

DISCOVER-AQ Outlook for Tuesday, July 12, 2011

Large mesoscale convective systems (MCSs) have been active today from Iowa to Ohio. Upper-level outflow from these systems should reach our study area overnight. The convection will reach western PA tonight and likely spread high cloud across our region through much of the morning. Clearing from west to east will occur by later morning, allowing a few hours of intense solar heating, which will drive possible deep convection over our region in the afternoon. Therefore, there will likely only be a short window of opportunity for flying tomorrow. Ozone air quality will likely go to Code Orange, especially if there are some hours of relatively clear sky in the midday period. Due to the cloud situation, we have decided not to fly tomorrow. The frontal system approaching from the Midwest will pass through Tuesday night. Wednesday looks iffy at the moment, with possible clouds behind the front. With a short-wave trough still to our west on Wednesday, this should provide enough vertical motion to induce considerable shallow convection in the afternoon. We will update the outlook for Wednesday tomorrow. Farther ahead, Thursday looks like a very nice day for flying, with cooler, drier, and cleaner conditions as a Canadian airmass moves our way.

Recommendations for July 12th-July 15th:

Tues., July 12: No Fly (cloudy in morning as result of upwind convection over W PA tonight; local convection in afternoon; frontal passage by evening)

Wed., July 13: No Fly?? (cloud cover with front may be slow moving out; afternoon shallow convection)

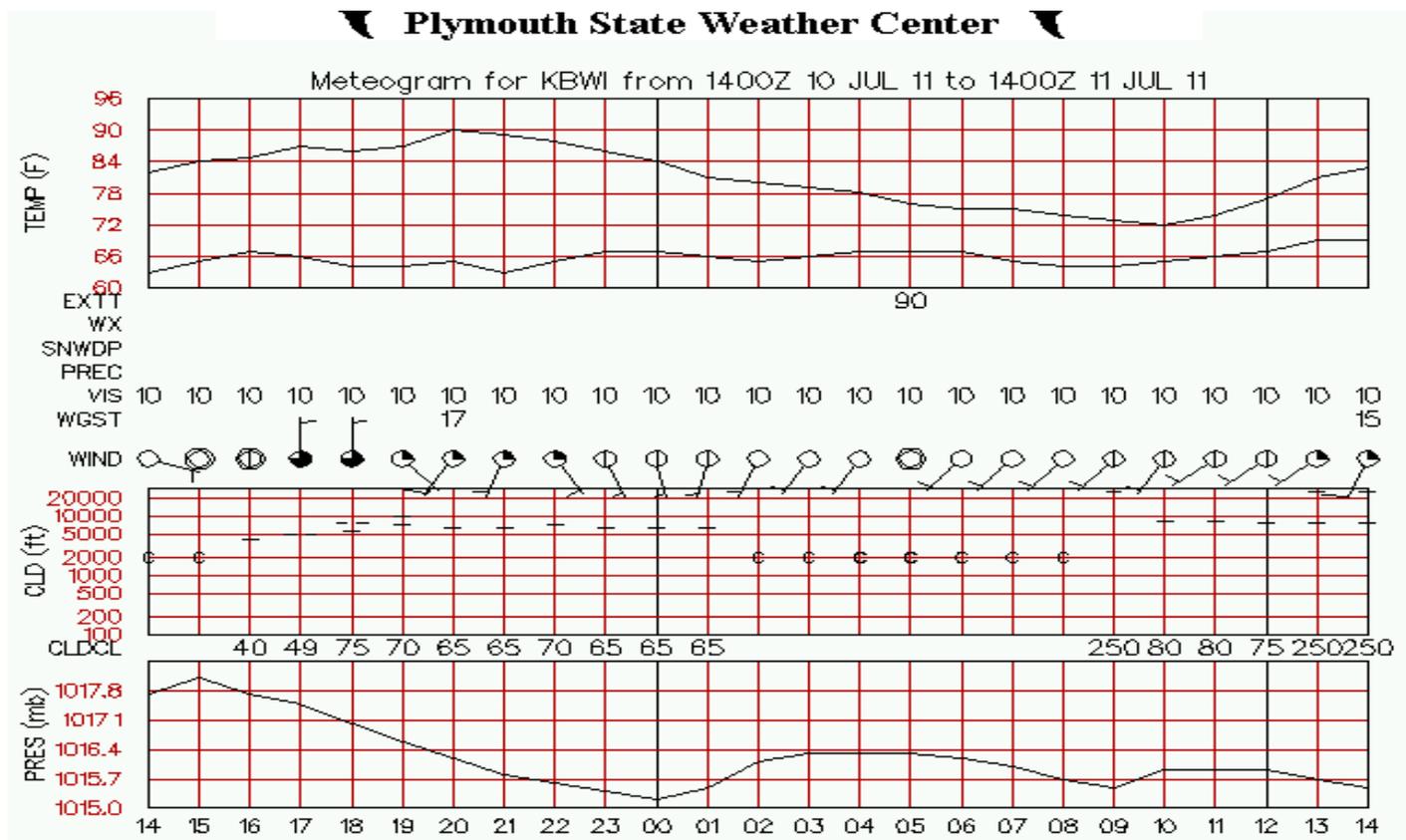
Thurs., July 14: Fly (clean Canadian air mass)

Fri., July 15: ????? (clouds forecast, but this may be too fast),

Ken Pickering, Clare Flynn, Greg Garner, Bryan Duncan

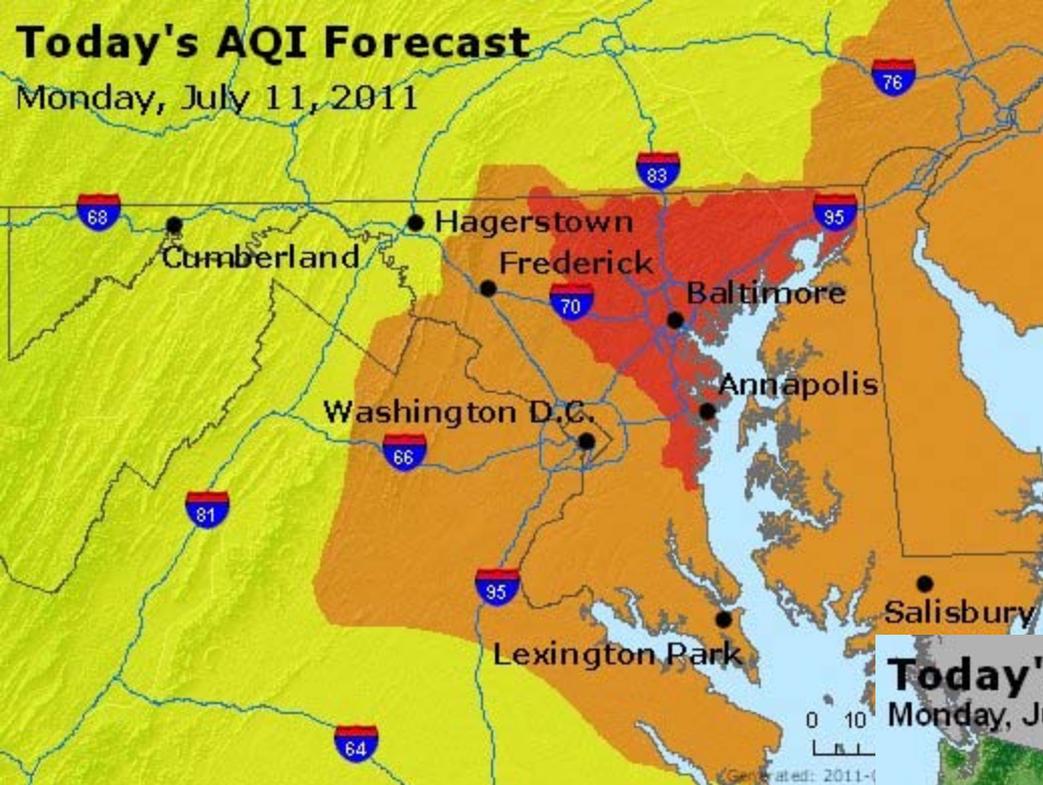
July 11, 2011

- Current Conditions at BWI 11am:
 - Partly cloudy (<20%), 83°F, humid, moderate winds
 - Moderate air quality throughout region (particles)



Today's AQI Forecast

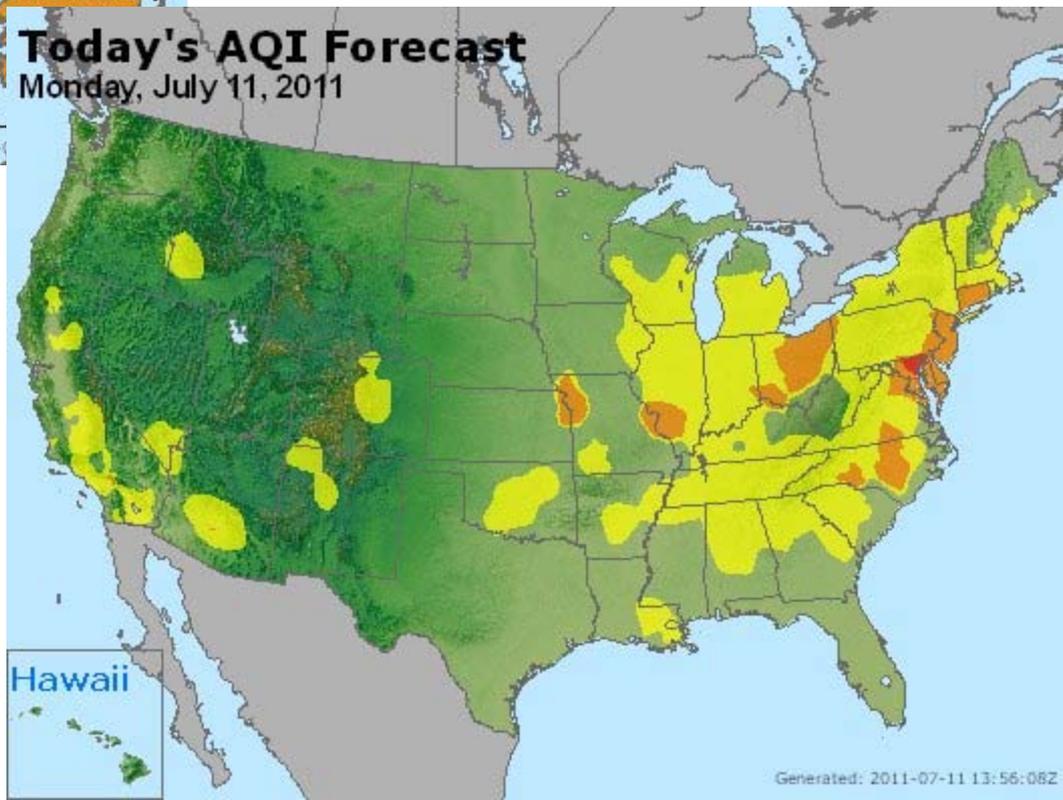
Monday, July 11, 2011



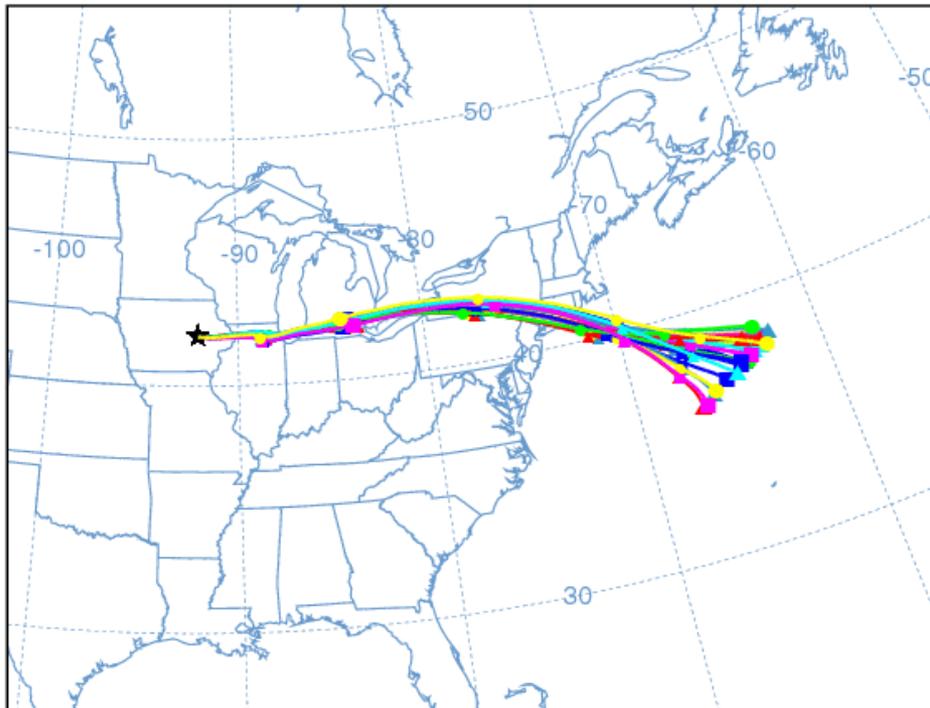
Code Red!

Today's AQI Forecast

Monday, July 11, 2011

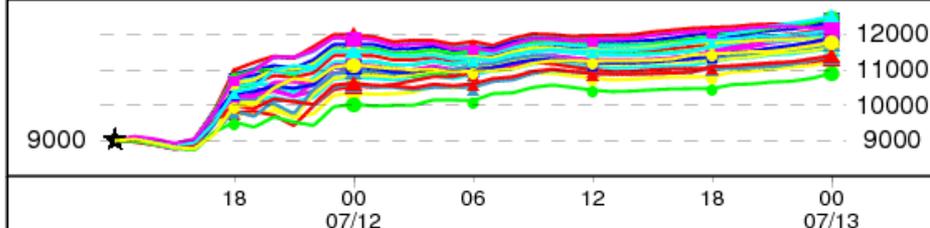


NOAA HYSPLIT MODEL
 Forward trajectories starting at 1200 UTC 11 Jul 11
 06 UTC 11 Jul NAM Forecast Initialization

