DISCOVER-AQ Outlook for Saturday, July 2, 2011 Flights

Forecast models expect low-level pollution to be on the increase tomorrow as the surface temperatures warm into the low 90s and the winds shift to the southwest from the northwesterly much cleaner flow of yesterday and today. Much of the study region will reach Code Orange (> 75 ppbv) ozone conditions tomorrow. Greatest surface ozone will likely be along the western shore of the Chesapeake Bay. Aerosol loadings should also increase with the increasing humidity. It appears that smoke from Canadian or SE US fires should not be significant on Saturday in our region. The most important issue for the flights tomorrow is high-level cloudiness. Most of the models (NAM, GFS, GEOS-5) bring in broad cirrus decks by early afternoon resulting from upstream convective outflow. The Canadian GEM model is the exception with only the outflow from one thunderstorm in eastern PA bringing us cirrus. Convection is occurring today over MN, WI forced by a frontal system moving through that region. The frontal system will be over the Great Lakes tomorrow, with possible convection being forced over Ohio and western PA. The upper tropospheric outflow from the MN/WI storms of today will be located over Quebec tomorrow afternoon, so that is not an issue for us. The upper –level outflow from OH/PA convection tomorrow will be directed toward the south as evidenced by the forecast flow at 300 hPa. The Canadian model forecasts scattered convection from eastern PA into New England, but we believe this to be very uncertain. If these storms were to occur the resulting cirrus would be rapidly transported our direction. Therefore, we have decided to propose flying tomorrow, but with an important update in the forecast at 8 AM tomorrow morning.

Recommendations for July 2nd-July 5th:

Sat., July 2: Fly, Hot, High Ozone, High Clouds possible in afternoon -- will update at 8:30 AM tomorrow

Sun., July 3: No Fly, Hot, More clouds

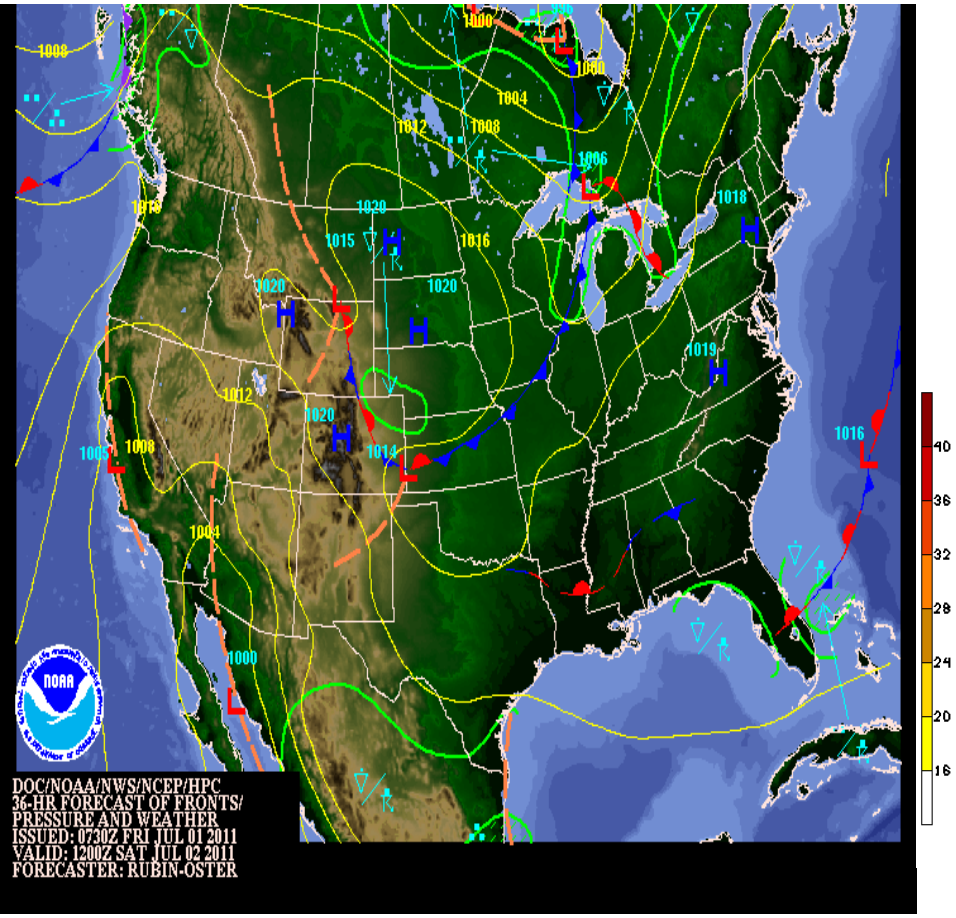
Mon., July 4: Perhaps Fly, keep an eye on clouds possible smoke

