

DISCOVER-AQ Outlook for Wednesday, July 20, 2011

The weather for Wednesday through the weekend is forecasted to be hazy, very hot, and very humid with intermittent clouds, so the cloud forecast should be monitored closely. This heatwave builds as the massive upper-level ridge plaguing the Plains moves east and the Bermuda High pumps very moist air into the Mid-Atlantic. Air quality is expected to be poor through the weekend.

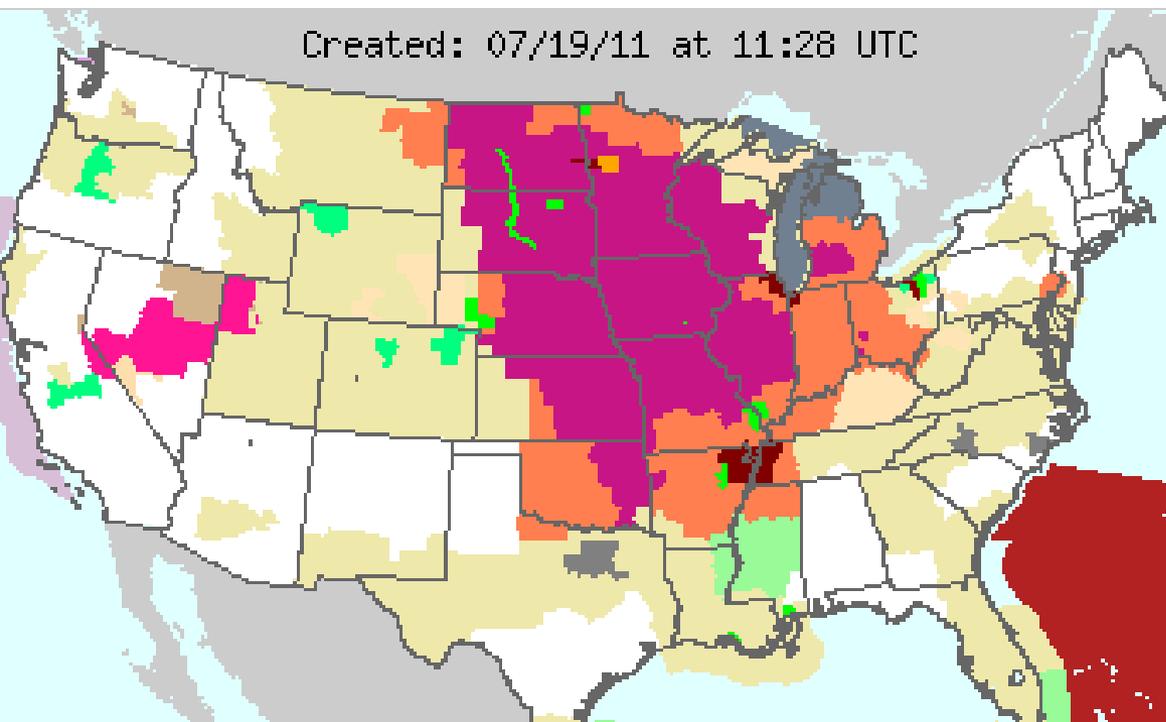
Recommendations for July 20th-23rd

July 20th, Wednesday: Can Fly – Watch Cloud Forecast

July 21st, Thursday: Can Fly

July 22nd, Friday: Can Fly

July 23rd, Saturday: Can Fly



Excessive Heat Warning
Heat Advisory

Odious Heatwave
Heading to DC

Current Conditions at BWI, 11 am

Baltimore-Washington International Airport

Lat: 39.19 Lon: -76.67 Elev: 148

Last Update on Jul 19, 10:54 am EDT

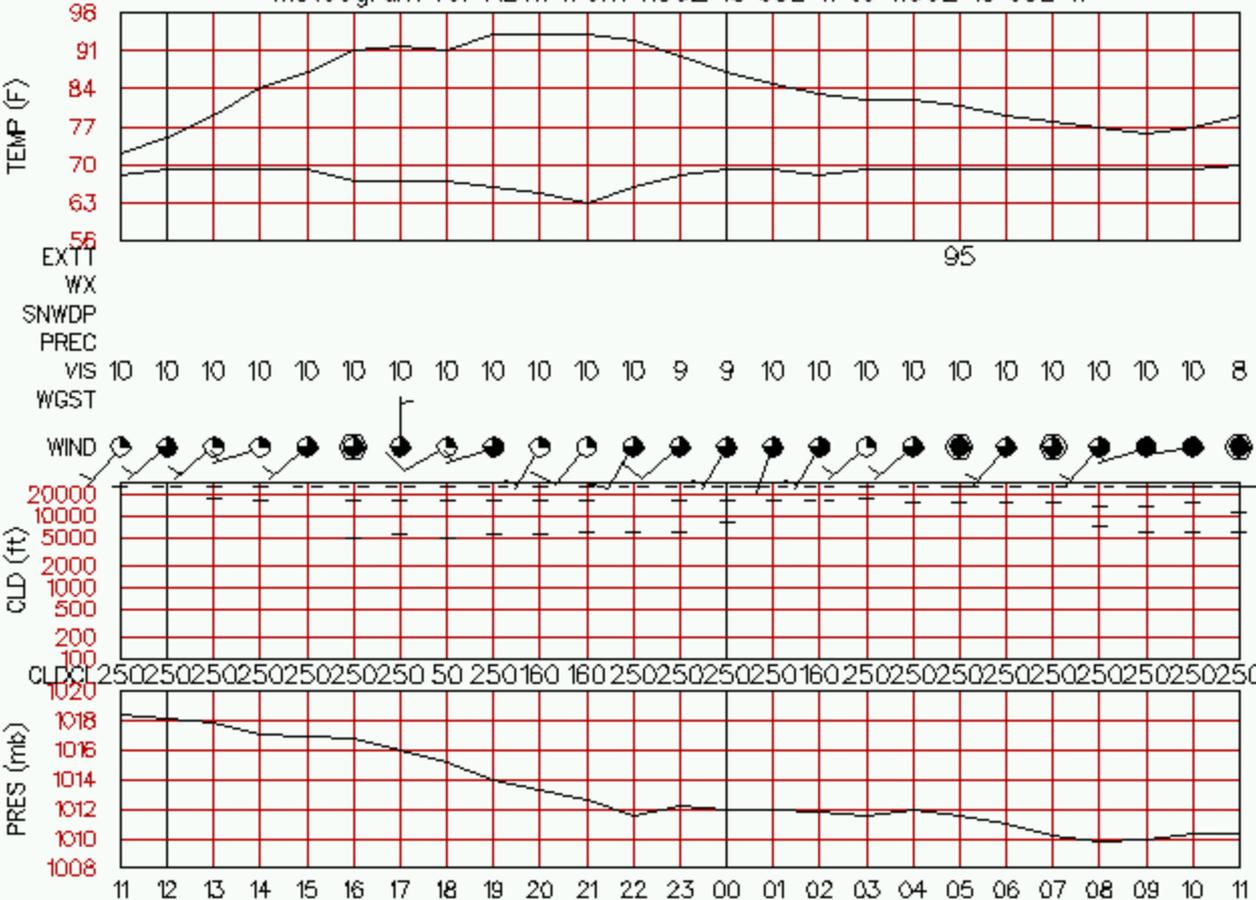
Humidity:	59 %
Wind Speed:	NW 7 MPH
Barometer:	29.84" (1010.2 mb)
Dewpoint:	72 °F (22 °C)
Heat Index:	95 °F (35 °C)
Visibility:	7.00 mi.

Overcast

**88 °F
(31 °C)**

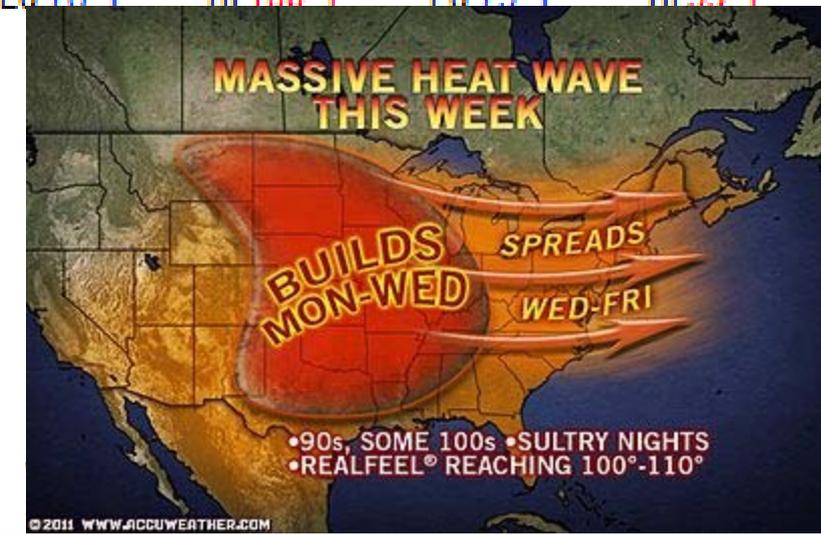
▼ Plymouth State Weather Center ▼

Meteogram for KBWI from 1100Z 18 JUL 11 to 1100Z 19 JUL 11



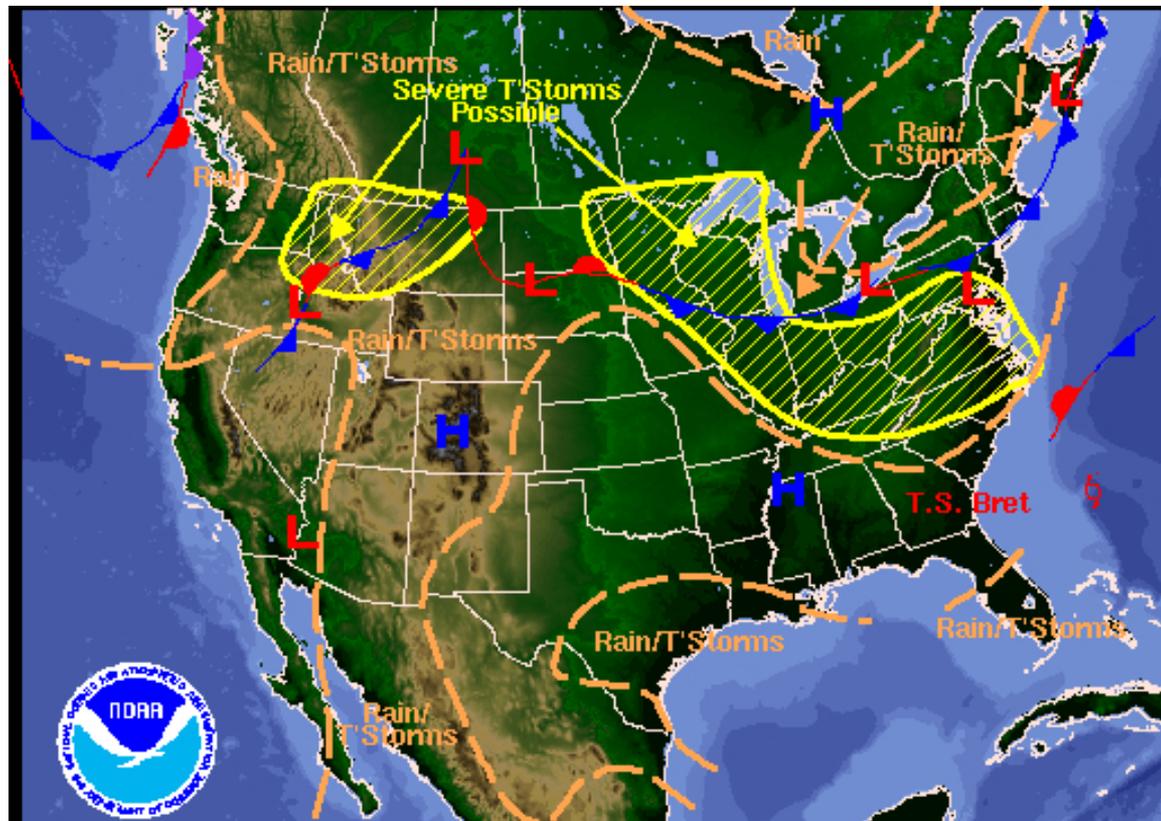
Today	Tonight	Wednesday	Wednesday Night	Thursday	Thursday Night	Friday	Friday Night	Saturday
								
40%	30%	20%	20%					
Chance Tstms	Chance Tstms	Isolated Tstms	Isolated Tstms	Hot	Mostly Clear	Hot	Partly Cloudy	Hot
Hi 95 °F	Lo 73 °F	Hi 93 °F	Lo 74 °F	Hi 98 °F	Lo 78 °F	Hi 100 °F	Lo 79 °F	Hi 99 °F

NWS SYNOPSIS... A WEAK BOUNDARY WILL MOVE SOUTHWARD INTO THE MID-ATLANTIC REGION THROUGH WEDNESDAY. STRONG HIGH PRESSURE ALOFT WILL BUILD INTO THE REGION FOR THE LATTER HALF OF THE WEEK...LEADING TO HOT AND VERY HUMID CONDITIONS.



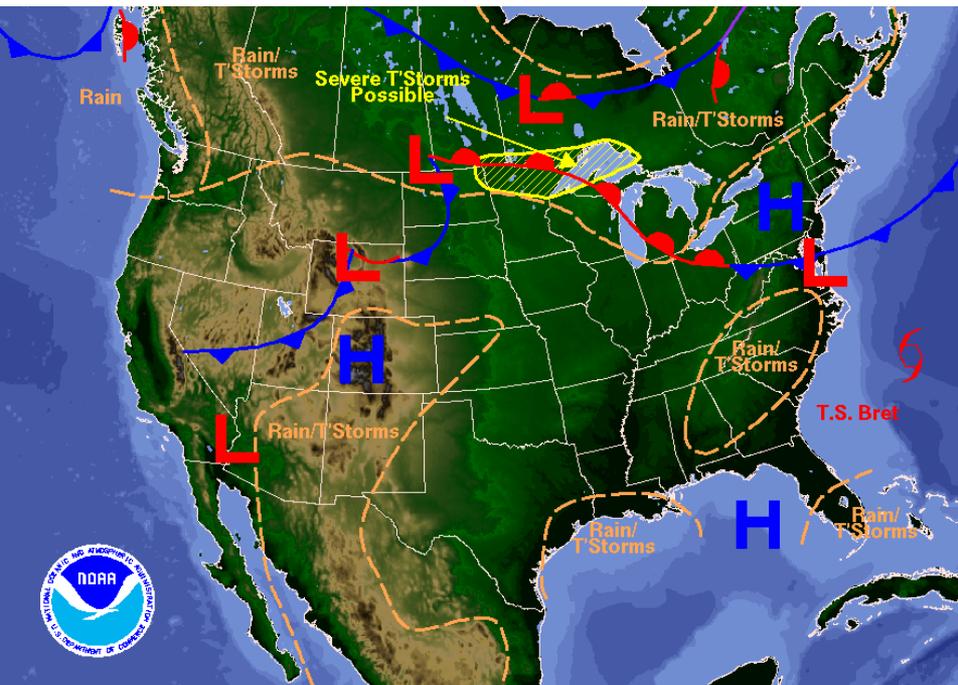
Today Jul 19	Wed 20	Thu 21	Fri 22	Sat 23	Sun 24	Mon 25	Tue 26			
										
Isolated T-Storms	Mostly Sunny	Partly Cloudy	Mostly Sunny	Partly Cloudy	Isolated T-Storms	Scattered T-Storms	Sunny	Sunny	Sunny	Sunny
95°F High	94°	97°	100°	94°	94°	92°	90°	88°	89°	
73° Low	74°	78°	78°	74°	73°	73°	69°	70°	71°	

Today: Thunderstorms possible as a shortwave trough moves through our area. Most likely in the afternoon, but still < 50% chance.

