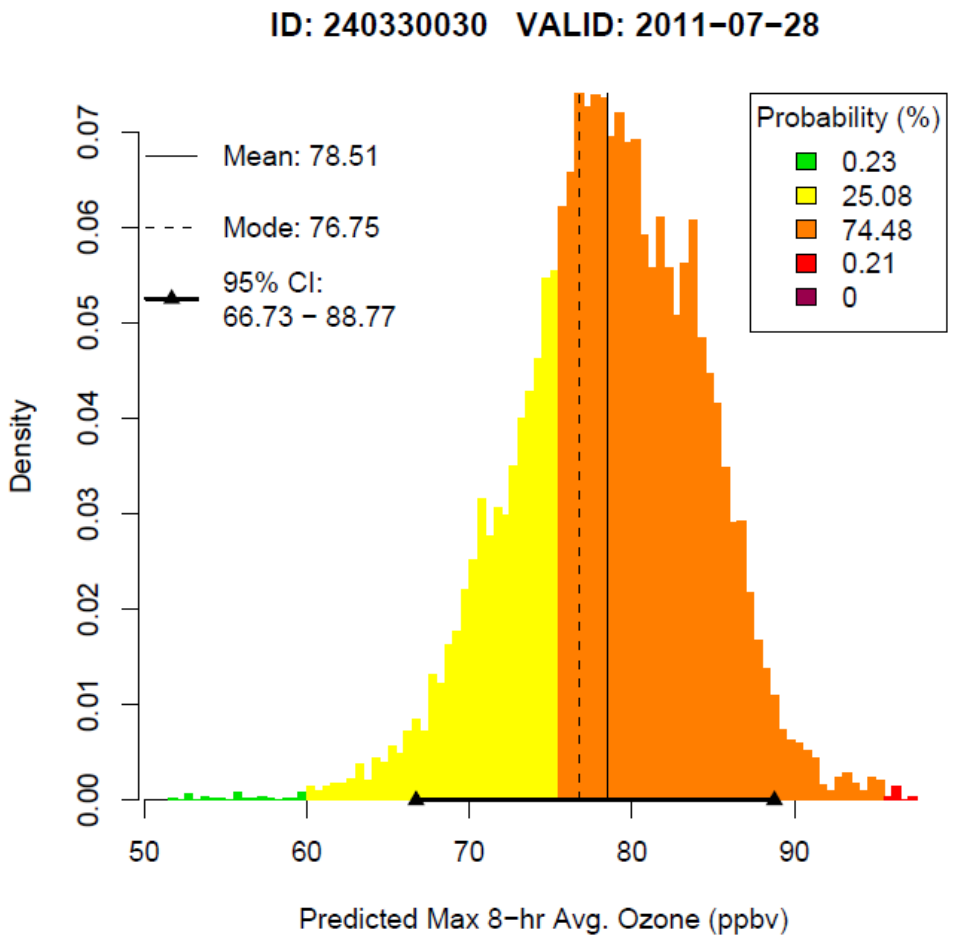


1-hr Max Ozone (ppbv) Tomorrow

NAQFC-MOS valid for Tomorrow

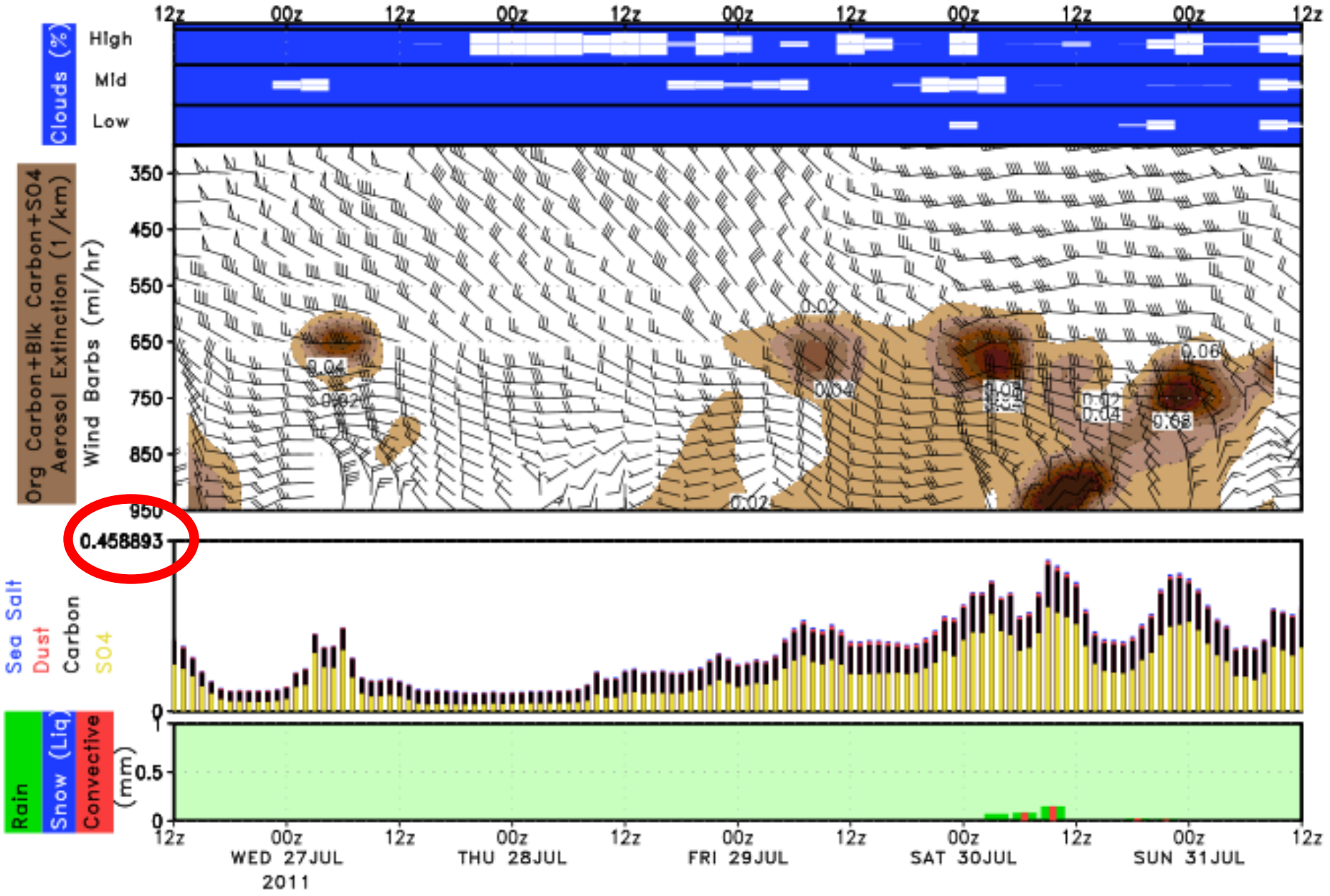


Edgewood

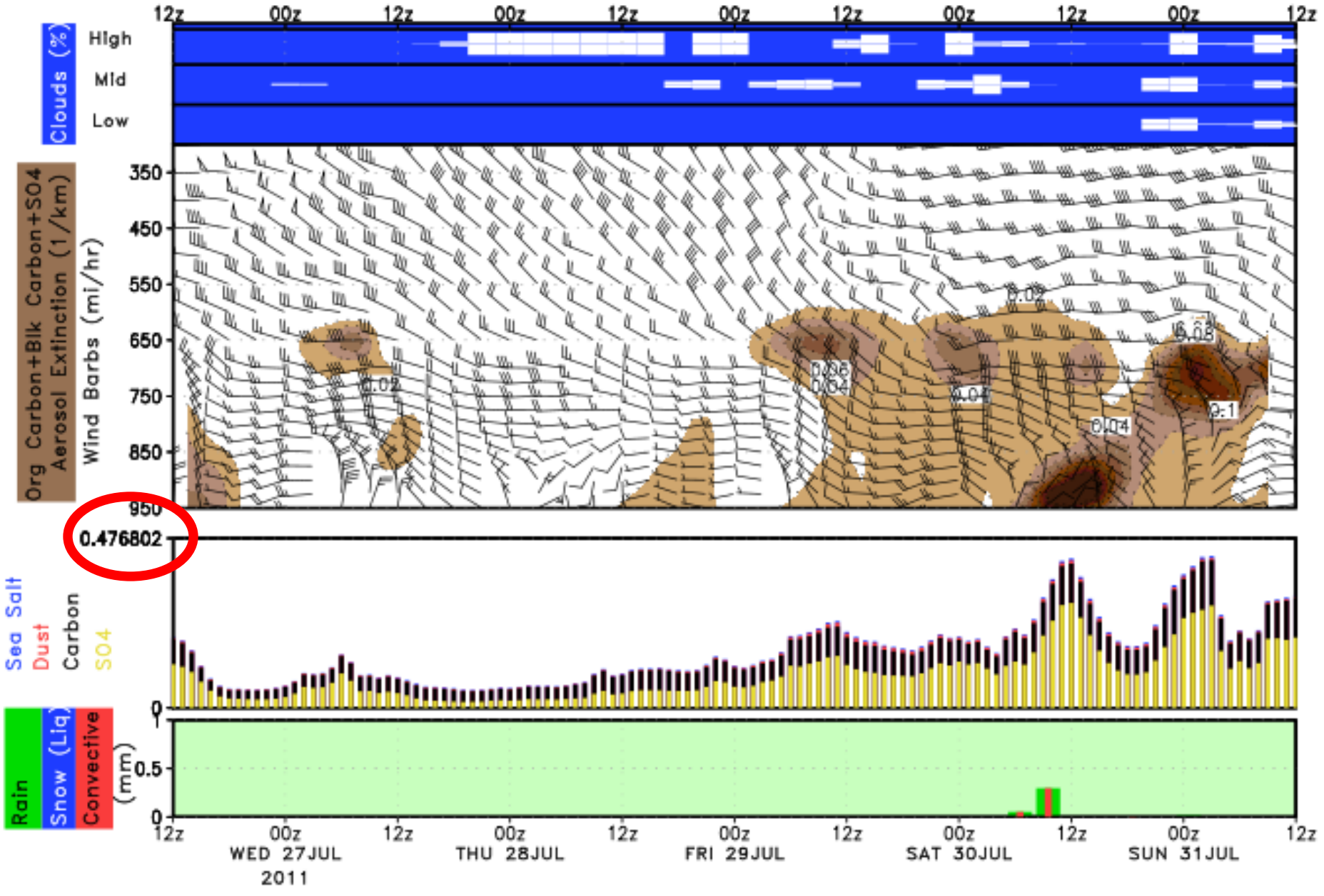


Beltsville

Essex


12z
00z
12z
00z
12z
00z
12z
00z
12z
00z
12z
Clouds (%)
High
Mid
Low
Org Carbon+Blk Carbon+SO4 Aerosol Extinction (1/km)
Wind Barbs (mi/hr)
350
450
550
650
750
850
950
0.02
0.04
0.06
0.08
0.458893
Sea Salt
Dust
Carbon
SO4
0
Rain
Snow (Liq)
Convective
(mm)
0.5
0
12z
00z
12z
00z
12z
00z
12z
00z
12z
00z
12z
WED 27JUL
2011
THU 28JUL
FRI 29JUL
SAT 30JUL
SUN 31JUL