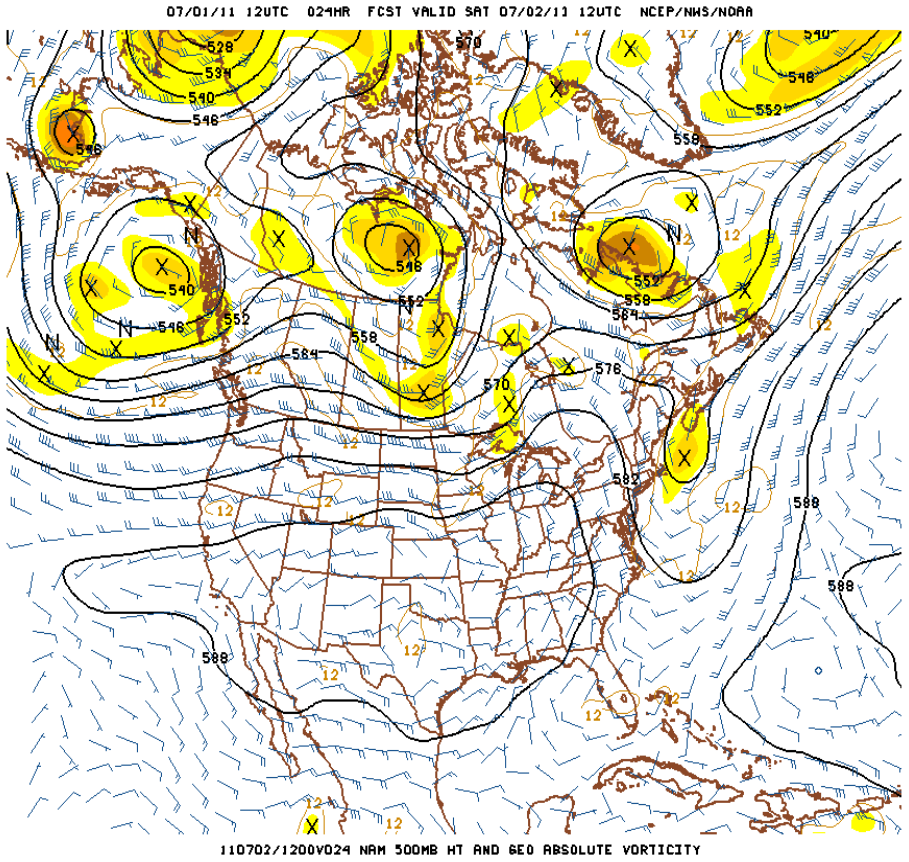
Tues., July 5: Perhaps Fly, Cooler

Clare Flynn

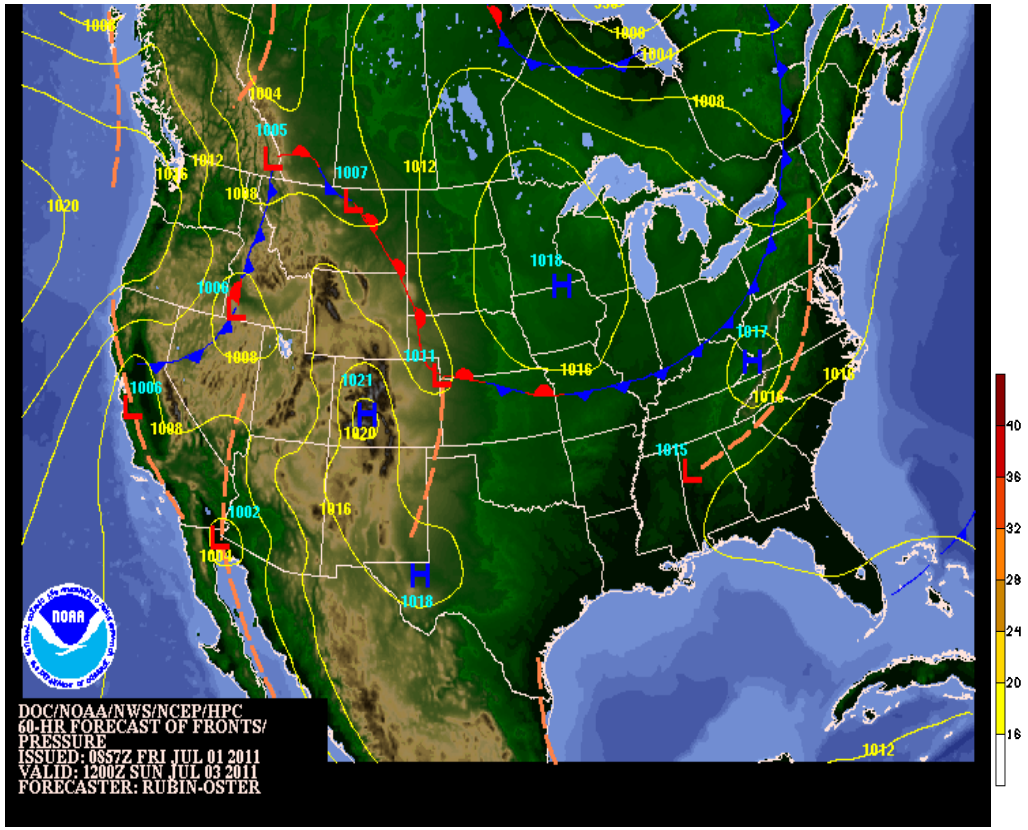
July 1, 2011

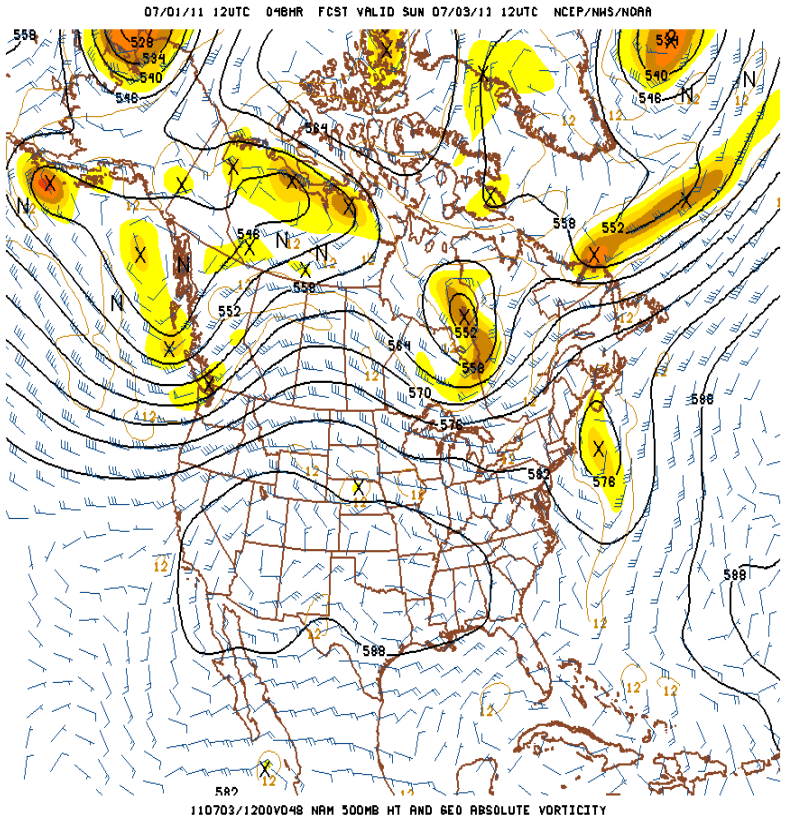
Saturday: Hot. Winds become southerly, bringing in moisture.