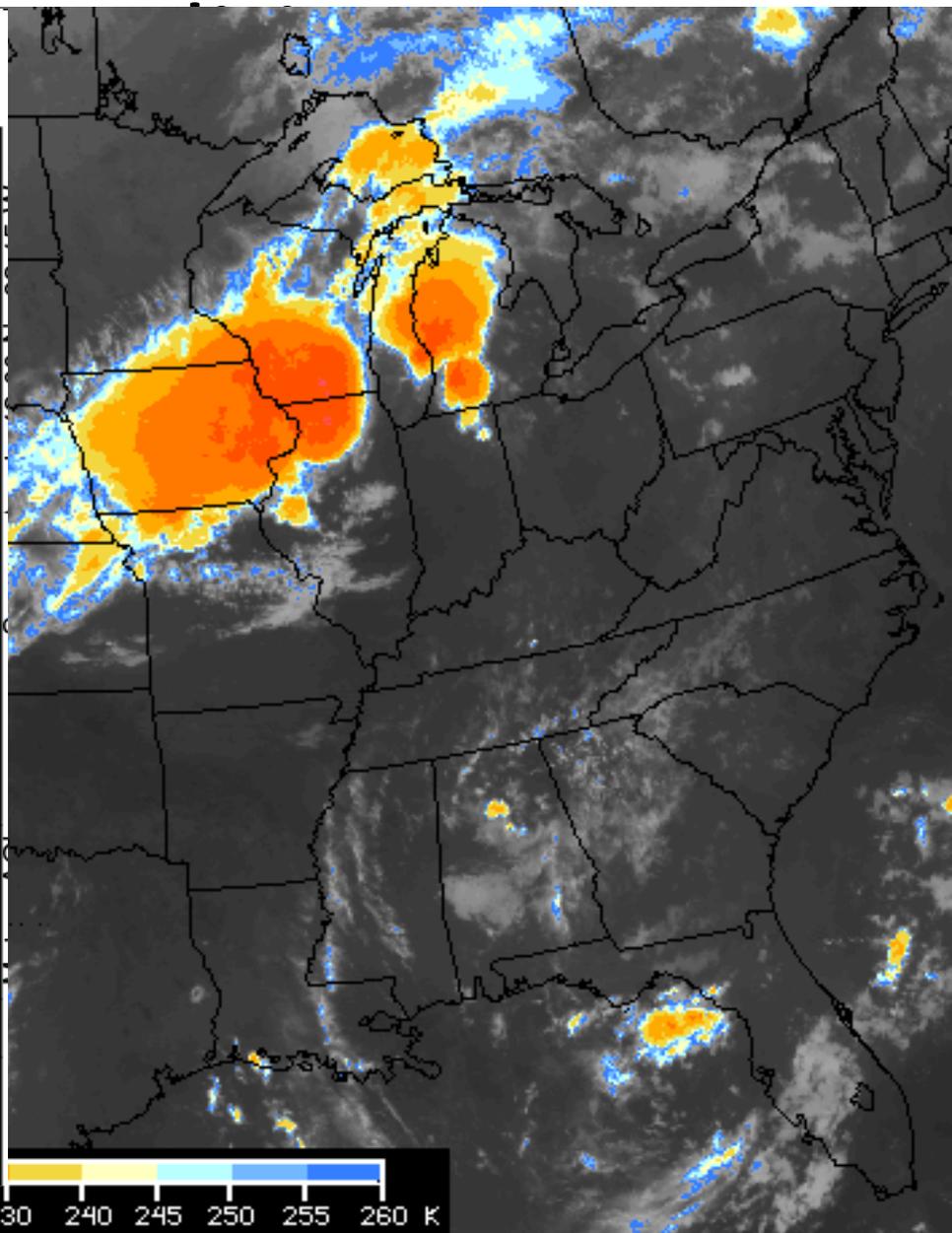


Source ★ at 42.00 N 92.15 W

Meters AGL

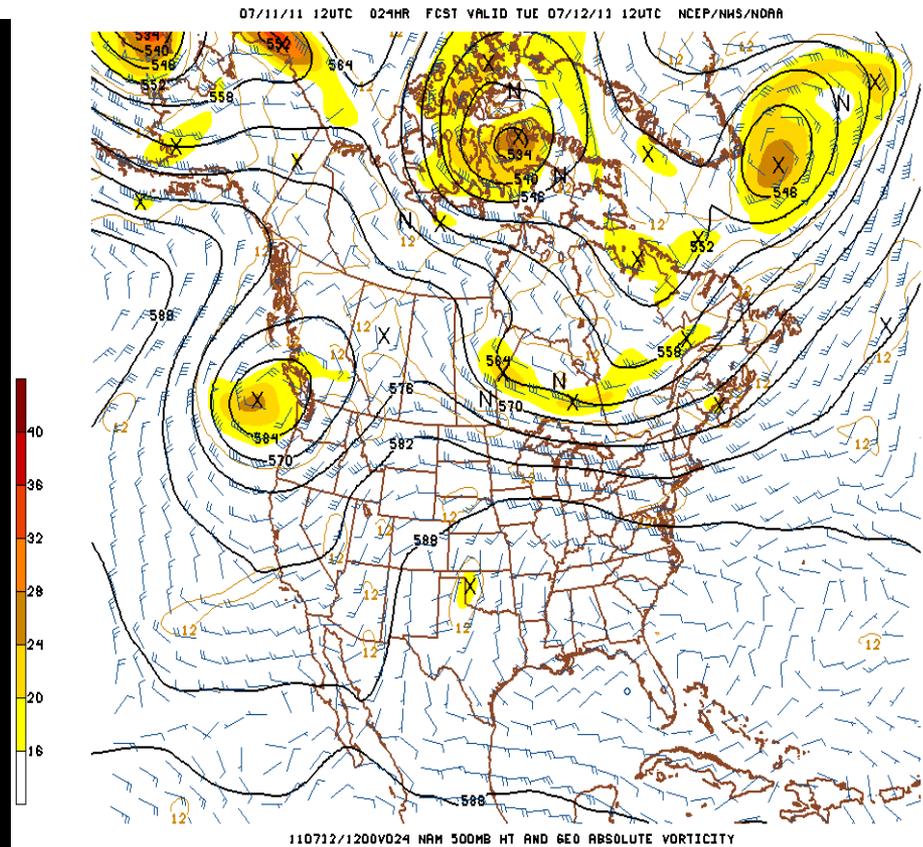
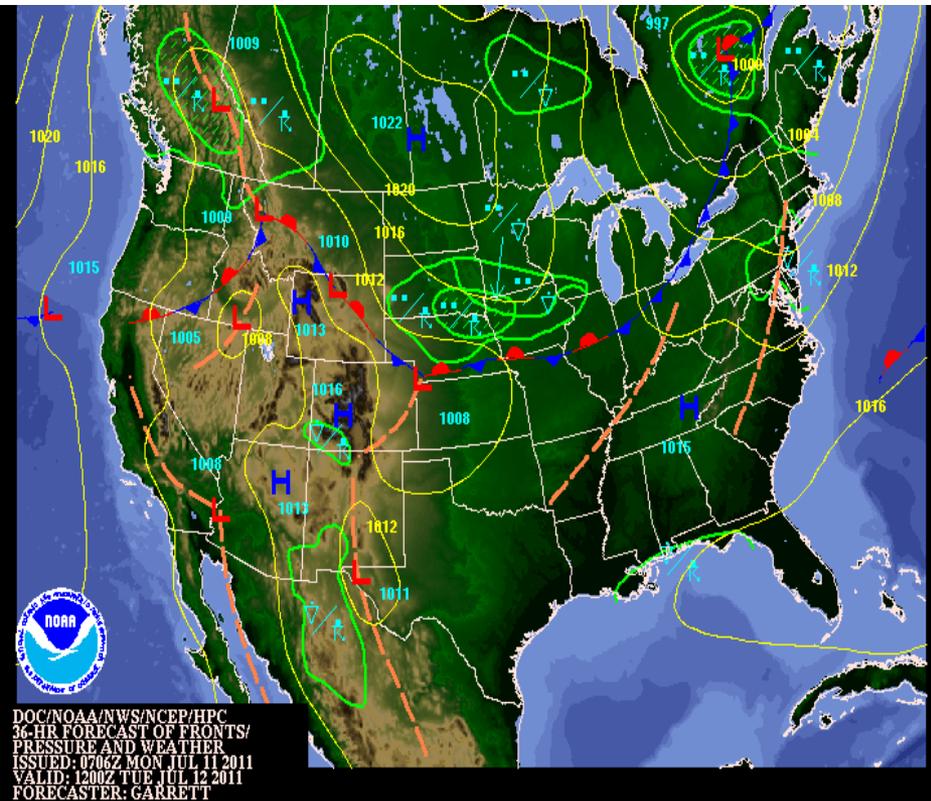


This is not a NOAA product. It was produced by a web user.
 Job ID: 13467 Job Start: Mon Jul 11 12:22:41 UTC 2011
 Source 1 lat.: 42 lon.: -92.15 height: 9000 m AGL
 Trajectory Direction: Forward Duration: 36 hrs
 Vertical Motion Calculation Method: Model Vertical Velocity
 Meteorology: 0600Z 11 Jul 2011 - NAM 12 km

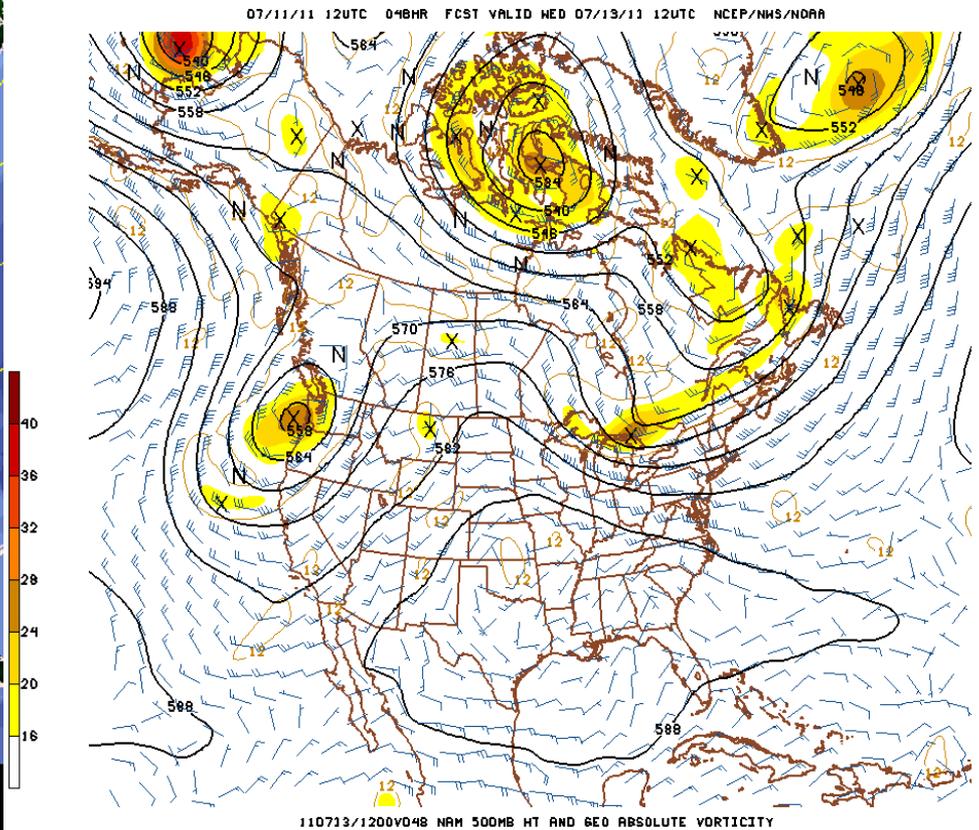
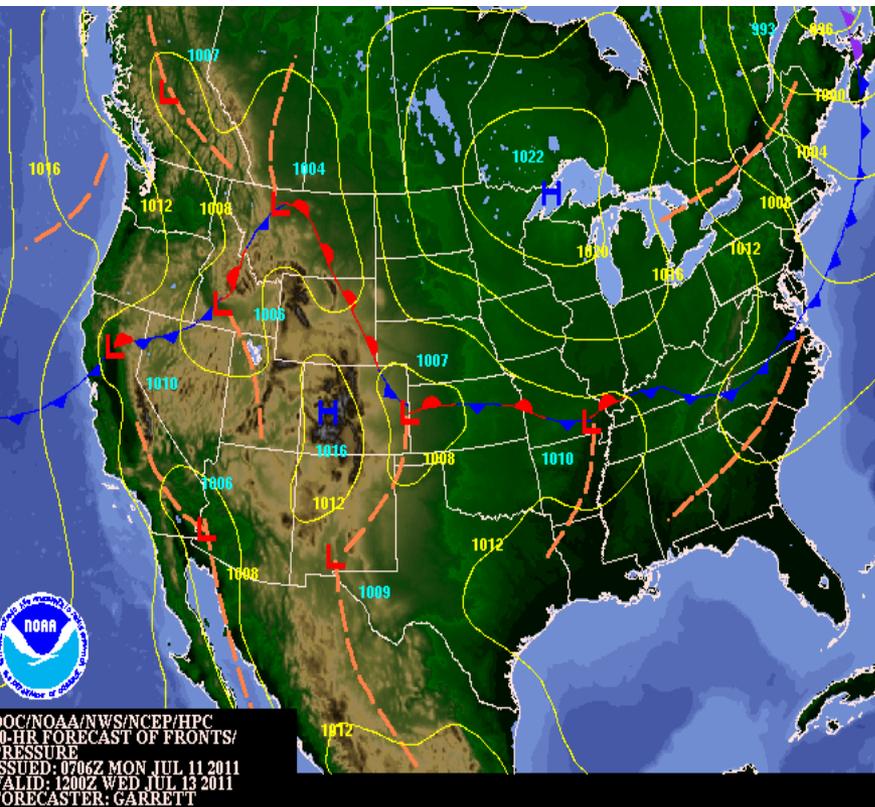


GOES-E 10.7 BAND 4 11 JUL 11 12:15 Z NASA LARC

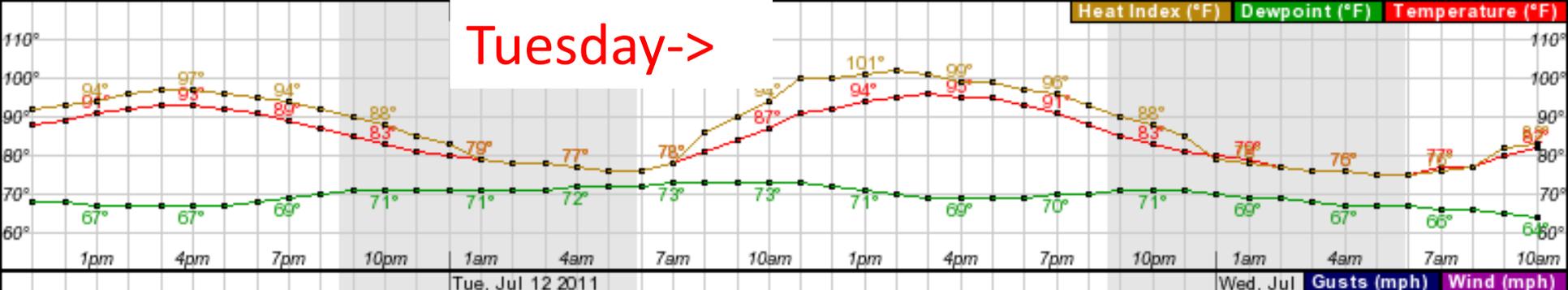
Tuesday: Surface trough present over region.
Cold front also moves in from north by
Tuesday night.



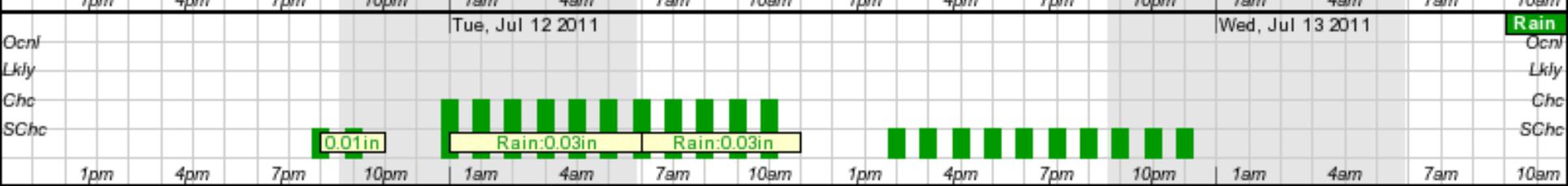
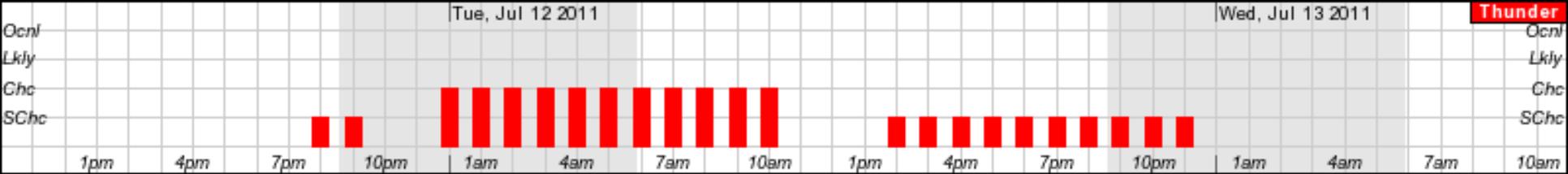
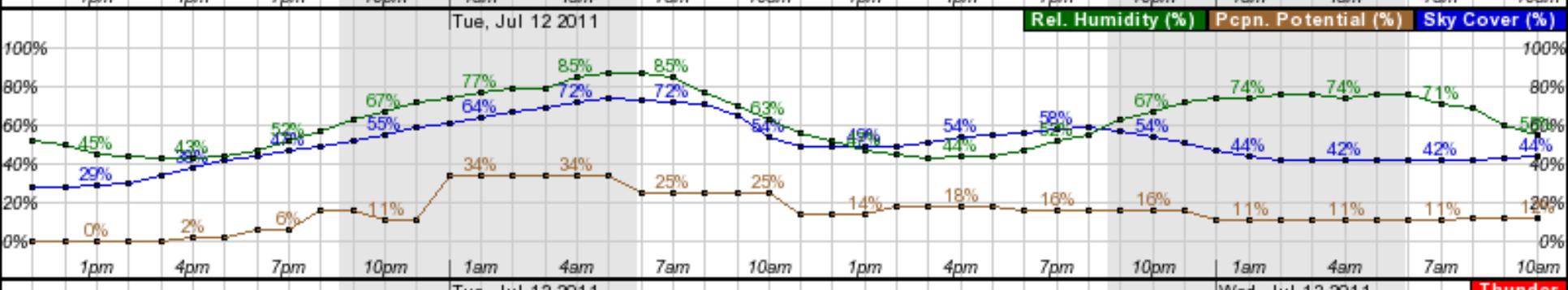
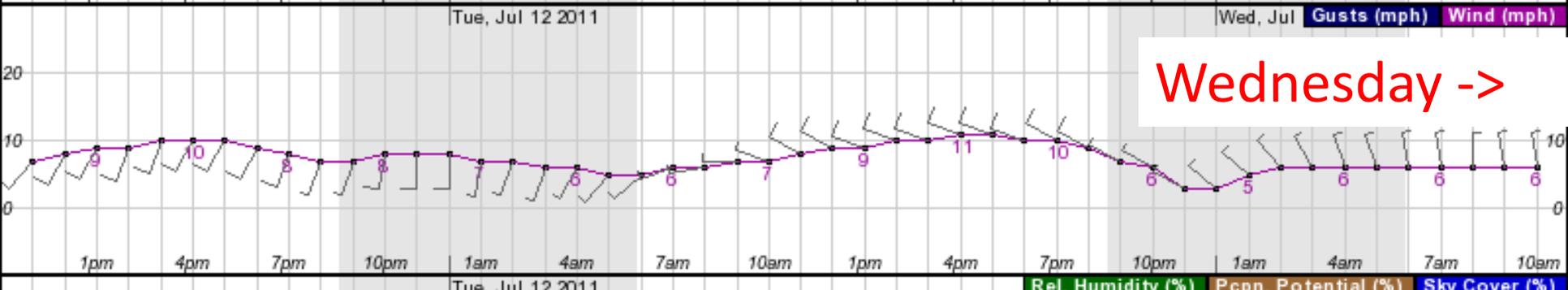
Wednesday: Cold front stalls to south of region.
High pressure begins to build into region again.