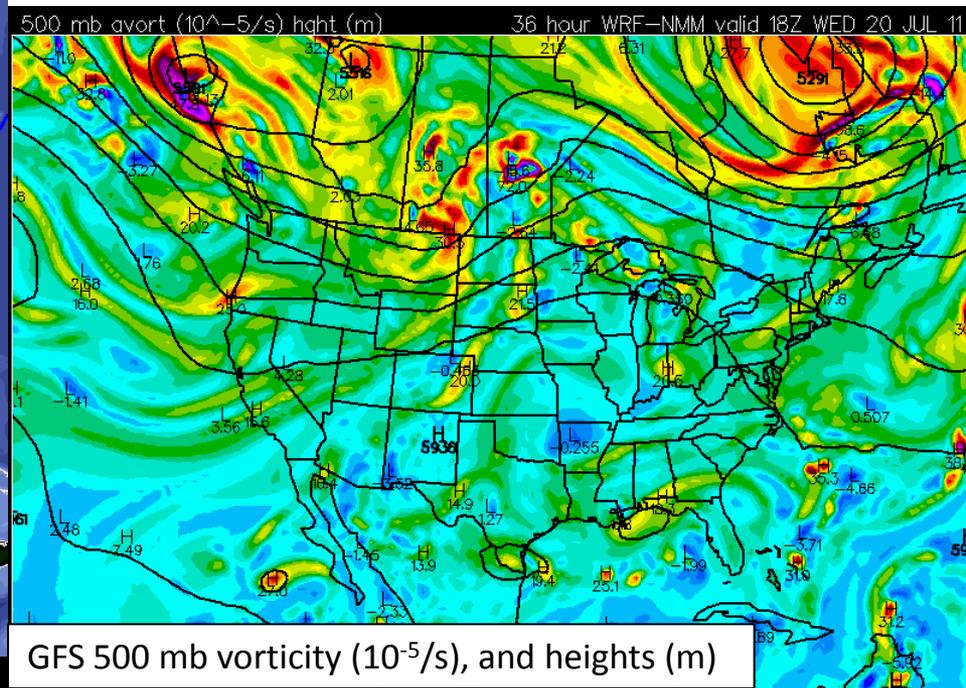


Weather Forecast for Tue, Jul 19, 2011, issued 3:51 AM EDT
DOC/NOAA/NWS/NCEP/Hydrometeorological Prediction Center
Prepared by Jackson based on HPC, SPC, and NHC forecasts

Tomorrow: Slight chance of afternoon thunderstorms from slight upslope flow. But weak shear forecast should keep them from becoming strong.



Weather Forecast for Wed, Jul 20, 2011, issued 4:08 AM EDT Tue, Jul 19, 2011
DOC/NOAA/NWS/NCEP/Hydrometeorological Prediction Center
Prepared by Jackson based on HPC, SPC, and NHC forecasts



GFS 500 mb vorticity ($10^{-5}/s$), and heights (m)

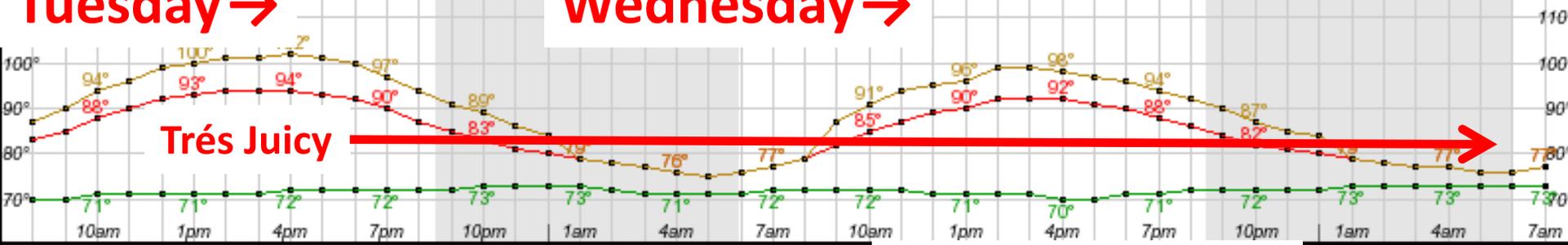
-16 -10 -4.0 2.0 8.0 14 20 26 32 38 44 50 56 62 68 72

COD-Nexlab <http://weather.cod.edu>

Tuesday →

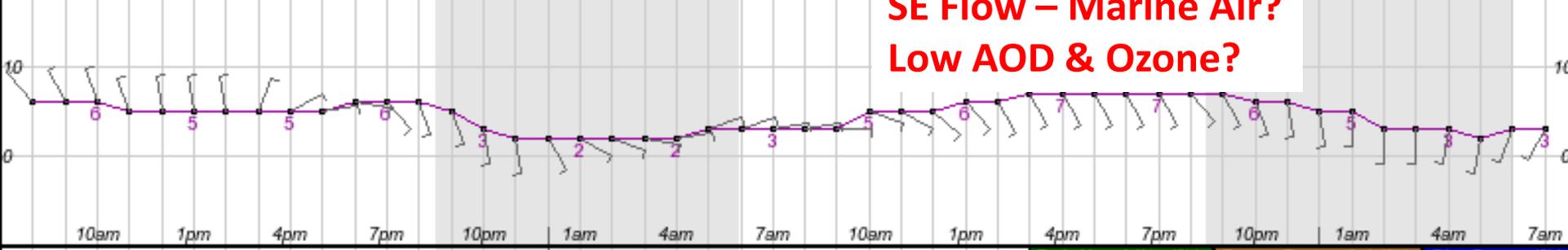
Wednesday →

Heat Index (°F) Dewpoint (°F) Temperature (°F)

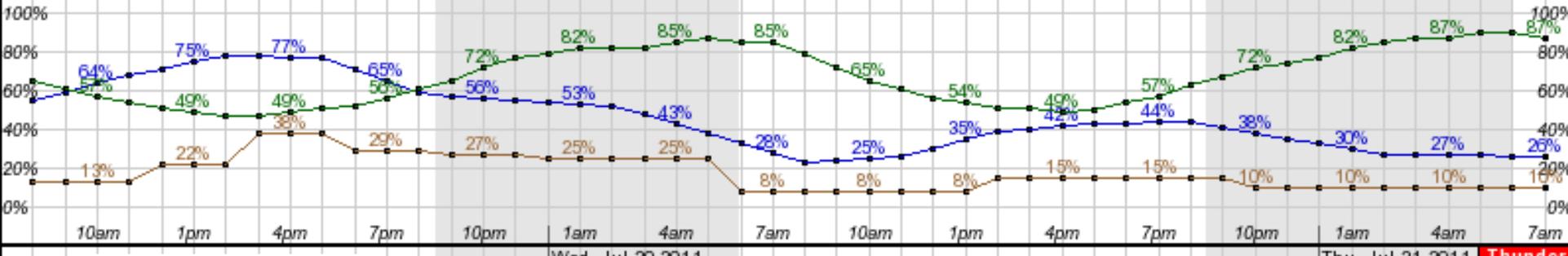


SE Flow – Marine Air?
Low AOD & Ozone?

Gusts (mph) Wind (mph)

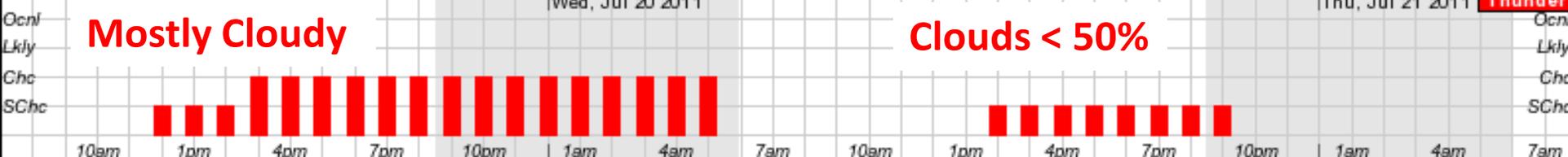


Rel. Humidity (%) Pcpn. Potential (%) Sky Cover (%)

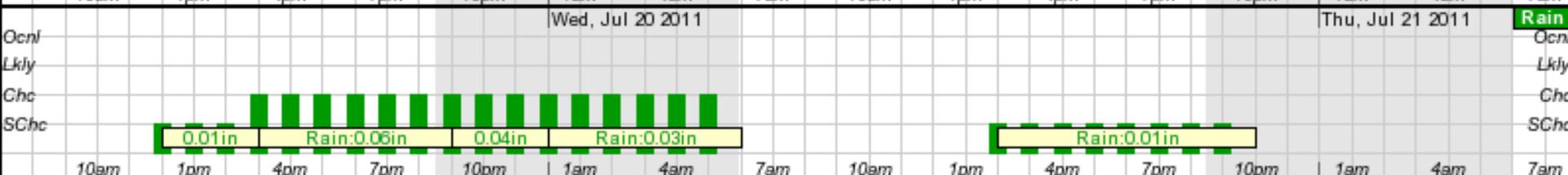


Mostly Cloudy

Clouds < 50%

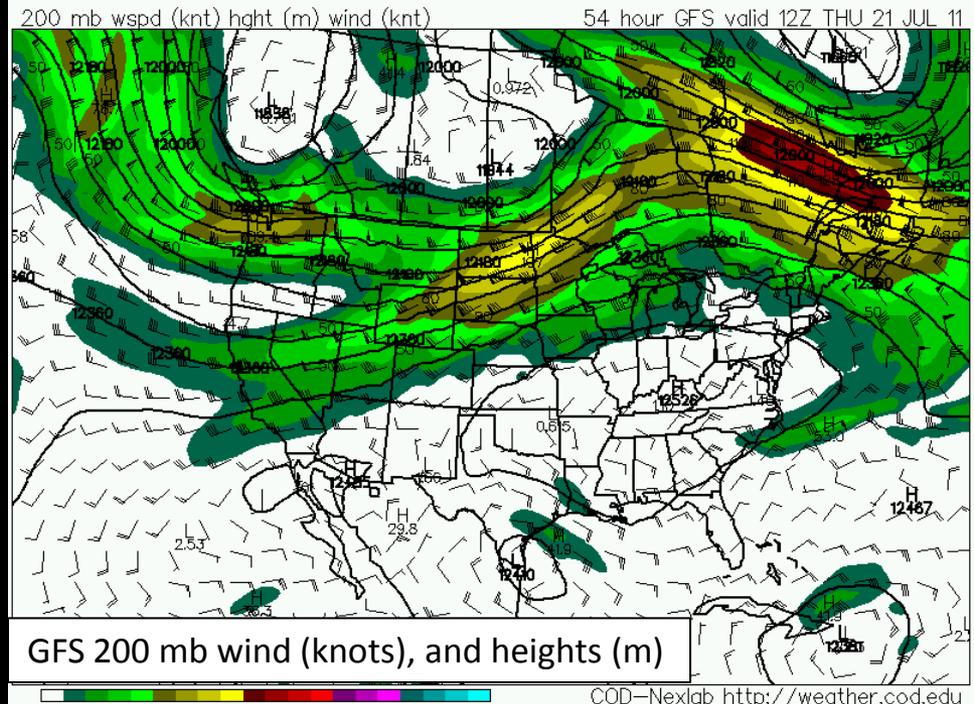
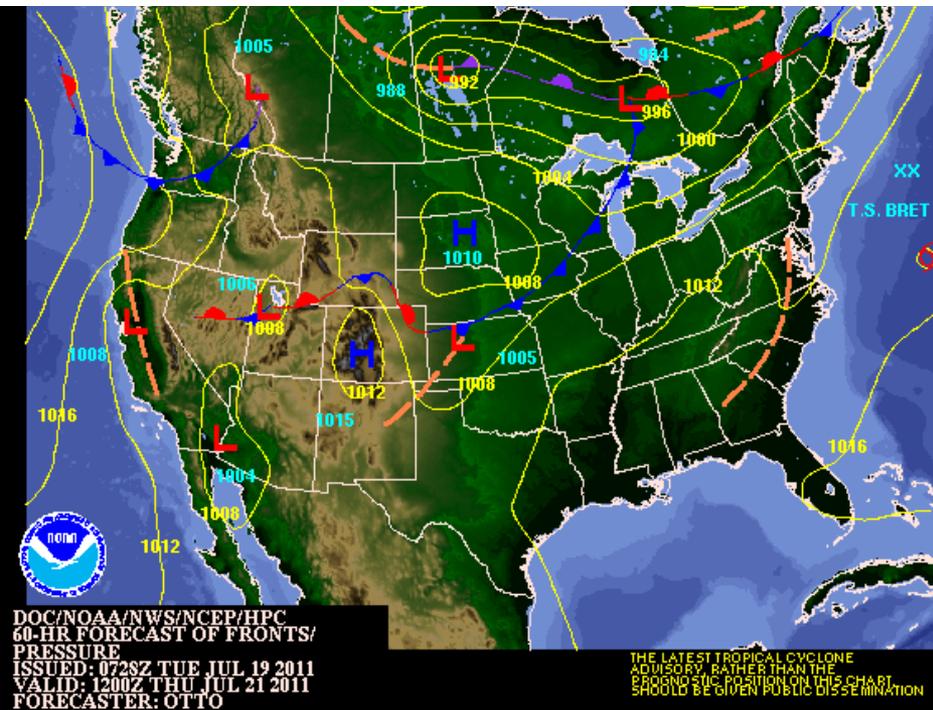
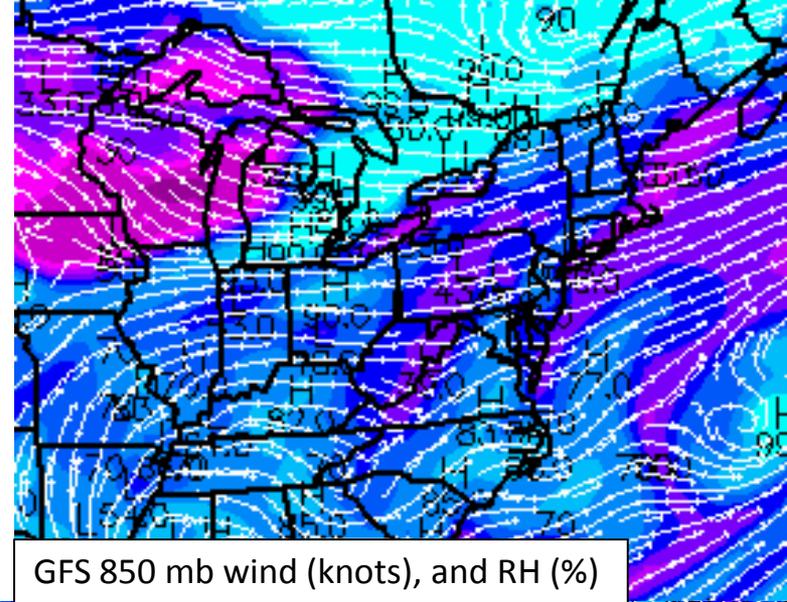


Thu, Jul 21 2011 Thunder



Thu, Jul 21 2011 Rain

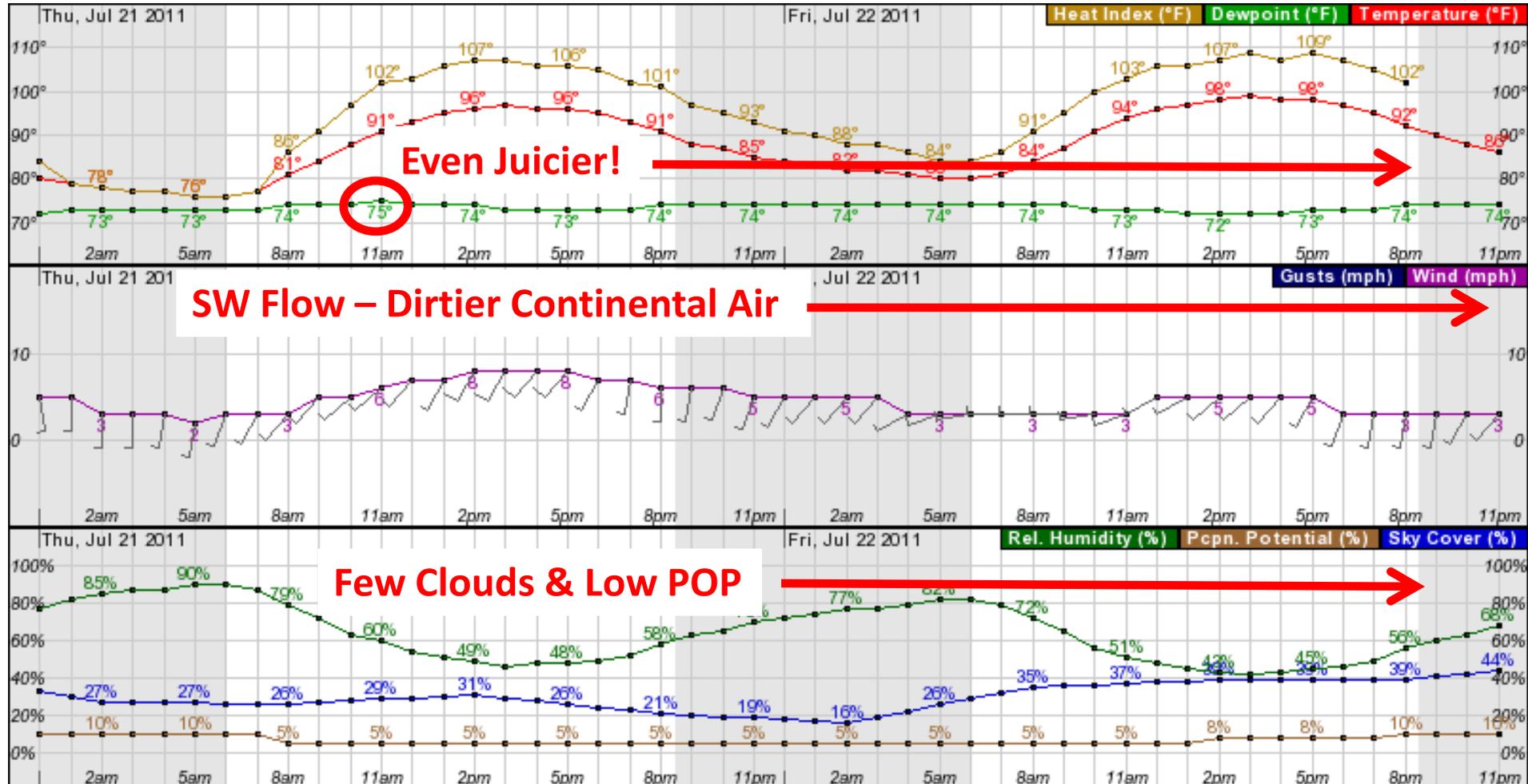
Thursday: The upper level ridge flattens and becomes centered over the central Appalachians. Very moist boundary layer and increasing temperatures will lead to dangerous heat indices.