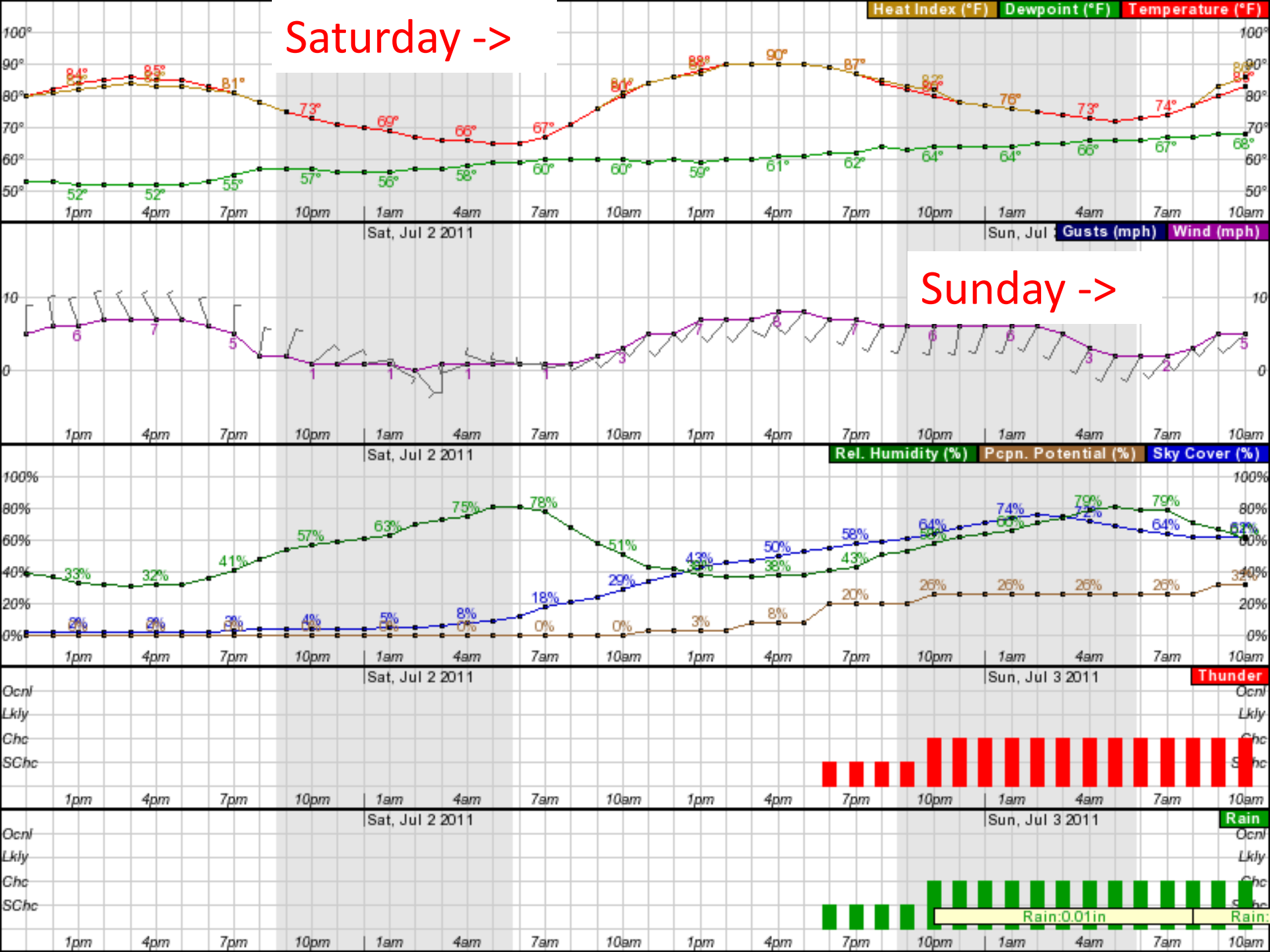


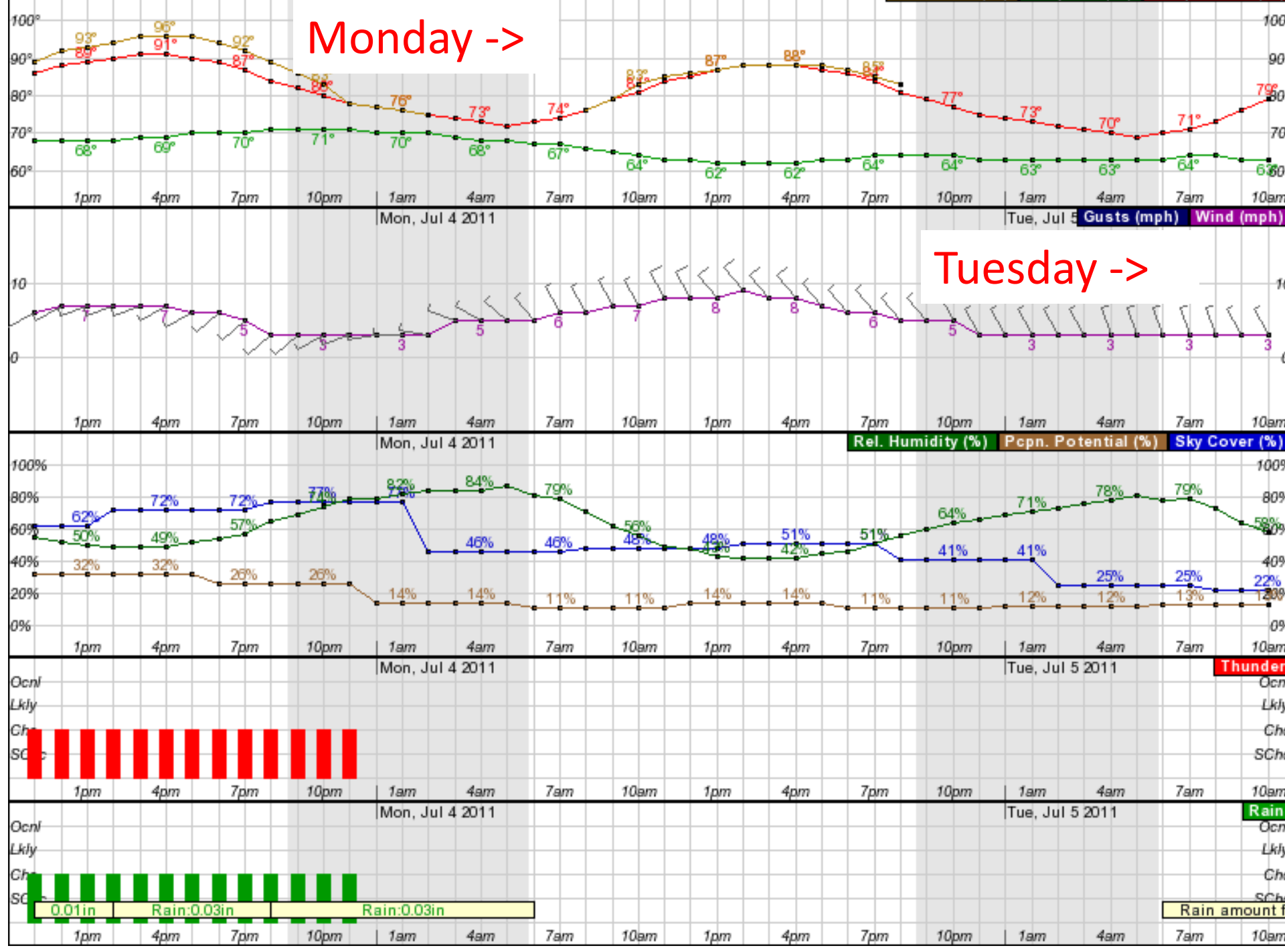


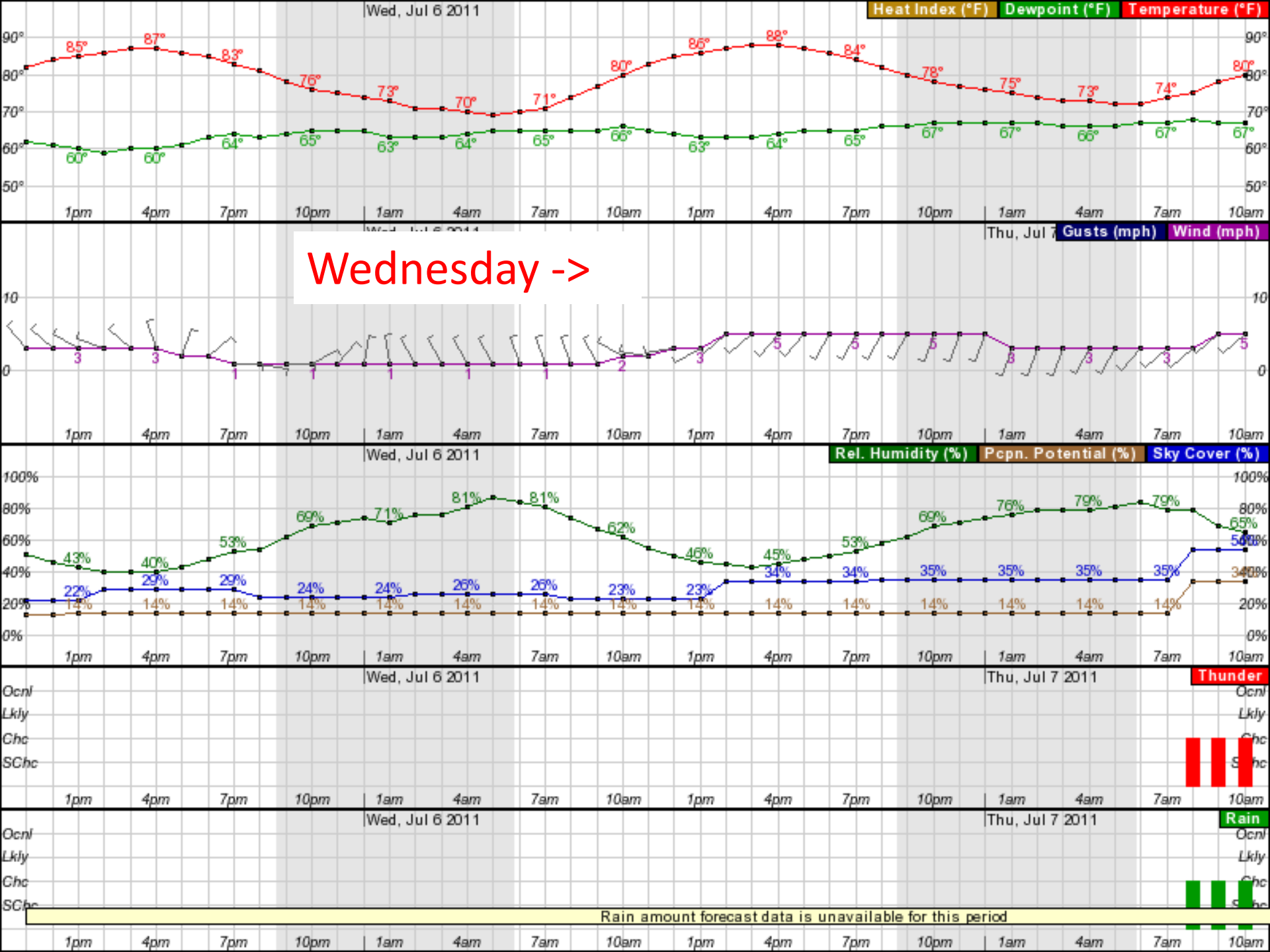
Sunday: Hot and humid. Clouds from convective activity in OH/Great Lakes region may advect into region Sat. night/Sunday.

