

## DISCOVER-AQ Outlook for Tuesday, July 5, 2011

A frontal system remains stalled just south of the Baltimore-Washington area today, leading to considerable clouds at multiple levels. All of the forecast models show high pressure building over the upper Midwest today and tonight which will lead to clearing over our study region by tomorrow morning. Following the early morning clearing, the day should only have scattered clouds. The cloud outlook will be updated at 3:30 AM tomorrow. Sky conditions will continue with only scattered clouds into Wednesday morning, but with increasing clouds during the Wednesday afternoon as the frontal system moves back to the north. Ozone is forecast to be in the upper moderate range tomorrow over the region. The GEOS-5 aerosol forecast produces AOT up to nearly 0.9 over the southern part of the study region with a combination of smoke from fires and regional sulfate. Recommendation is to fly tomorrow, with an update at 3:30 AM.

# Recommendations for July 5<sup>th</sup>-July 7<sup>th</sup>:

Tues., July 5: Fly (looks good all day). Check on progress of early AM clearing

Wed., July 6: Perhaps Fly (early flight again?)—clouds on the increase in afternoon

Thurs., July 7: Perhaps No Fly - more clouds, possible Tstorms

K. Pickering, C. Flynn, G. Garner

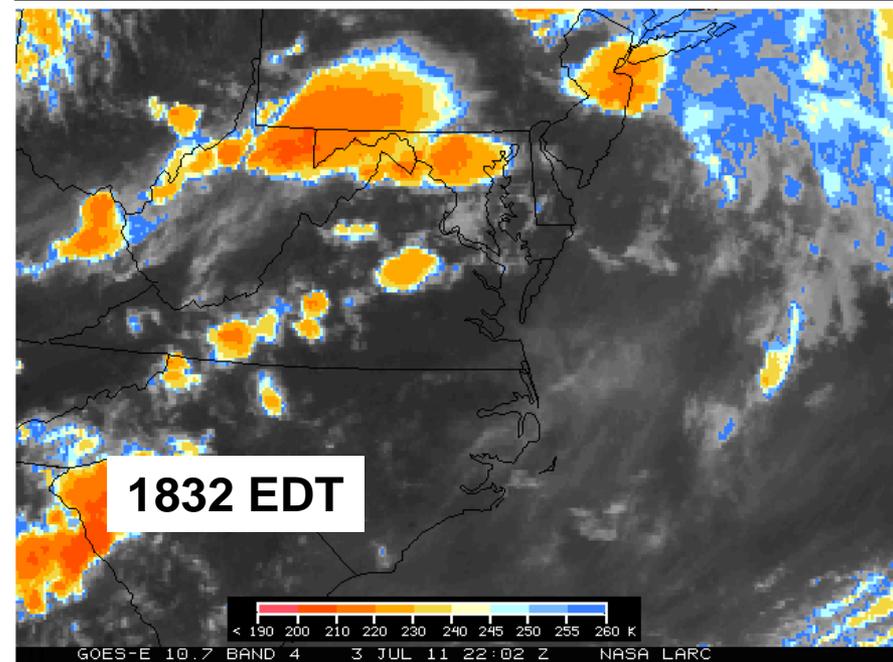
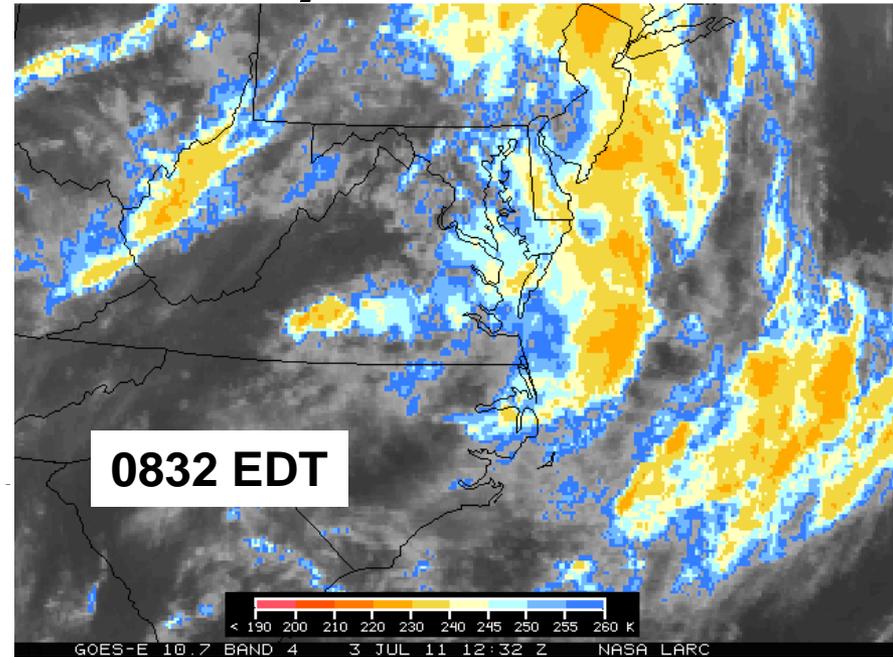
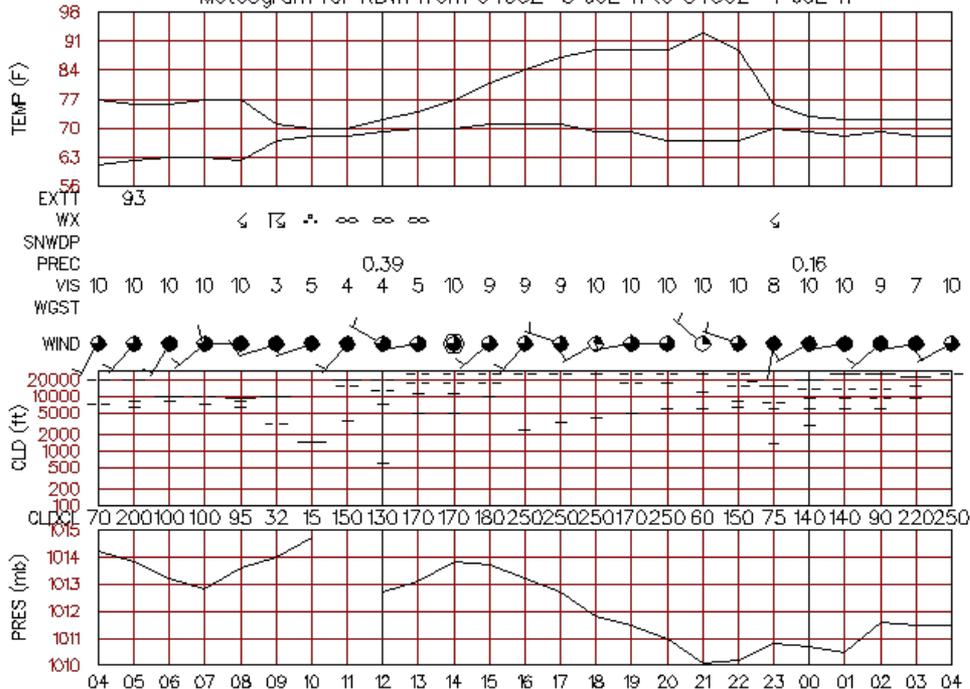
July 4, 2011

# Wx Verification: 03 July

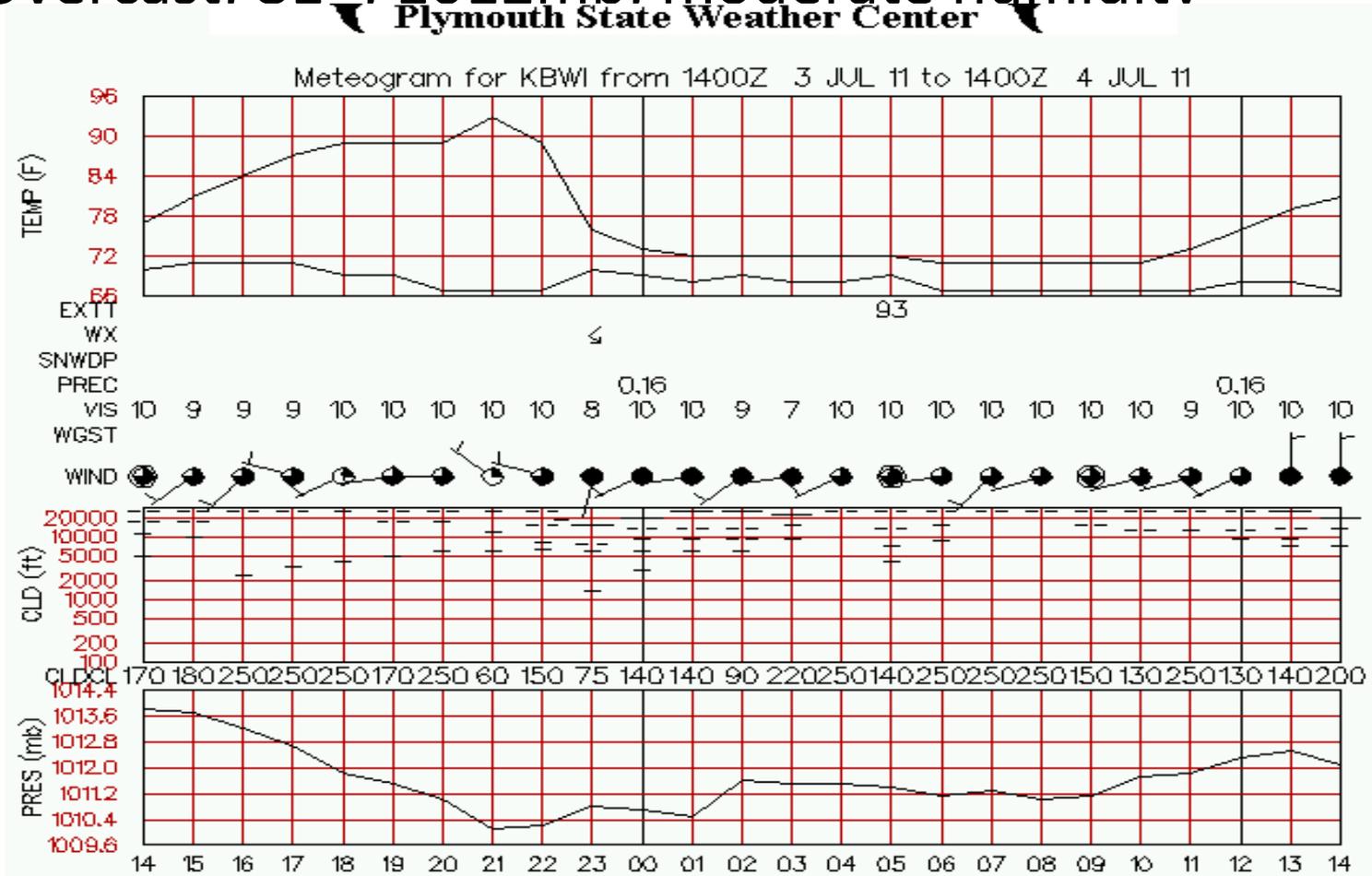
- Clouds from pre-frontal trough in AM
- Convection in WV and western MD in PM
- Hazy morning with low visibility
- “Few” clouds at 1400 and 1700 EDT, otherwise overcast