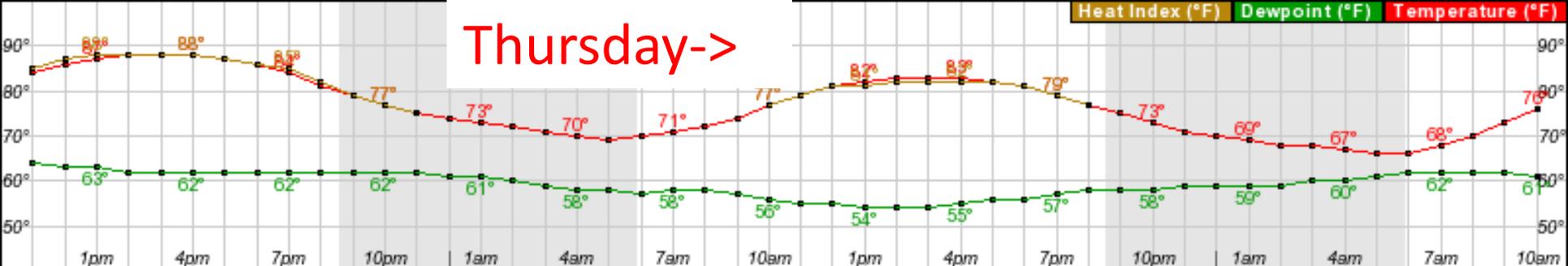
Tuesday ->



Wednesday ->

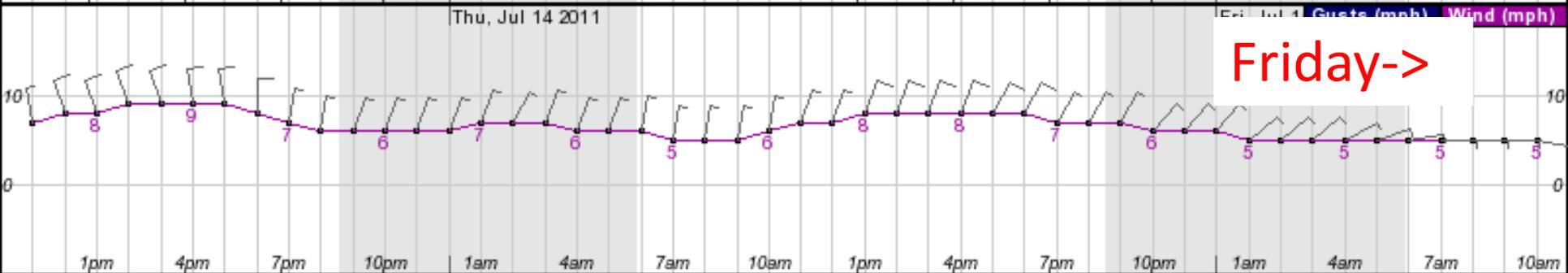


Thursday->



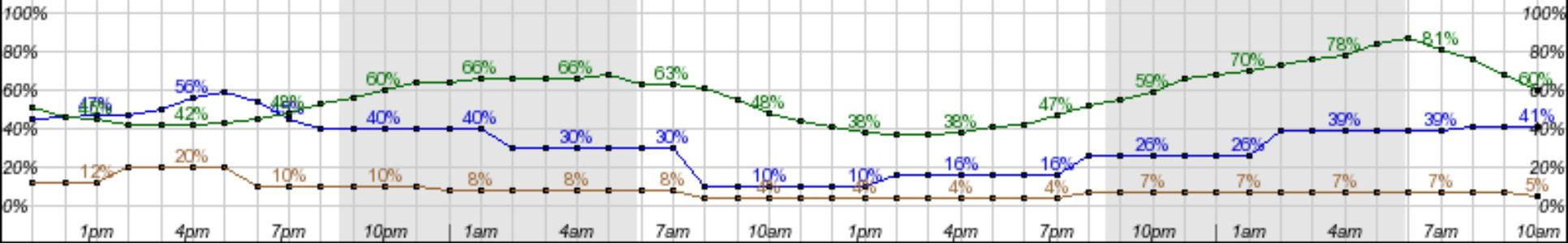
Thu, Jul 14 2011

Friday->



Thu, Jul 14 2011

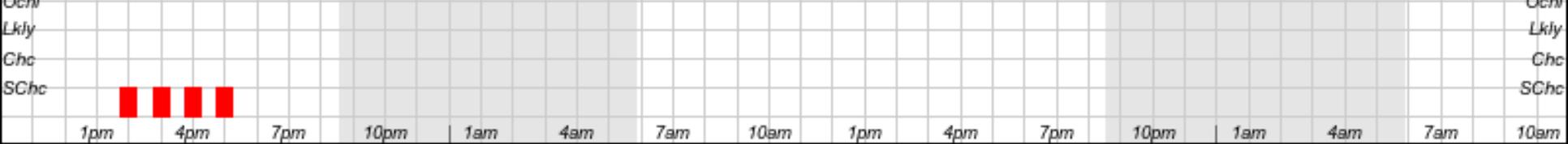
Rel. Humidity (%) Pcpn. Potential (%) Sky Cover (%)