Beltsville


12z
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12z
Clouds (%)
High
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Org Carbon+Blk Carbon+SO4 Aerosol Extinction (1/km)
Wind Barbs (mi/hr)
350
450
550
650
750
850
950
0.476802
0.02
0.06
0.04
0.08
0.1
0.04
0.04
Sea Salt
Dust
Carbon
SO4
0
Rain
Snow (Liq.)
Convective
(mm)
0.5
0
12z
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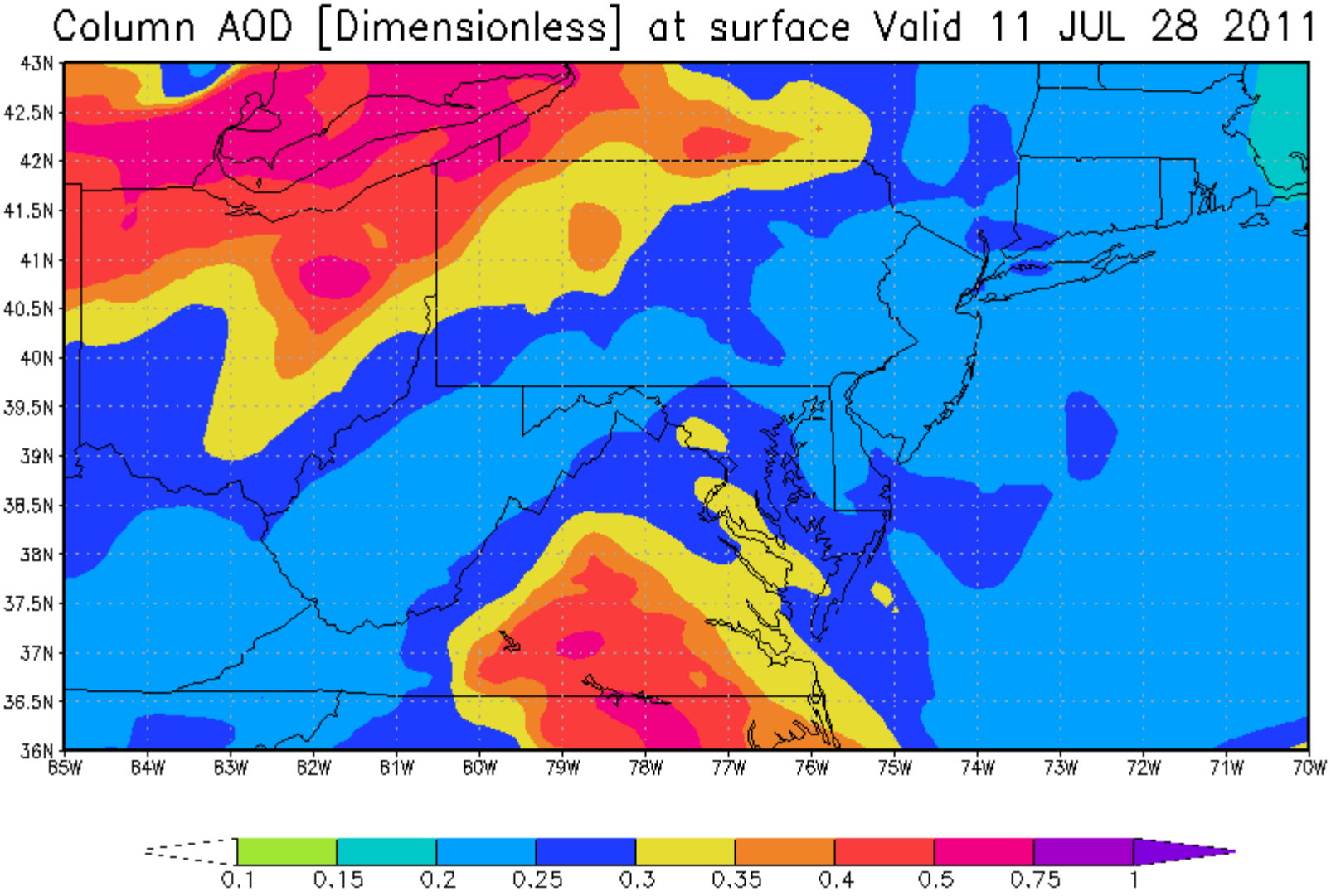
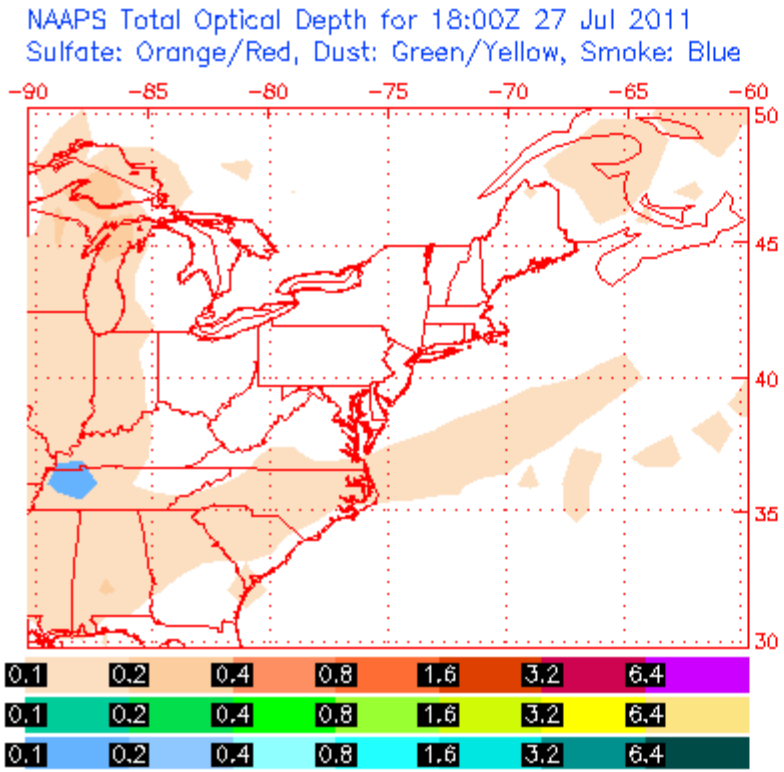
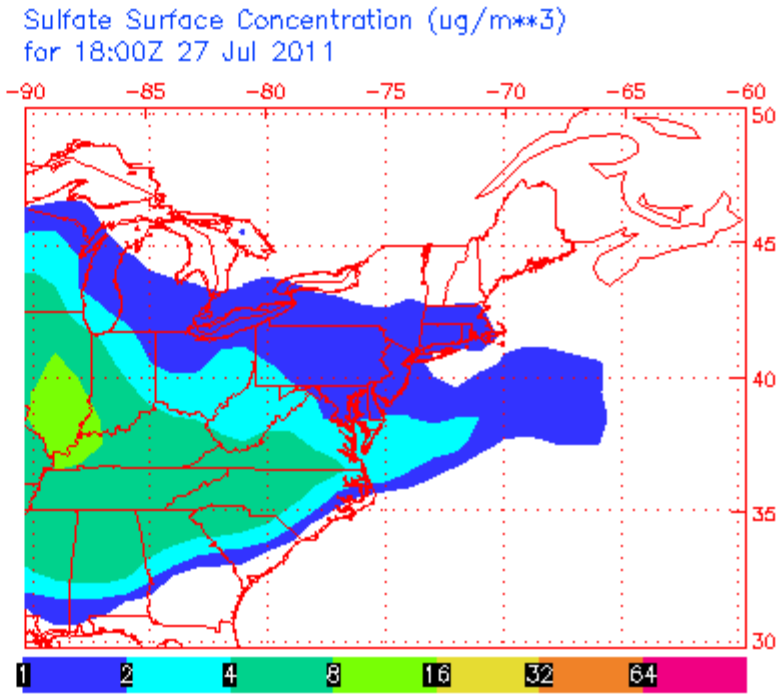
12z
WED 27JUL
2011
THU 28JUL
FRI 29JUL
SAT 30JUL
SUN 31JUL