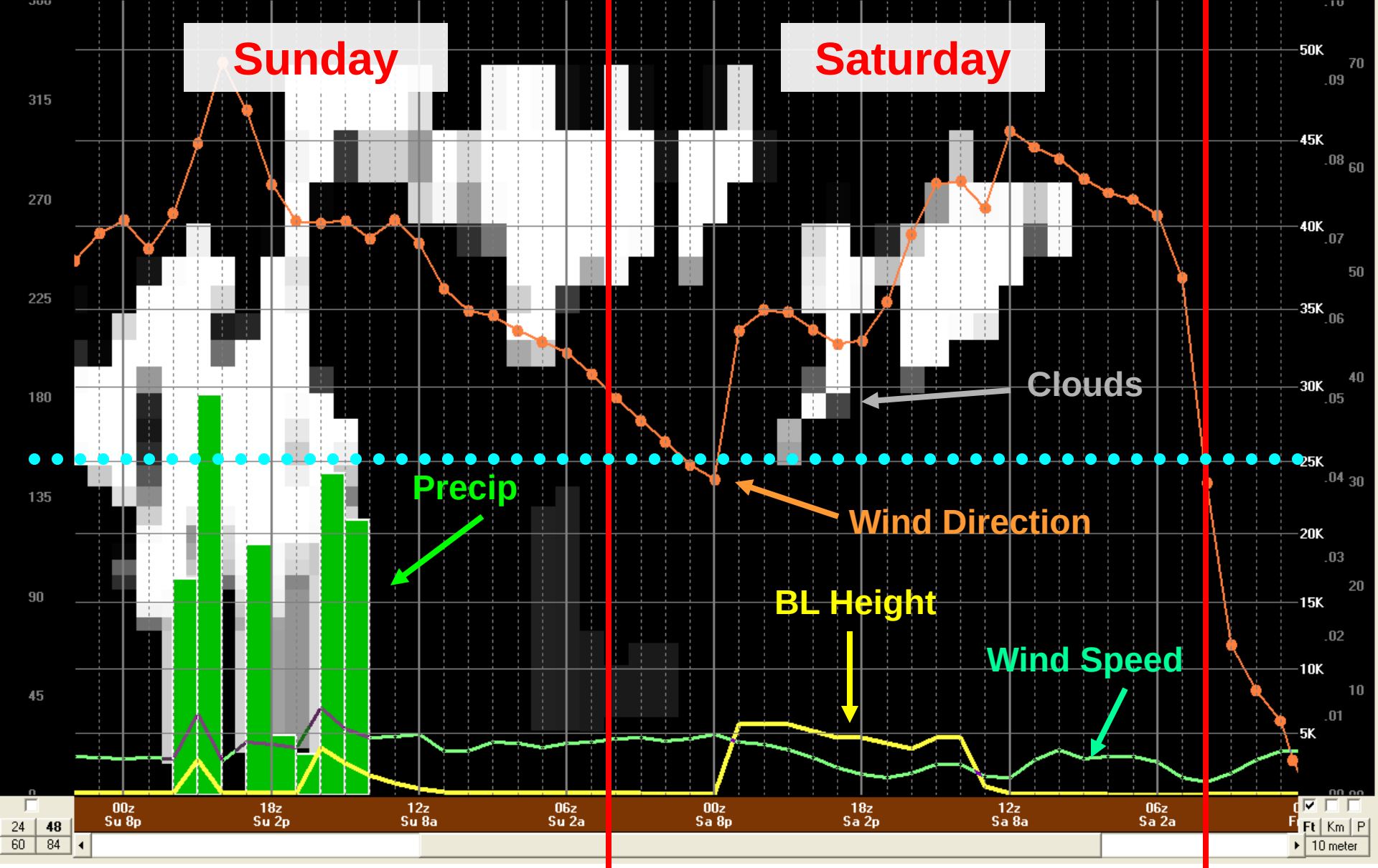





Saturday ->
Sunday ->
Heat Index (°F)
Dewpoint (°F)
Temperature (°F)
Gusts (mph)
Wind (mph)
Rel. Humidity (%)
Pcpn. Potential (%)
Sky Cover (%)
Thunder
Rain
Ocnl
Lkly
Chc
SChc
Rain:0.01in
Sat, Jul 2 2011
Sun, Jul 3 2011
1pm
4pm
7pm
10pm
1am
4am
7am
10am


Monday ->
Tuesday ->
Mon, Jul 4 2011
Tue, Jul 5
Tue, Jul 5 2011
Gusts (mph)
Wind (mph)
Rel. Humidity (%)
Pcpn. Potential (%)
Sky Cover (%)
Thunder
Rain
Ocnl
Lkly
0.01in
Rain:0.03in
Rain:0.03in
Rain amount
1pm
4pm
7pm
10pm
1am
4am
7am
10am


Wed, Jul 6 2011
Heat Index (°F)
Dewpoint (°F)
Temperature (°F)
Thu, Jul 7
Gusts (mph)
Wind (mph)
Wednesday ->
Rel. Humidity (%)
Pcpn. Potential (%)
Sky Cover (%)
Thu, Jul 7 2011
Thunder
Ocnl
Lkly
Chc
SChc
Rain
Rain amount forecast data is unavailable for this period
1pm
4pm
7pm
10pm
1am
4am
7am
10am



Bufkit NAM (20110701 1200 UTC):