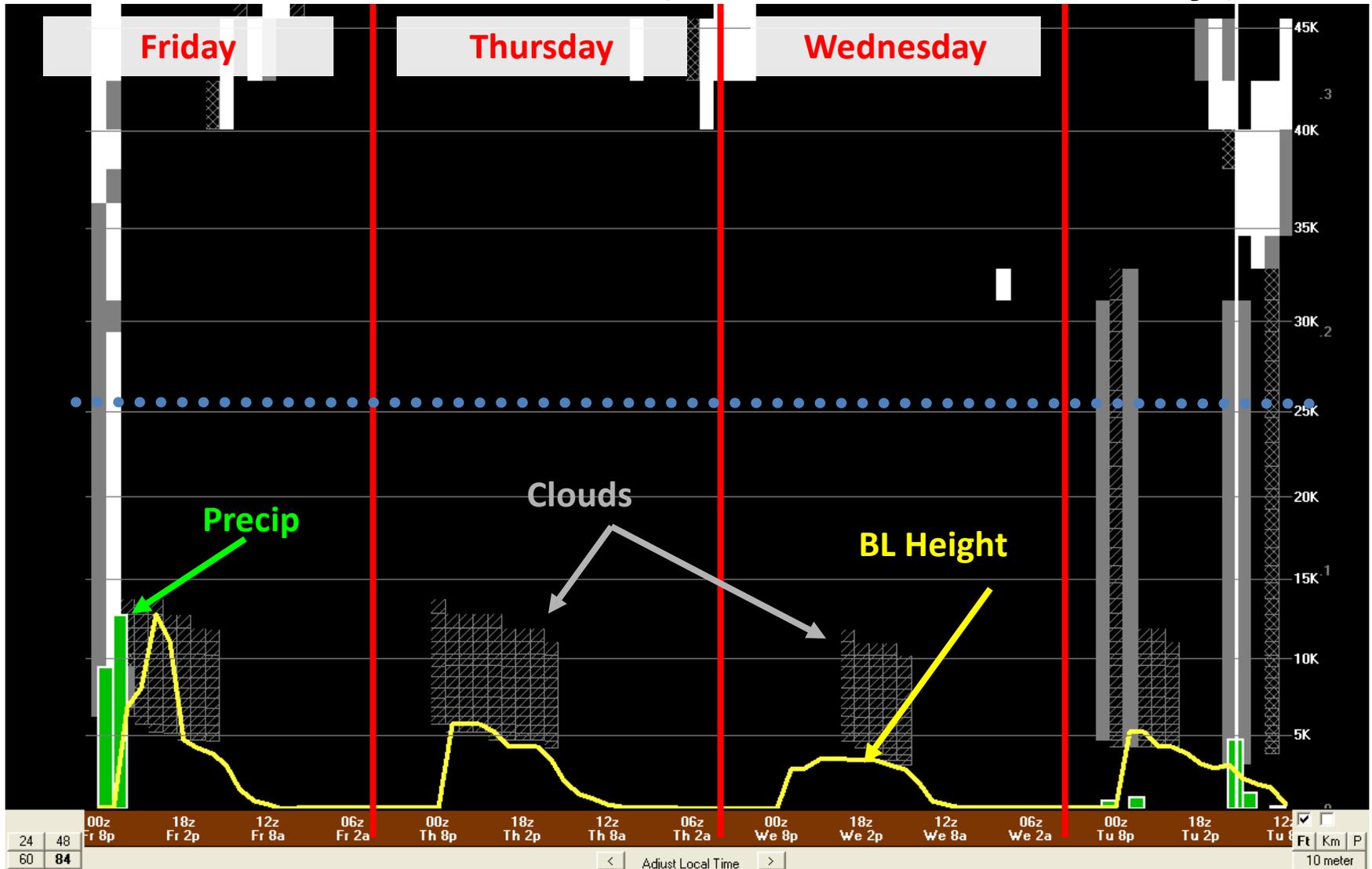
Hotter than Georgia Asphalt in July

Thursday →

Friday →



Bufkit – NAM (12 UTC 19 July)



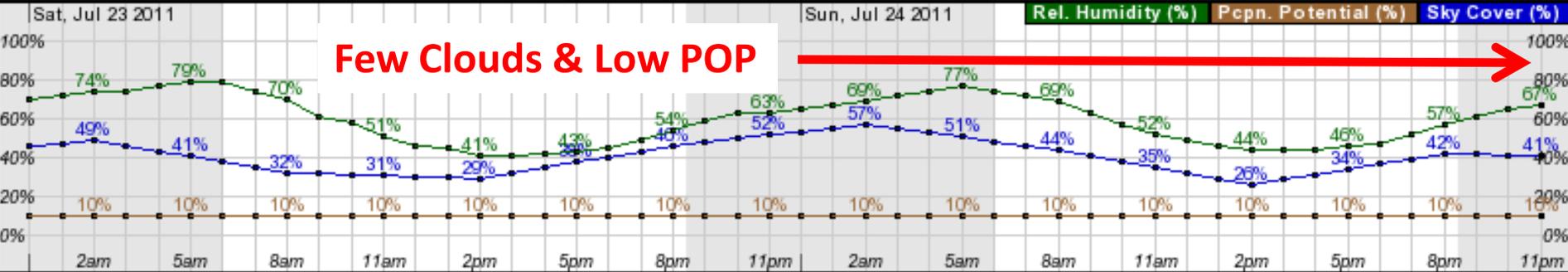
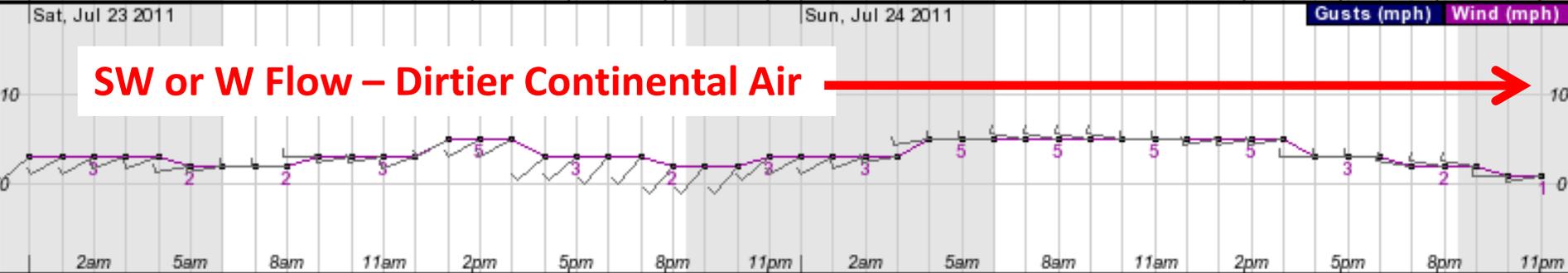
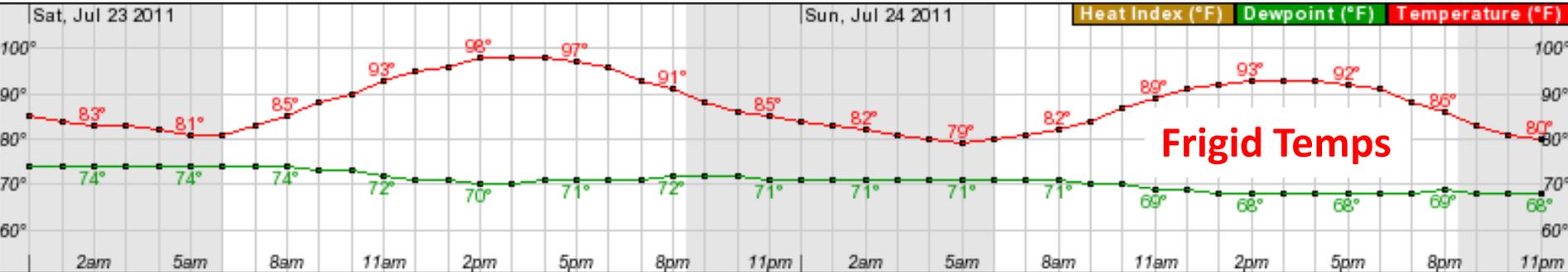
- Scattered BL clouds on Wed. and Thr.
- Chance of precip on Friday
- Fairly shallow BL on Wed. afternoon

Saturday : Hazy, Very Hot, Extremely Humid

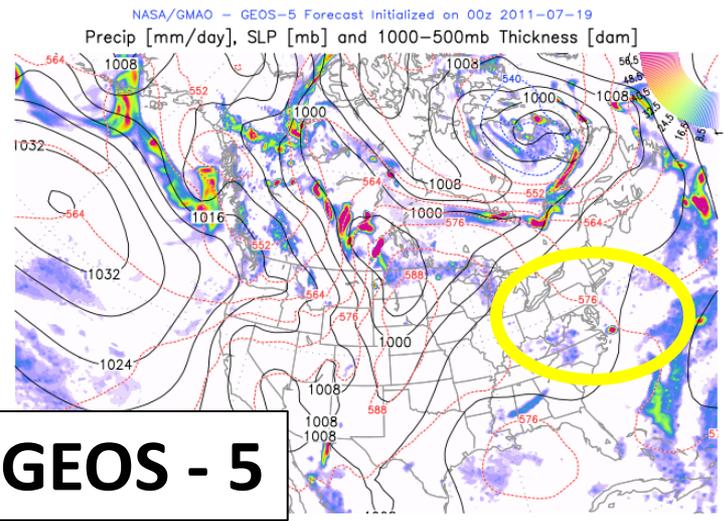
Sunday : Less Heat with Lower Dewpoints

Saturday →

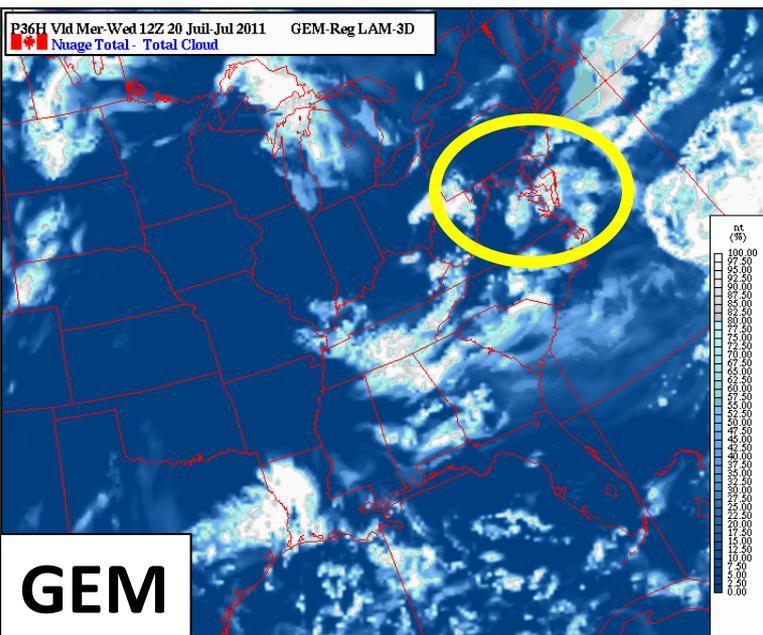
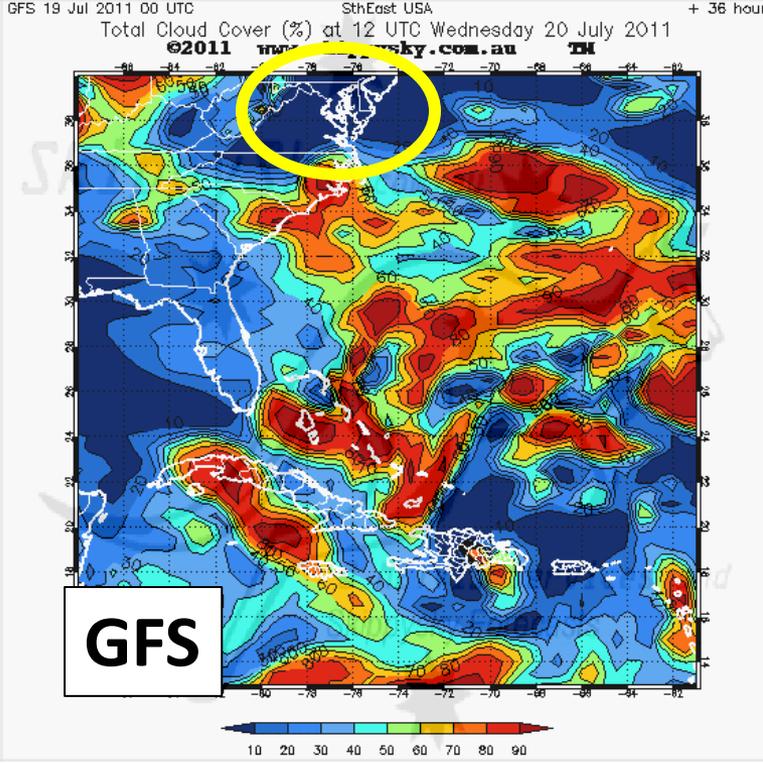
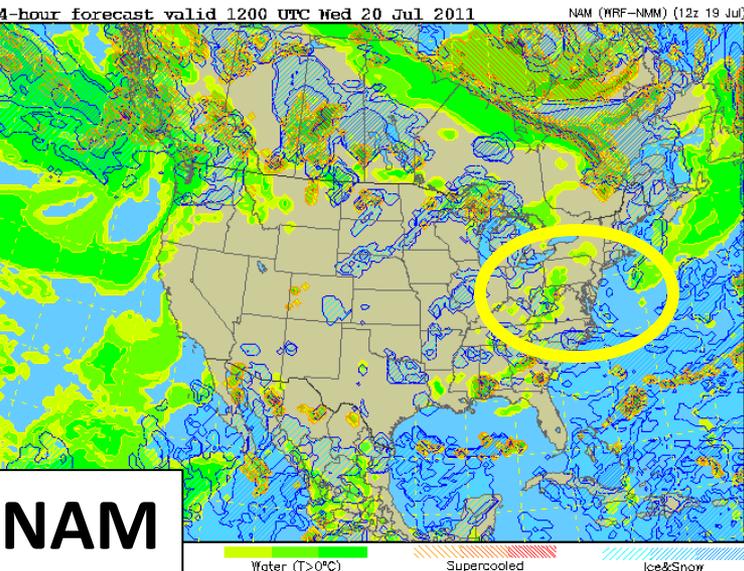
Sunday →



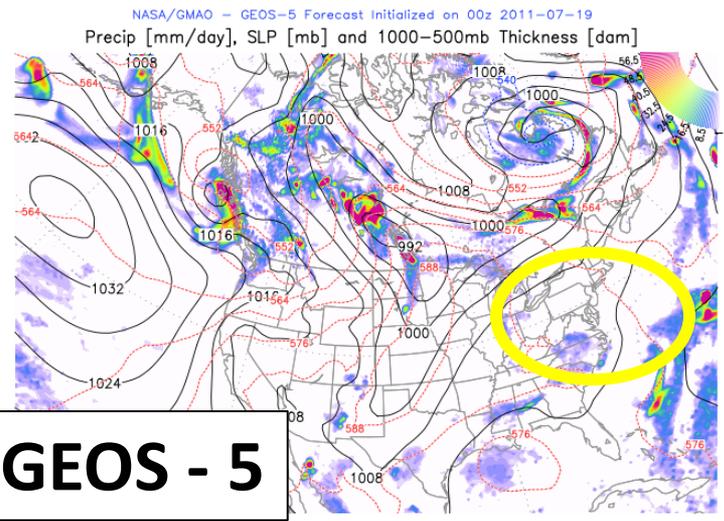
Wednesday 8 am: GEM model shows clouds in the southern part of our region.