CMAQ AOD at 7 AM Tomorrow

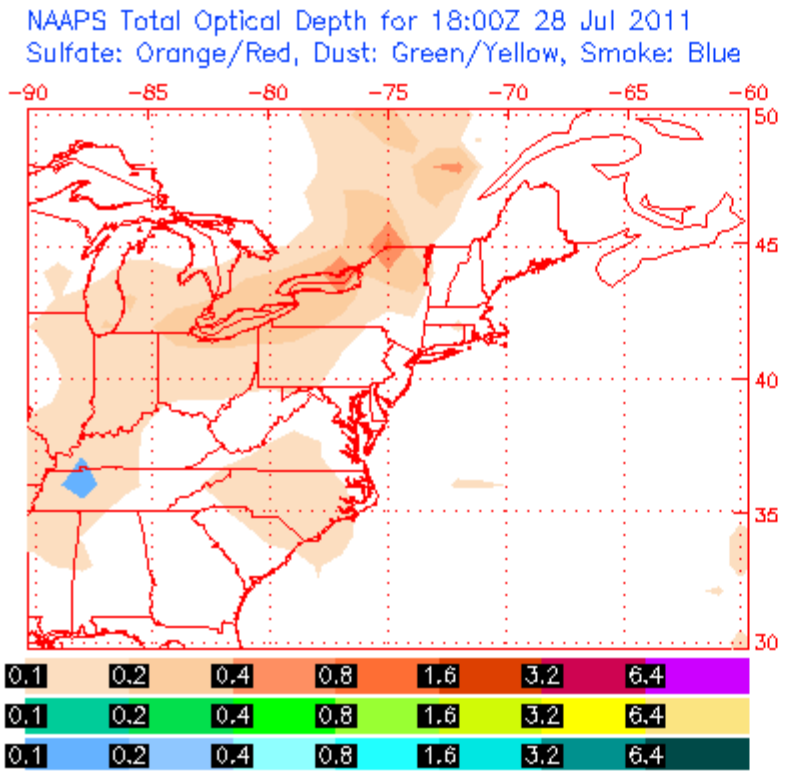


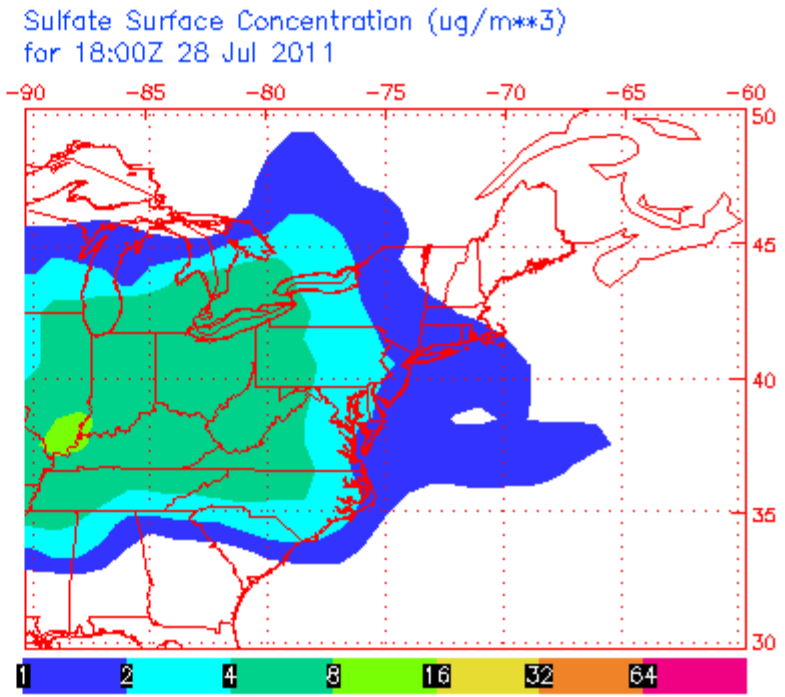
Today 2 PM


NAAPS Total Optical Depth for 18:00Z 27 Jul 2011
Sulfate: Orange/Red, Dust: Green/Yellow, Smoke: Blue
-90 -85 -80 -75 -70 -65 -60
50 45 40 35 30
0.1 0.2 0.4 0.8 1.6 3.2 6.4
0.1 0.2 0.4 0.8 1.6 3.2 6.4
0.1 0.2 0.4 0.8 1.6 3.2 6.4