## ▼ Plymouth State Weather Center ▼

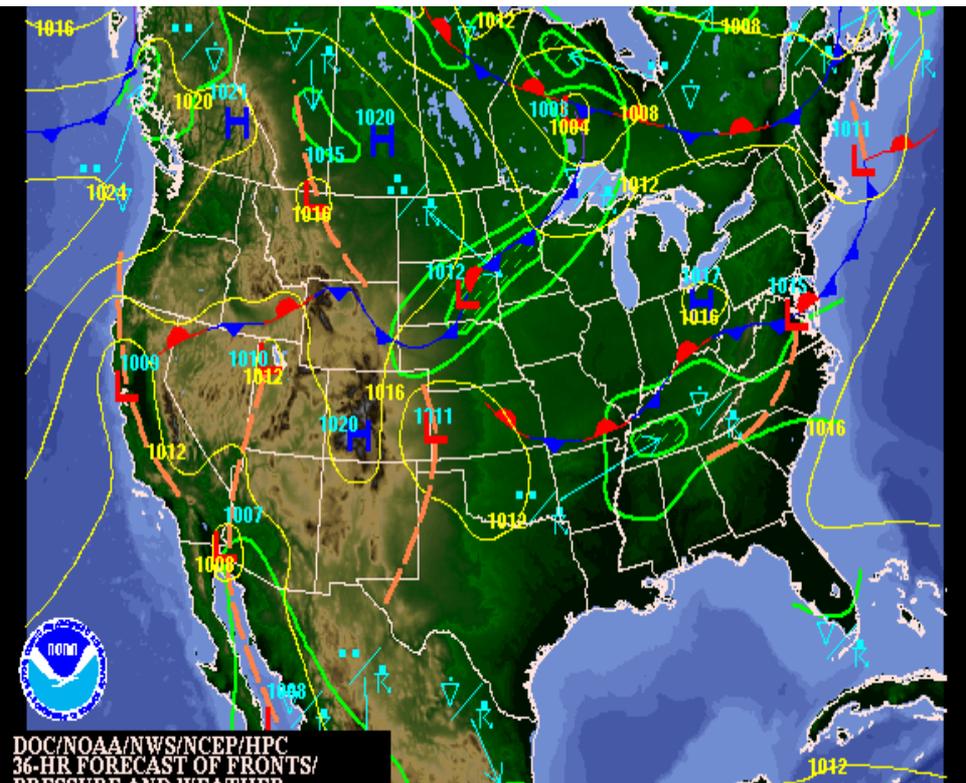
Meteogram for KBWI from 0400Z 3 JUL 11 to 0400Z 4 JUL 11



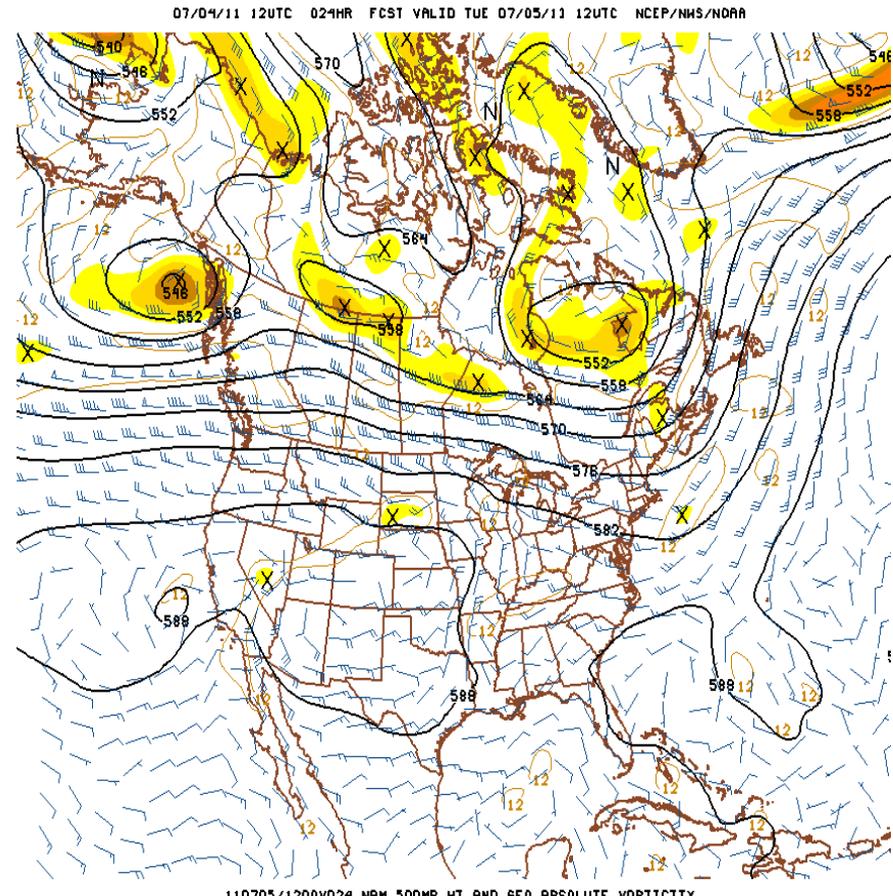
- Current conditions at BWI at 11:00am
  - Current air quality is upper Good for O3; Moderate for PM2.5 at some sites
  - Overcast. 81°. 1012mb. moderate humidity



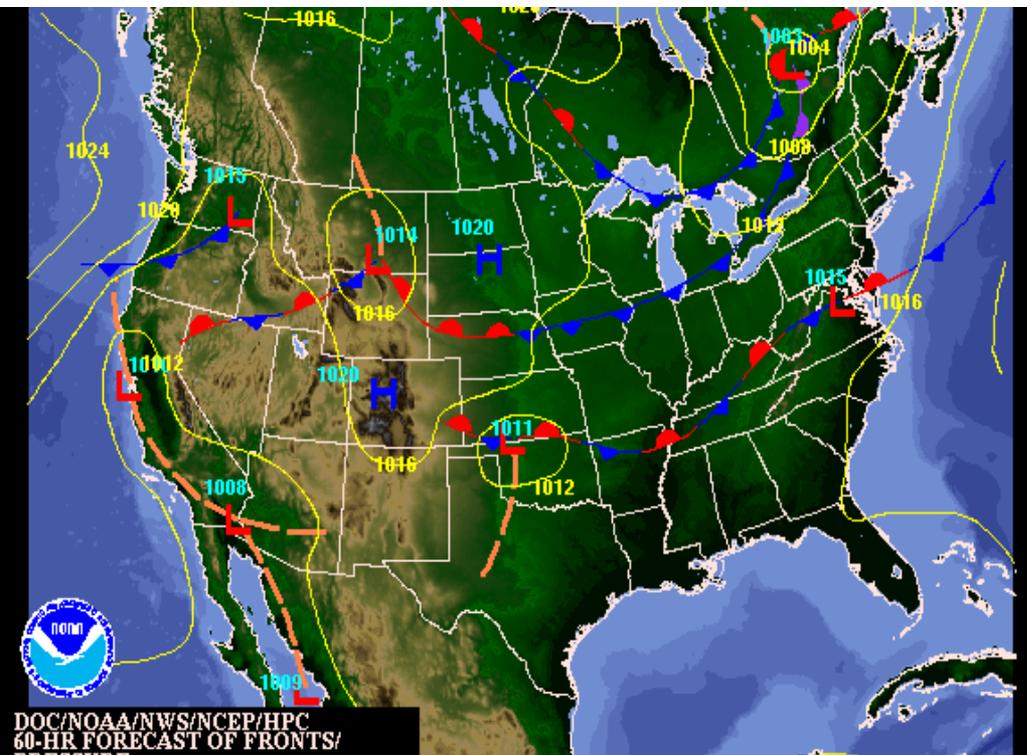
Tuesday: Front remains stalled to south of region. Clear and warm behind front.



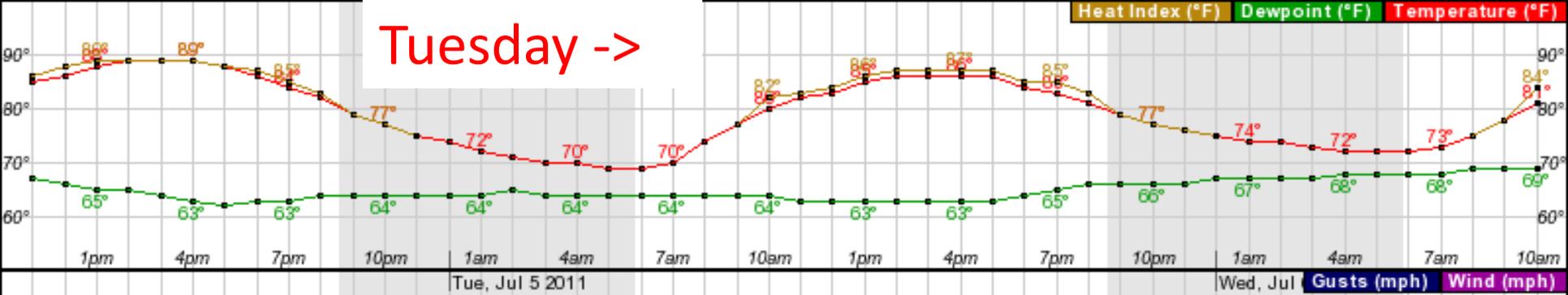
DOC/NOAA/NWS/NCEP/HPC  
36-HR FORECAST OF FRONTS/  
PRESSURE AND WEATHER  
ISSUED: 0730Z MON JUL 04 2011  
VALID: 1200Z TUE JUL 05 2011  
FORECASTER: RUBIN-OSTER



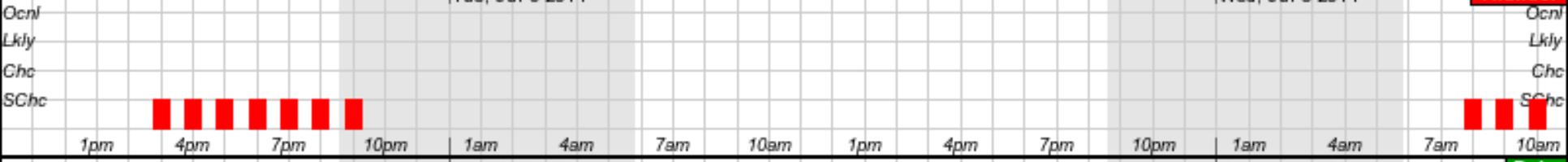
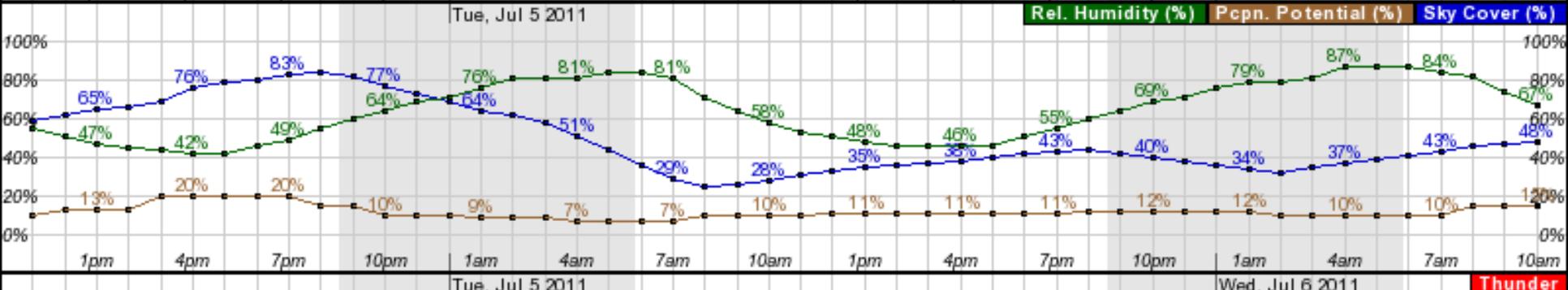
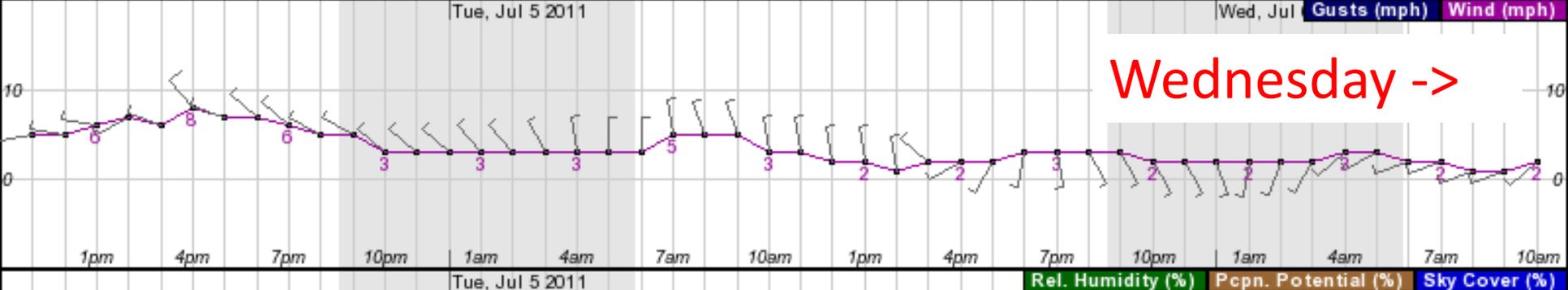
Wednesday: Front may begin to move northward as warm front. High over OH has disappeared.