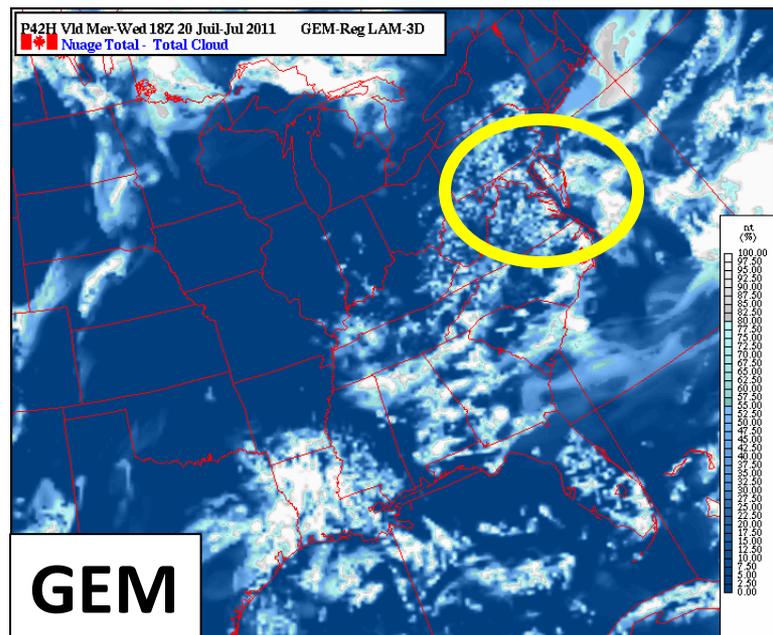
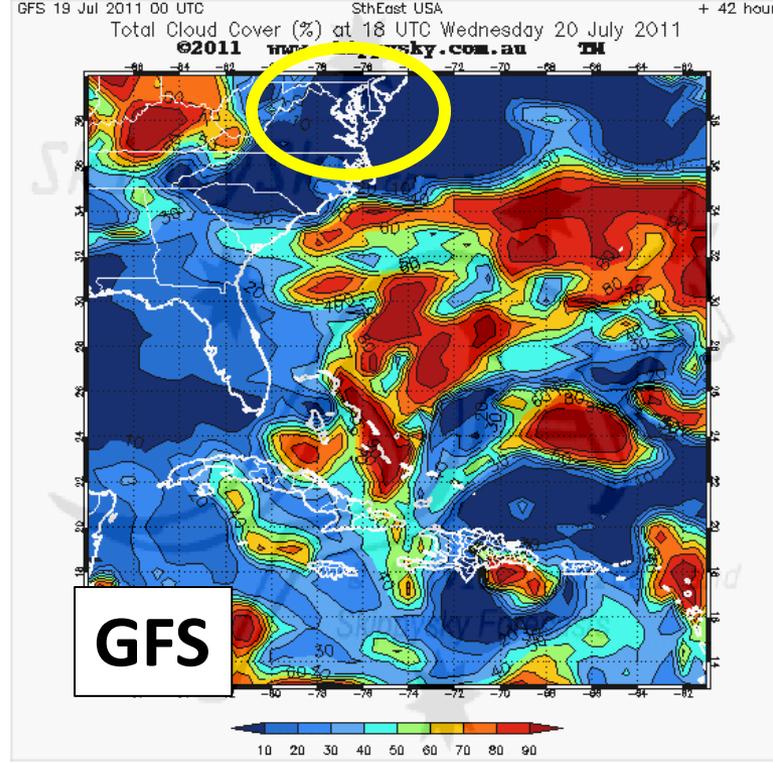
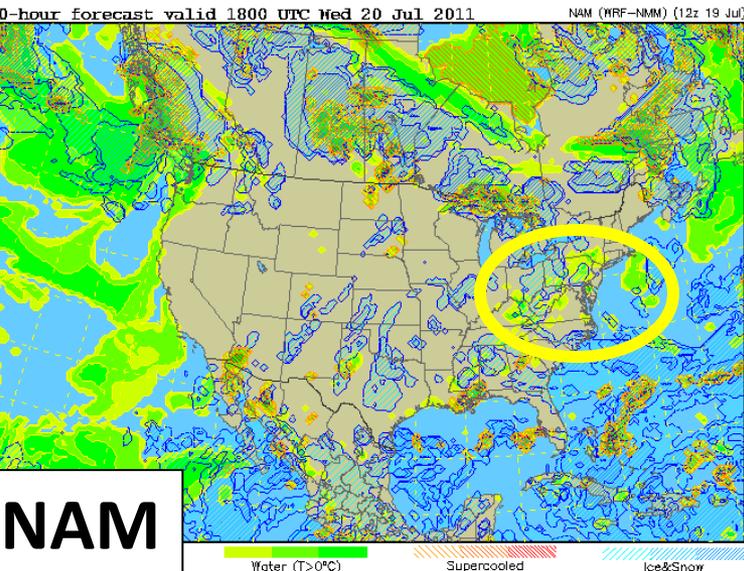
36-hr forecast valid Wed 12z 2011-07-20



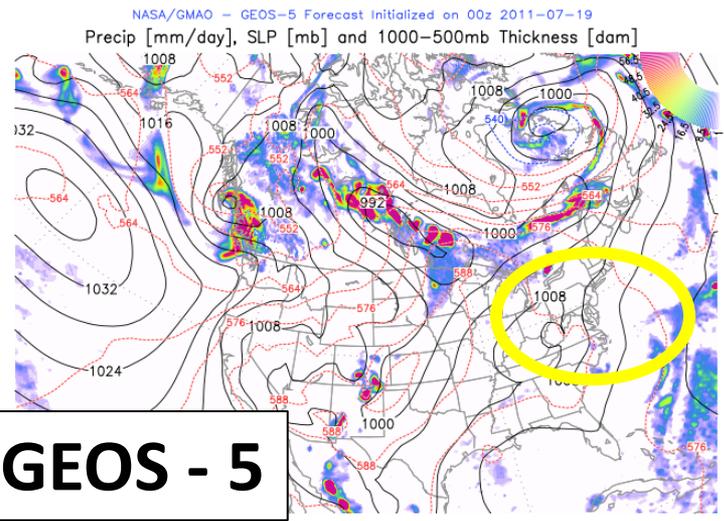
Wednesday 2 pm: GEM model shows increasing clouds over our region. NAM shows high level clouds (18K + ft) to our north.



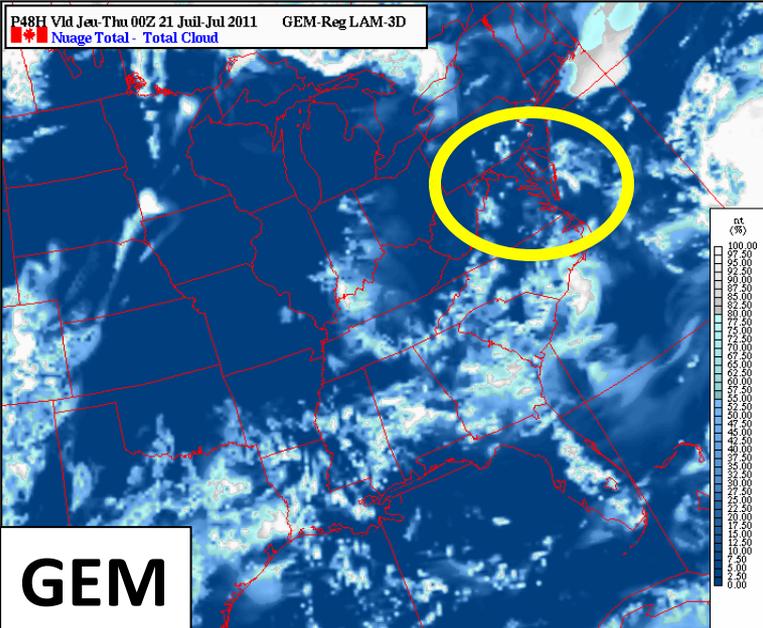
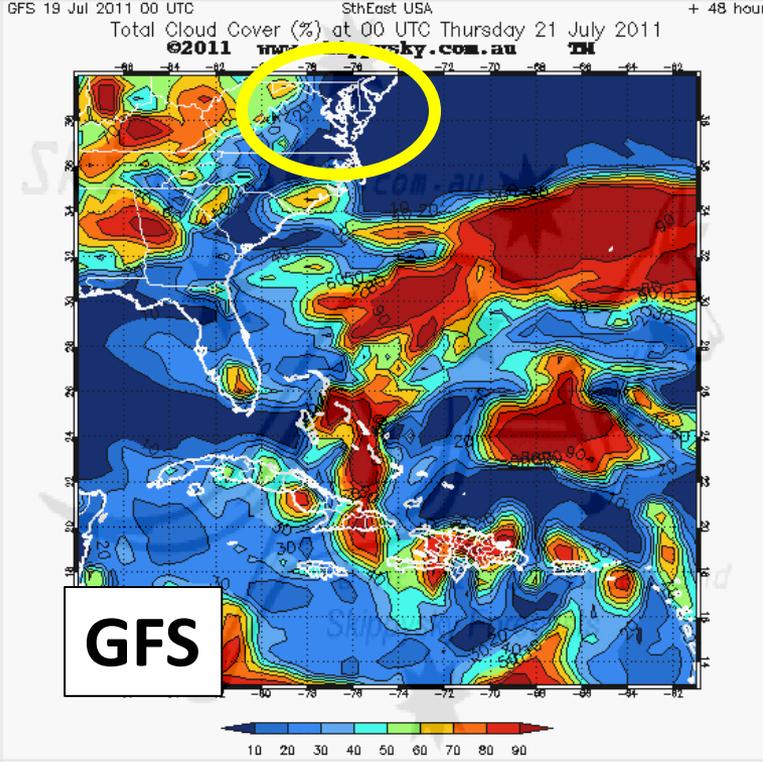
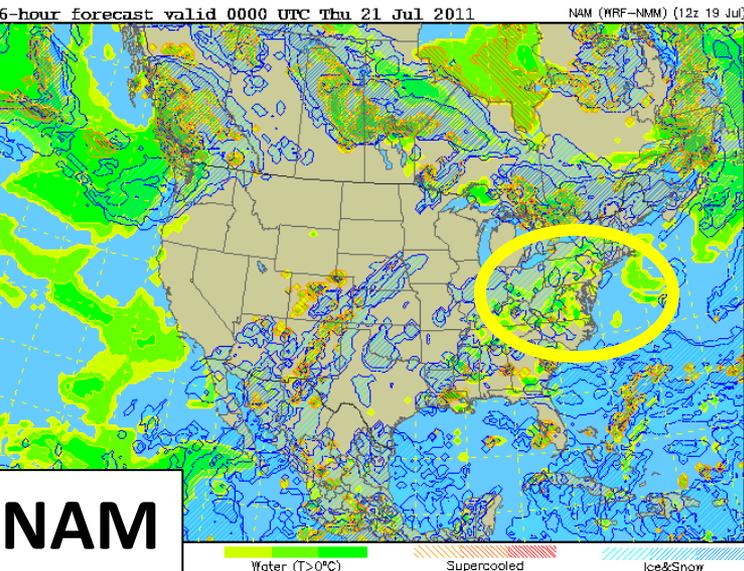
42-hr forecast valid Wed 18z 2011-07-20



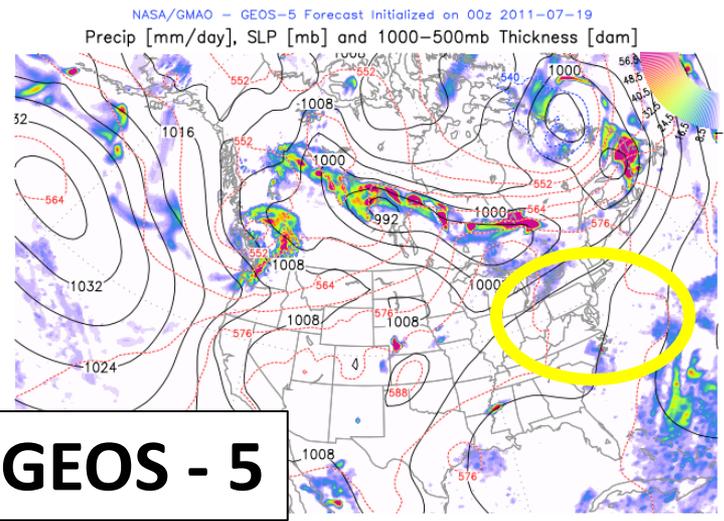
Wednesday 8 pm: NAM forecasts low/mid level clouds over our area (<6K ft – 12K ft). GFS shows high clouds to our west.



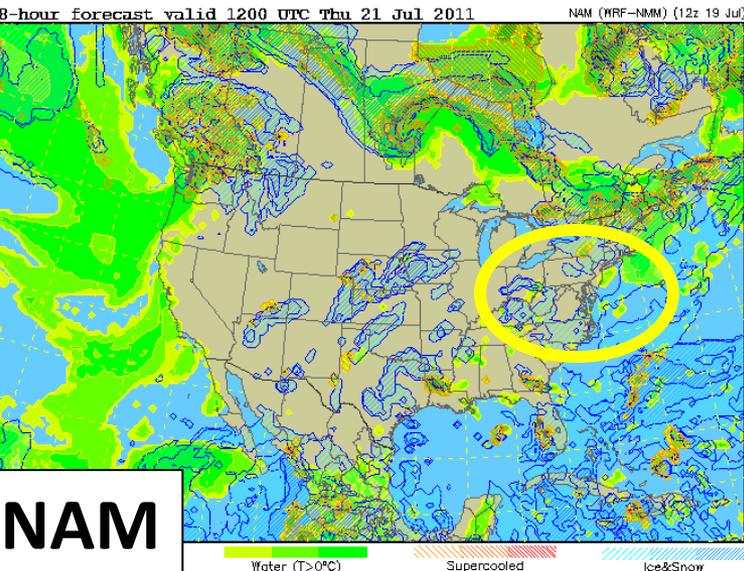
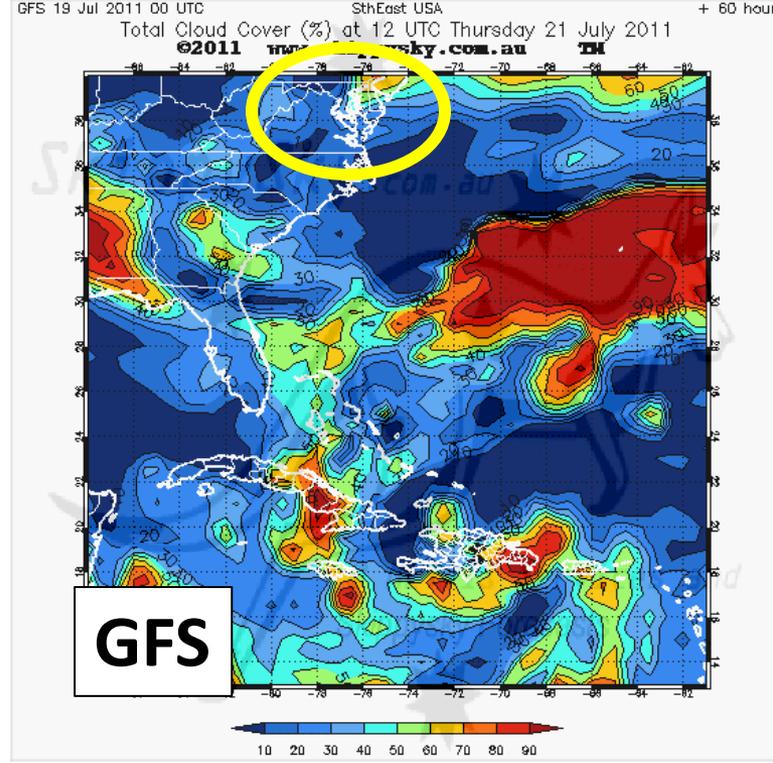
48-hr forecast valid Thu 00z 2011-07-21



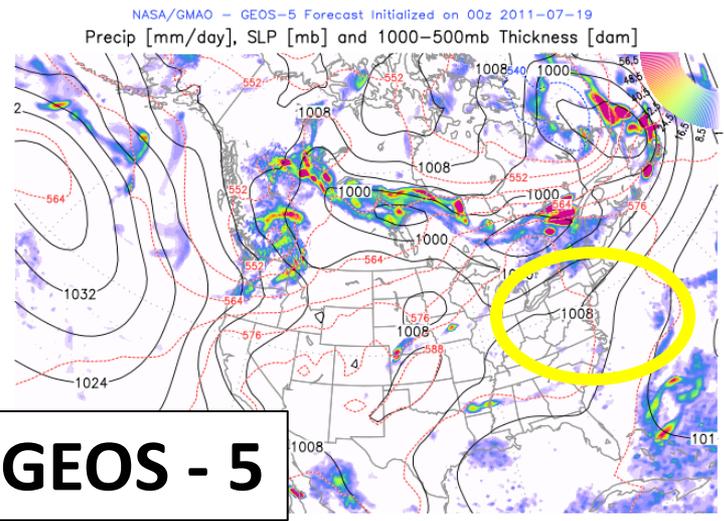
Thursday 8 am: GFS forecasts high cloud cover with coverage increasing from 10% towards 60% in NE MD.