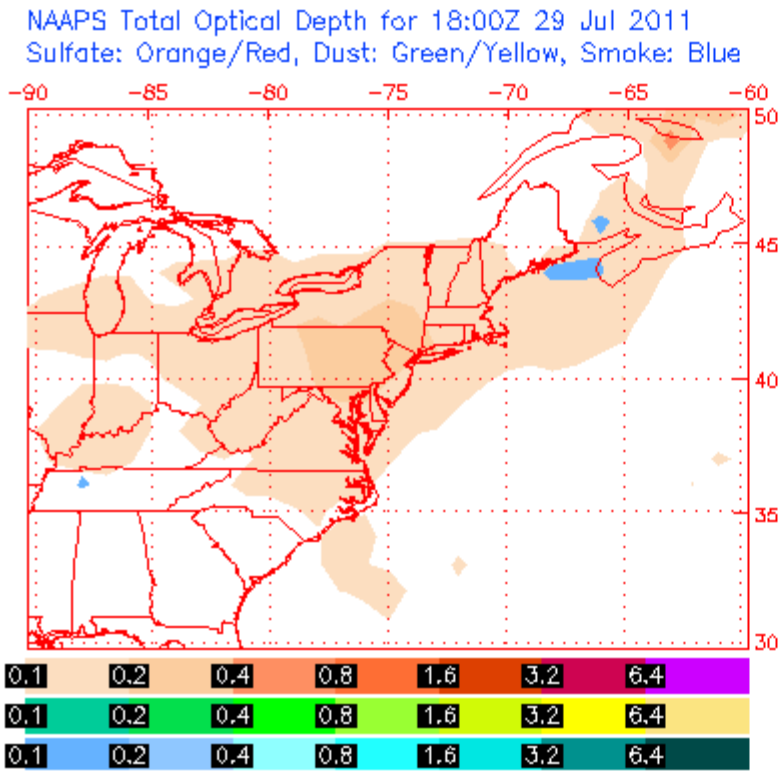

Sulfate Surface Concentration (ug/m**3)
for 18:00Z 27 Jul 2011
-90 -85 -80 -75 -70 -65 -60
50 45 40 35 30
1 2 4 8 16 32 64