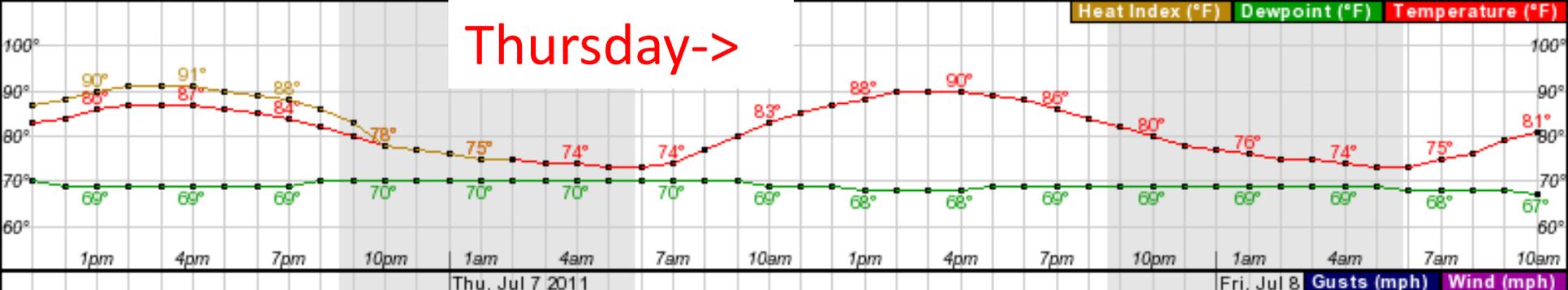
Tuesday ->



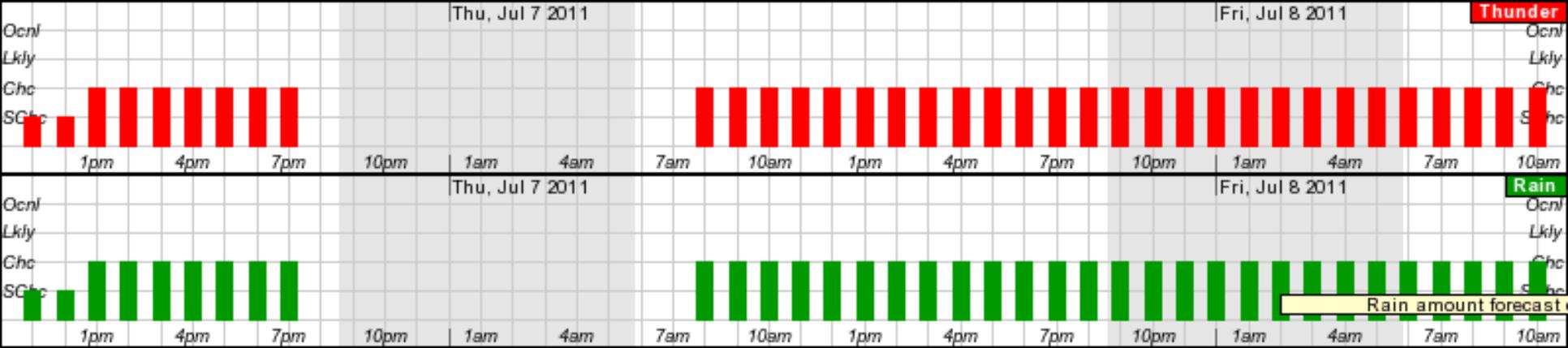
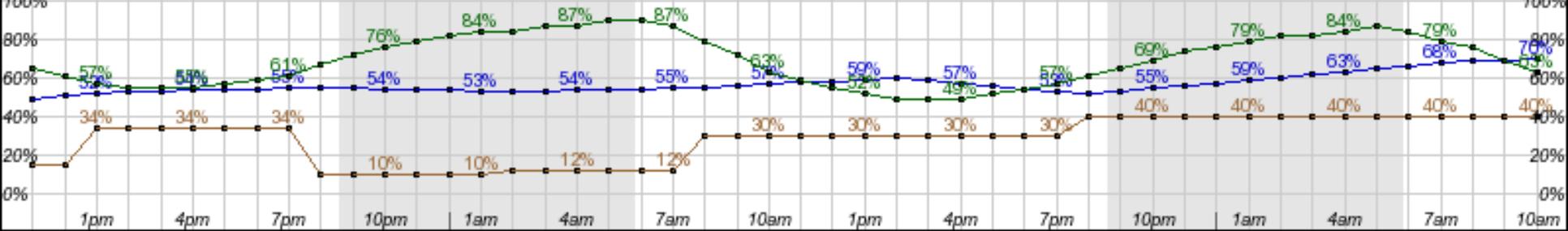
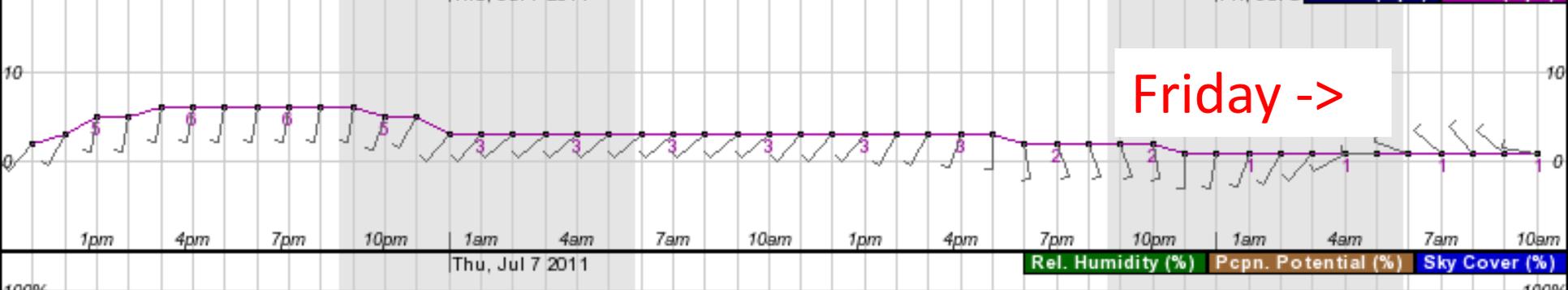
Wednesday ->



# Thursday->

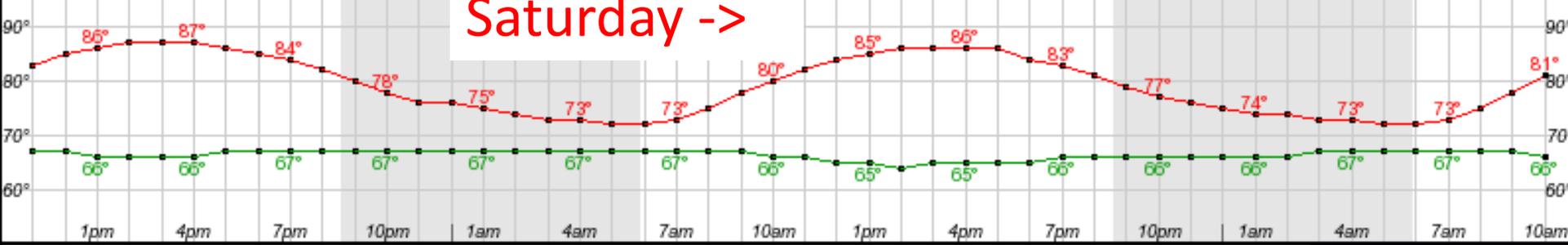


# Friday ->



# Saturday ->

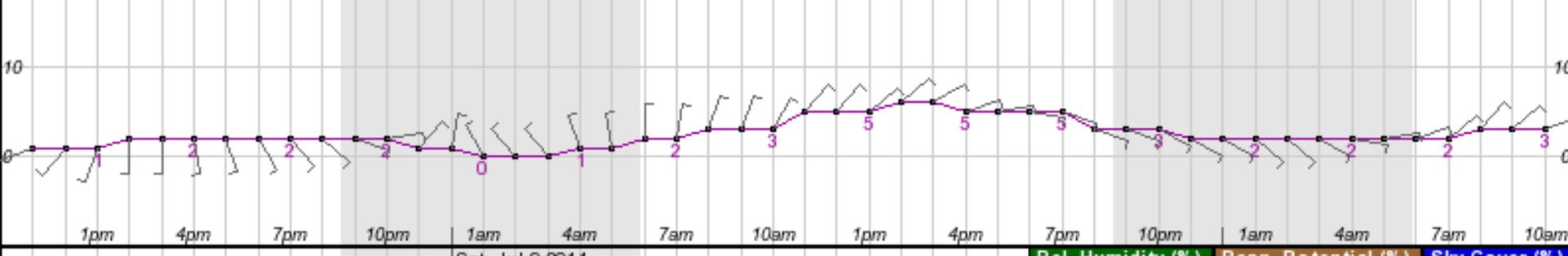
Heat Index (°F) Dewpoint (°F) Temperature (°F)



Sat, Jul 9 2011

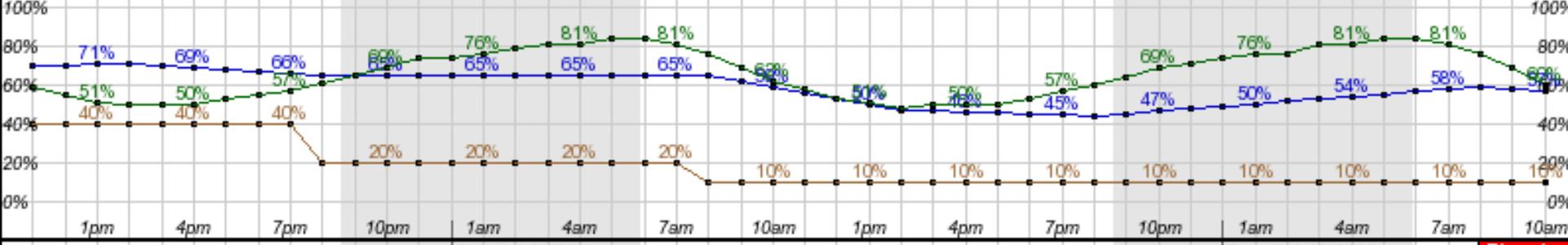
Sun, Jul

Gusts (mph) Wind (mph)