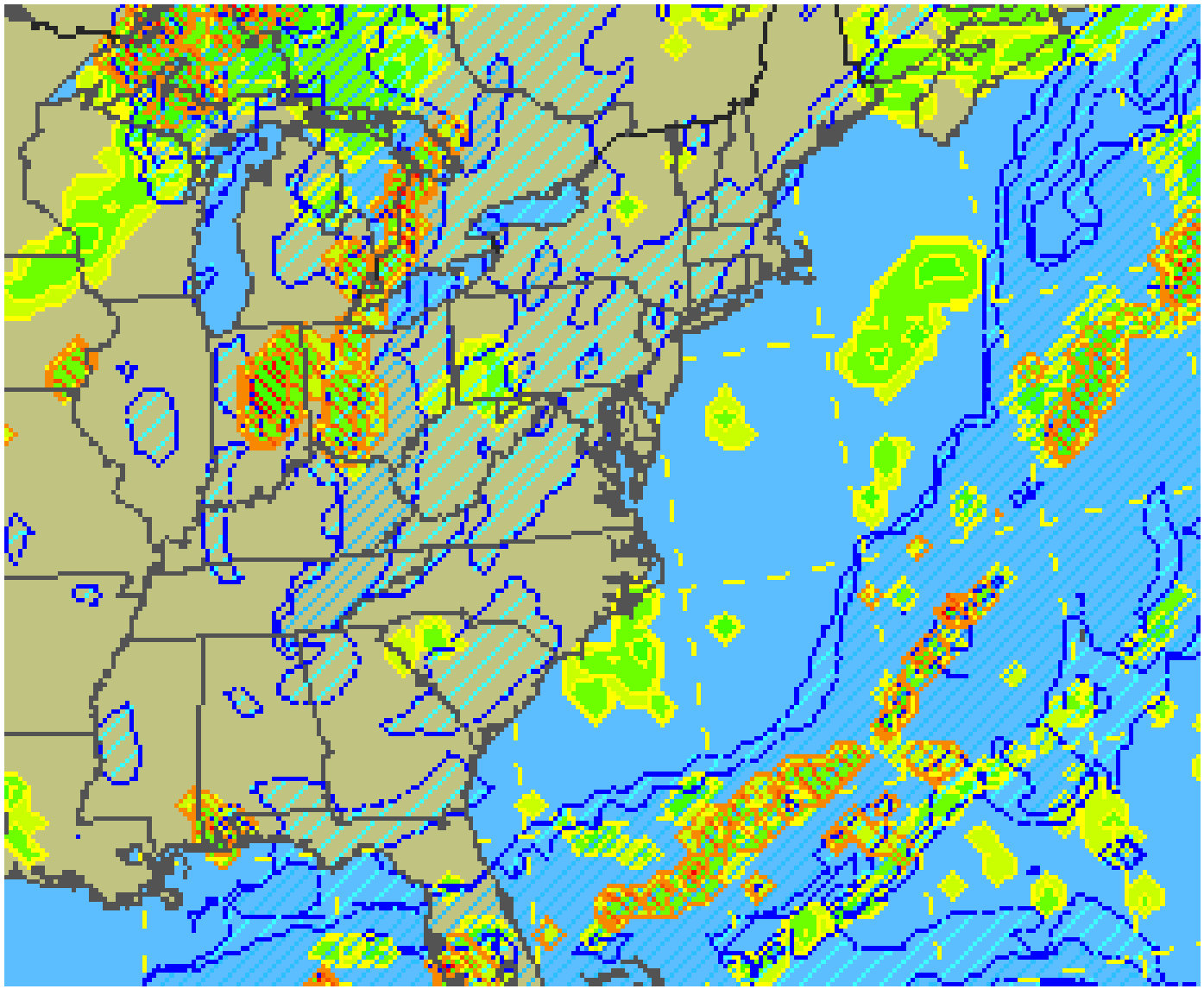
-BL Height ~ 5000 ft @ 1400 EDT

-Few clouds below 26,000 ft at 1700 EDT

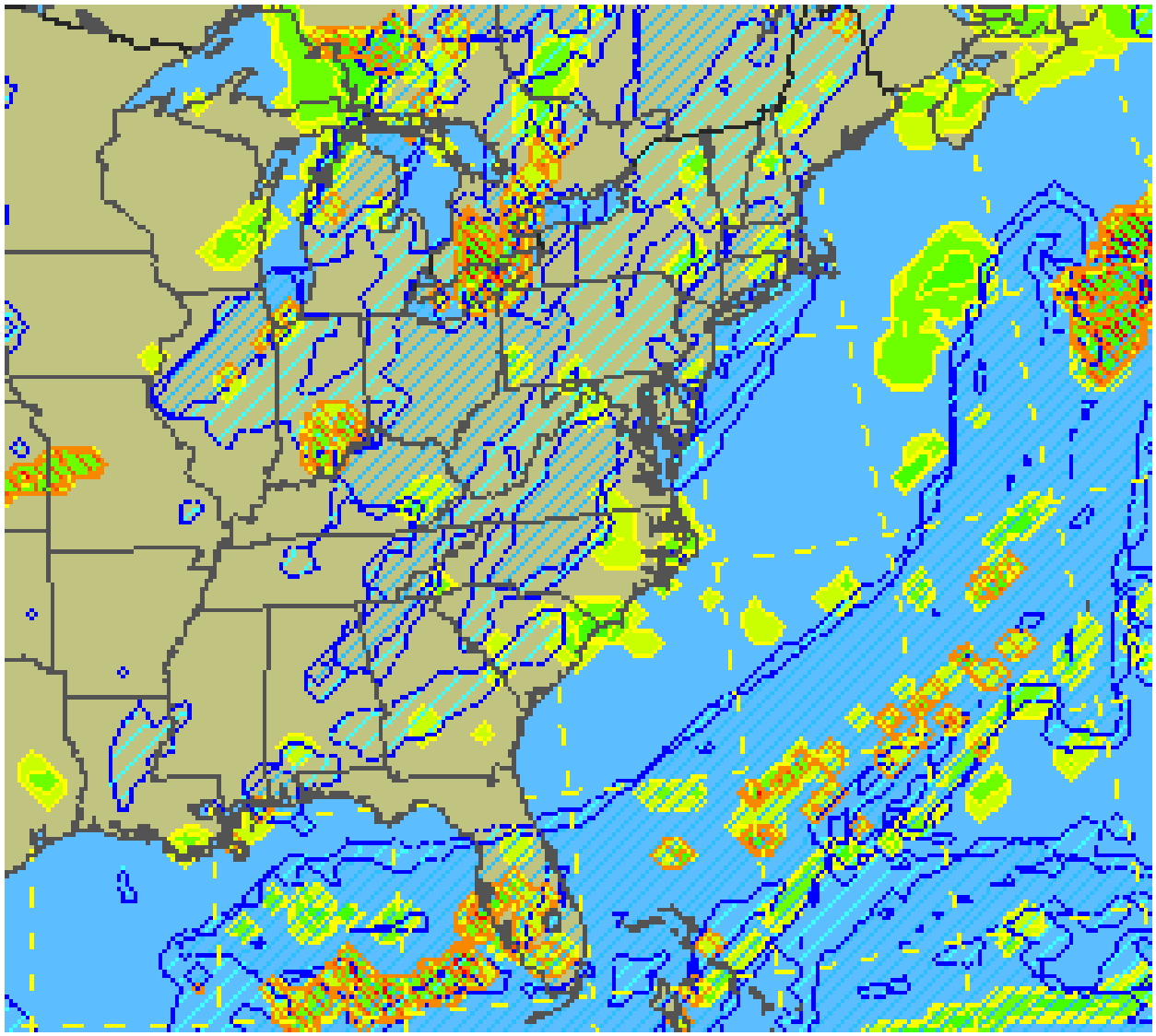