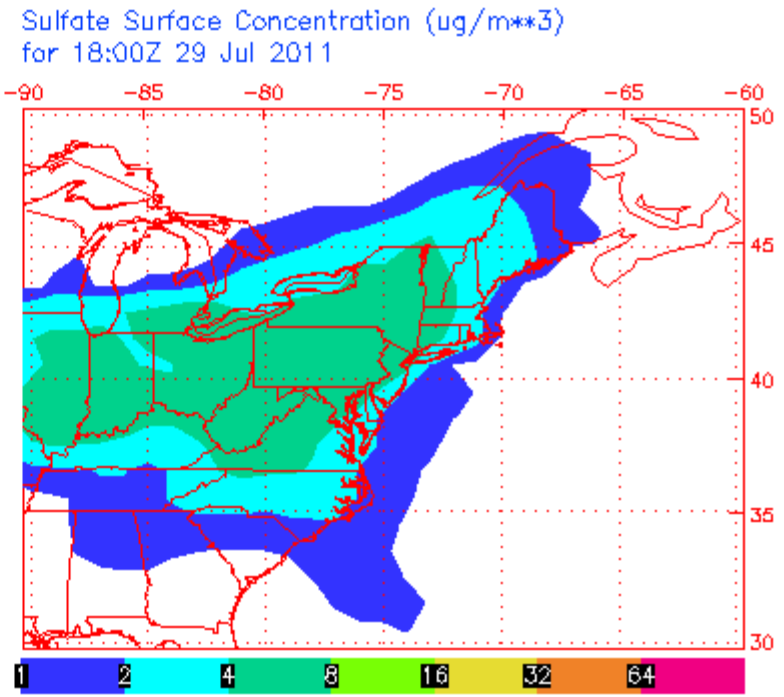
Tomorrow 2 PM



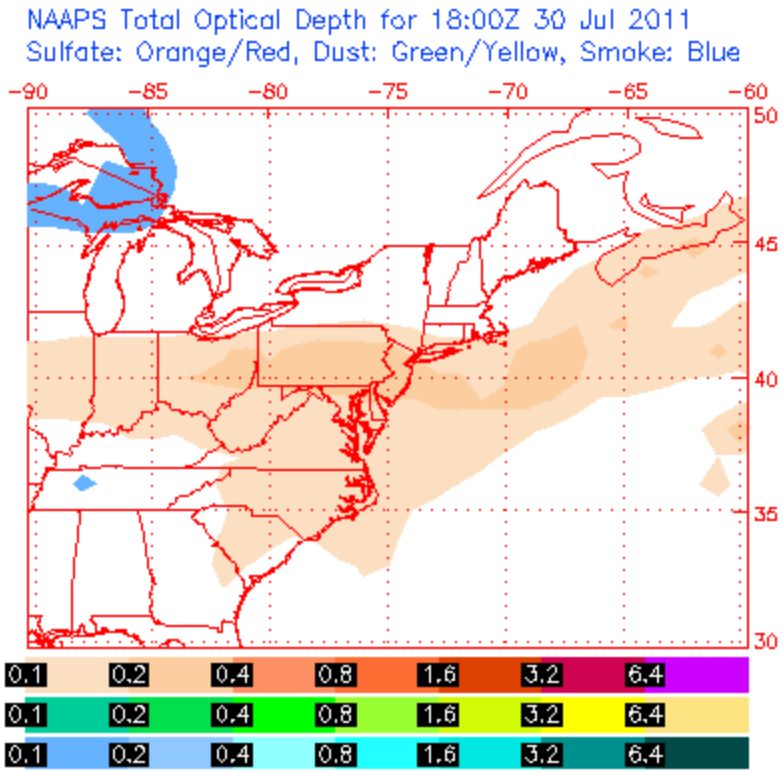


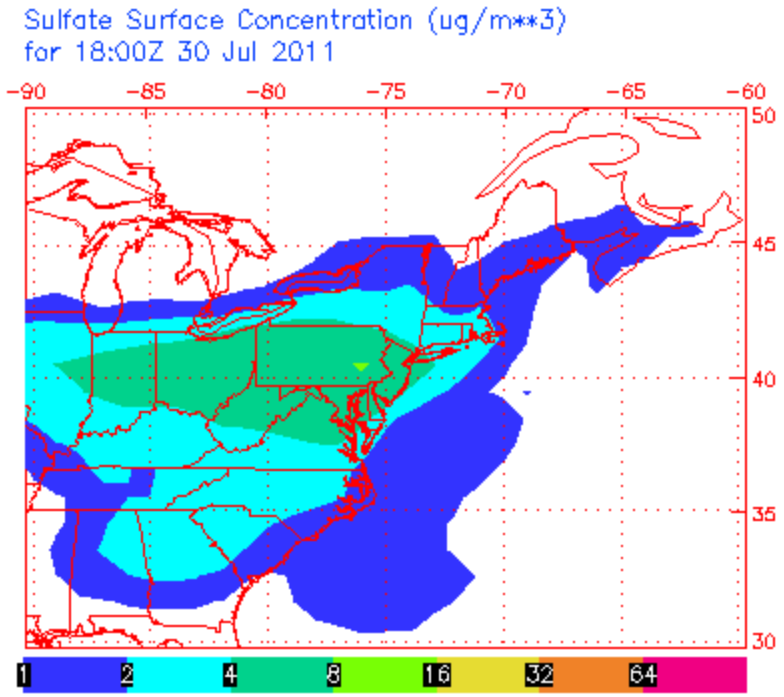
Friday 2 PM

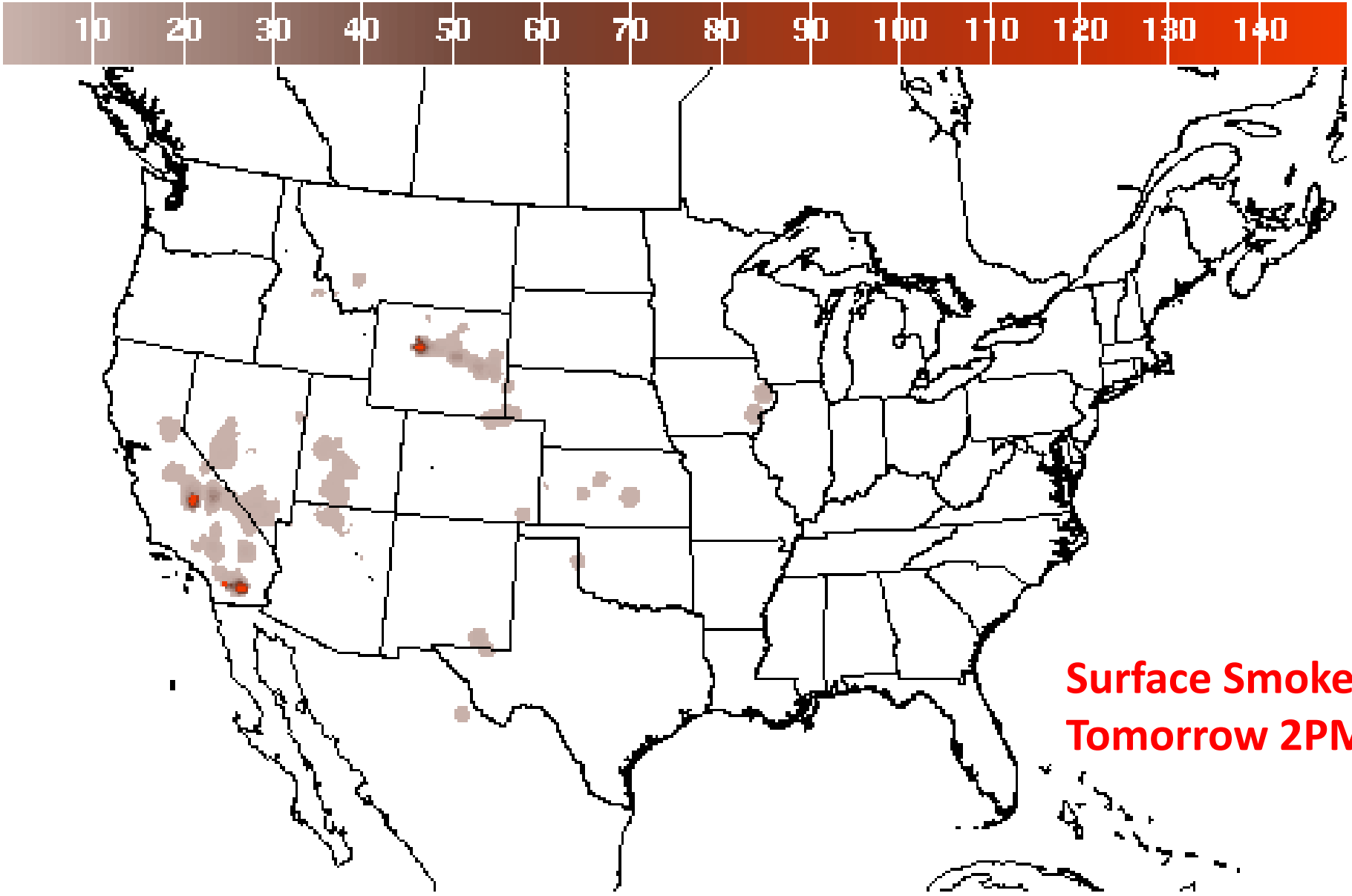

NAAPS Total Optical Depth for 18:00Z 29 Jul 2011
Sulfate: Orange/Red, Dust: Green/Yellow, Smoke: Blue
-90 -85 -80 -75 -70 -65 -60
50 45 40 35 30
0.1 0.2 0.4 0.8 1.6 3.2 6.4
0.1 0.2 0.4 0.8 1.6 3.2 6.4
0.1 0.2 0.4 0.8 1.6 3.2 6.4


Sulfate Surface Concentration (ug/m**3)
for 18:00Z 29 Jul 2011
-90 -85 -80 -75 -70 -65 -60
50 45 40 35 30
1 2 4 8 16 32 64

Saturday 2 PM






10 20 30 40 50 60 70 80 90 100 110 120 130 140
Surface Smoke
Tomorrow 2PM
1Hr Surface Smoke (micrograms/m^3) Thu Jul 28 2011 2PM EDT
(Thu Jul 28 2011 18Z)
National Digital Guidance Database
06z model run
Graphic created-Jul 27 7:49AM EDT

AREA FORECAST DISCUSSION...UPDATED
NATIONAL WEATHER SERVICE BALTIMORE MD/WASHINGTON DC
941 AM EDT WED JUL 27 2011