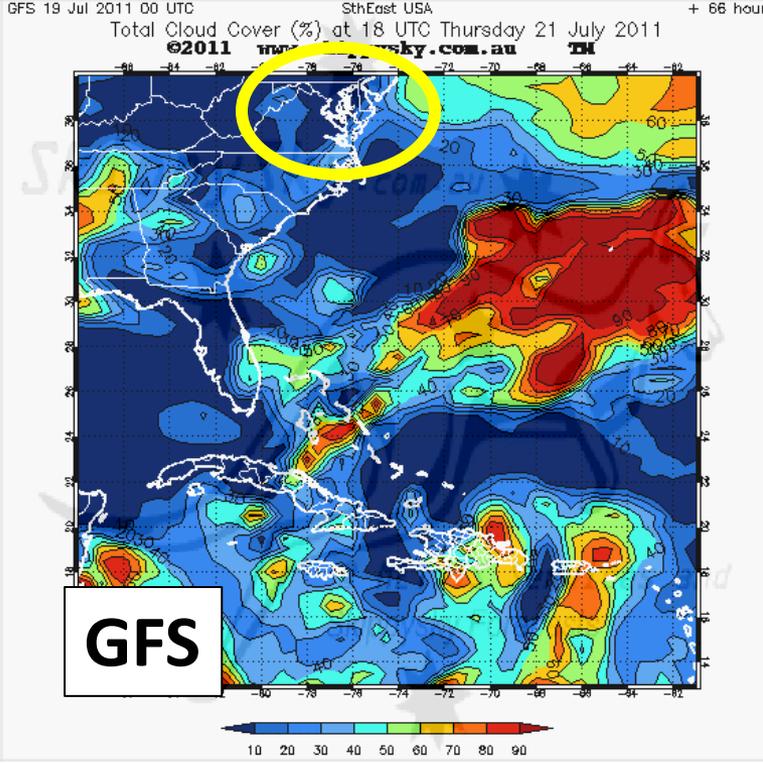
60-hr forecast valid Thu 12z 2011-07-21



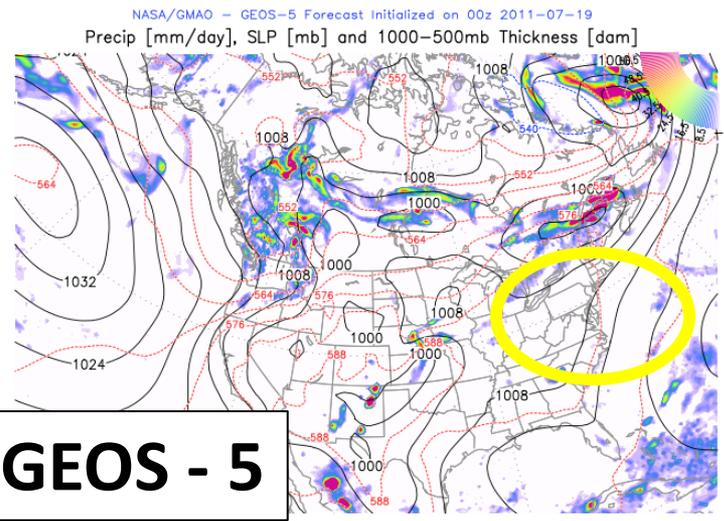
Thursday 2 pm: All models clear



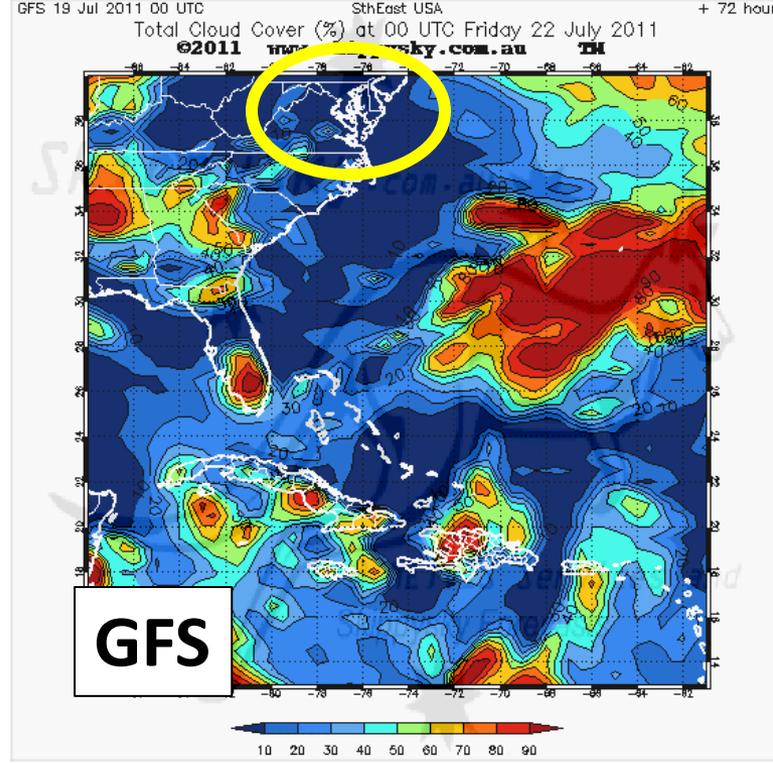
66-hr forecast valid Thu 18z 2011-07-21



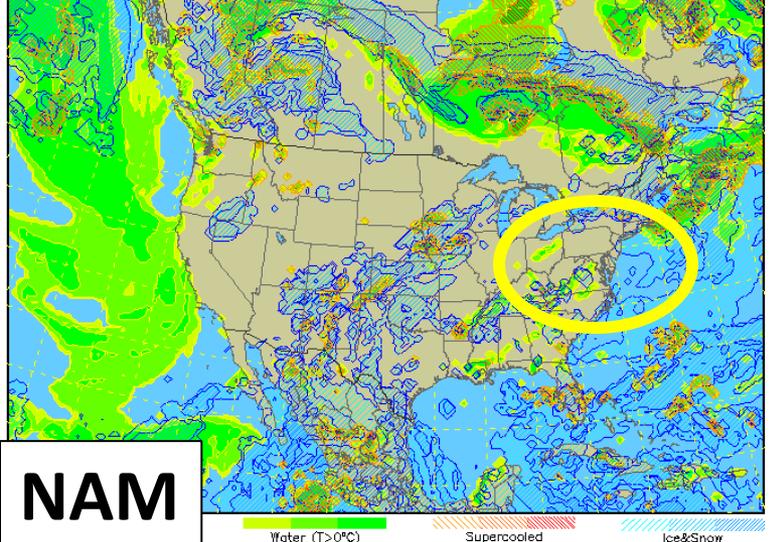
Thursday 8 pm: All models clear



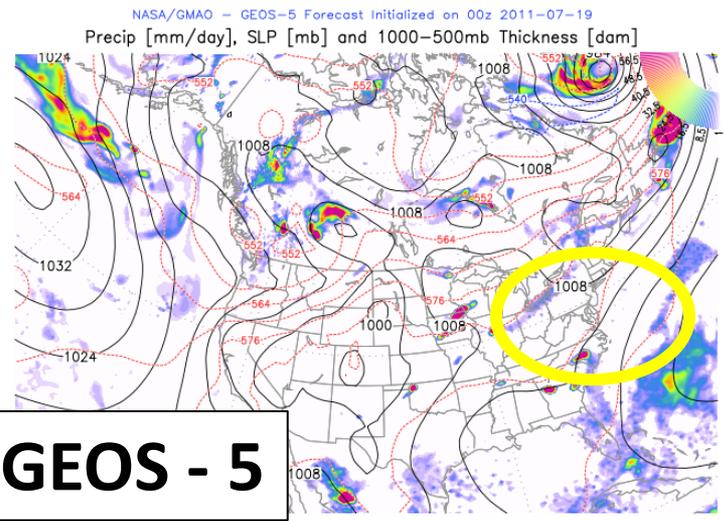
72-hr forecast valid Fri 00z 2011-07-22



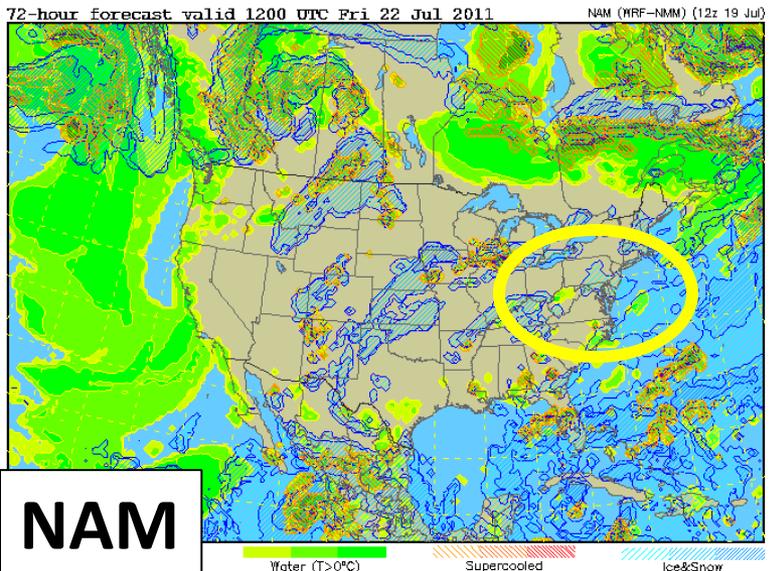
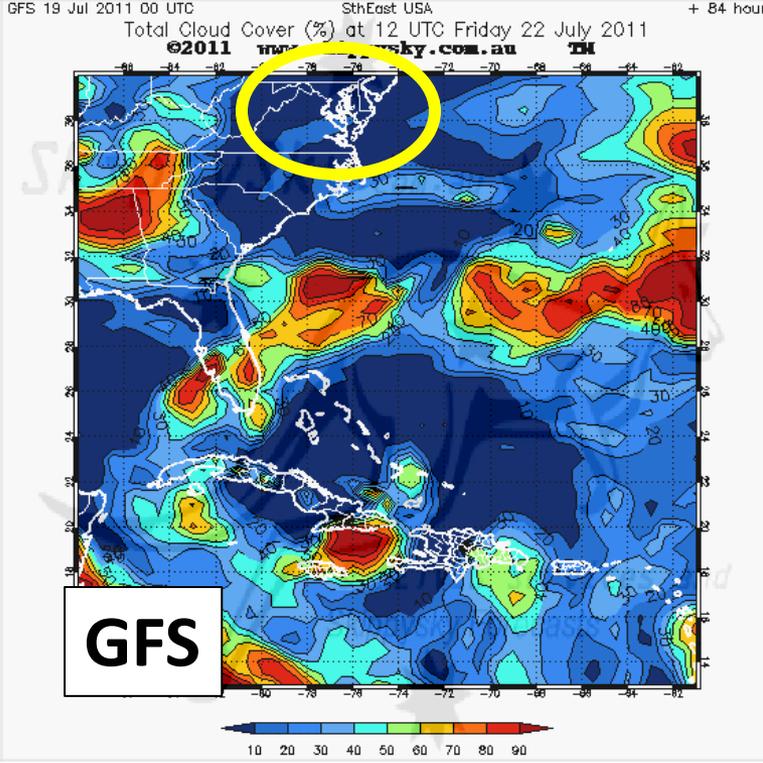
60-hour forecast valid 0000 UTC Fri 22 Jul 2011 NAM (WRF-NMM) (12z 19 Jul)



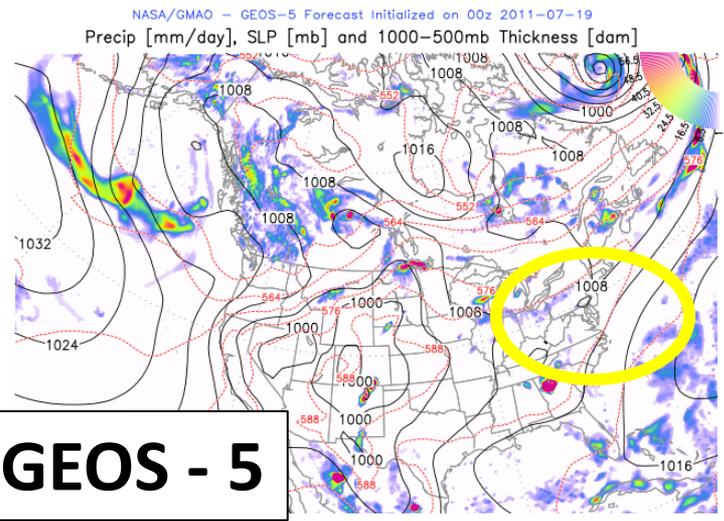
Friday 8 am: NAM predicts high level cloud cover (18K +ft)



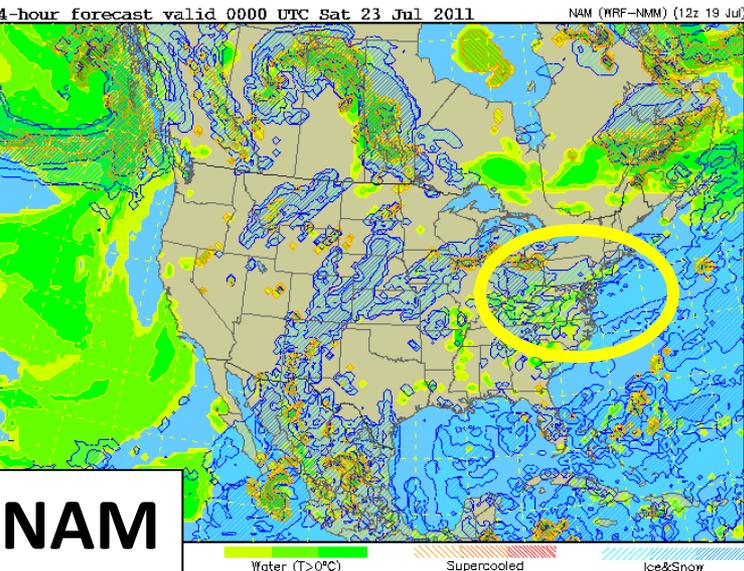
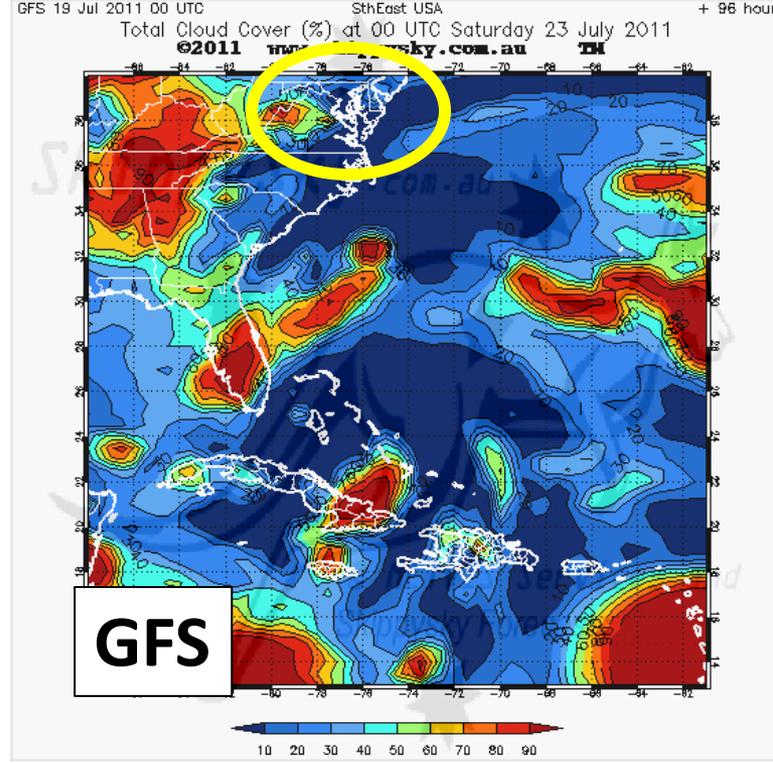
84-hr forecast valid Fri 12z 2011-07-22



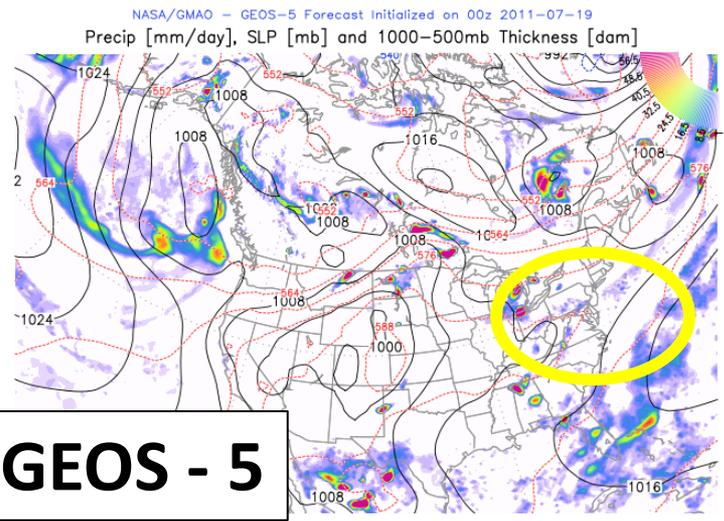
Friday 8 pm: NAM predicts high level cloud cover (18K +ft) over our area and mid-level (6K – 12K ft) over southern MD. GFS shows high clouds over northern MD and low clouds in northern VA.