-SW winds at 5 knts shift S at ~10 knts at 1400 EDT

-No Precip

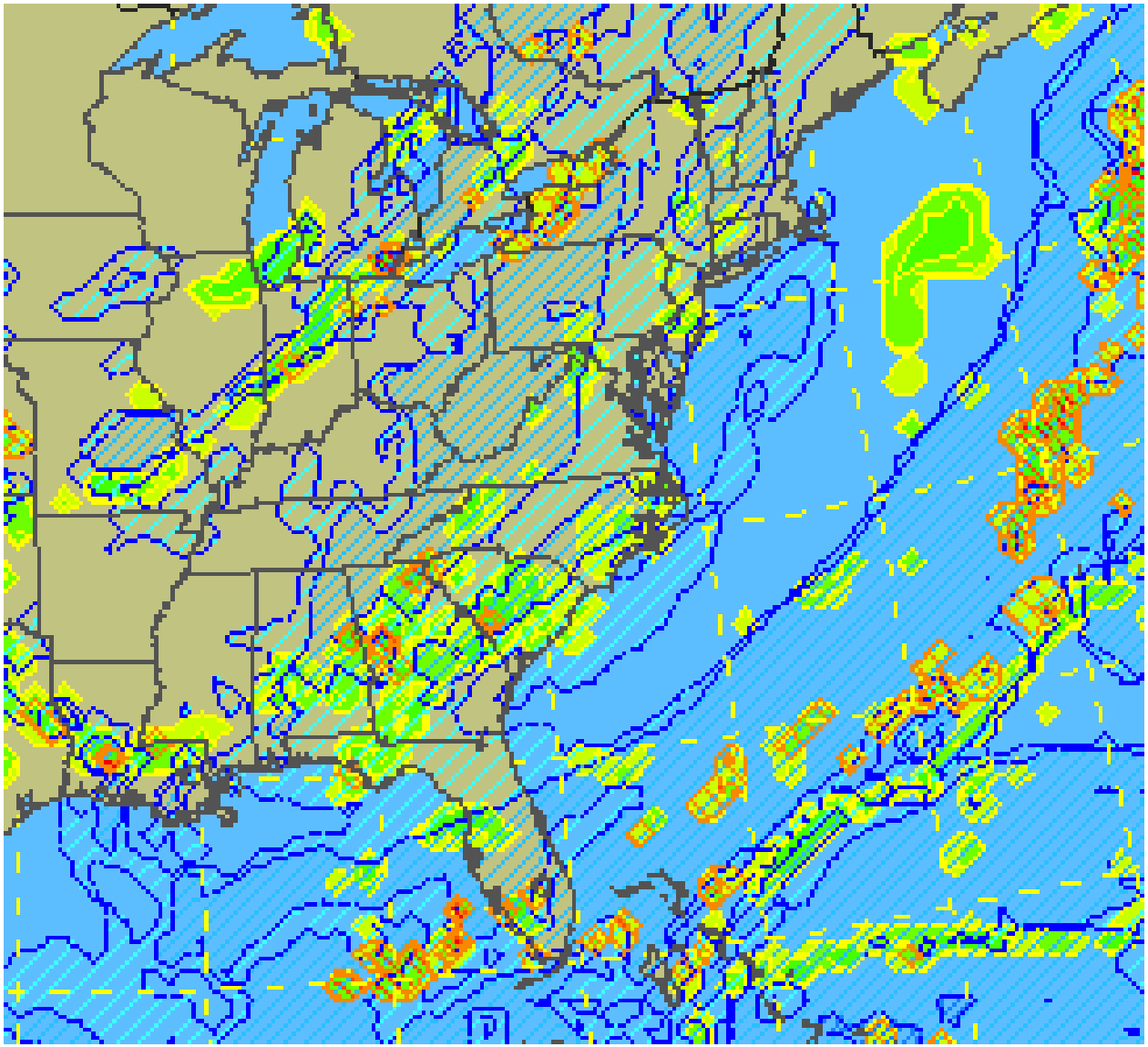
Saturday 8am: High clouds (above 18,000ft) present over region of interest