Sat, Jul 9 2011

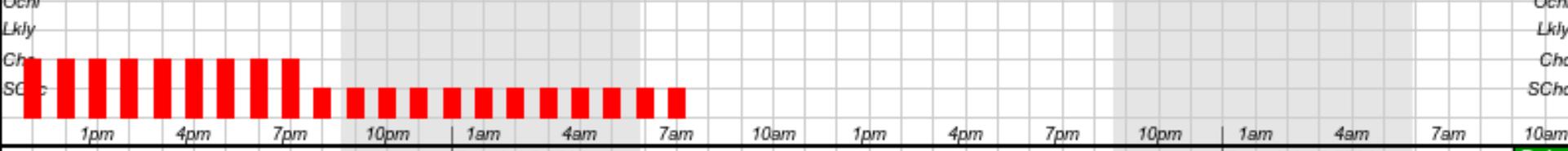
Rel. Humidity (%) Pcpn. Potential (%) Sky Cover (%)



Sat, Jul 9 2011

Sun, Jul 10 2011

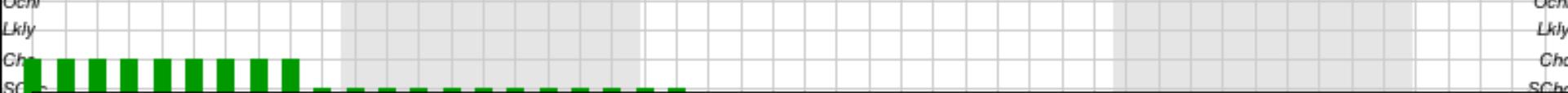
Thunder



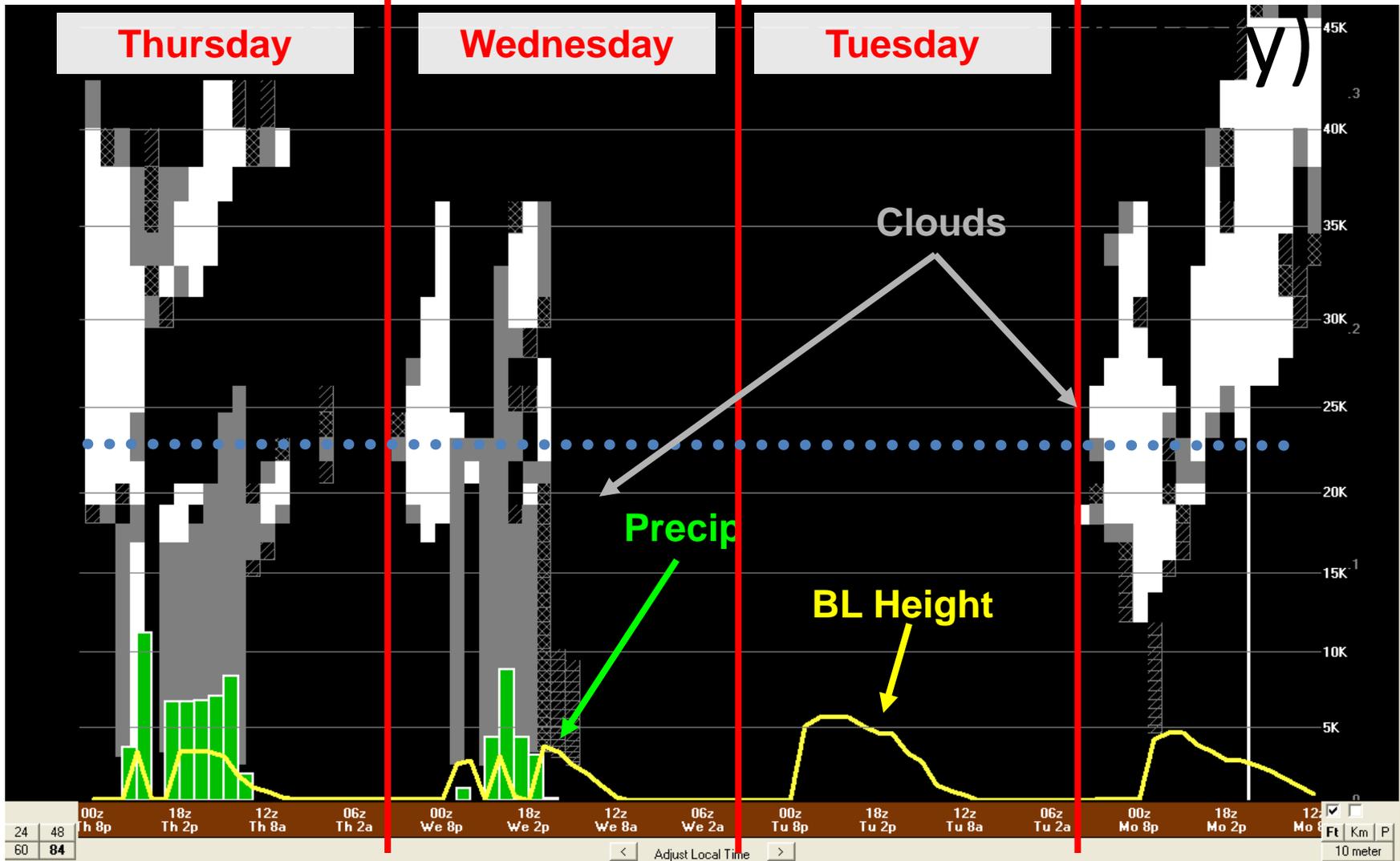
Sat, Jul 9 2011

Sun, Jul 10 2011

Rain



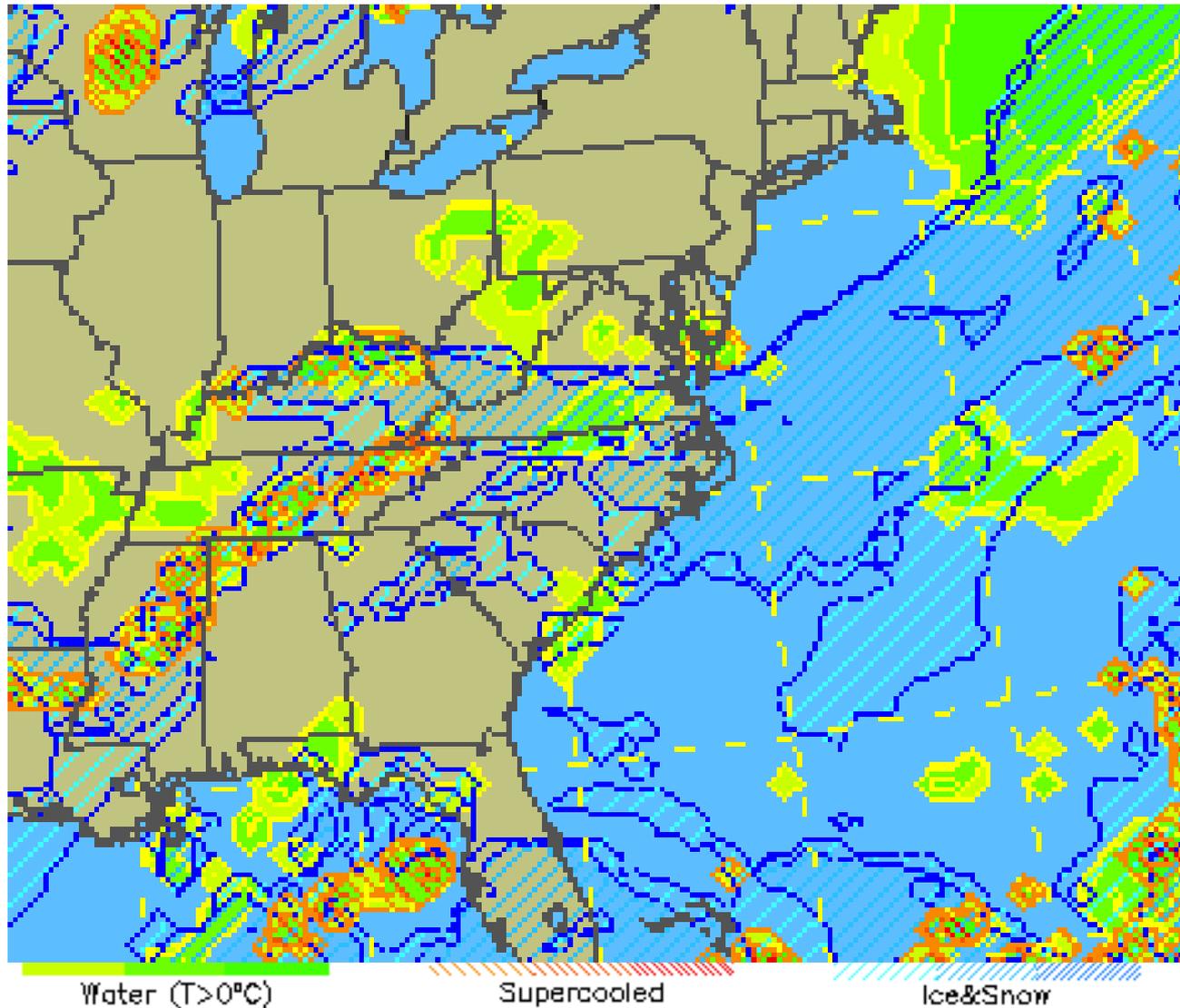
Rain amount forecast data is unavailable for this period