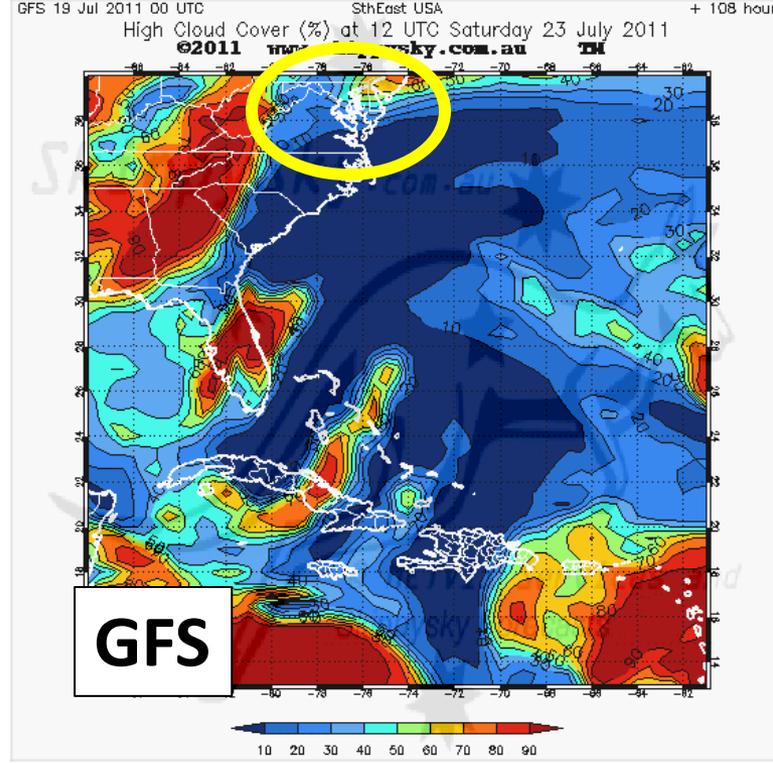
96-hr forecast valid Sat 00z 2011-07-23



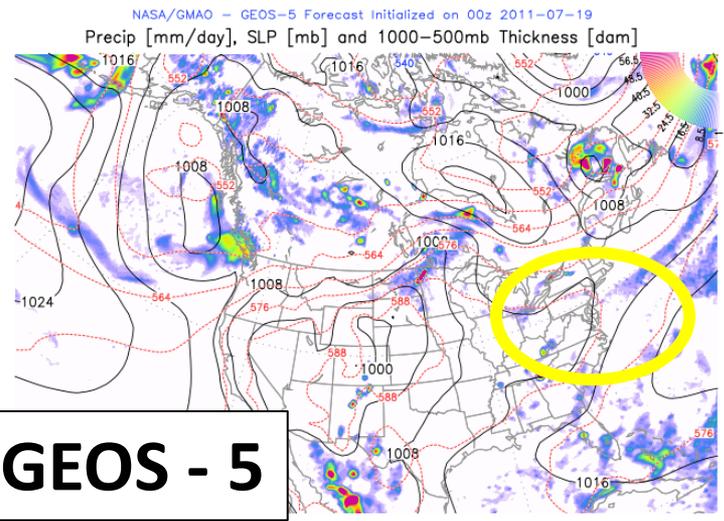
Saturday 8 am: GFS forecasts high cloud cover with coverage increasing from 30% towards 60% in NE MD.



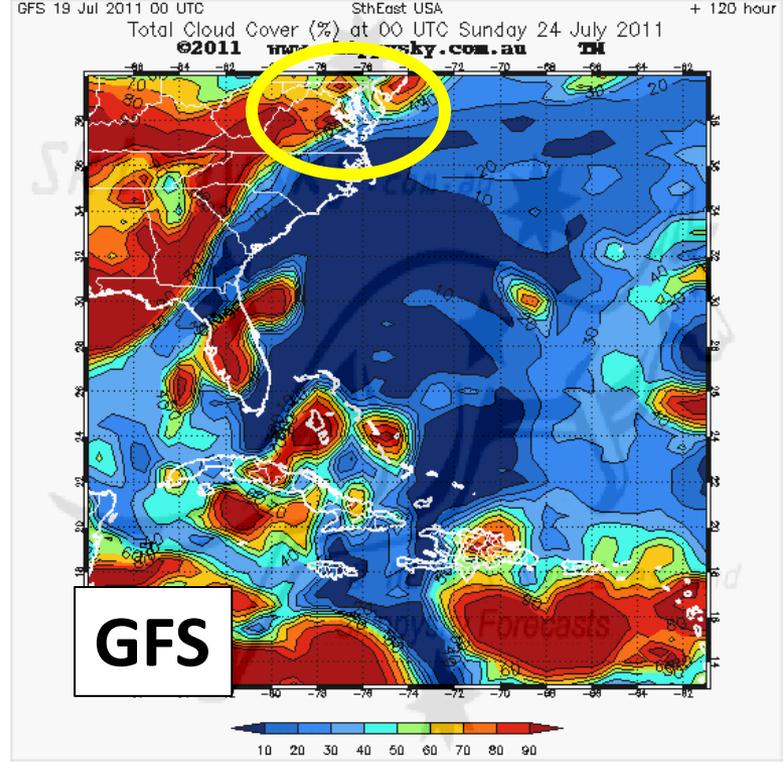
108-hr forecast valid Sat 12z 2011-07-23



Saturday 8 am: GFS forecasts thick (all levels) cloud cover

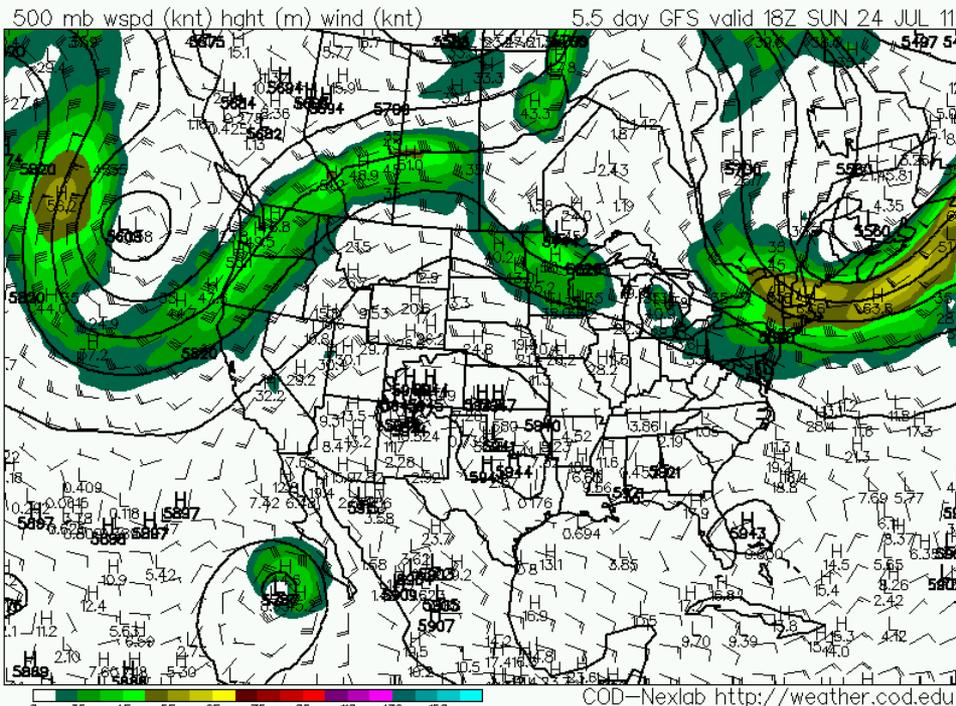


120-hr forecast valid Sun 00z 2011-07-24

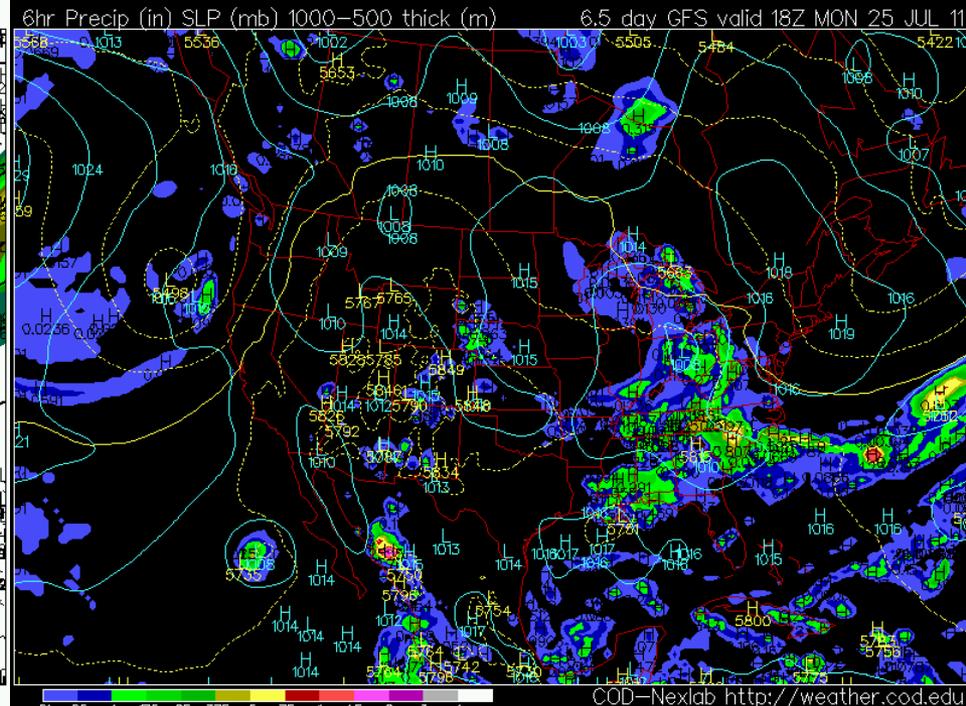


Extended forecast (Saturday through Monday): Upper level high pressure recedes westward by Sunday afternoon as a shortwave trough digs across Central Canada. This might result in a decrease in temperatures and modest westerly flow that could help relieve the oppressive moisture from late this week. A surface trough might impact our area Monday afternoon/evening. Provided sufficient moisture is ahead of it, thunderstorms are possible.

2 pm Sunday
GFS 500 mb winds (knots), heights (m)



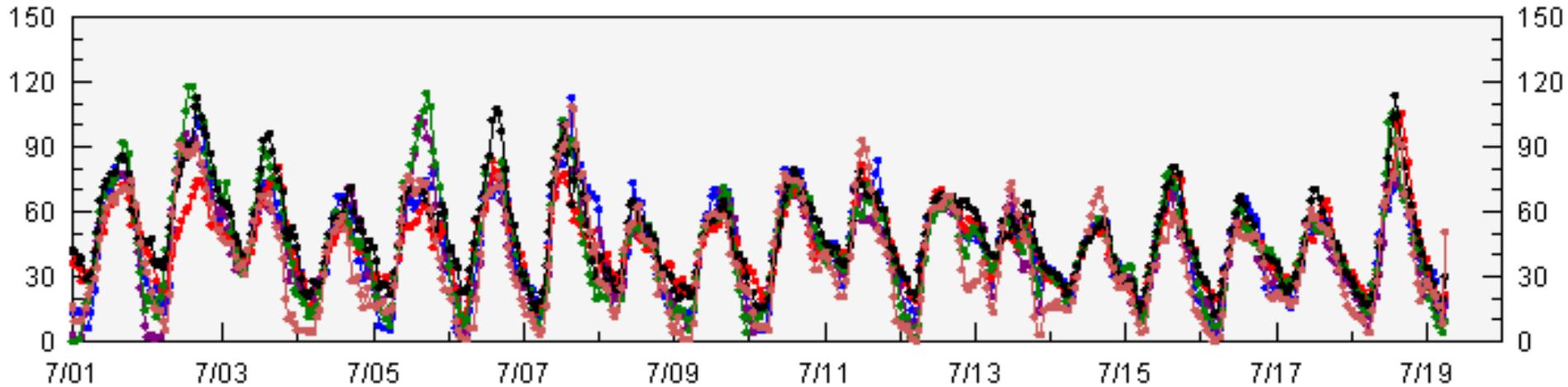
2 pm Monday
GFS surface SLP (mb), 1000-500 thickness (m), 6 hr precip (in)