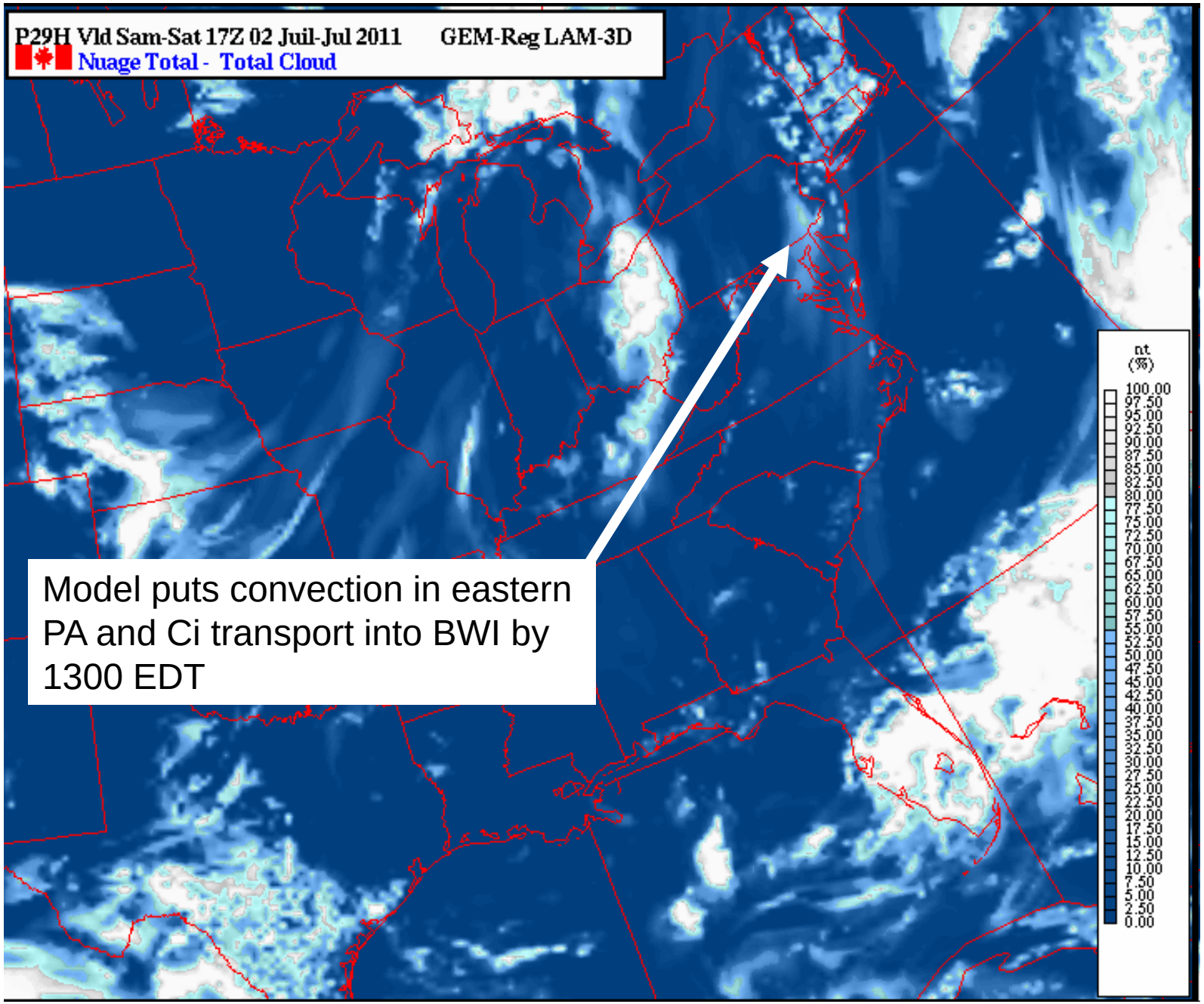


Saturday 2pm: Presence of high clouds and some middle clouds (6-12,000ft) to west of region