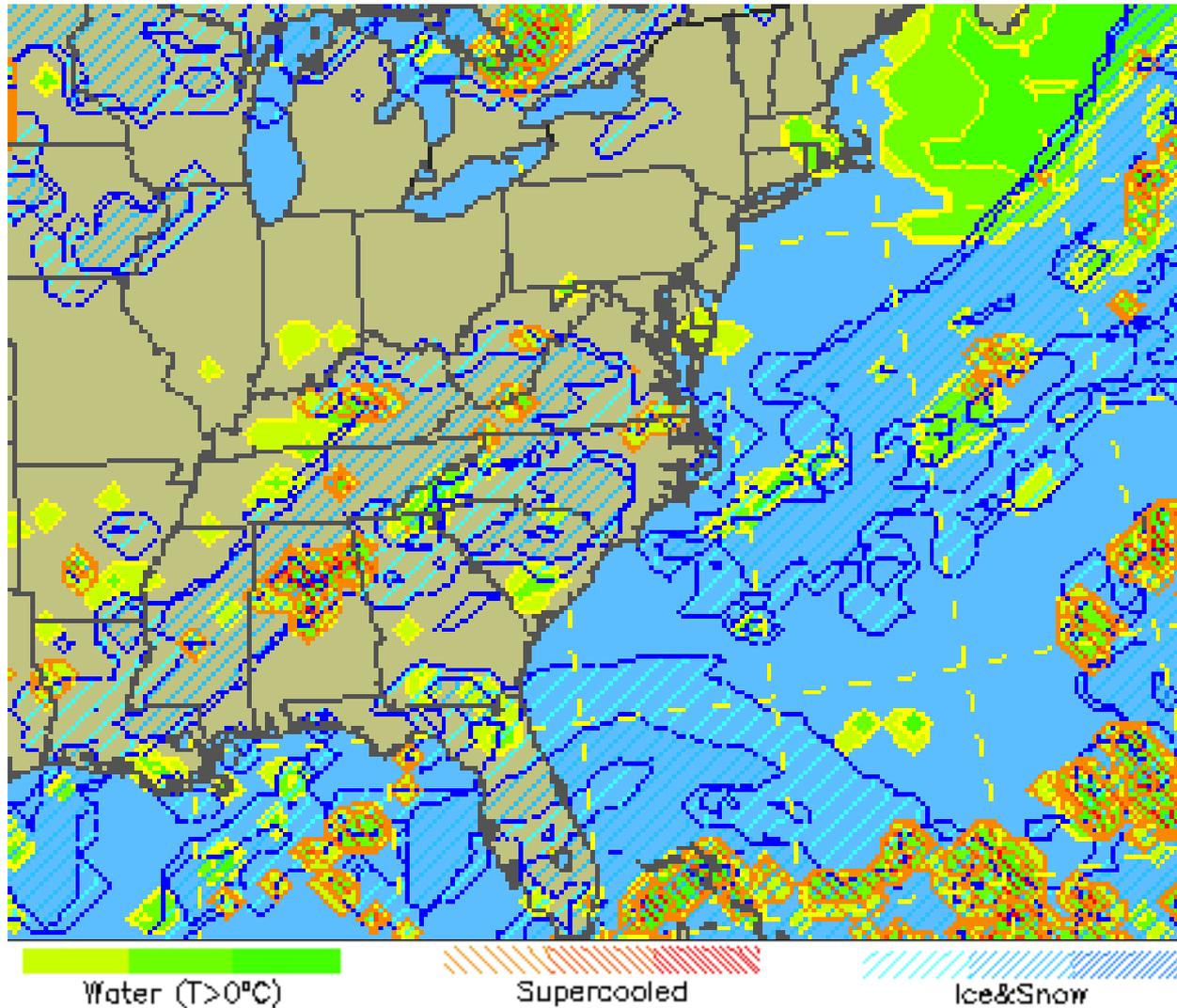
-Clear skies all day Tuesday  
 -BL ~ 5,200 ft

-Low clouds and precip on  
 Wednesday and Thursday

Tuesday 8am: Clear skies, clouds to south of region

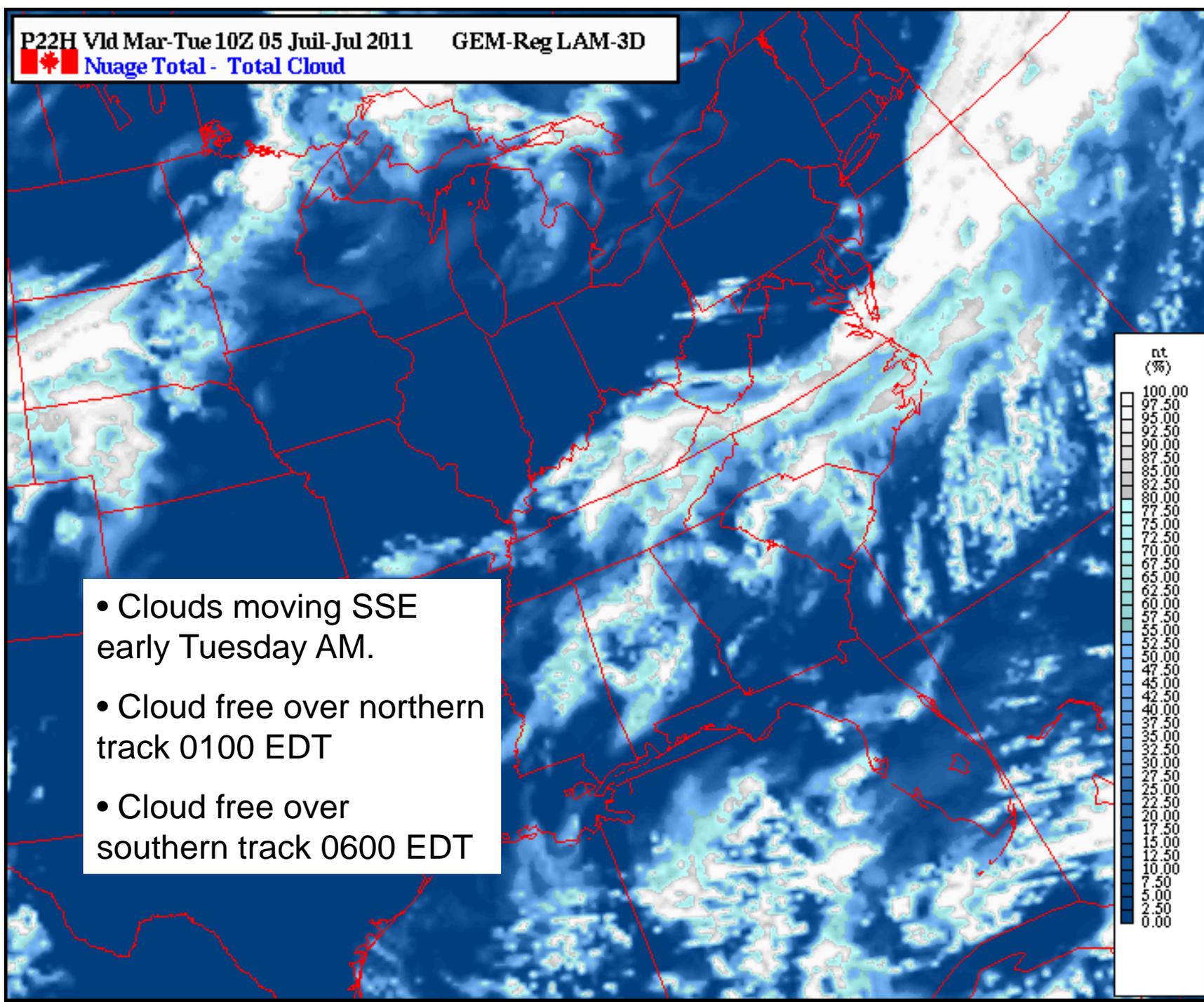


Tuesday (2pm): Remains clear



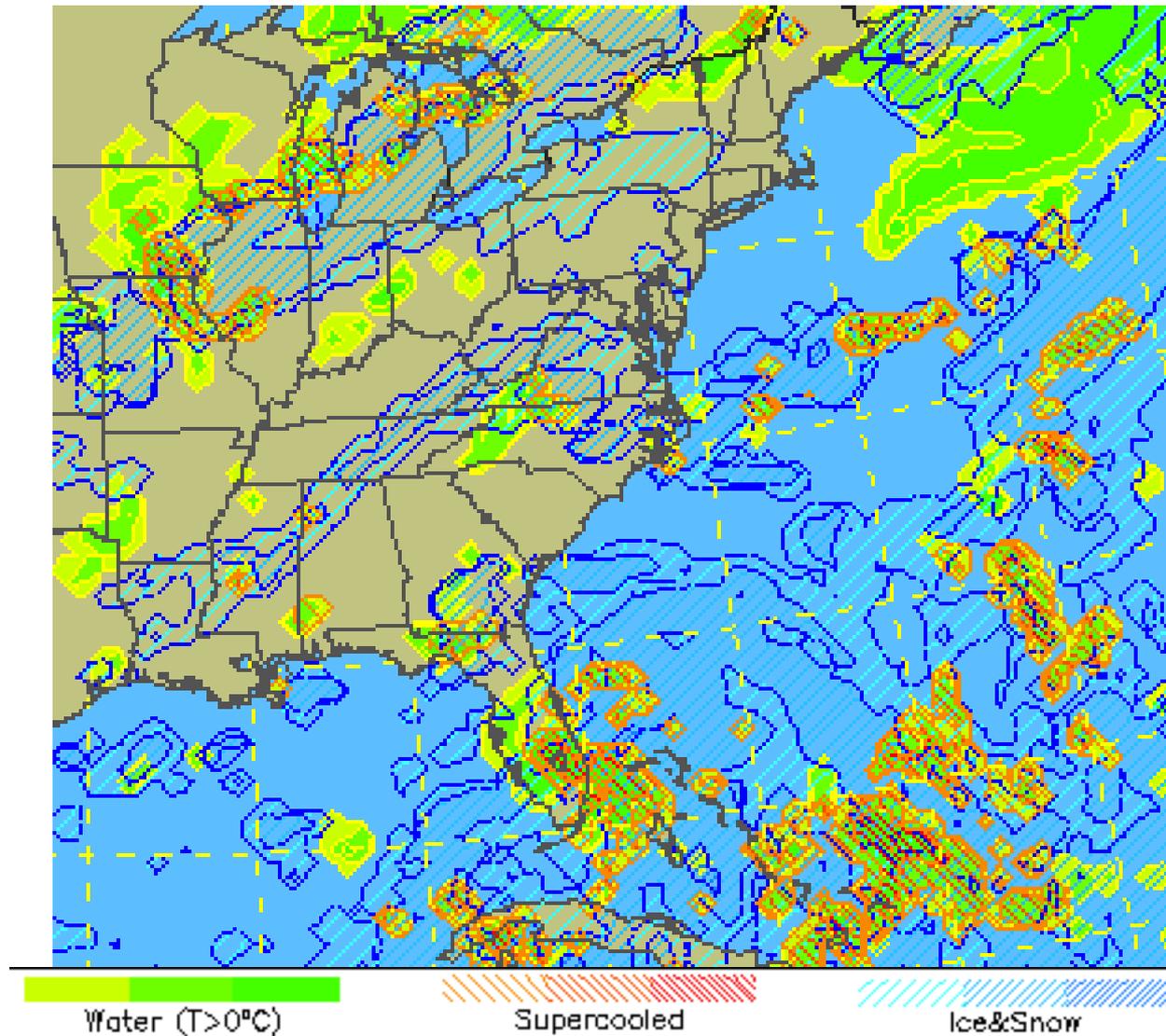
P22H Vld Mar-Tue 10Z 05 Jul-Jul 2011 GEM-Reg LAM-3D