Thu, Jul 14 2011

Fri, Jul 15 2011

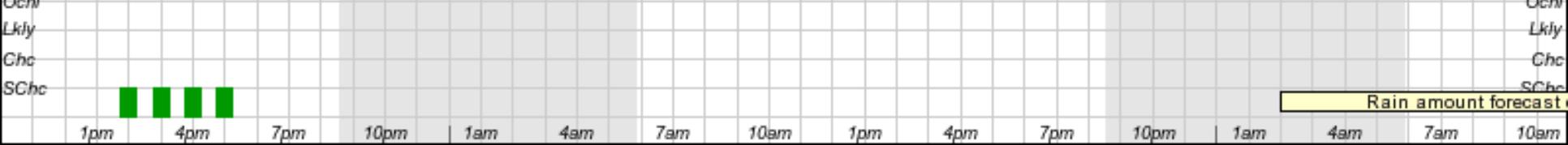
Thunder



Thu, Jul 14 2011

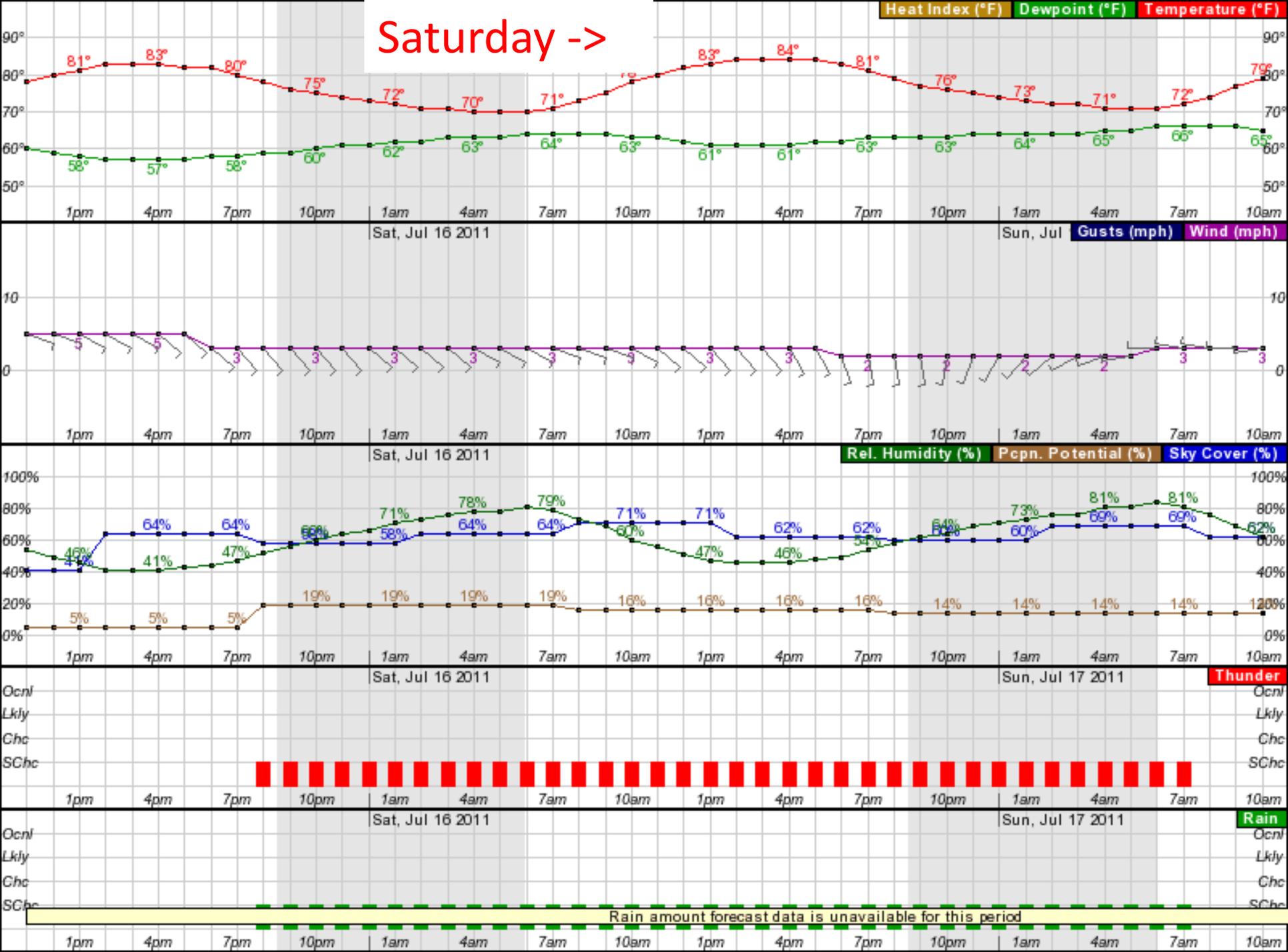
Fri, Jul 15 2011

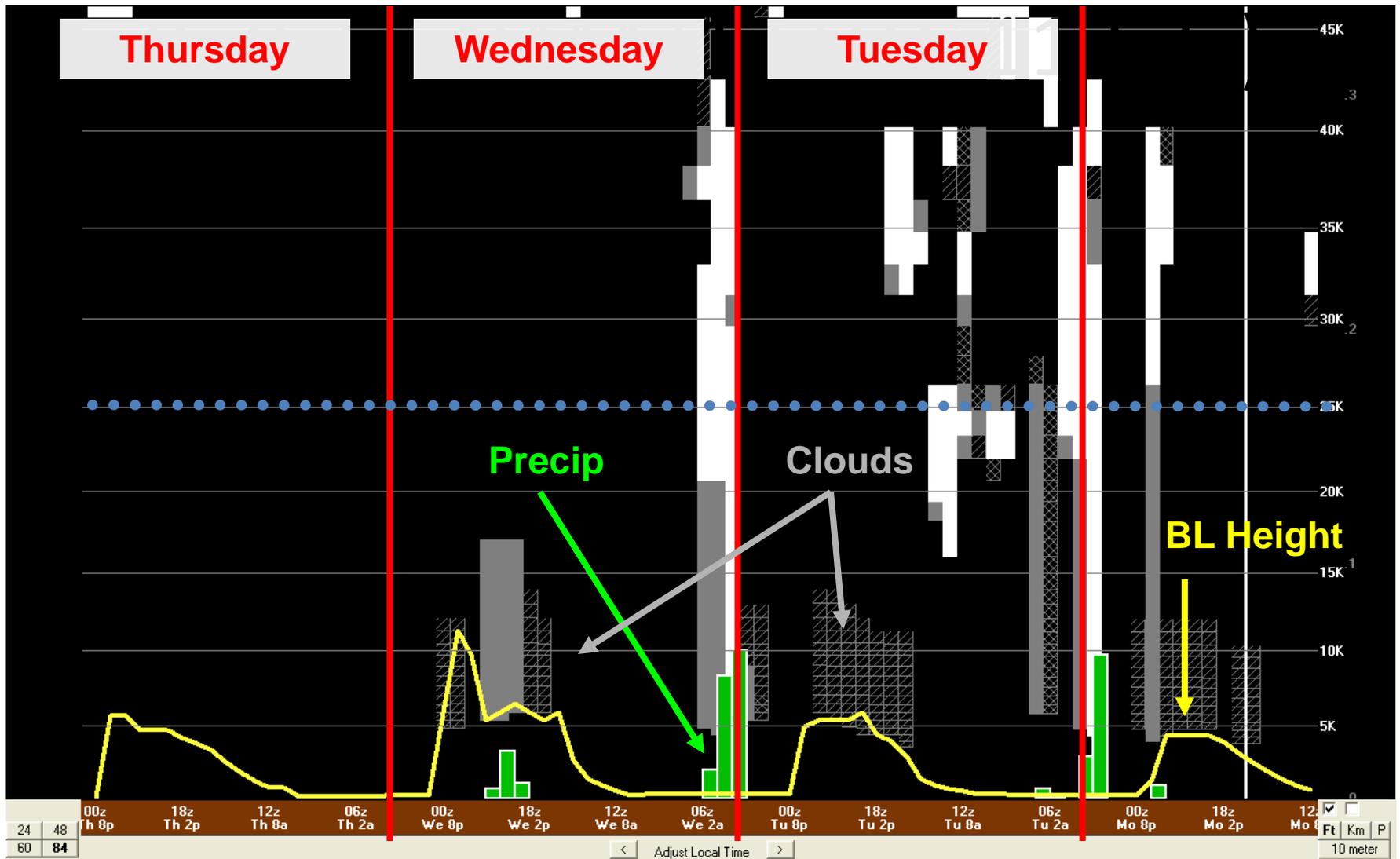
Rain



Rain amount forecast

Saturday ->

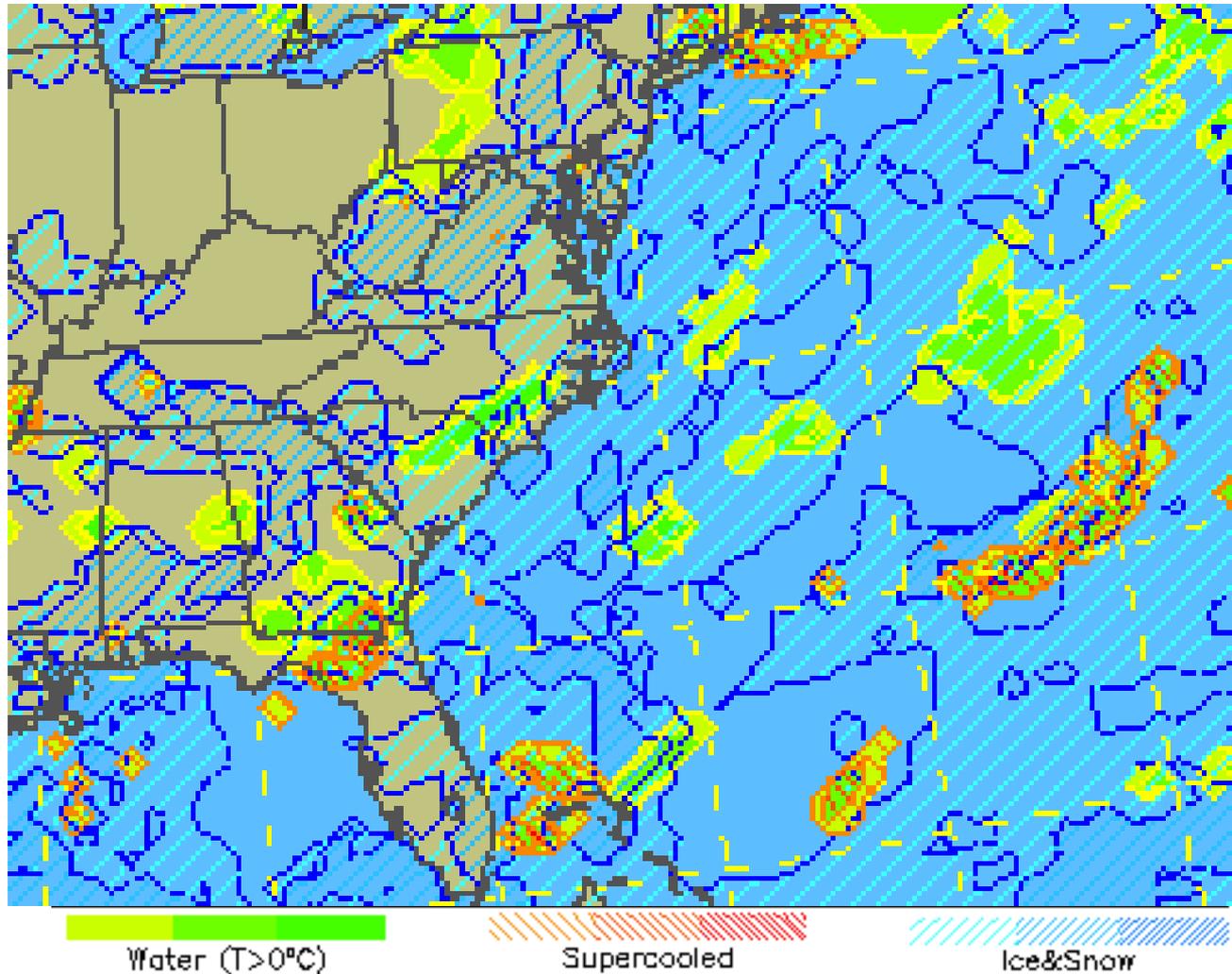




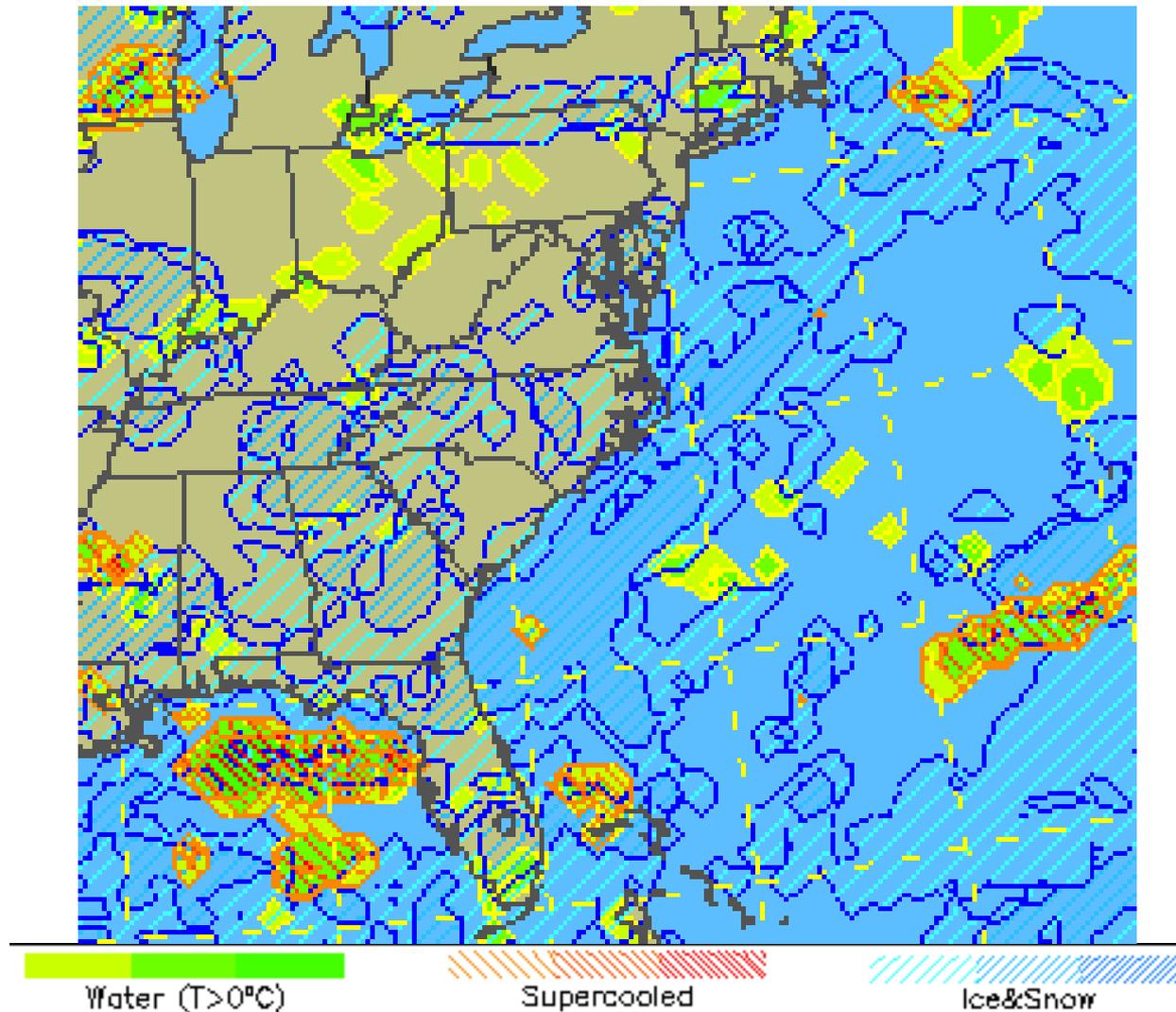
- Mix of clouds Tuesday morning followed by low BL clouds in the afternoon.

- Chance for precip and mix clouds early Wed. morning.
- Chance for light convective precip on Wed. afternoon.

Tuesday 8am: NAM places high cloud (above 18,000ft) in region through morning



Tuesday 2pm: High clouds remain in portion of study area through afternoon



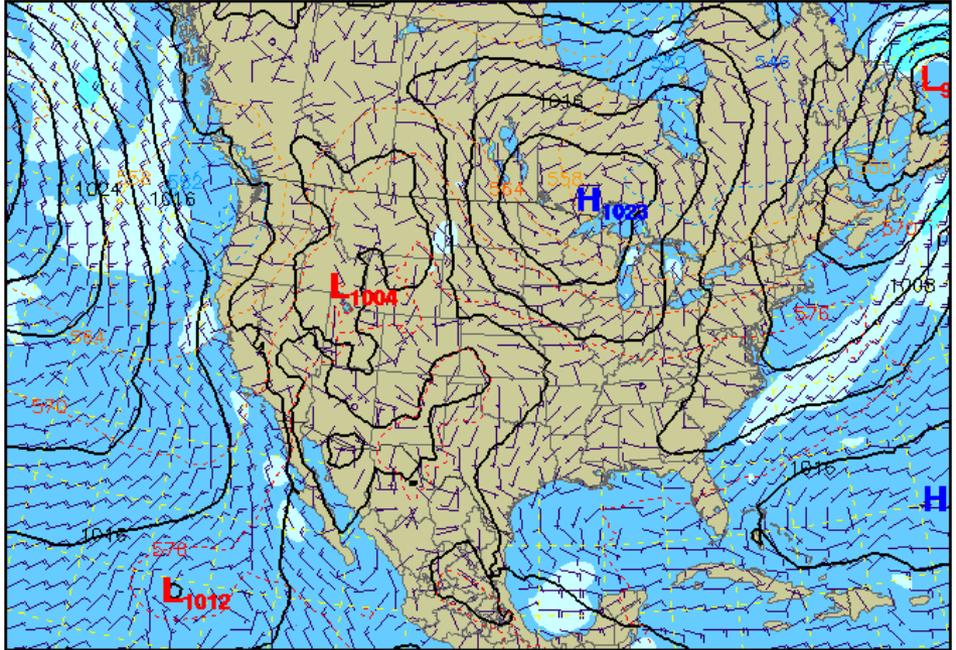
NAM – MSLP and Clouds Wednesday Morning

Surface (10m) Wind Speed (knots) / MSLP (mb)

Integrated liquid and frozen hydrometeors (all levels)

48-hour forecast valid 1200 UTC Wed 13 Jul 2011

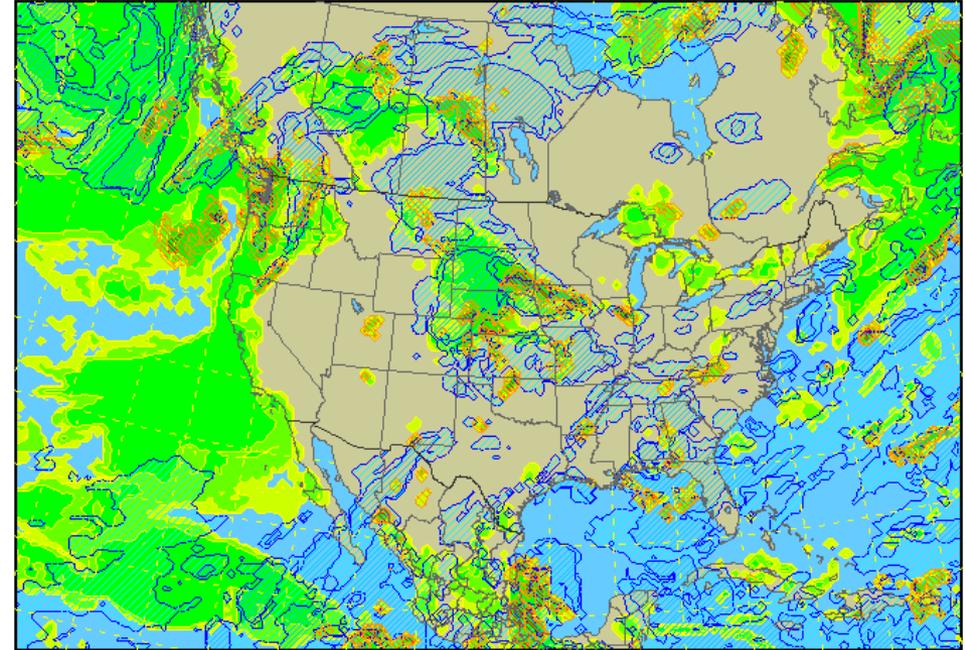
NAM (MRF-NMM) (12z 11 Jul)



15 20 30 40 50 60 80 100 knots

48-hour forecast valid 1200 UTC Wed 13 Jul 2011

NAM (MRF-NMM) (12z 11 Jul)



Water (>0°C) Supercooled Ice&Snow

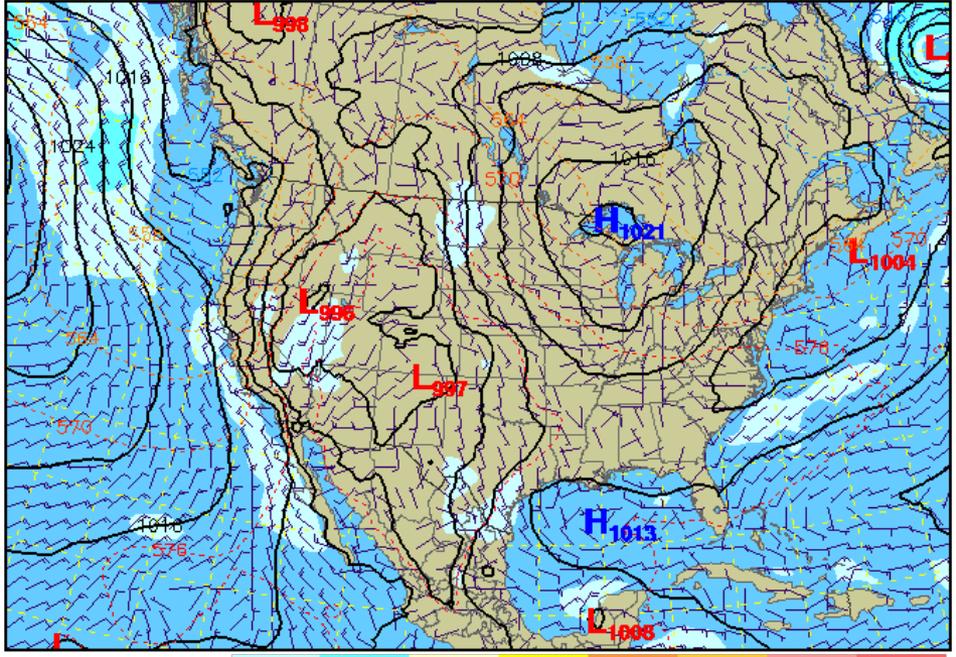
NAM – MSLP and Clouds Wednesday Evening

Surface (10m) Wind Speed (knots) / MSLP (mb)

Integrated liquid and frozen hydrometeors (all levels)

60-hour forecast valid 0000 UTC Thu 14 Jul 2011

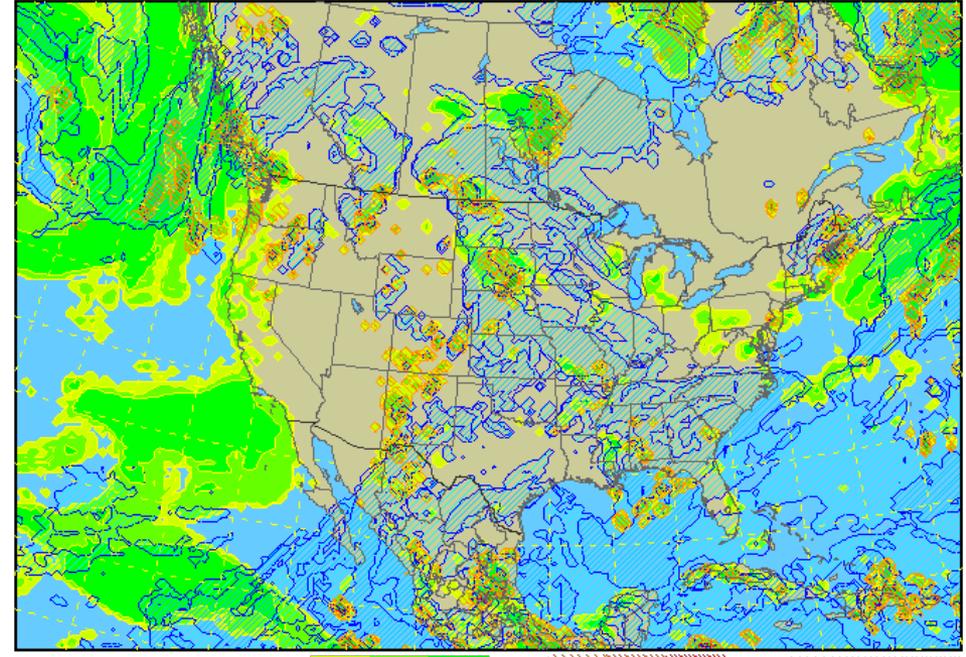
NAM (MRF-NMM) (12z 11 Jul)



15 20 30 40 50 60 80 100 knots

60-hour forecast valid 0000 UTC Thu 14 Jul 2011

NAM (MRF-NMM) (12z 11 Jul)



Water (>0°C) Supercooled Ice&Snow

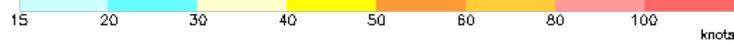
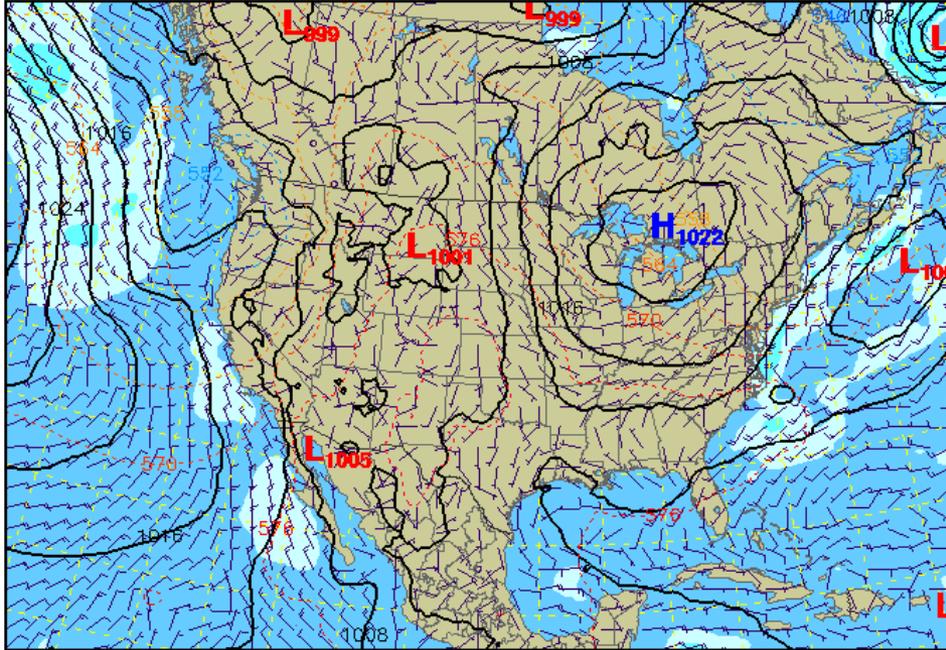
NAM – MSLP and Clouds Thursday Morning

Surface (10m) Wind Speed (knots) / MSLP (mb)

Integrated liquid and frozen hydrometeors (all levels)