.SYNOPSIS... HIGH PRESSURE WILL BUILD OVER THE REGION THROUGH TONIGHT BEFORE MOVING OFF THE COAST LATE IN THE WEEK. RETURN FLOW AROUND THE HIGH WILL USHER IN HOT AND HUMID CONDITIONS FRIDAY AND SATURDAY. A COLD FRONT MAY IMPACT THE AREA SUNDAY INTO EARLY NEXT WEEK.

.NEAR TERM /THROUGH THURSDAY/... HIPRES BUILDS INTO THE RGN TDA...WHICH WILL SUPPORT LGT NWLY FLOW AND MODESTLY COOLER TEMPS. 12Z KIAD RAOB SUGGESTS MAXIMA IN UPR 80S-LWR 90S...WHICH IS GENLY IN LINE WITH GUIDANCE. CU FIELD MAY DVLP ALONG RDGS AND IN VLYS WHERE MSTR HAS POOLED...WITH DEBRIS CI XPCD TO SPREAD ACRS THE RGN FROM CNVCTV COMPLEX OVER GRTLKS. SFC HIPRES MOVES SEWD ACRS FCST AREA TNGT. LGT WINDS XPCD.

AS SFC HIPRES MOVES EWD INTO ATLC BY THU MRNG...MSTR WILL SPREAD NWD AROUND ITS WRN PERIPHERY. THIS MSTR MAY LEAD TO PATCHY FOG LATE TNGT...BUT OTHERWISE NO SGFNT IMPACTS XPCD.

DEWPT TEMPS WILL CONT TO INCR THU AS HEAT INCRS ONCE AGAIN. MAXIMA IN THE LOW-MID 90S XPCD ON THU...WITH INCRG HUMIDITY. NO PCPN XPCD.