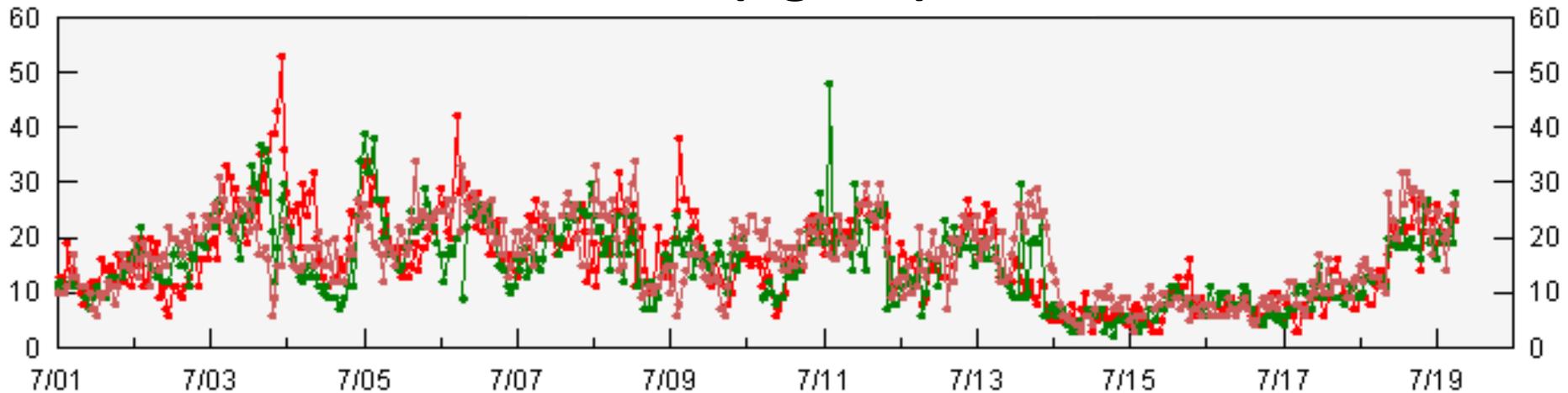
MDE Surface Sites

Padonia Beltsville Edgewood Aldino Essex Fairhill

Ozone (ppbv) 1 hr

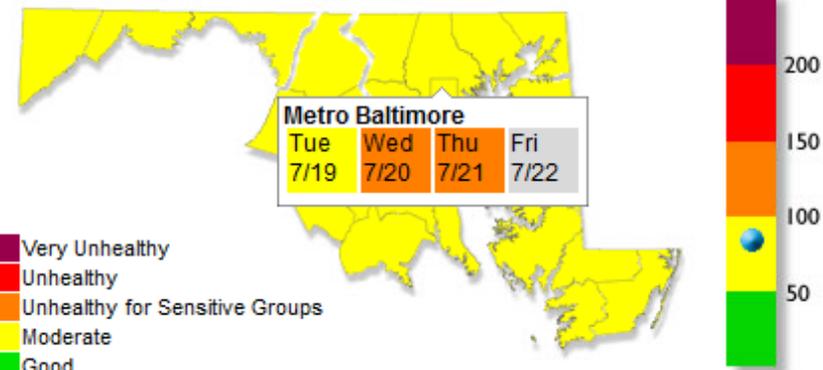


PM2.5 (ug/m³) 1 hr



Today's AQI Forecast

Tuesday, July 19, 2011



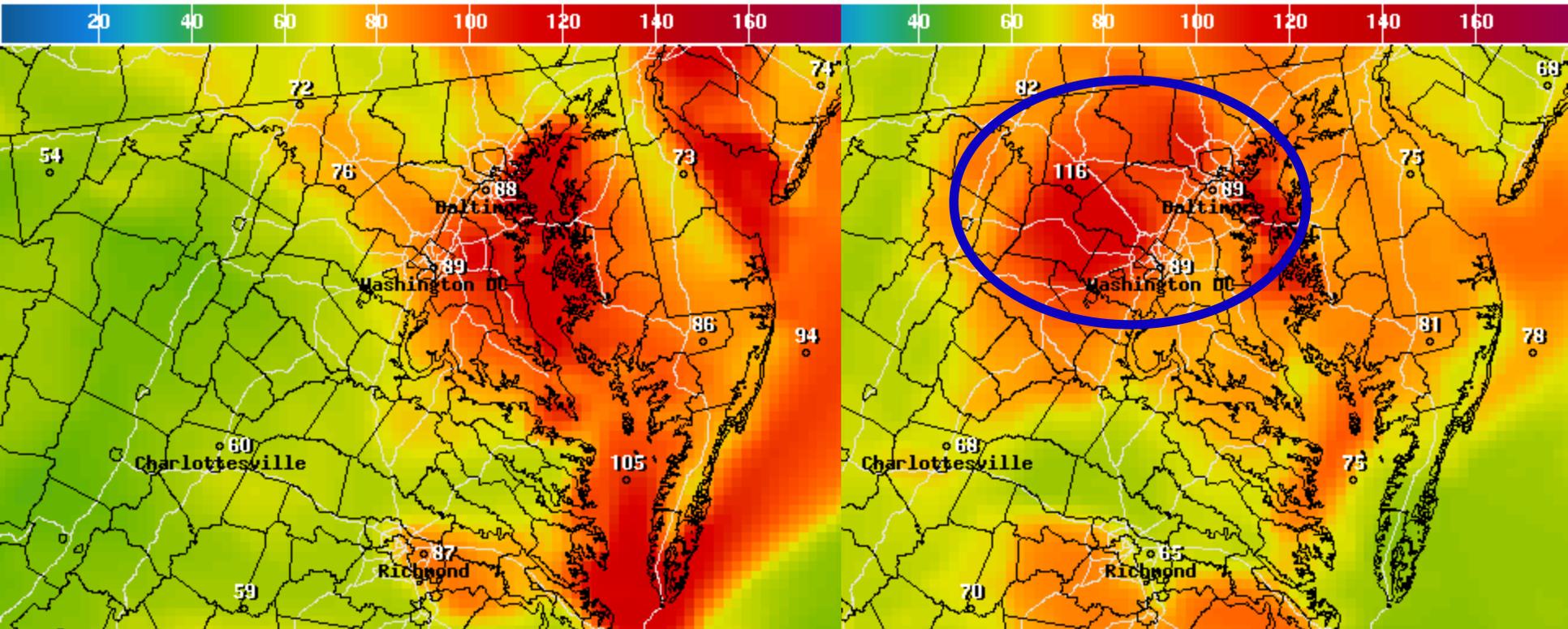
Forecast Discussion: On Tuesday, a weak cold front moves through the area causing an increase in cloud cover and chance of rain showers throughout the day. Expect mid to upper Moderate range for all locations. On Wednesday, a high pressure system begins to dominate the region. Some stagnation and partly to sunny skies could lead ozone to reach Unhealthy for Sensitive Groups (USG) AQI in the Baltimore and Washington D.C. metro areas while other areas could remain Moderate. Fine particles could also rise with an increase in moisture and possible smoke transport due to fire activity in Canada. A heat wave is expected to begin on Thursday as temperatures jump to the upper 90's F. USG conditions are expected to continue for most locations. - MDE

Air Quality Forecast					
Today's High		Tomorrow's High			
Air Quality Index (AQI)		Air Quality Index (AQI)			
84	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	84	Moderate	Ozone	101	Unhealthy for Sensitive Groups
Particles (PM2.5)	57	Moderate	Particles (PM2.5)	62	Moderate

More widespread high ozone on Wednesday than today.

Tuesday

Wednesday



Max 1 hr ozone (ppbv)

2011 11PM EDT

Maximi

Max 1 hr ozone (ppbv)

2AM EDT

06z model run

Graphic created-Jul 19 7:47AM EDT

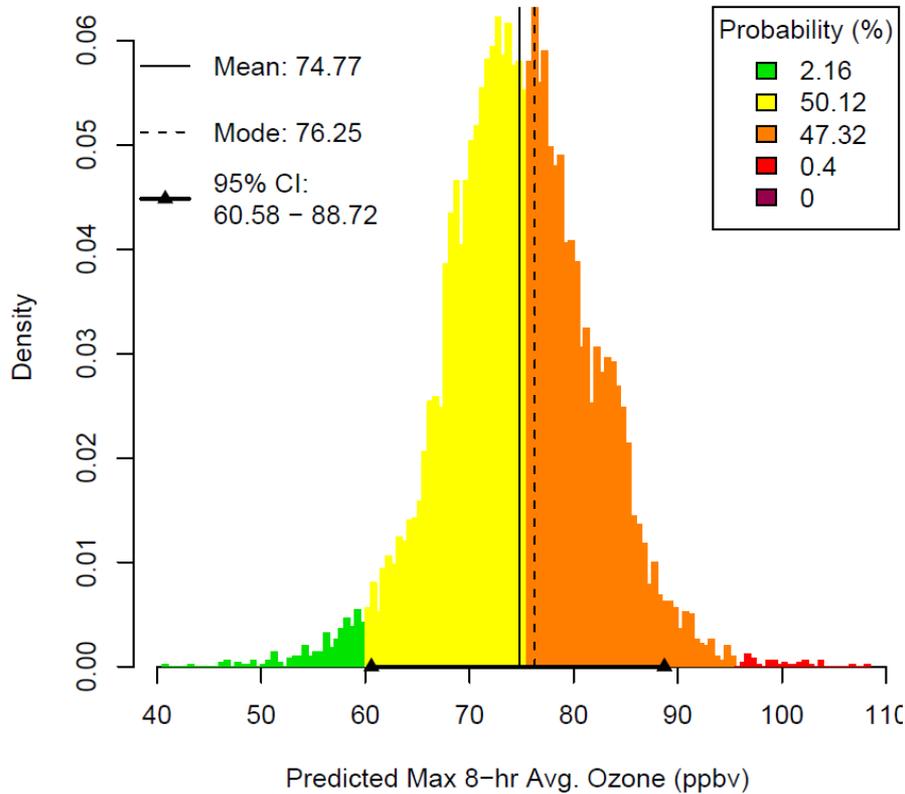
06z model run

Graphic created-Jul 19 7:47AM EDT



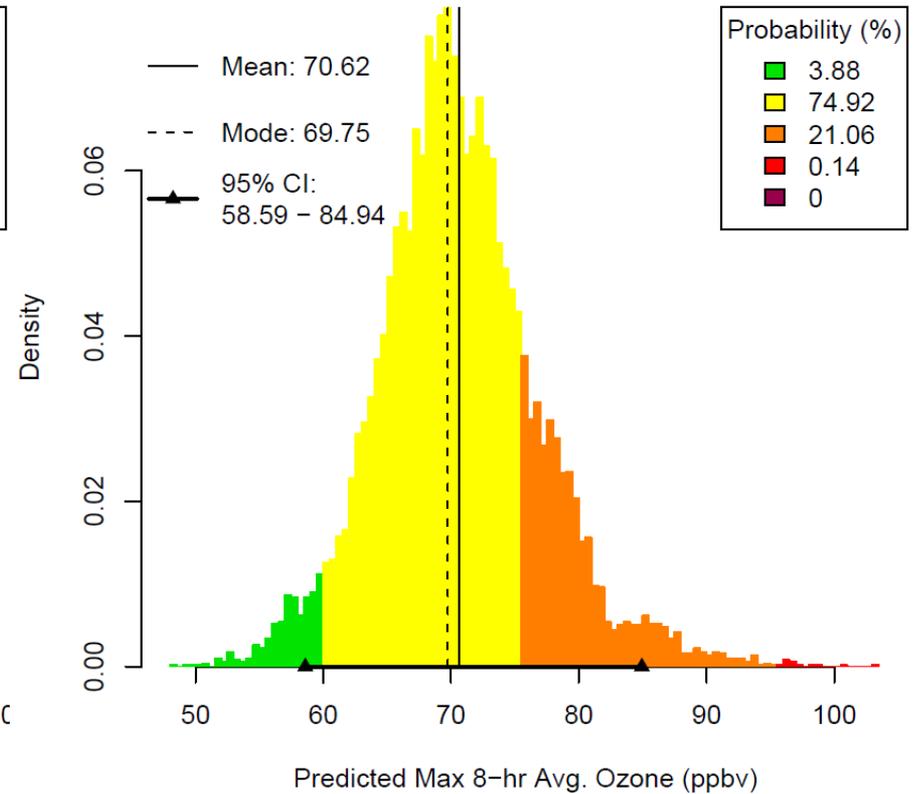
NAQFC-MOS valid for Wednesday

ID: 240251001 VALID: 2011-07-20



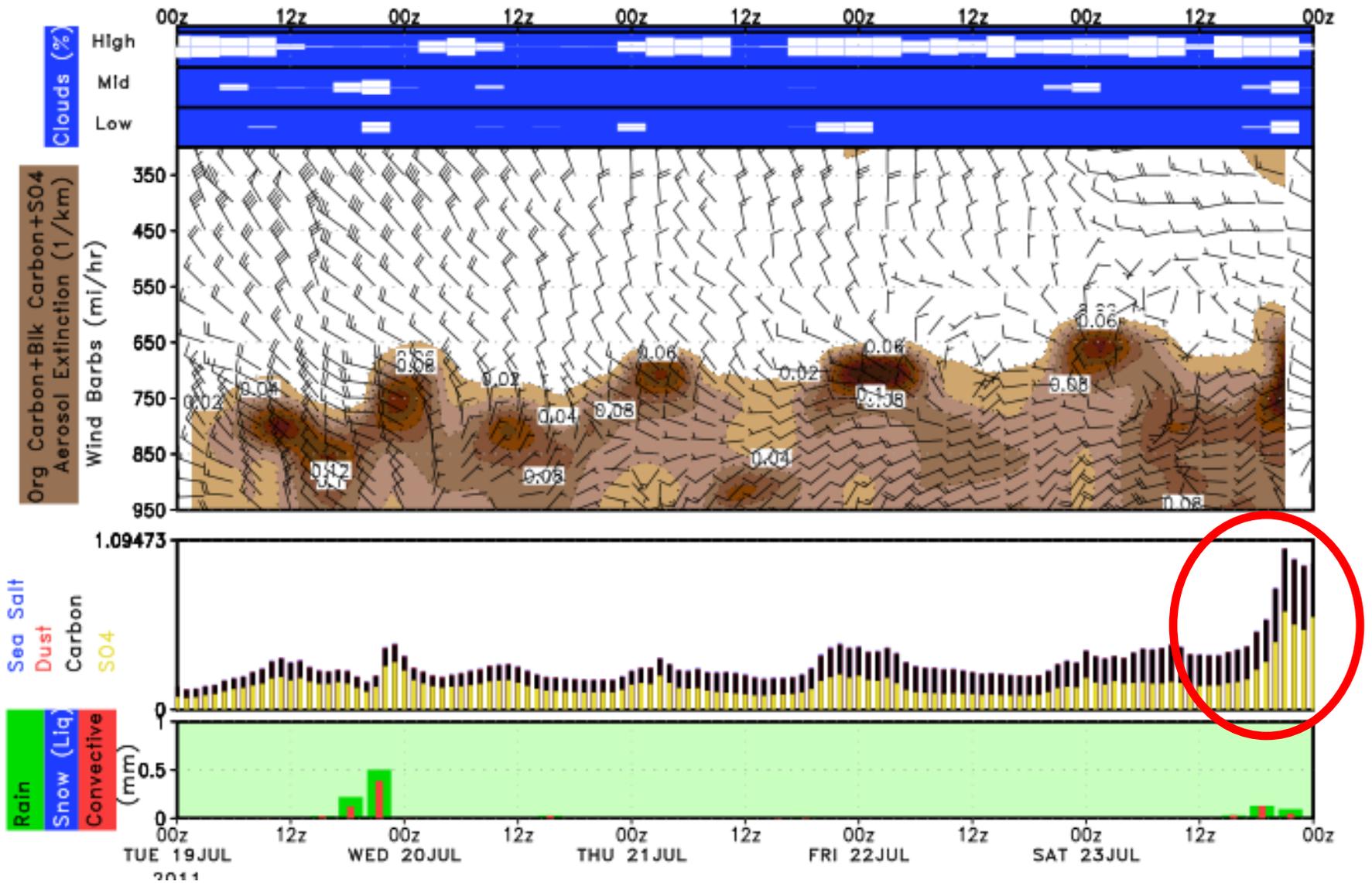
Edgewood

ID: 240330030 VALID: 2011-07-20



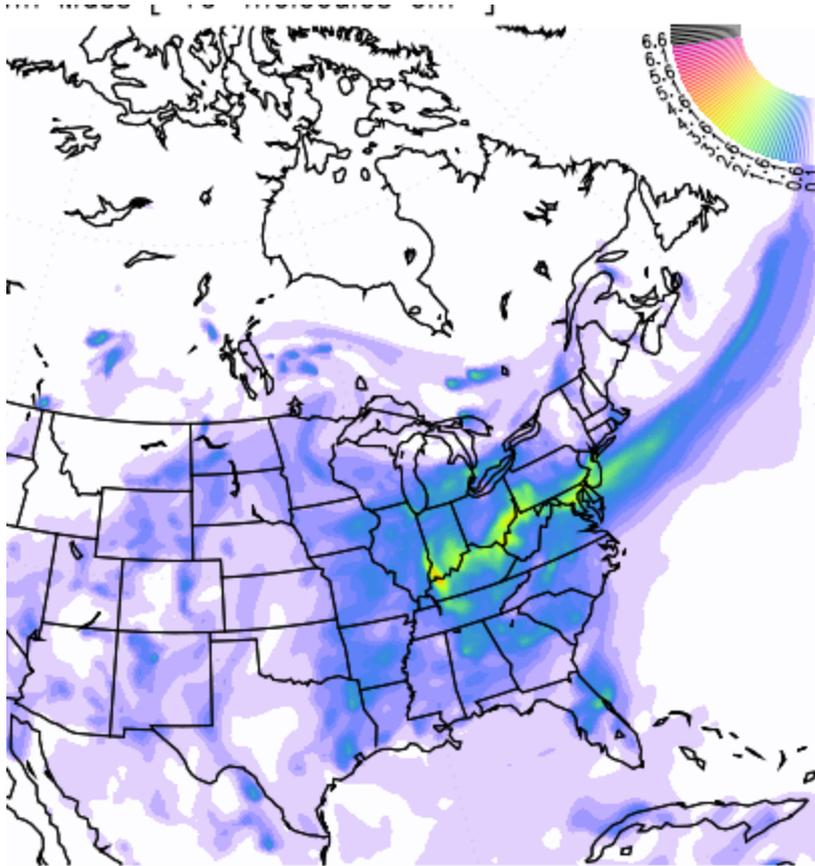
Beltsville

Beltsville

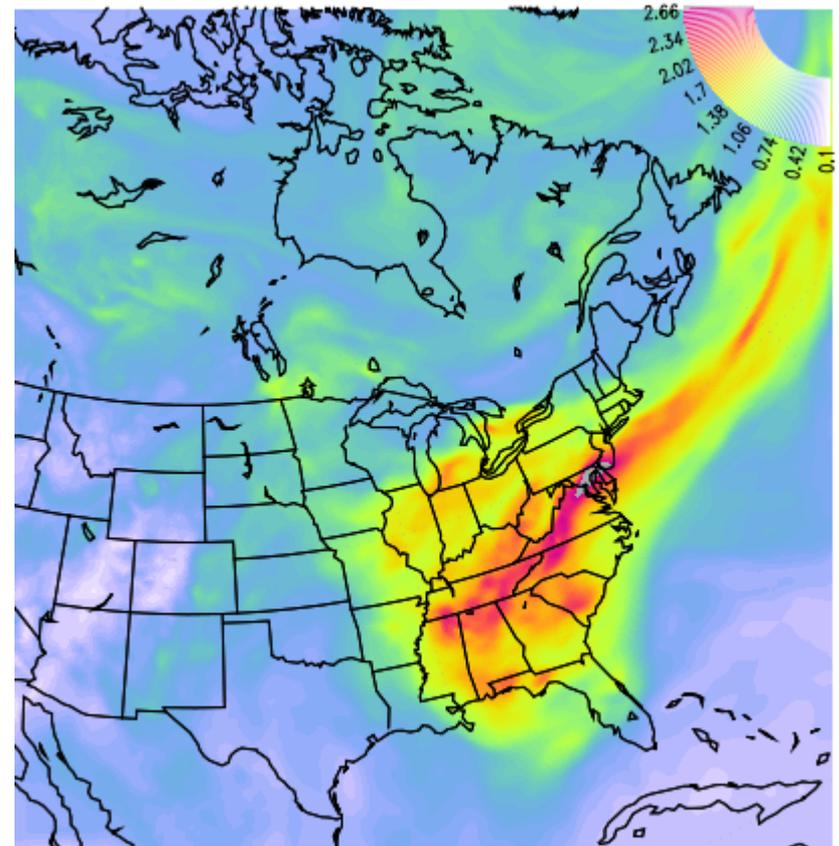


Saturday high AOD likely anthropogenic.