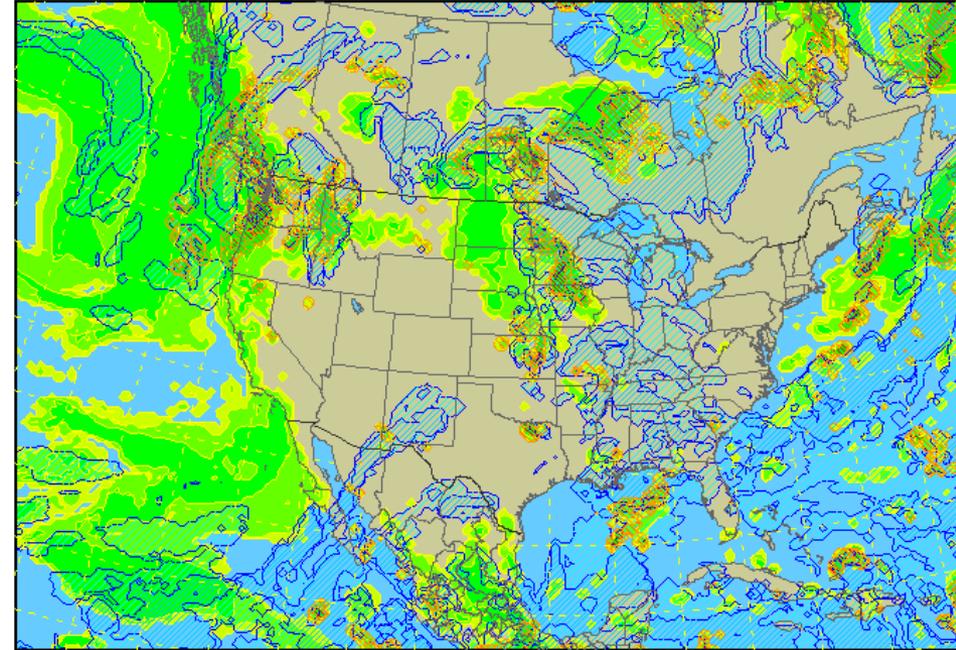
72-hour forecast valid 1200 UTC Thu 14 Jul 2011

NAM (MRF-NMM) (12z 11 Jul)

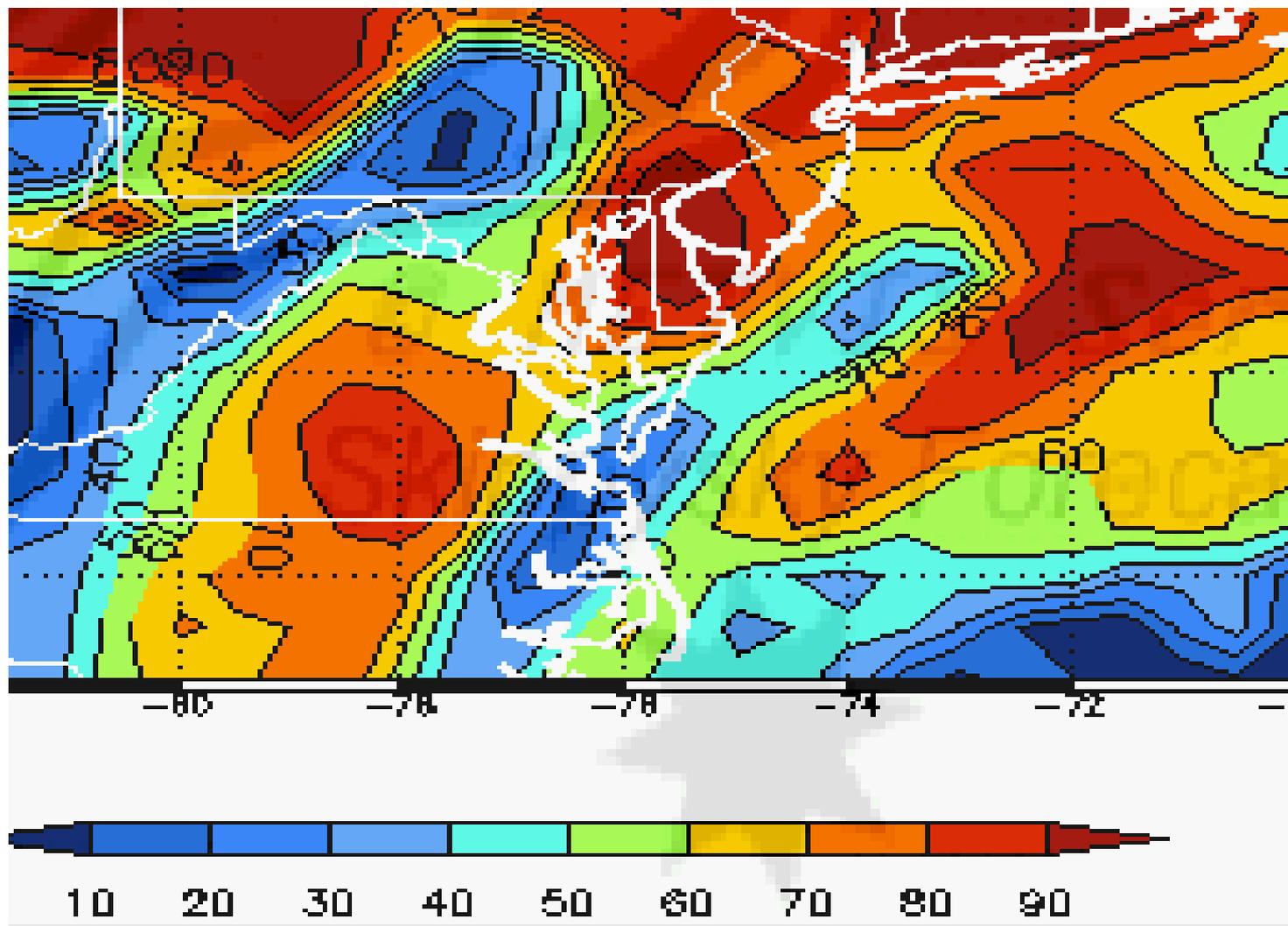


72-hour forecast valid 1200 UTC Thu 14 Jul 2011

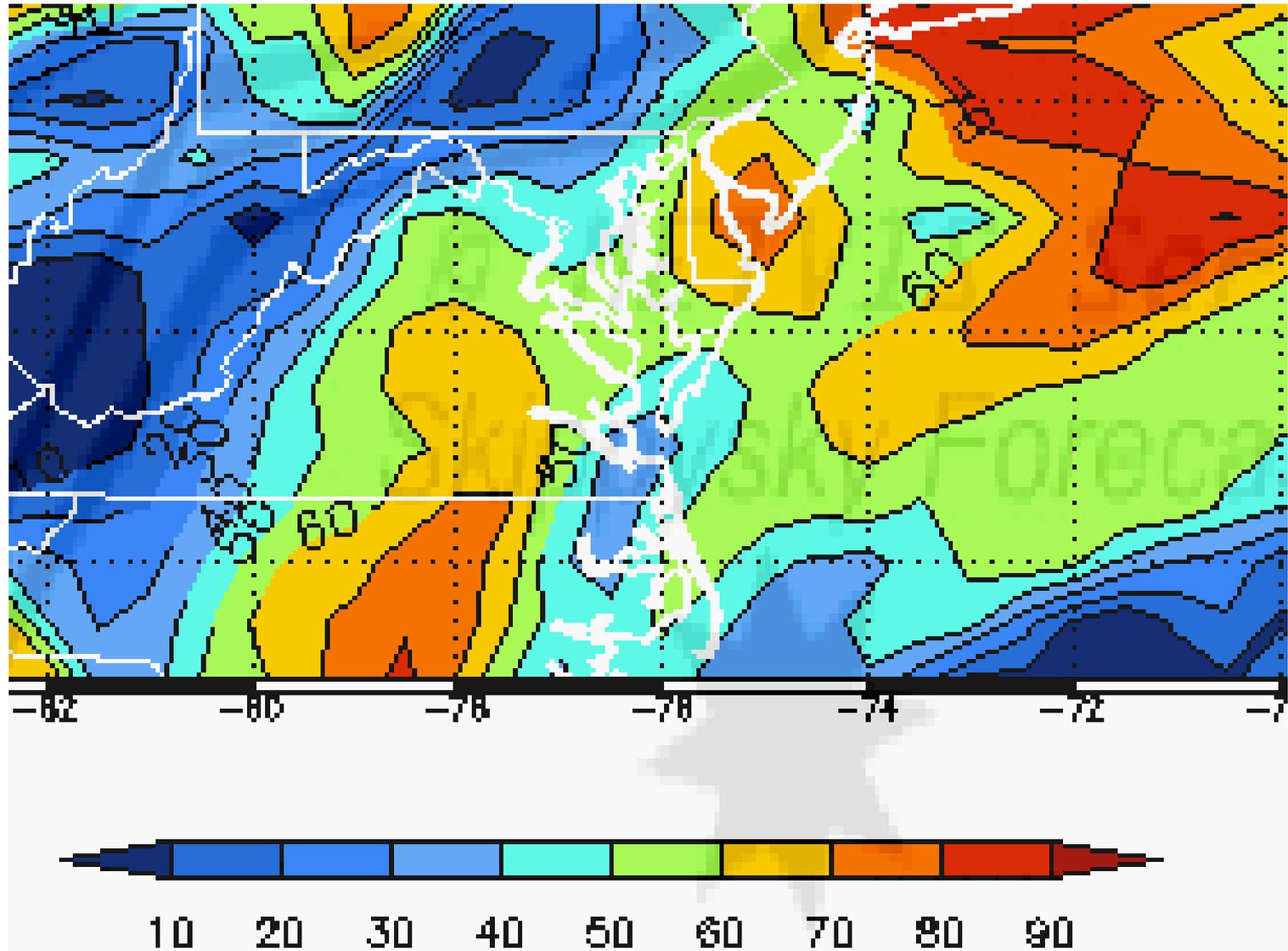
NAM (MRF-NMM) (12z 11 Jul)



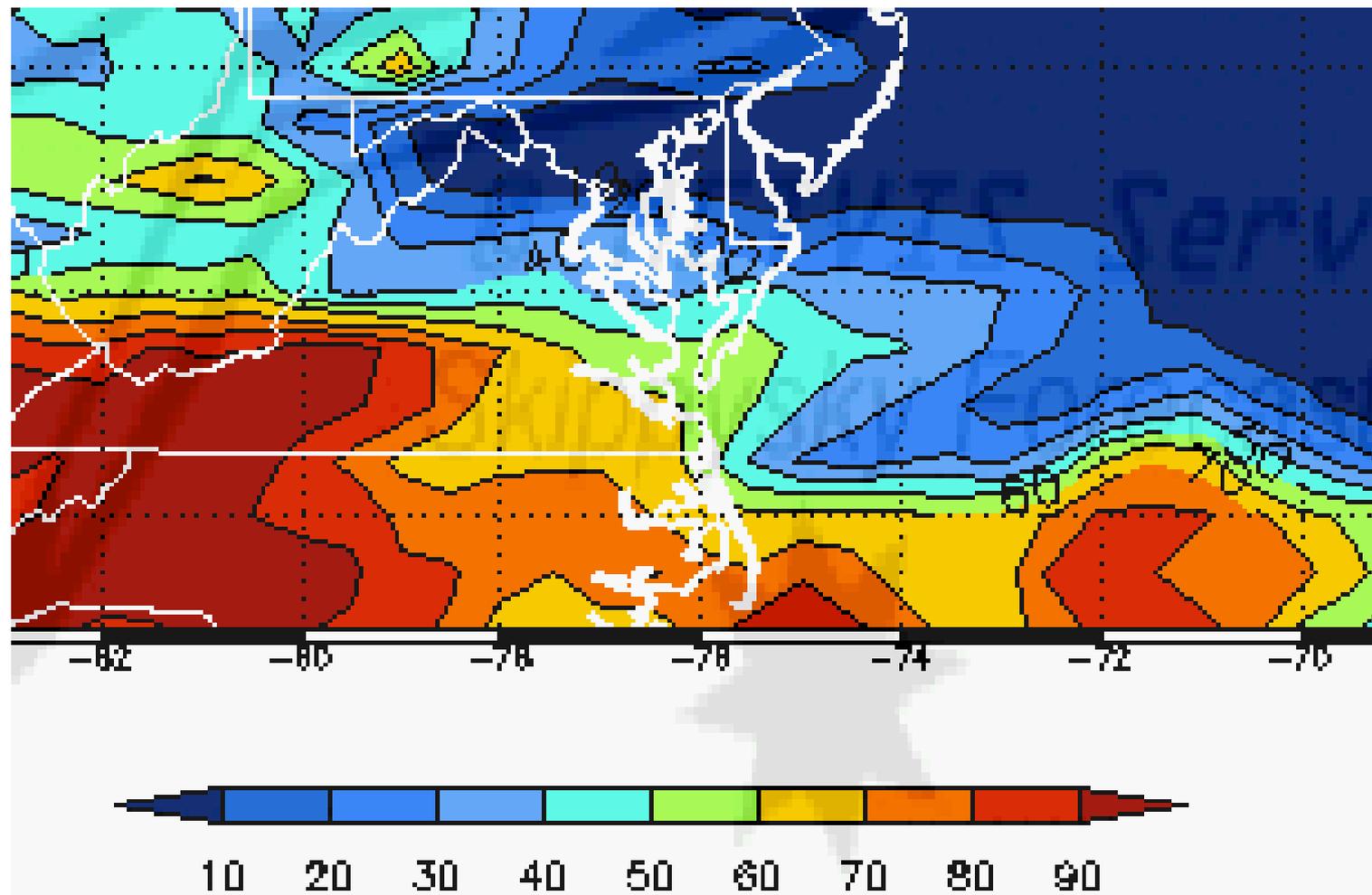
Tuesday 11am: GFS places significant cloud cover over study area through morning as well



Tuesday 2pm: GFS keeps cloud cover under 50% through afternoon for study region (borderline)

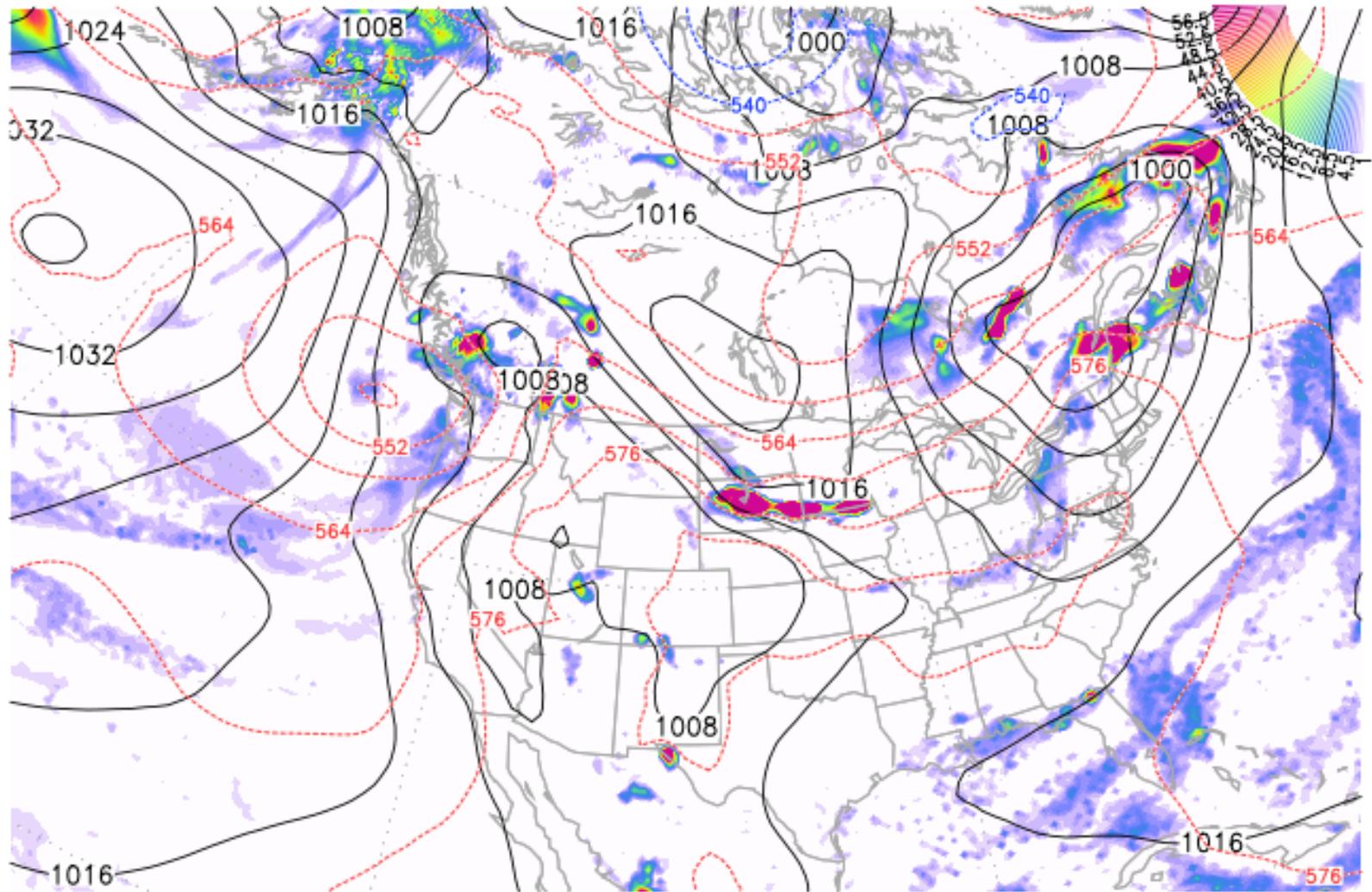


Wednesday 2pm: GFS keeps region clear through afternoon



NASA/GMAO - GEOS-5 Forecast Initialized on 00z 2011-07-11

Precip [mm/day], SLP [mb] and 1000-500mb Thickness [dam]