.SHORT TERM /THURSDAY NIGHT THROUGH SATURDAY NIGHT/... I`M NOT CONFIDENT ABT PCPN CHCS IN THE NEXT SVRL DAYS - IT IS ALWAYS DIFFICULT AT THIS TIME OF YR TO EXPRESS ANY LVL OF CONFIDENCE W/ PCPN FCSTG MULTIPLE DAYS IN ADVANCE. I`VE NOTICED THAT SOME TREES/LEAVES ARE BEGINNING TO LOOK STRESSED FM THIS PD OF LOW PCPN AND HIGH HEAT...BUT UNFORTUNATELY NO WIDESPREAD SOAKING RAIN ON THE HORIZON. I`LL STICK W/ THE 20-30 POP WE ARE CURRENTLY FCSTG...BUT MY CONFIDENCE IS NOT HIGH THAT MID ATLC WL SEE MUCH RAFL.

.LONG TERM /FRIDAY THROUGH TUESDAY/... BOTH GFS XTND AND ECMWF ARE IMPLYING THAT A SHORT WV WL PUSH INTO THE MID ATLC ON MON...THAT THE UPR RDG WL RETROGRADE. THIS WOULD KEEP THE SRN U.S. W OF THE MS RVR UNDER THE HIGH HEAT...BUT BRING SLTLY COOLER TEMPS TO THE E CST AS IT FALLS UNDER A MINOR TROF. GIVEN THE AMT OF HEAT THAT HAS BEEN STORED AT THE SFC DURG THE MONTH OF JULY I WOULD EXPECT TEMPERATURES TO REMAIN ABOVE GUIDANCE.