☄ Nuage Total - Total Cloud

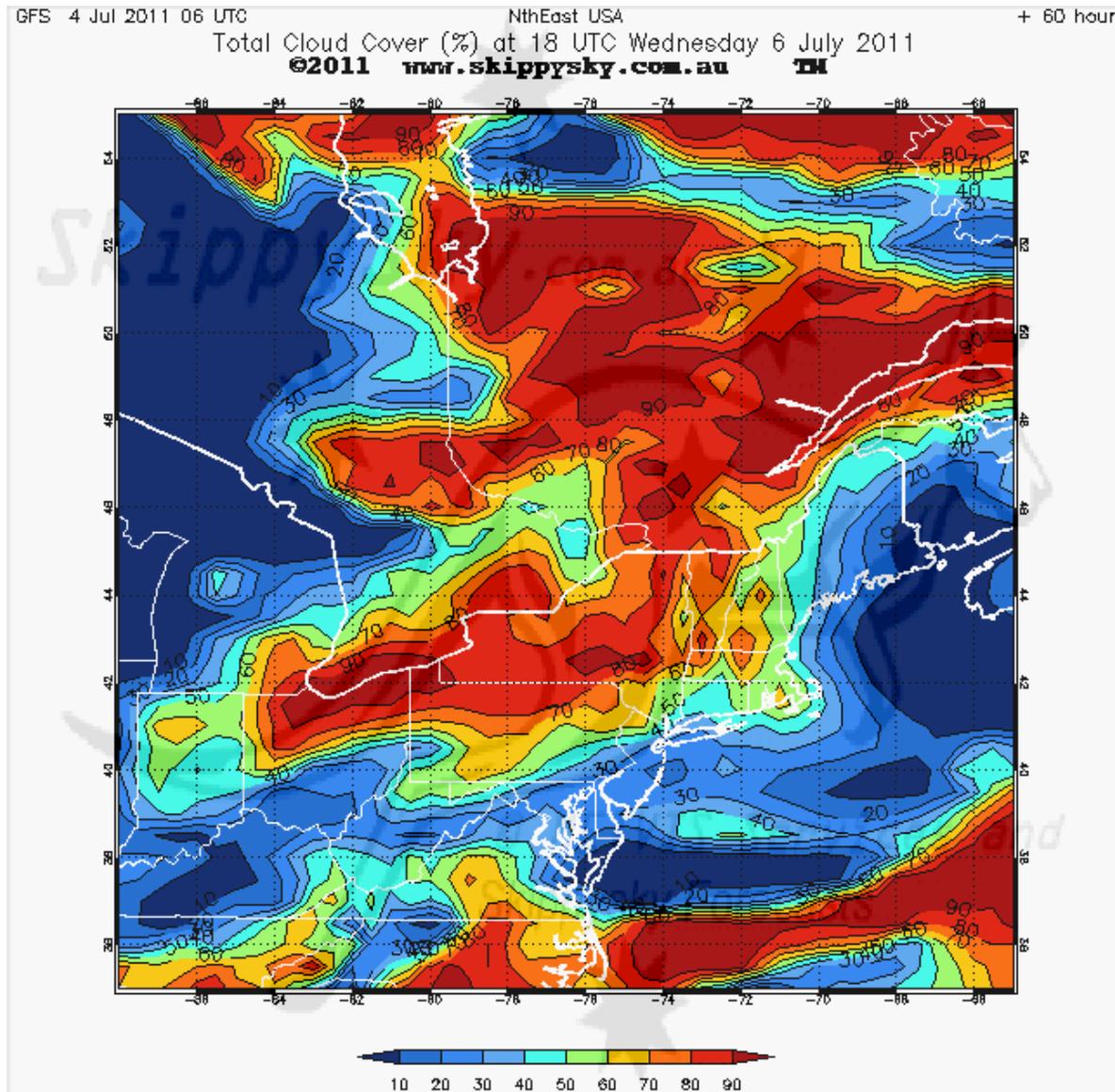


- Clouds moving SSE early Tuesday AM.
- Cloud free over northern track 0100 EDT
- Cloud free over southern track 0600 EDT

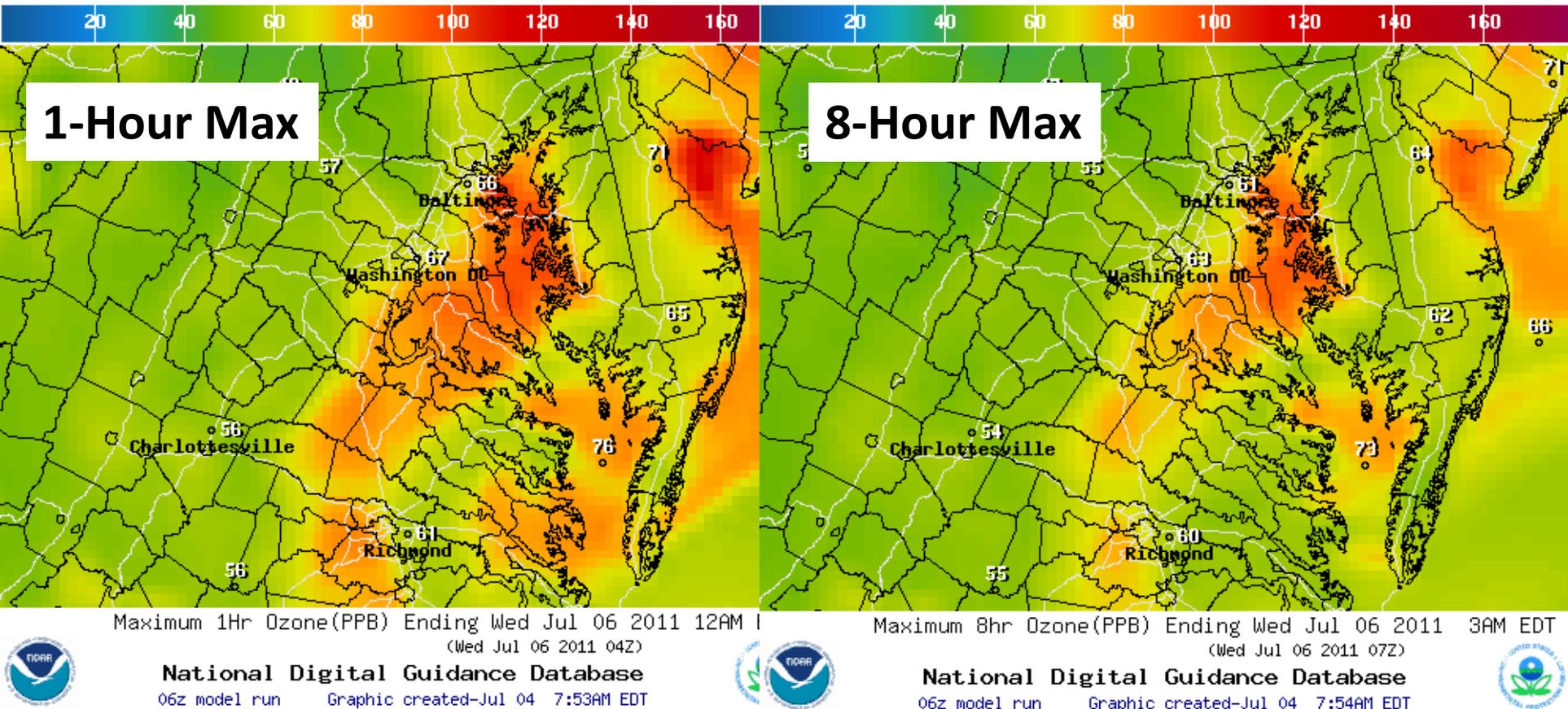
Wednesday 8am: Clear in morning, however NAM places clouds in region by evening



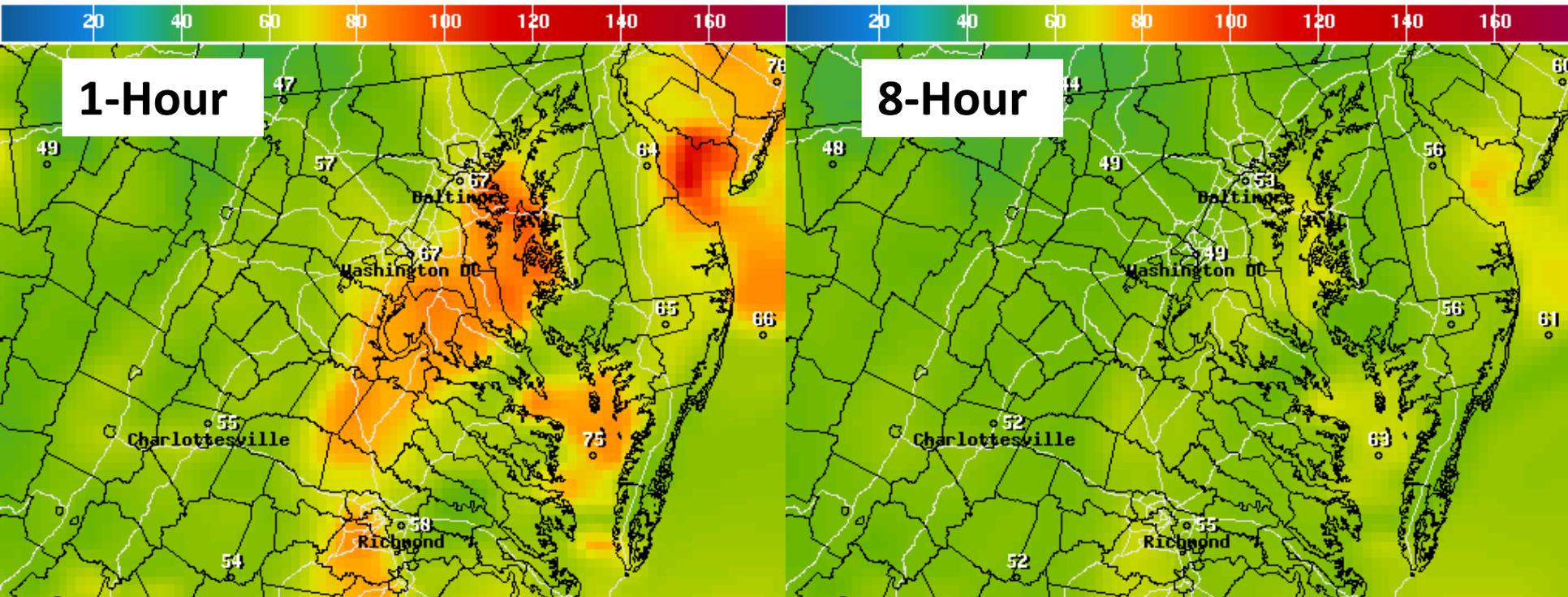
# Wednesday 2pm: GFS keeps region under 50% cloud cover for afternoon



Tuesday: Air quality in the upper moderate range. Both daily maxs. in the upper 60s ppbv.



Tuesday (4pm): Should not see high afternoon pollution (good news for morning flight).



1Hr Avg Ozone Concentration(PPB) Ending Tue Jul 05 2011 4PM EDT 18Hr Avg Ozone Concentration(PPB) Ending Tue Jul 05 2011 4PM EDT

(Tue Jul 05 2011 20Z)