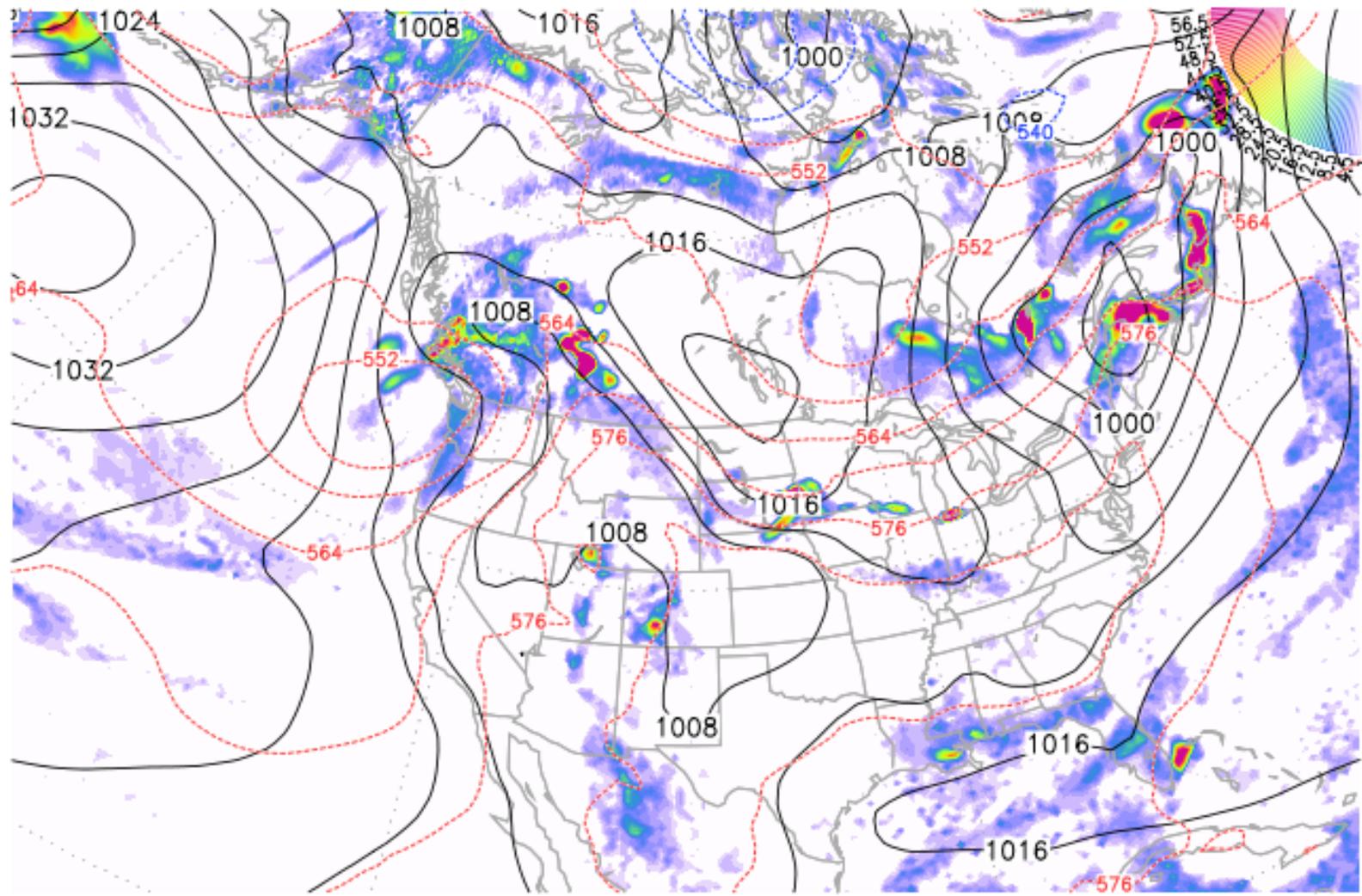


36 hr forecast valid Tue 12z 2011-07-12

GEOS-5 Forecast

NASA/GMAO - GEOS-5 Forecast Initialized on 00z 2011-07-11

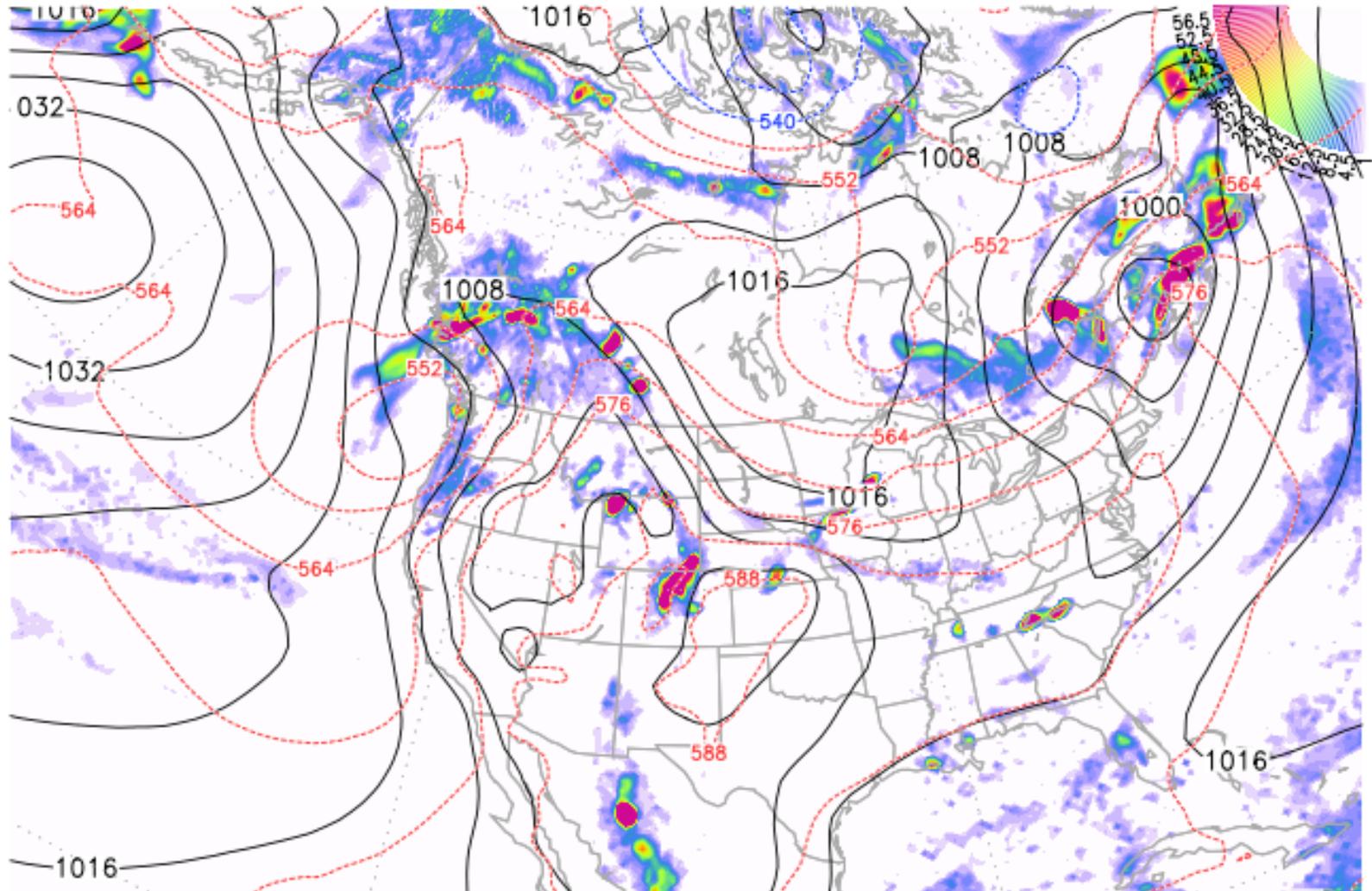
Precip [mm/day], SLP [mb] and 1000-500mb Thickness [dam]



42 hr forecast valid Tue 18z 2011-07-12

NASA/GMAO - GEOS-5 Forecast Initialized on 00z 2011-07-11

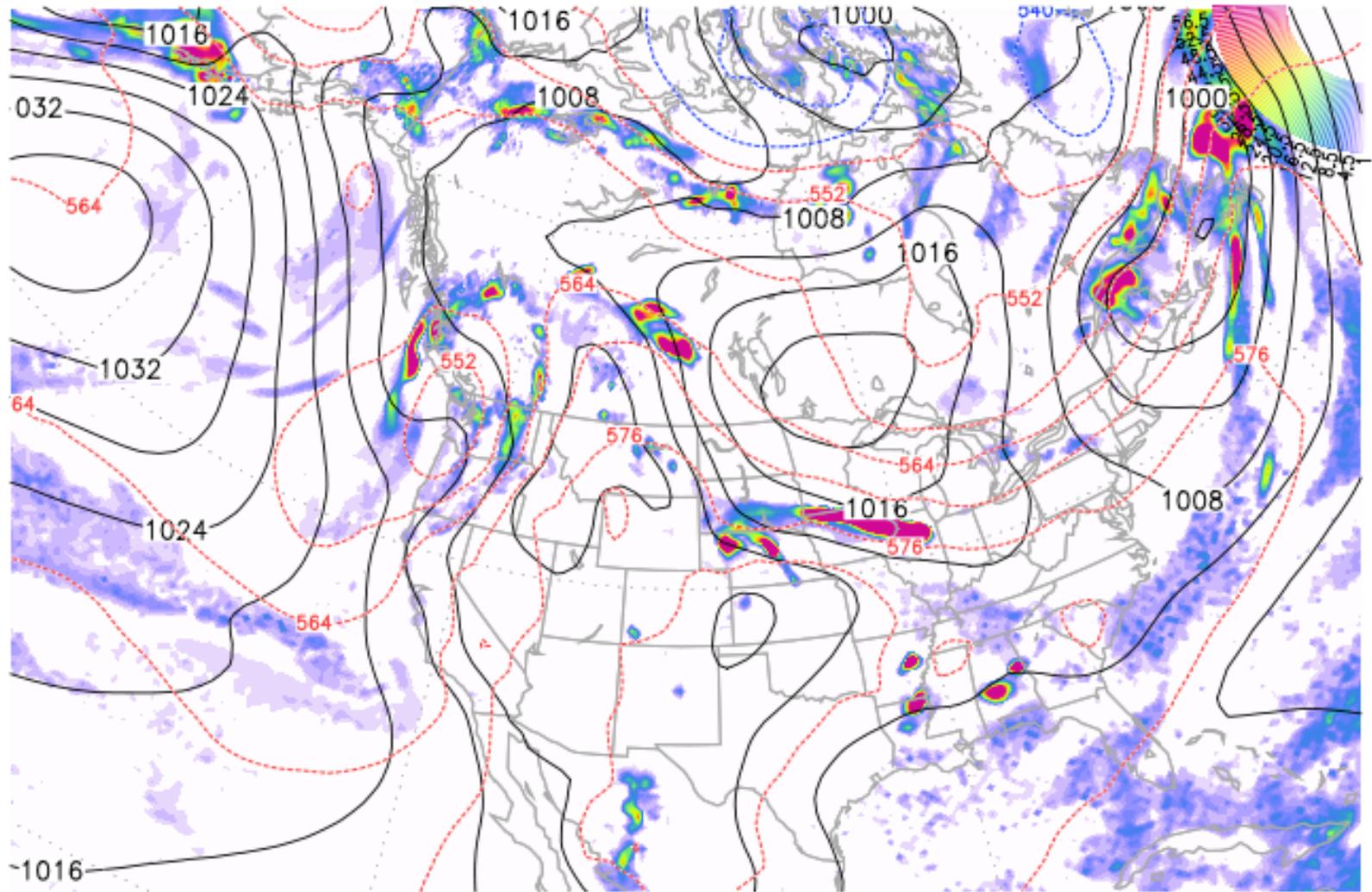
Precip [mm/day], SLP [mb] and 1000-500mb Thickness [dam]



48 hr forecast valid Wed 00z 2011-07-13

NASA/GMAO - GEOS-5 Forecast Initialized on 00z 2011-07-11

Precip [mm/day], SLP [mb] and 1000-500mb Thickness [dam]