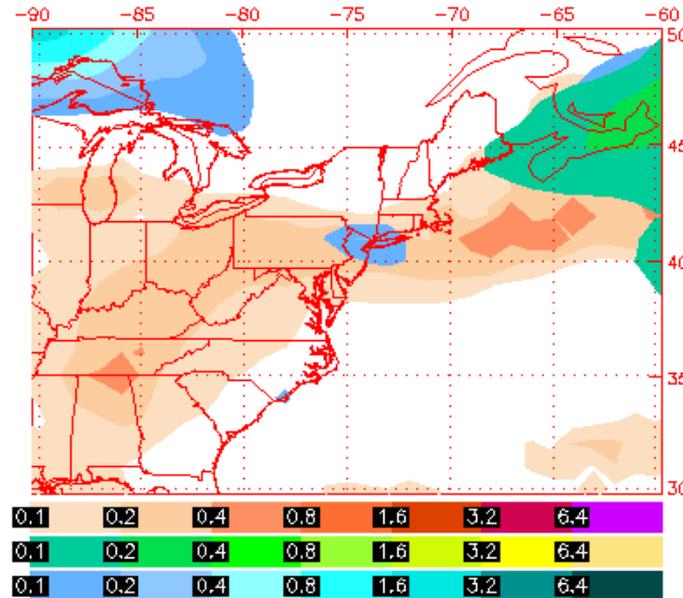
SO₂ column mass



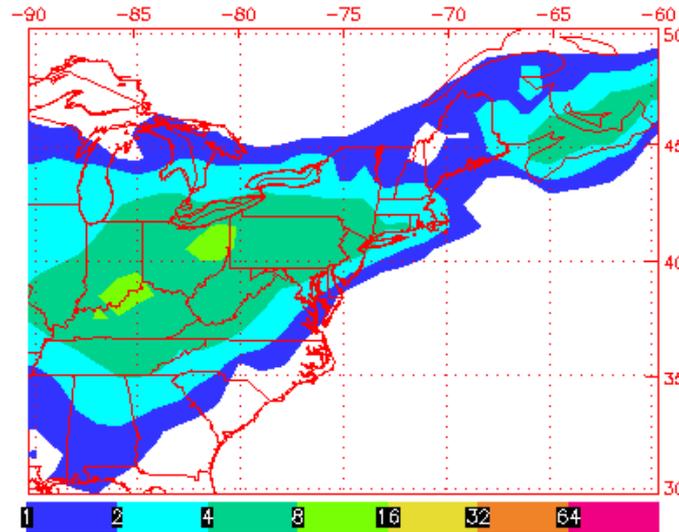
Fossil fuel CO column



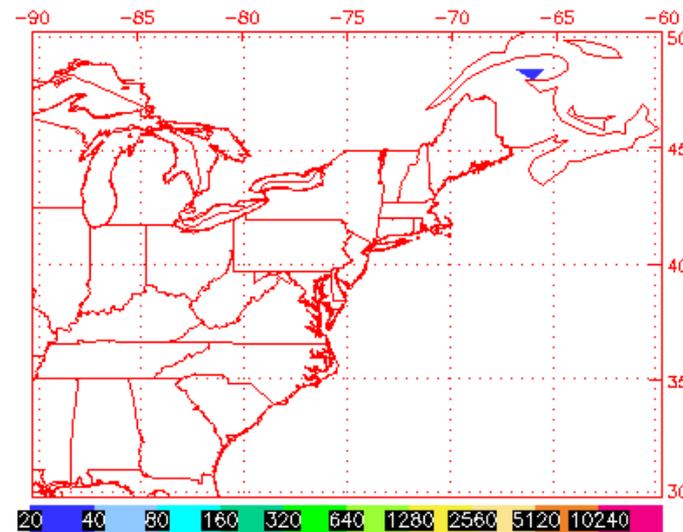
NAAPS Total Optical Depth for 00:00Z 19 Jul 2011
Sulfate: Orange/Red, Dust: Green/Yellow, Smoke: Blue



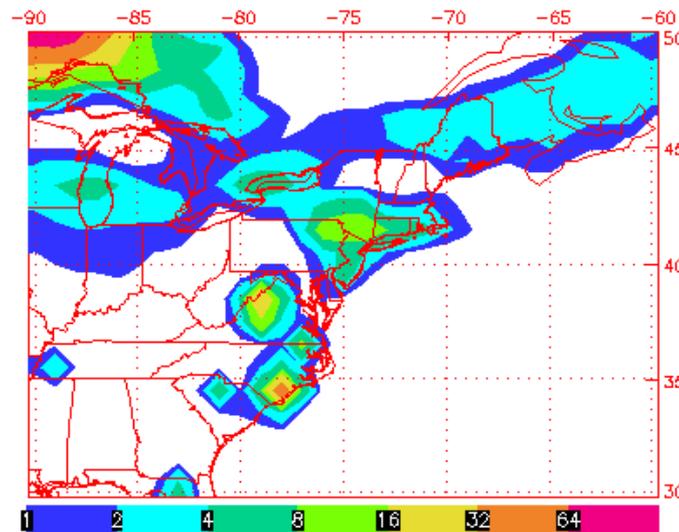
Sulfate Surface Concentration ($\mu\text{g}/\text{m}^3$)
for 00:00Z 19 Jul 2011



Dust Surface Concentration ($\mu\text{g}/\text{m}^3$)
for 00:00Z 19 Jul 2011

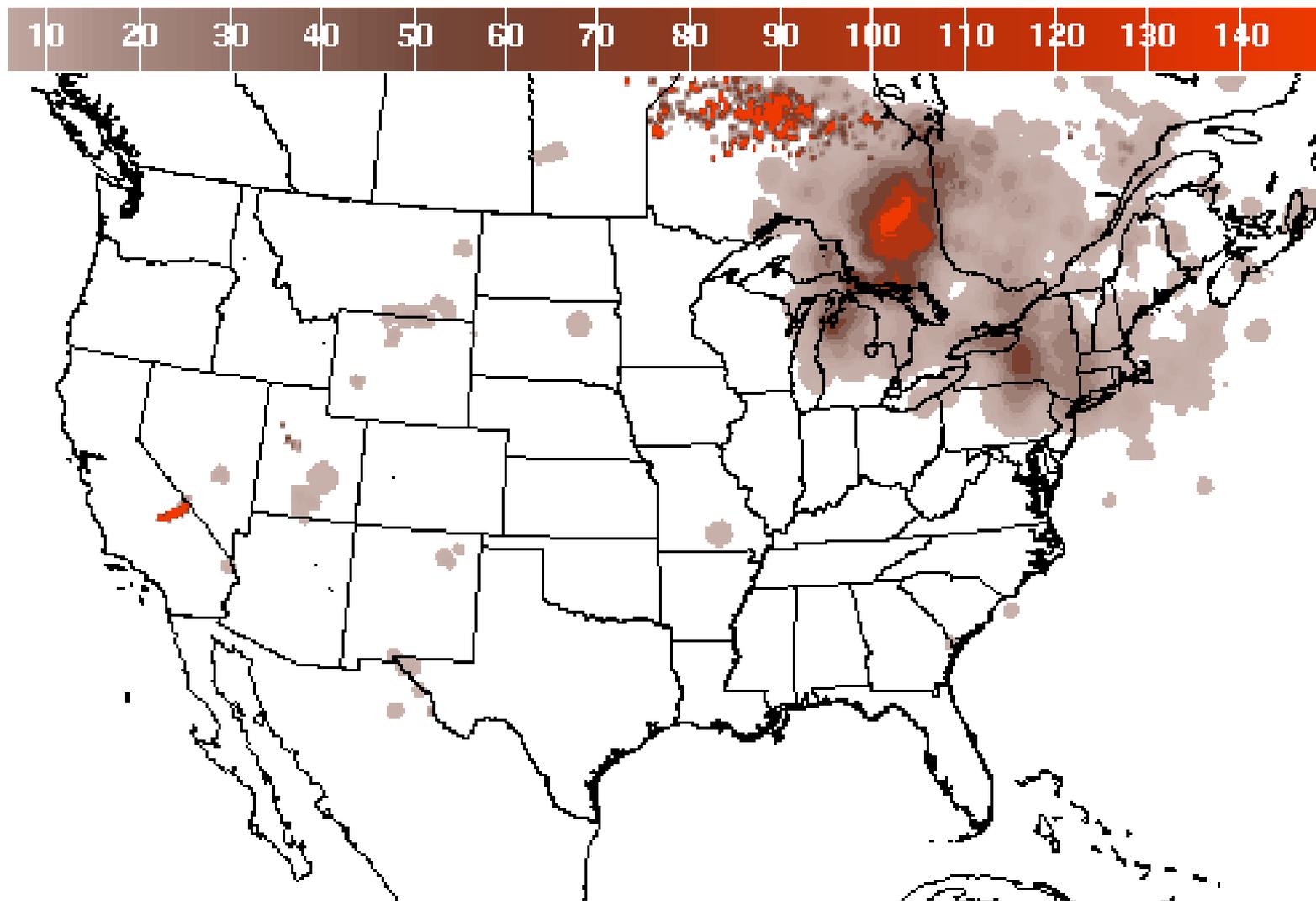


Smoke Surface Concentration ($\mu\text{g}/\text{m}^3$)
for 00:00Z 19 Jul 2011



**Keep an eye on
Biomass burning
Smoke.**

Smoke from Ontario fires gets really close – keep an eye on the plume!

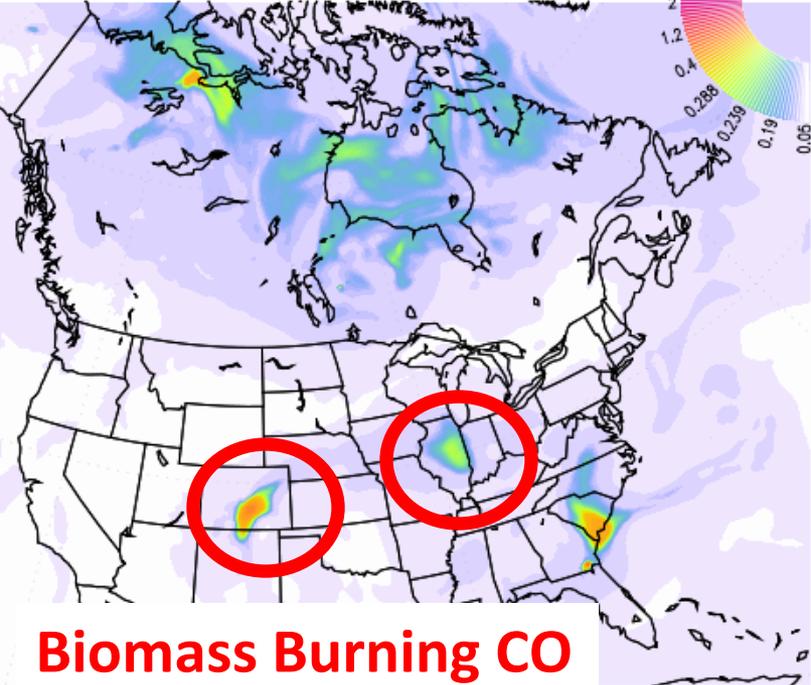


1Hr Surface Smoke (micrograms/m³) Wed Jul 20 2011 6AM EDT
(Wed Jul 20 2011 10Z)

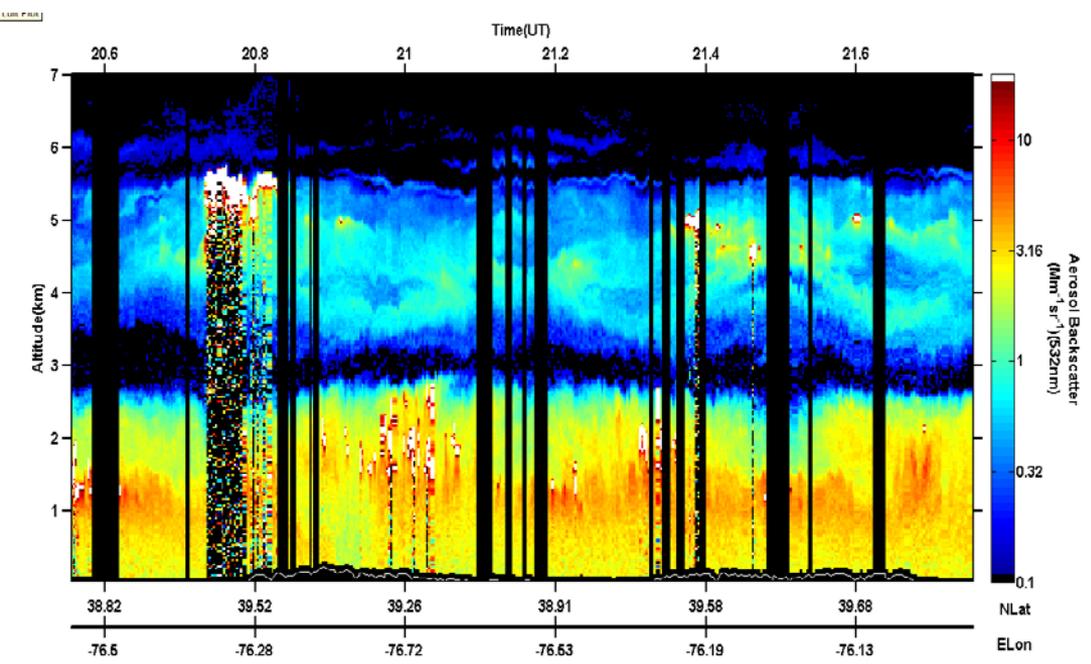
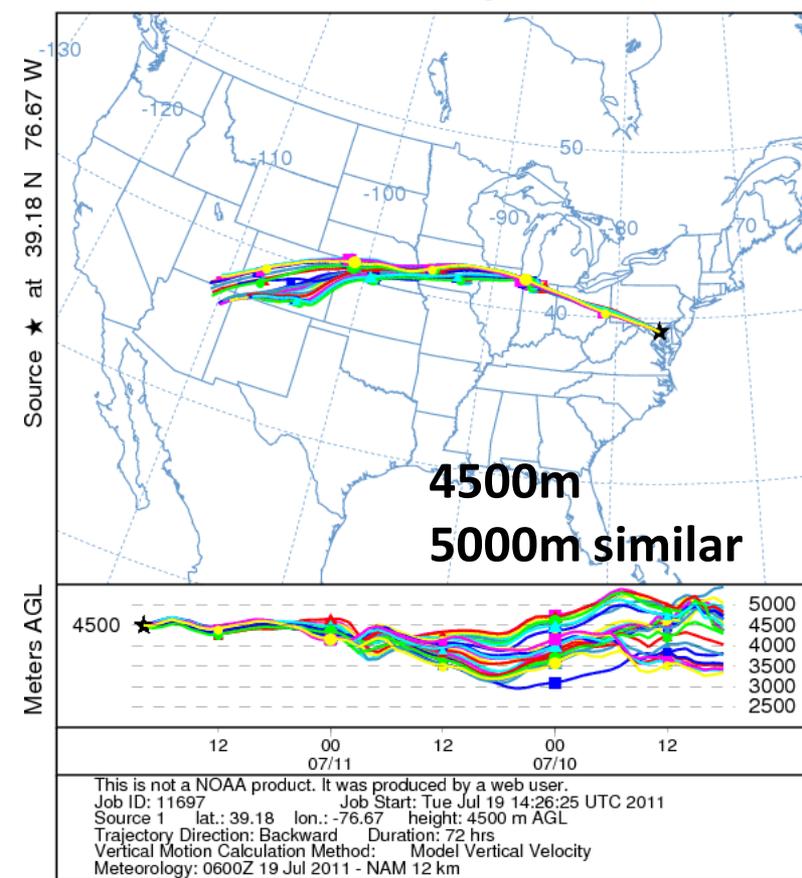


National Digital Guidance Database

06z model run Graphic created-Jul 19 8:07AM EDT



NOAA HYSPLIT MODEL
 Backward trajectories ending at 2000 UTC 11 Jul 11
 NAM Meteorological Data



Las Conchas fire near Los Alamos, New Mexico could be source of elevated AOT on July 11th between 4 & 5 km