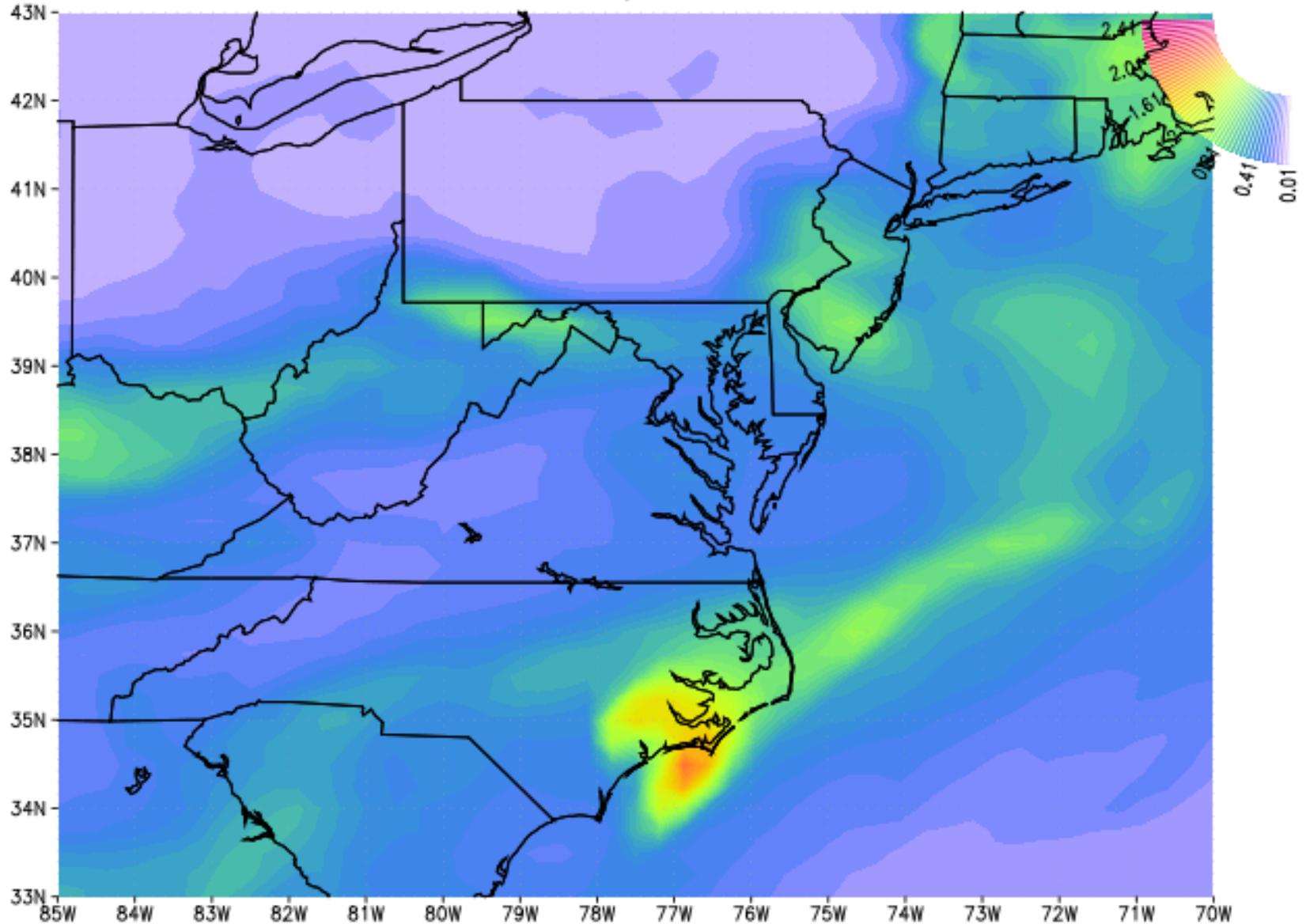
(Tue Jul 05 2011 20Z)