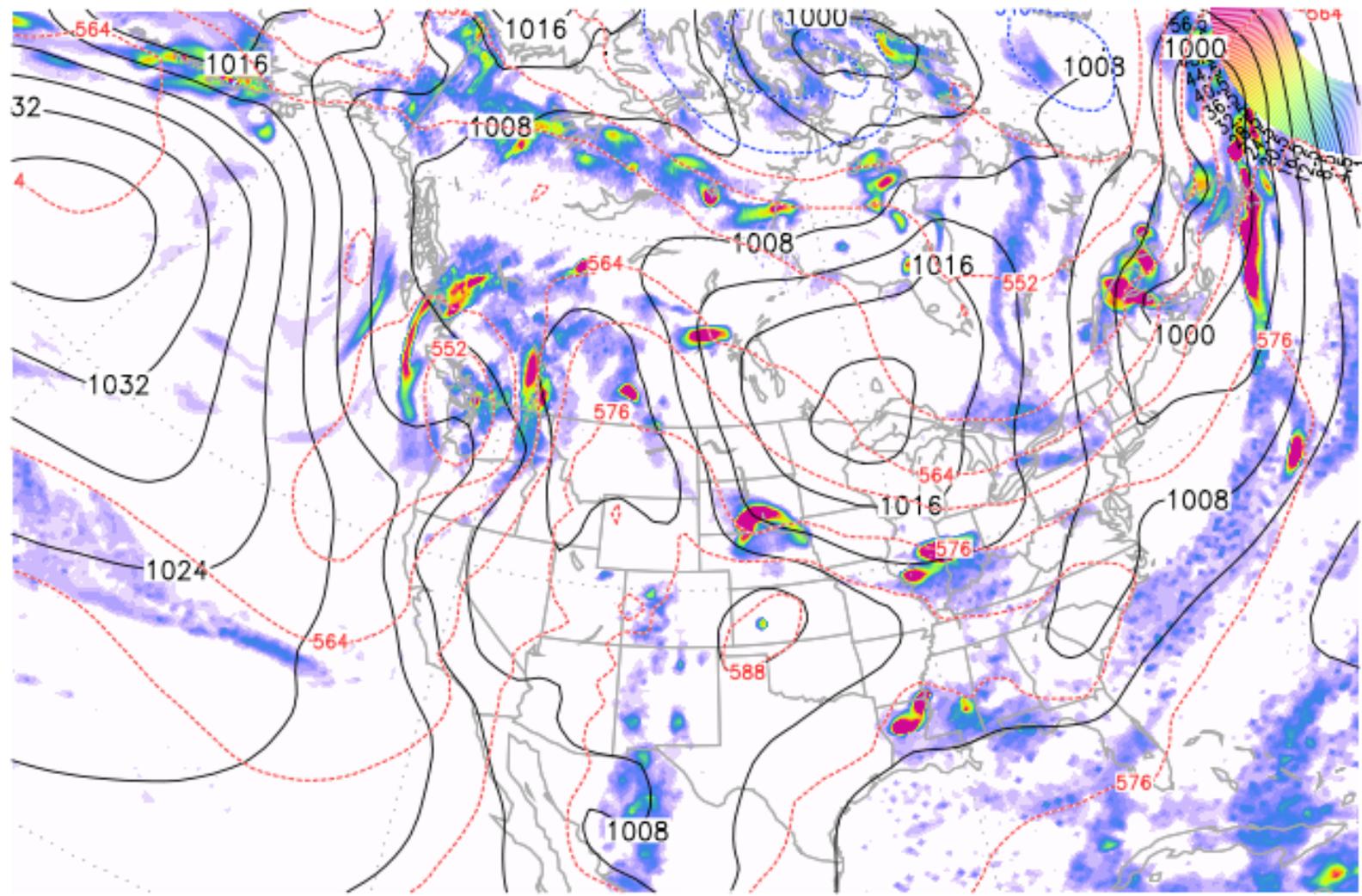


60 hr forecast valid Wed 12z 2011-07-13

GEOS-5 ANALYSIS

NASA/GMAO - GEOS-5 Forecast Initialized on 00z 2011-07-11

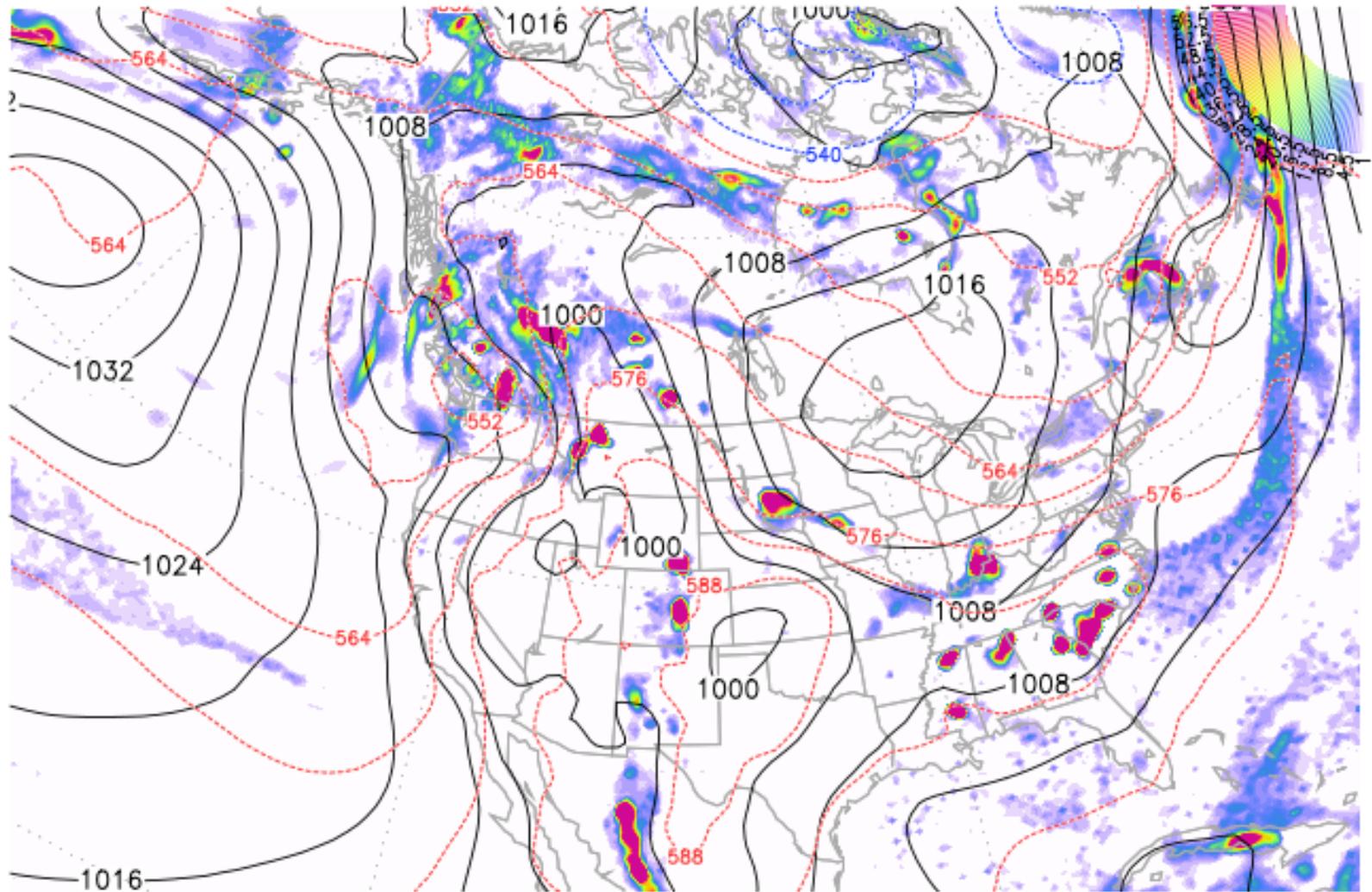
Precip [mm/day], SLP [mb] and 1000-500mb Thickness [dam]



66 hr forecast valid Wed 18z 2011-07-13

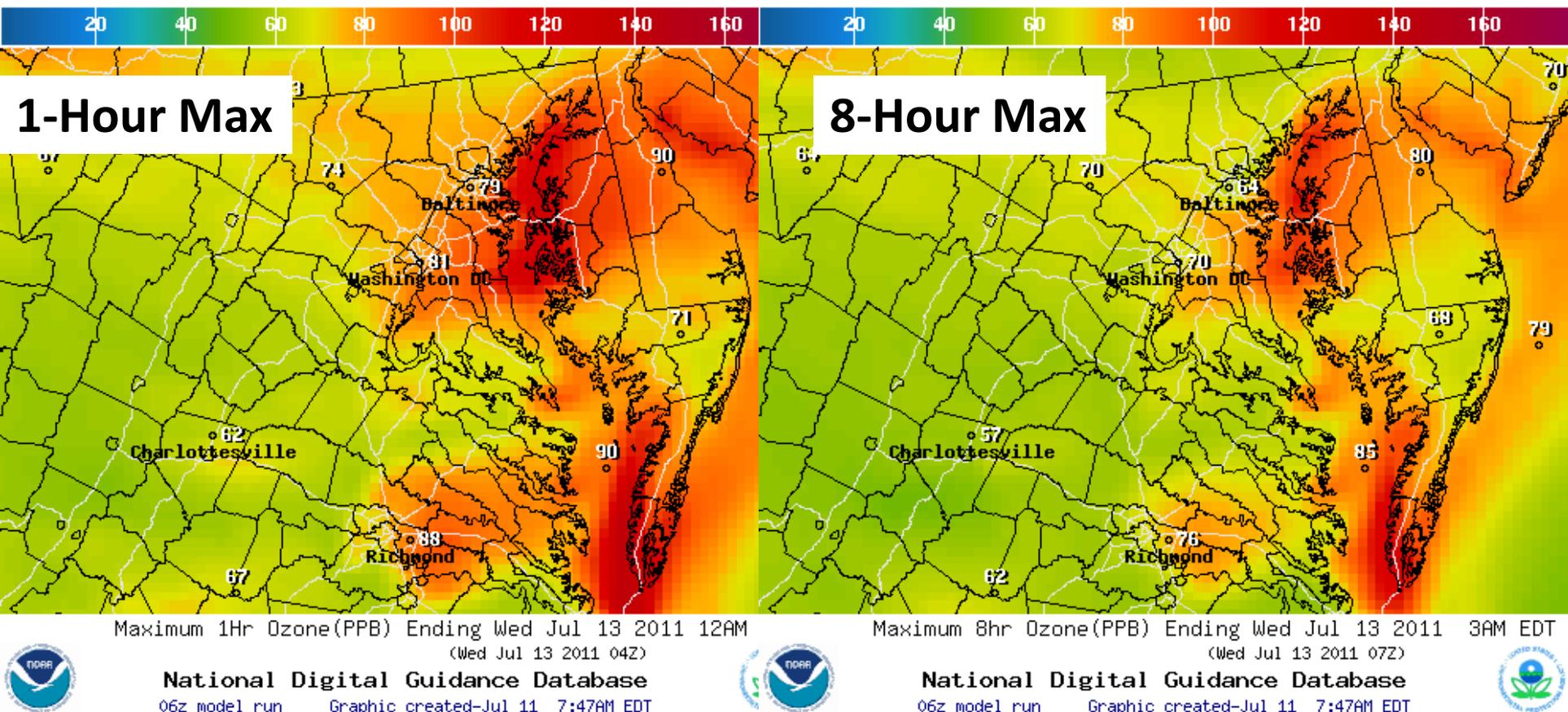
NASA/GMAO - GEOS-5 Forecast Initialized on 00z 2011-07-11

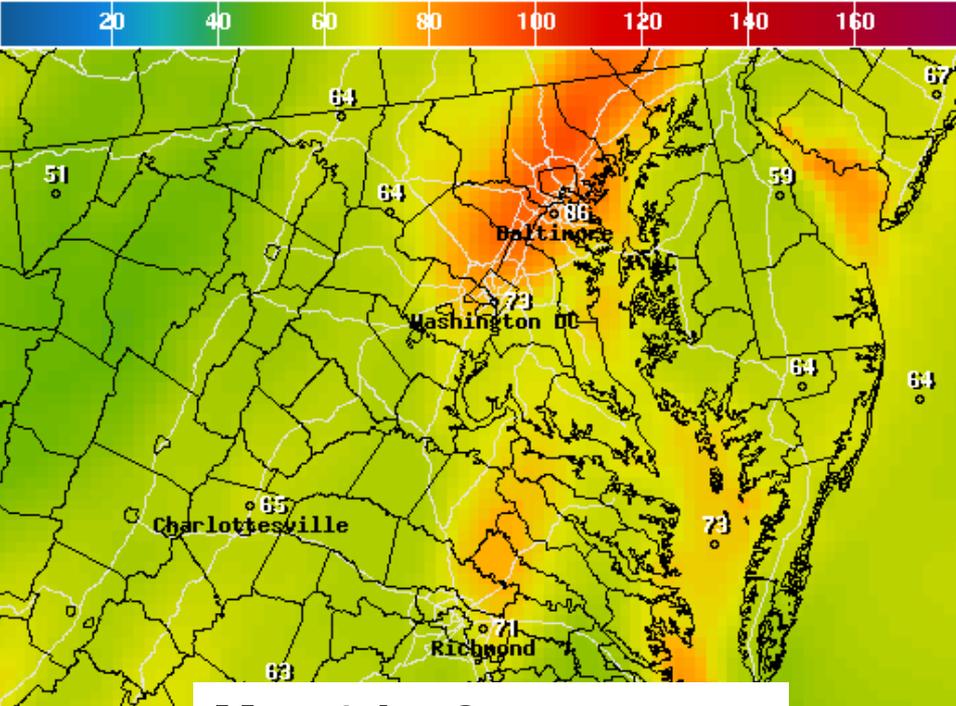
Precip [mm/day], SLP [mb] and 1000-500mb Thickness [dam]



72 hr forecast valid Thu 00z 2011-07-14

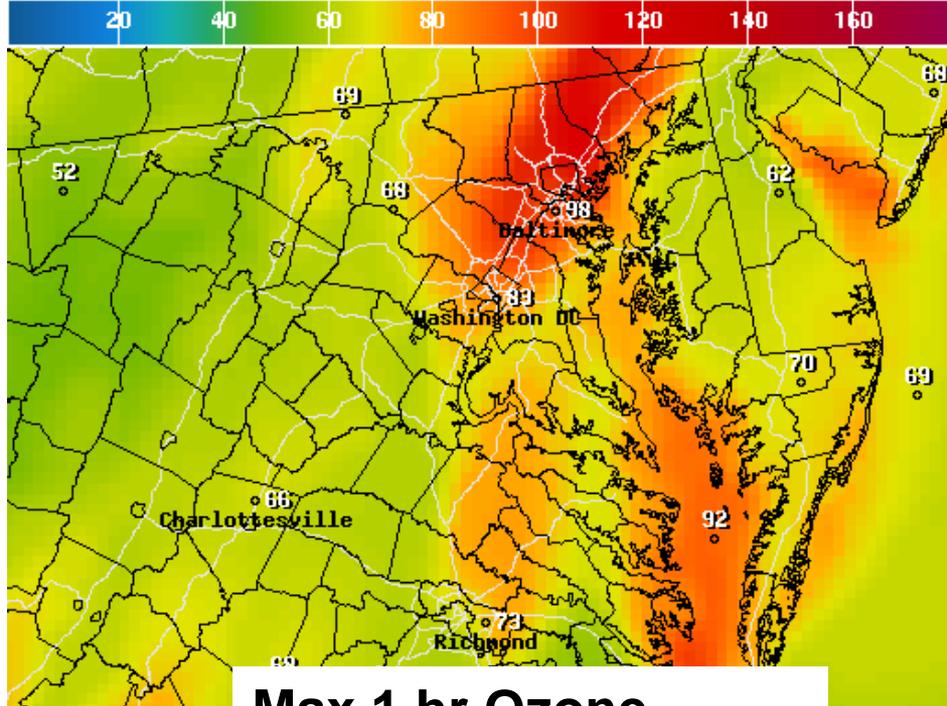
Tuesday: Ozone concentrations around Baltimore should be less than they were on Monday, but ozone picks up around DC. Could be another higher pollution day.





Max 8 hr Ozone (ppbv) 6 AM EDT

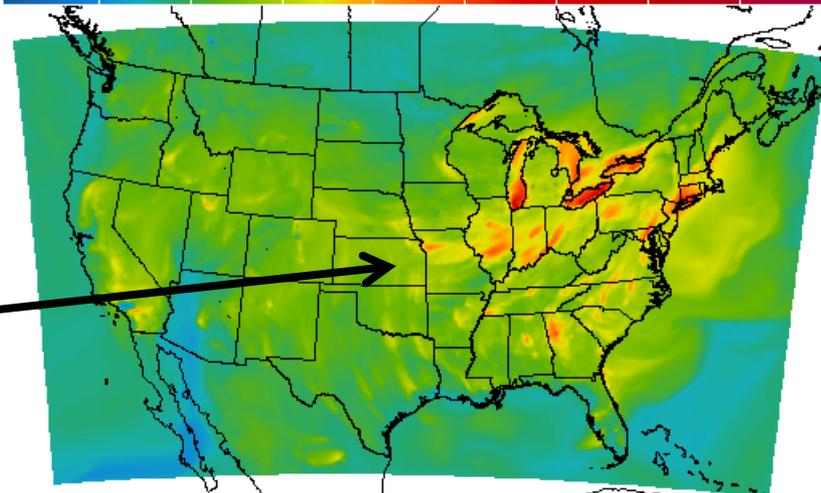
National Digital Guidance Database
 06z Model run Graphic created-Jul 11 7:47AM EDT



Max 1 hr Ozone (ppbv) 1 PM EDT

National Digital Guidance Database
 06z Model run Graphic created-Jul 11 8:14AM EDT

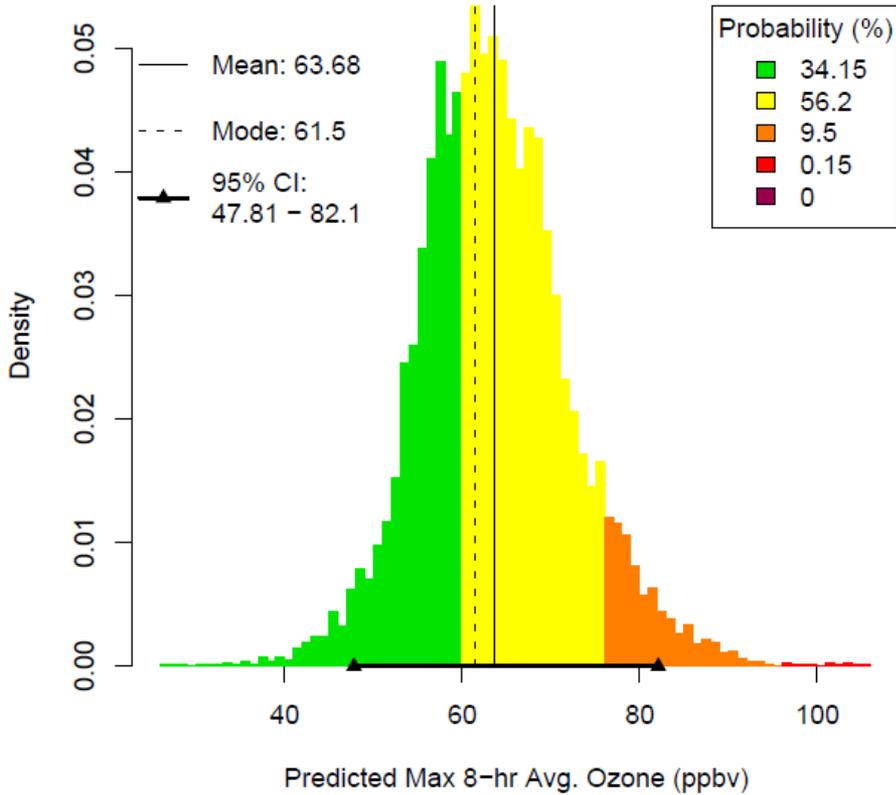
Regional background elevated ~60-70 ppbv



Maximum 8hr Ozone(PPB) Ending Tue Jul 12 2011 6 AM EDT (Tue Jul 12 2011 10z)

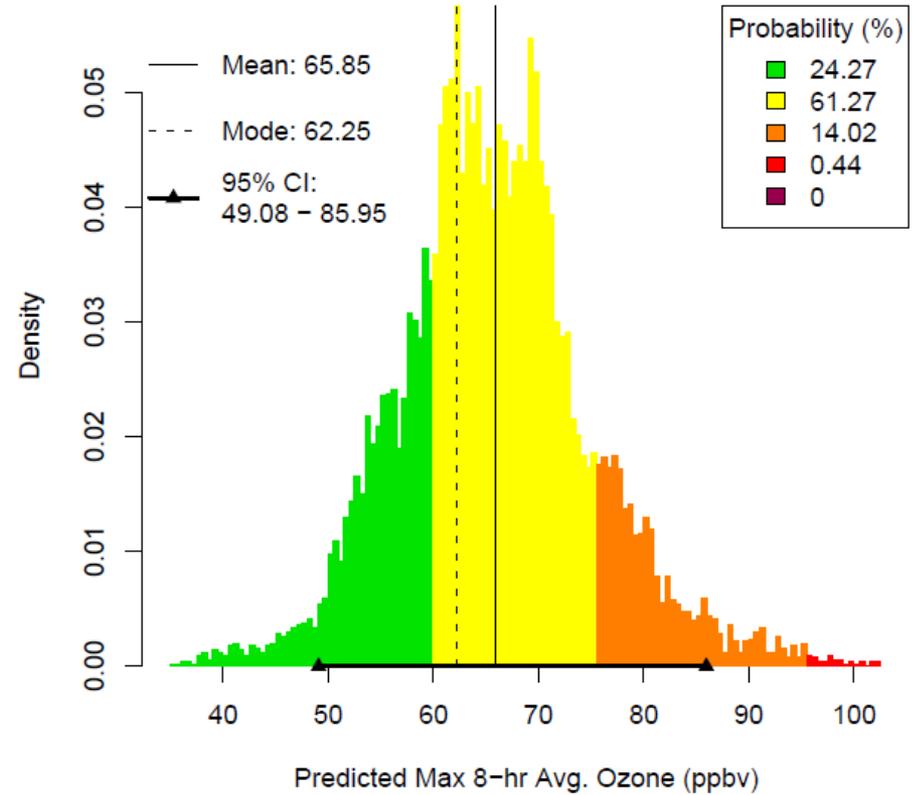
National Digital Guidance Database
 06z model run Graphic created-Jul 11 8:14AM EDT

ID: 240251001 VALID: 2011-07-12



Edgewood

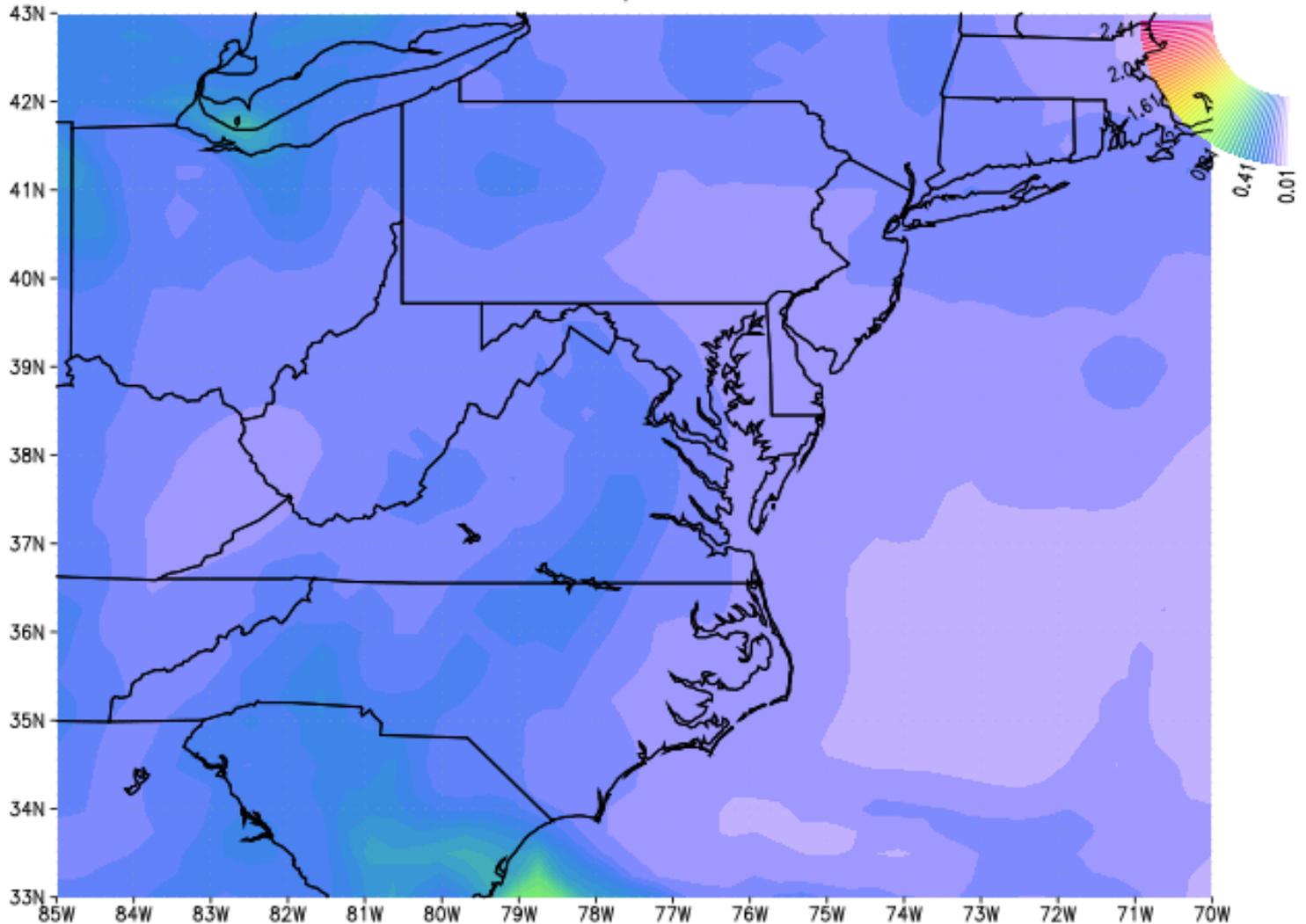
ID: 240330030 VALID: 2011-07-12



Beltsville

Today's AOT forecast: Small aerosol impact.

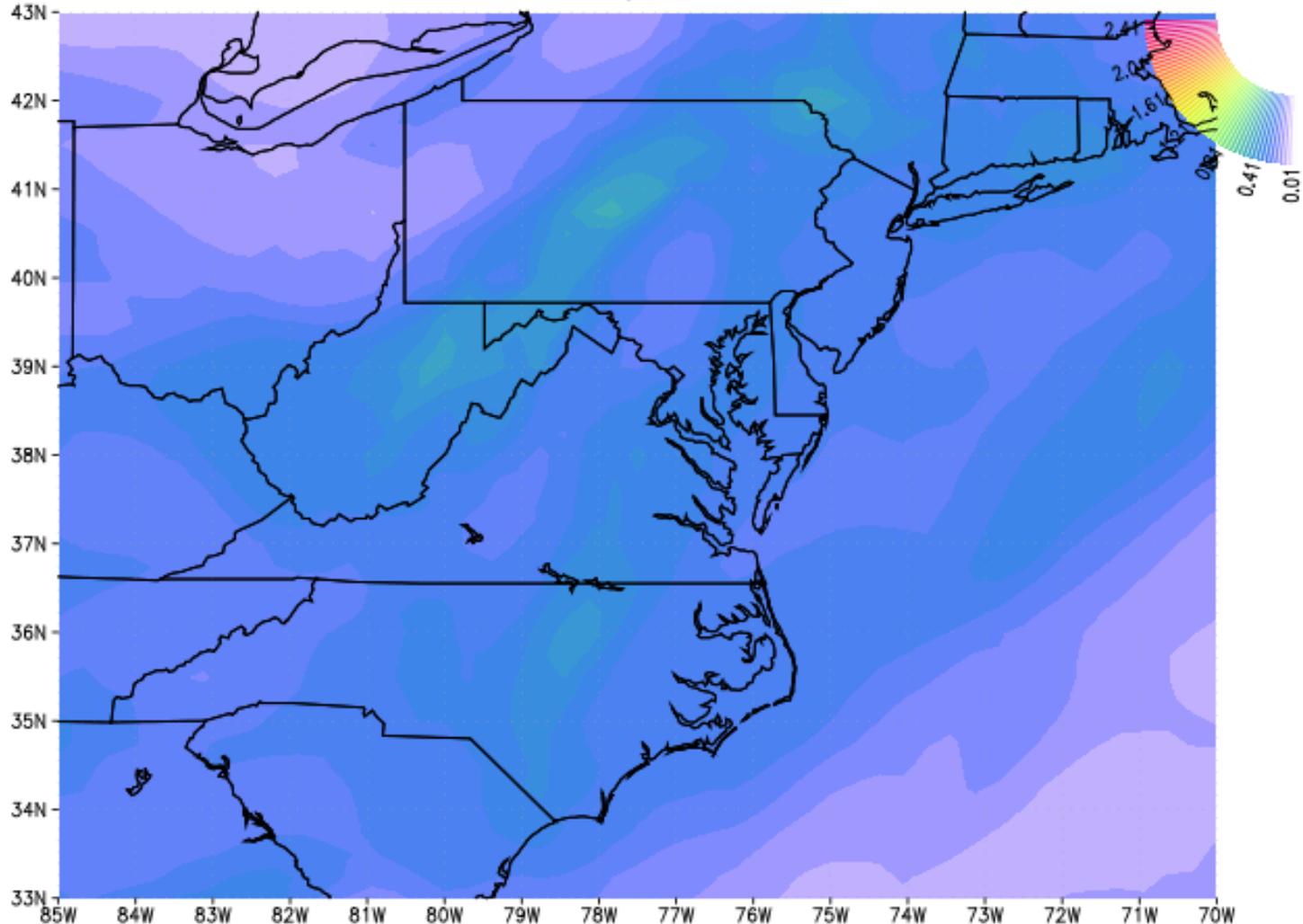
NASA/GMAO – GEOS-5 Forecast Initialized on 00z 2011-07-11
Total Aerosol Optical Thickness



12 hr forecast valid Mon 12z 2011-07-11

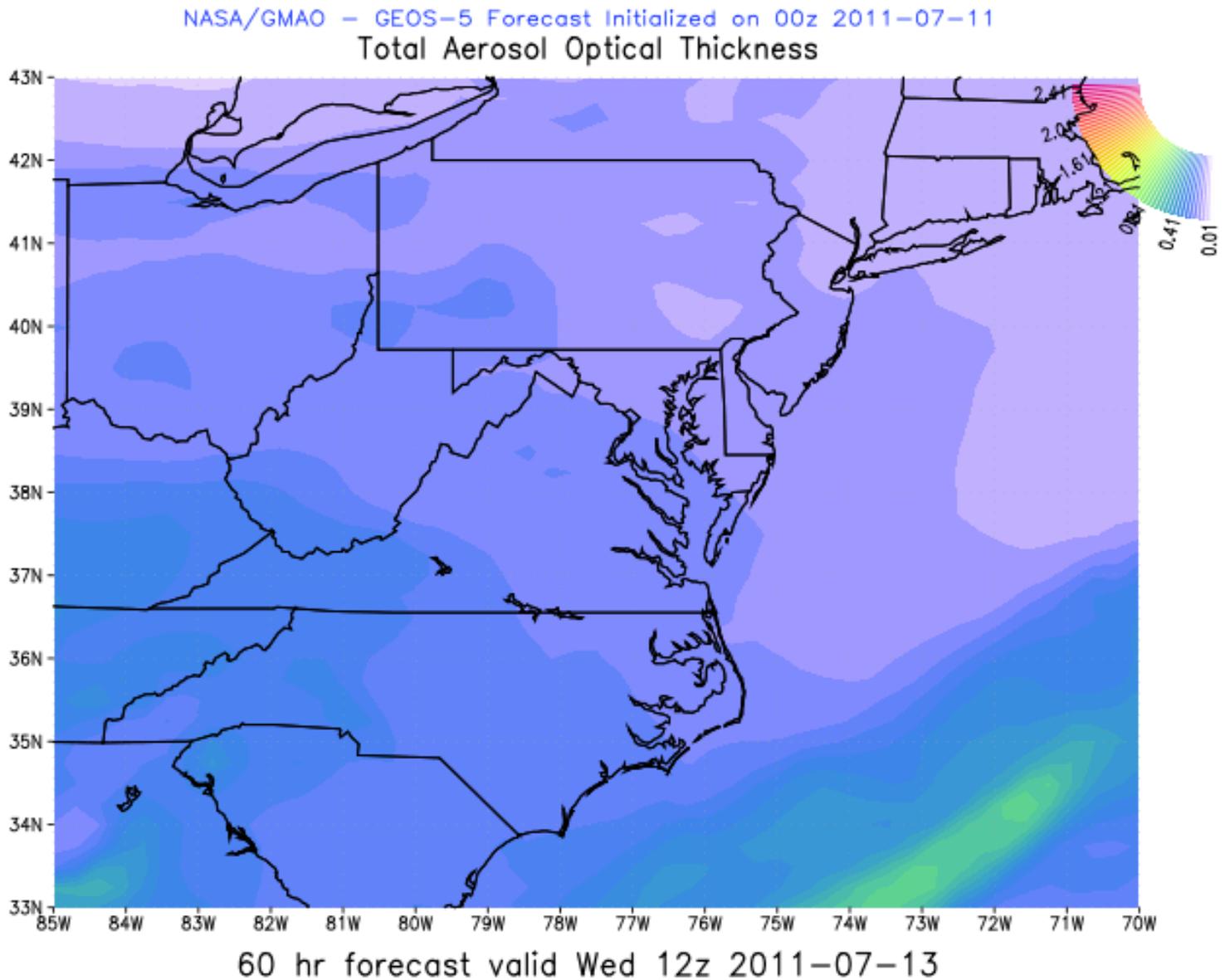
Tuesday: Aerosol impact apparent from NM fires/power plants

NASA/GMAO - GEOS-5 Forecast Initialized on 00z 2011-07-11
Total Aerosol Optical Thickness

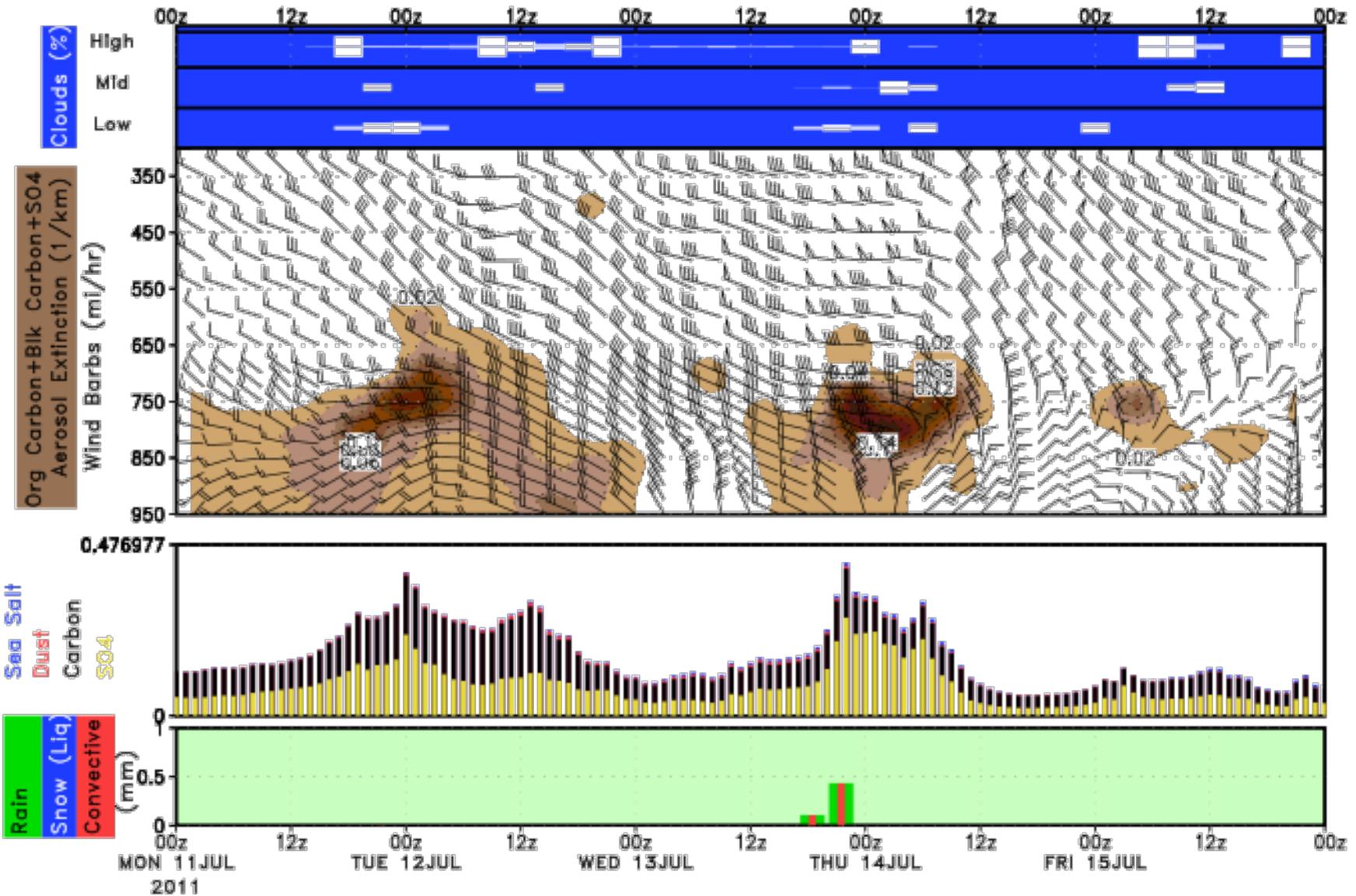


36 hr forecast valid Tue 12z 2011-07-12

Wednesday: Minimal aerosol impact.



GEOS-5 Envirogram ~~Belt~~ Raleigh 15 July 2011



Beltsville Envirogram.