# Today's AOT forecast: impact of Canadian fires and regional sulfate

NASA/GMAO - GEOS-5 Forecast Initialized on 00z 2011-07-04

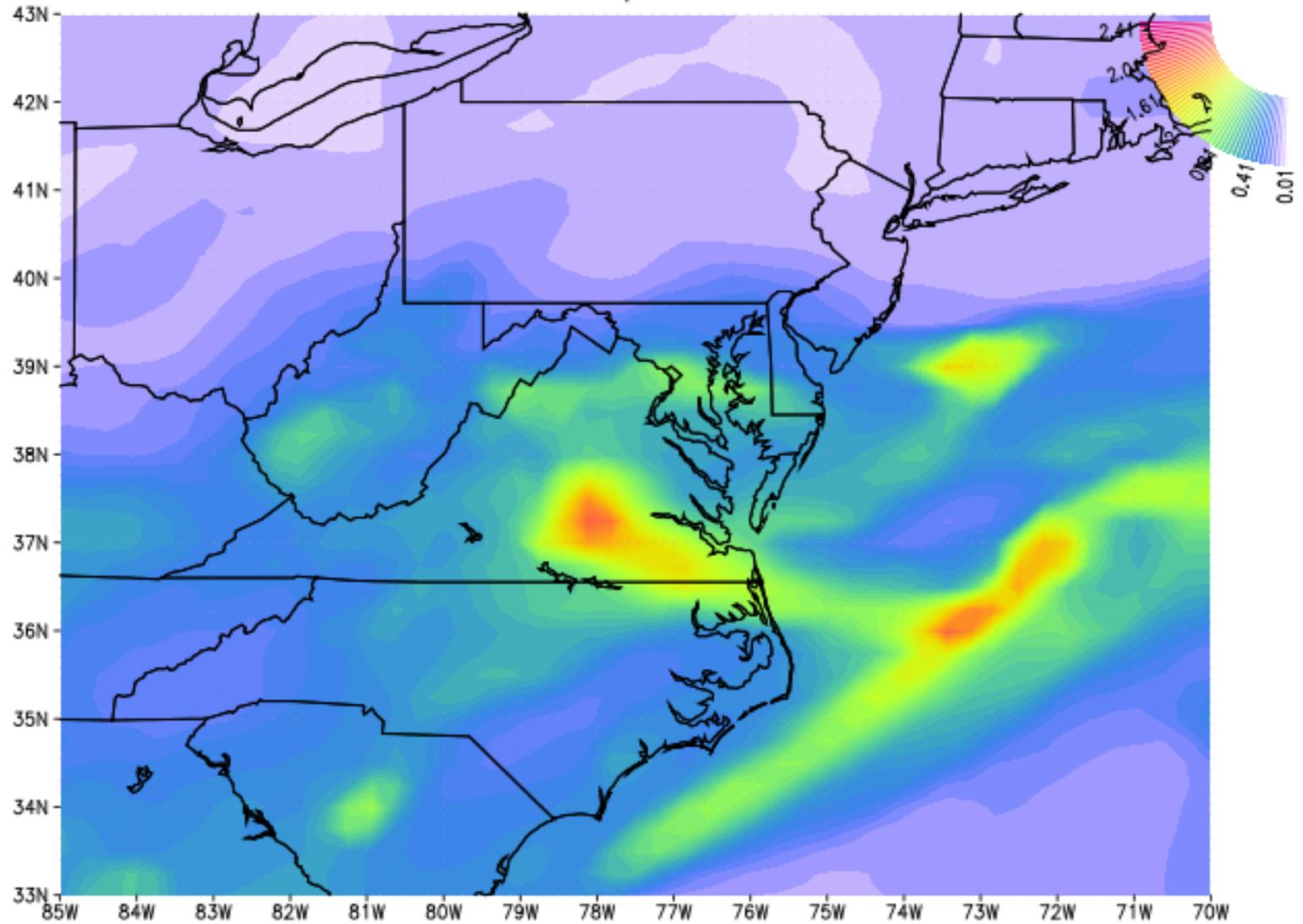
Total Aerosol Optical Thickness



0 hr forecast valid Mon 00z 2011-07-04

NASA/GMAO – GEOS-5 Forecast Initialized on 00z 2011-07-04

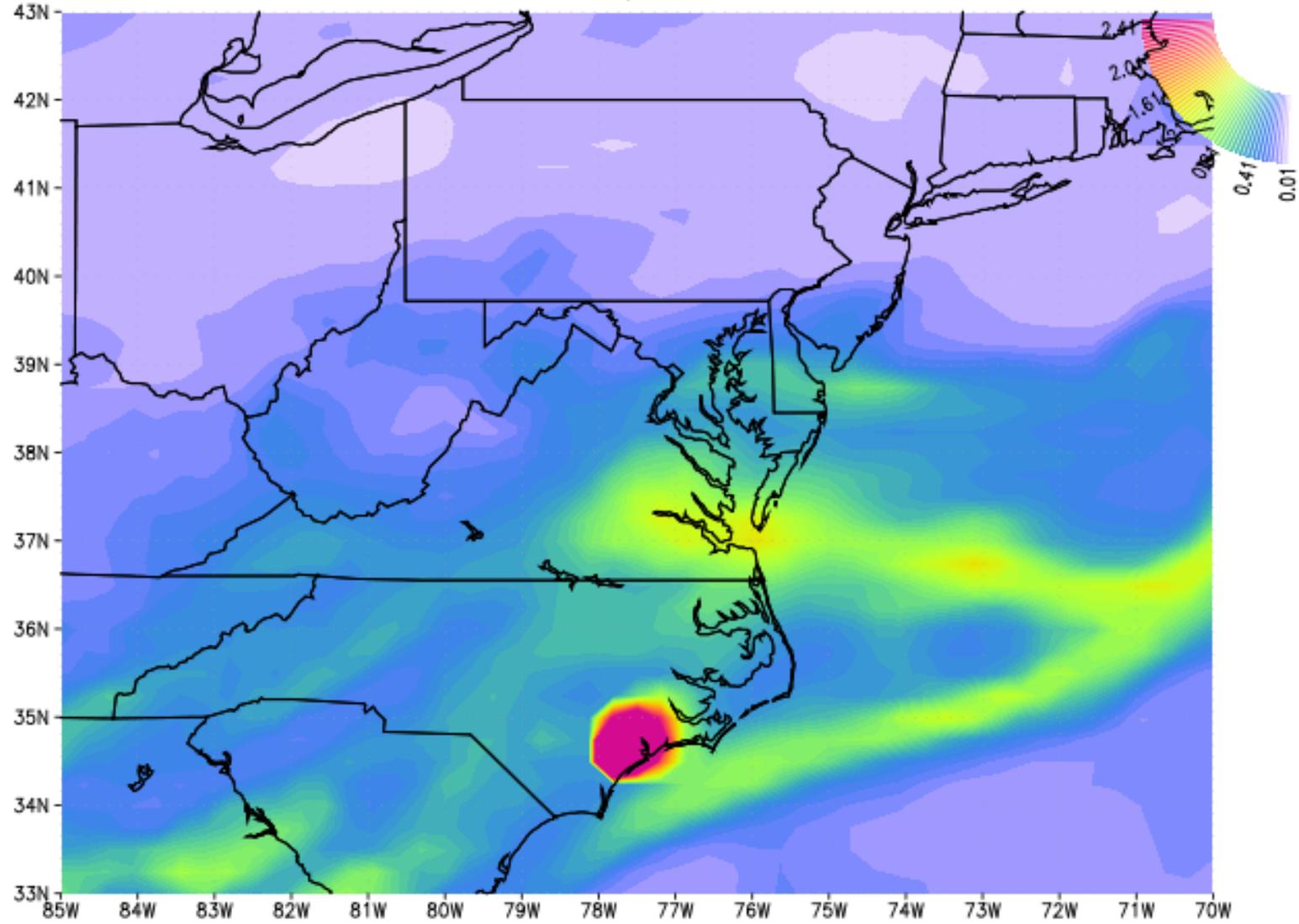
### Total Aerosol Optical Thickness



36 hr forecast valid Tue 12z 2011-07-05

# Tuesday afternoon: smoke from NC wildfires impacts region

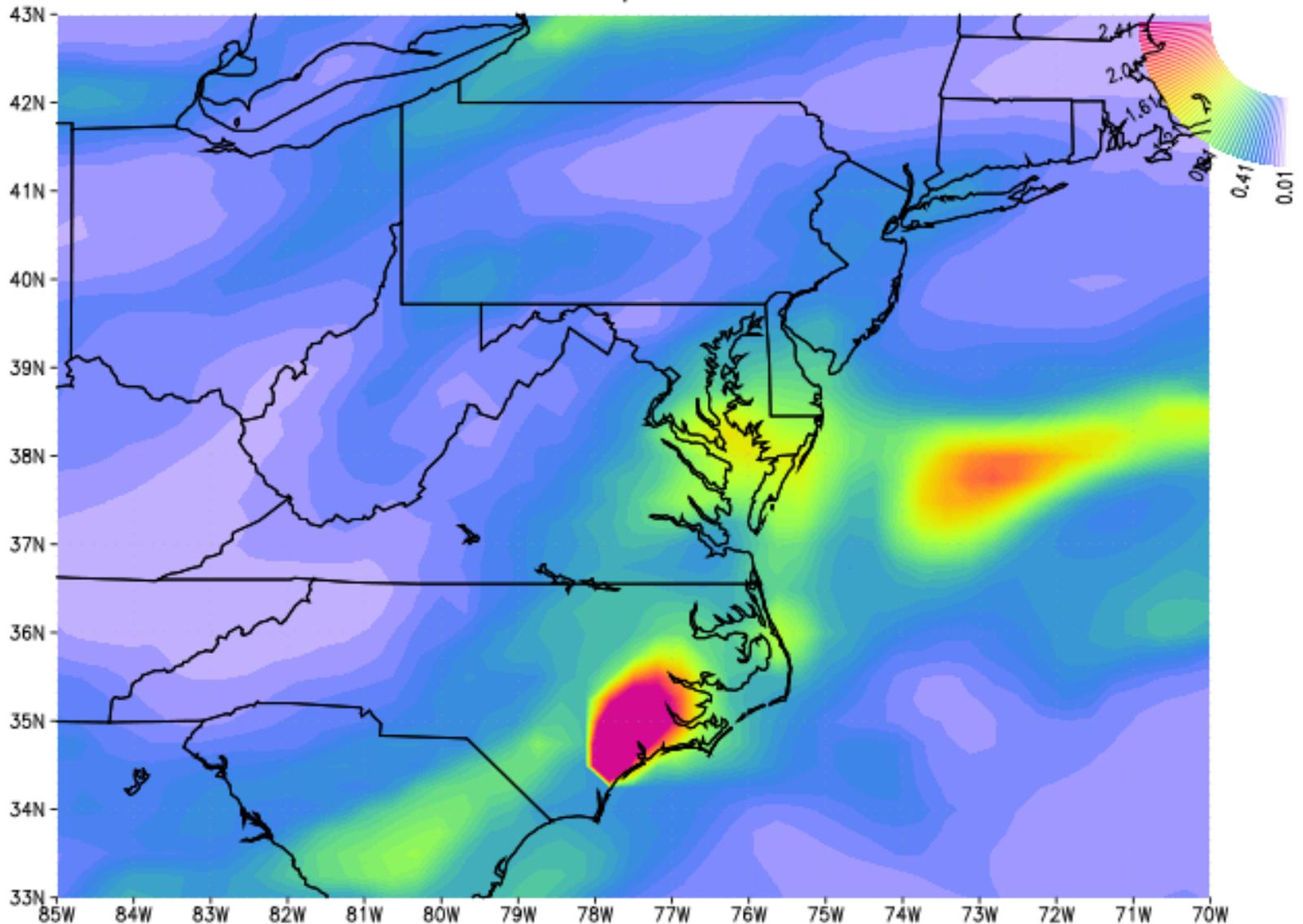
NASA/GMAO – GEOS-5 Forecast Initialized on 00z 2011-07-04  
Total Aerosol Optical Thickness



44 hr forecast valid Tue 20z 2011-07-05

# Wednesday: NC smoke continues to impact region

NASA/GMAO - GEOS-5 Forecast Initialized on 00z 2011-07-04  
Total Aerosol Optical Thickness



68 hr forecast valid Wed 20z 2011-07-06

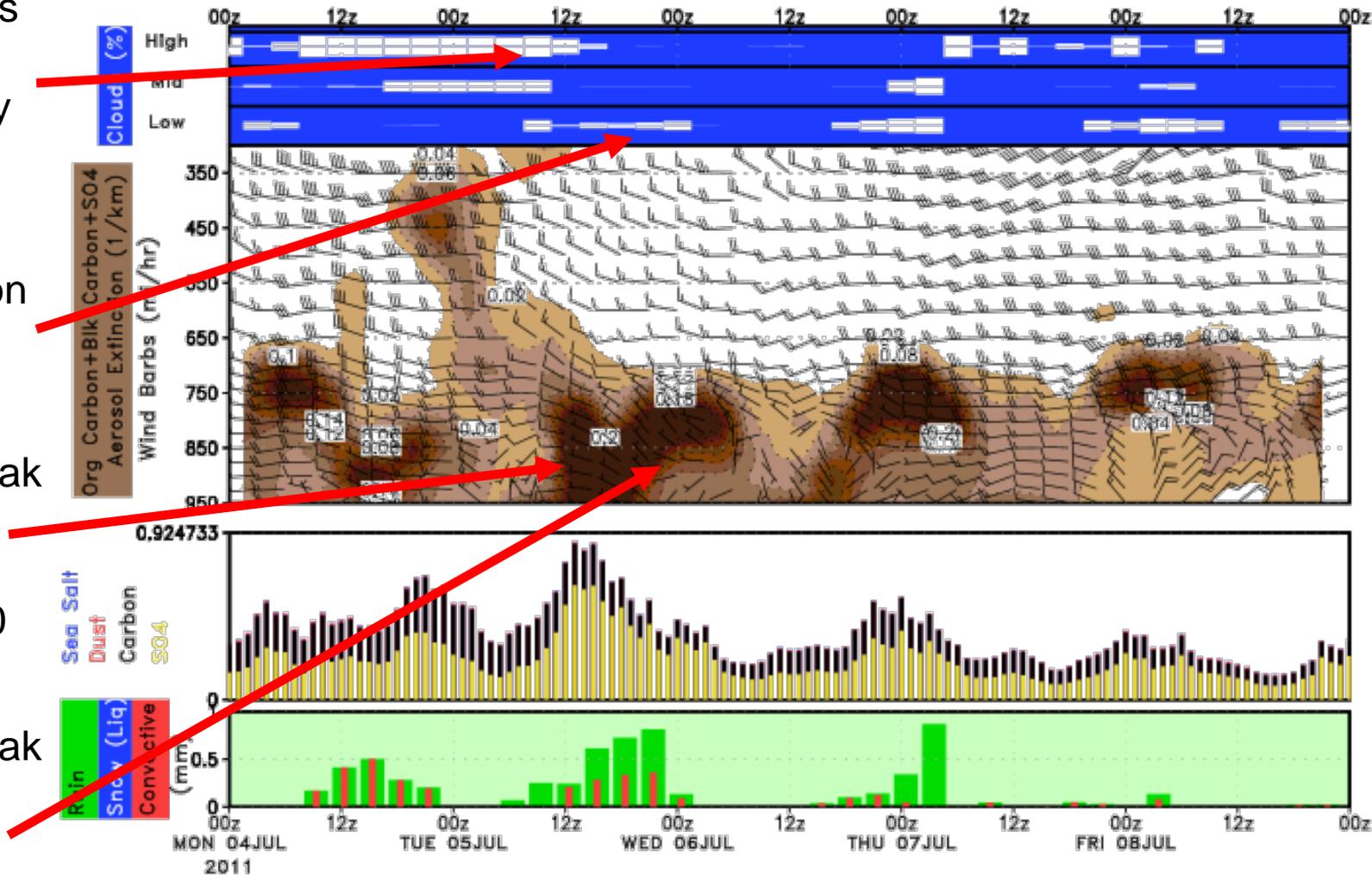
# GEOS-5 Envirogram through 08 July 2011 Beltsville

- High clouds diminishing into Tuesday AM.

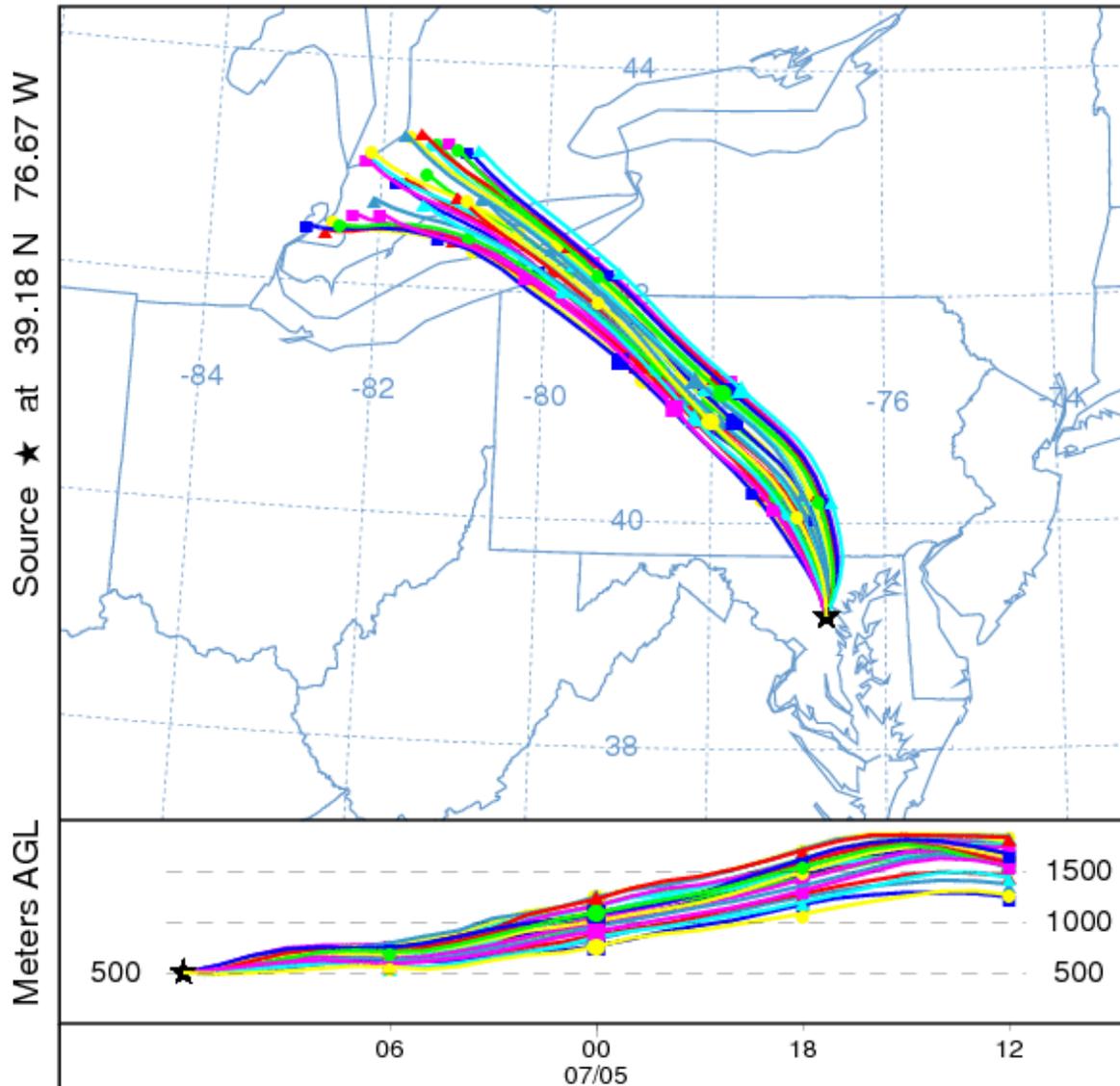
- Increasing low clouds on Tuesday afternoon.

- Aerosol peak from sfc. to 9000 ft at 0700 – 1400 EDT.

- Aerosol peak from 5000 - 9000 ft overnight.



- Wednesday AM looks relatively clean and clear of clouds.



Trajectories indicate southern Great Lakes as source region for tomorrow morning's air.

Air subsiding over west-central PA before reaching flight track.

Source of aerosols: SO<sub>2</sub> from coal-fired power plants?

This is not a NOAA product. It was produced by a web user.  
 Job ID: 14724 Job Start: Mon Jul 4 16:26:00 UTC 2011  
 Source 1 lat.: 39.18 lon.: -76.67 height: 500 m AGL  
 Trajectory Direction: Backward Duration: 24 hrs  
 Vertical Motion Calculation Method: Model Vertical Velocity  
 Meteorology: 1200Z 4 Jul 2011 - NAM 12 km