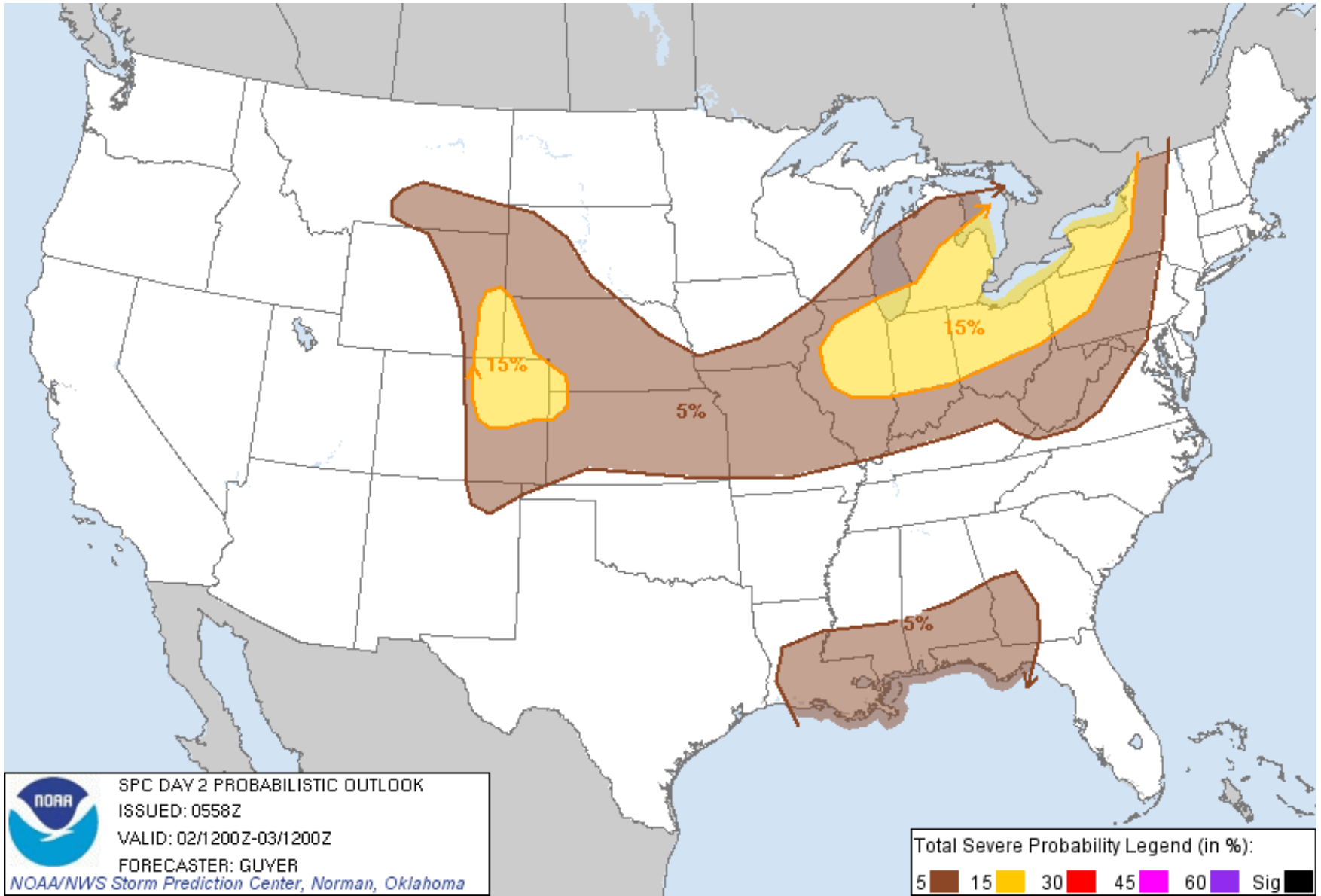


Saturday 8pm: High and middle clouds persist over/near region of interest, cloudiness seems increased

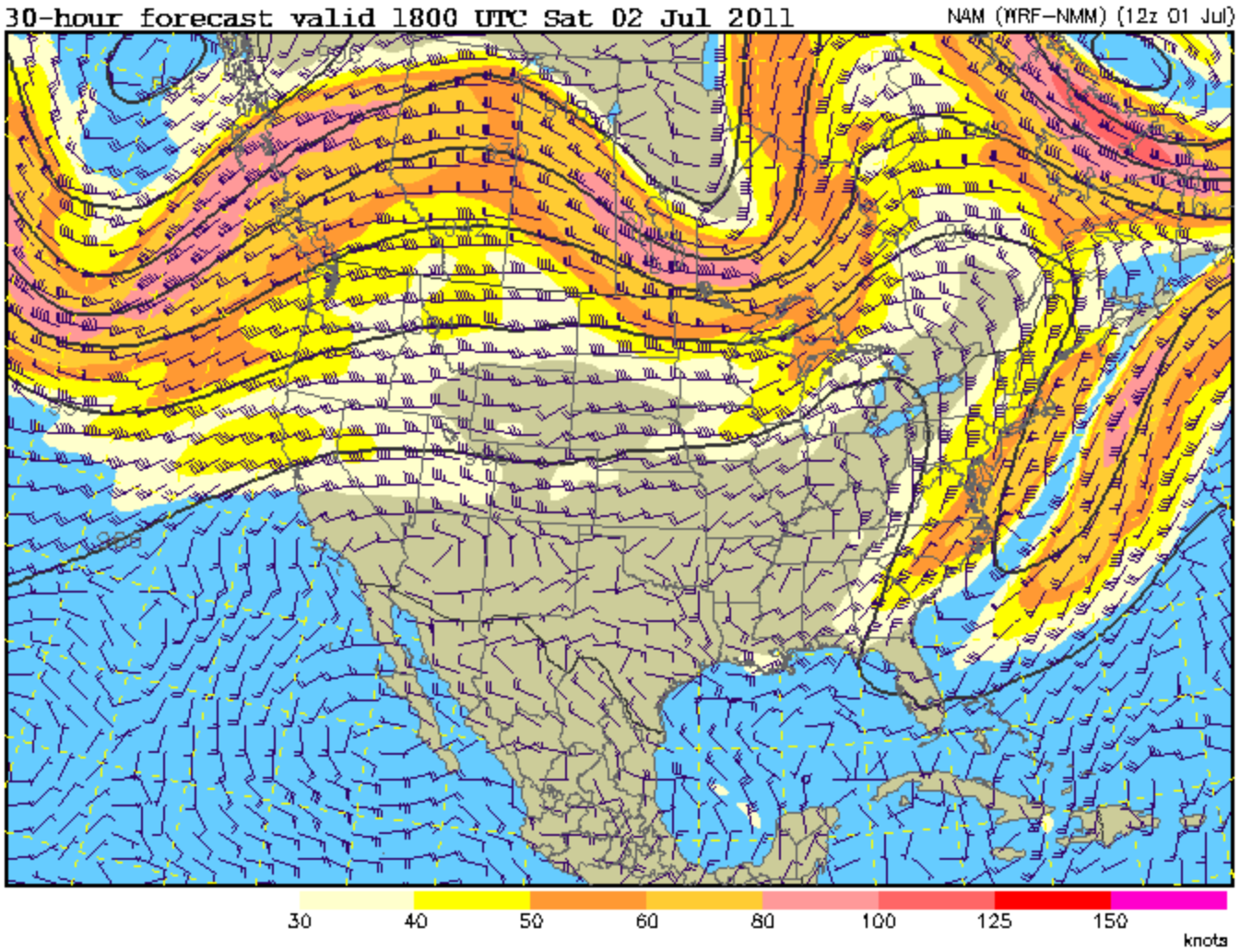


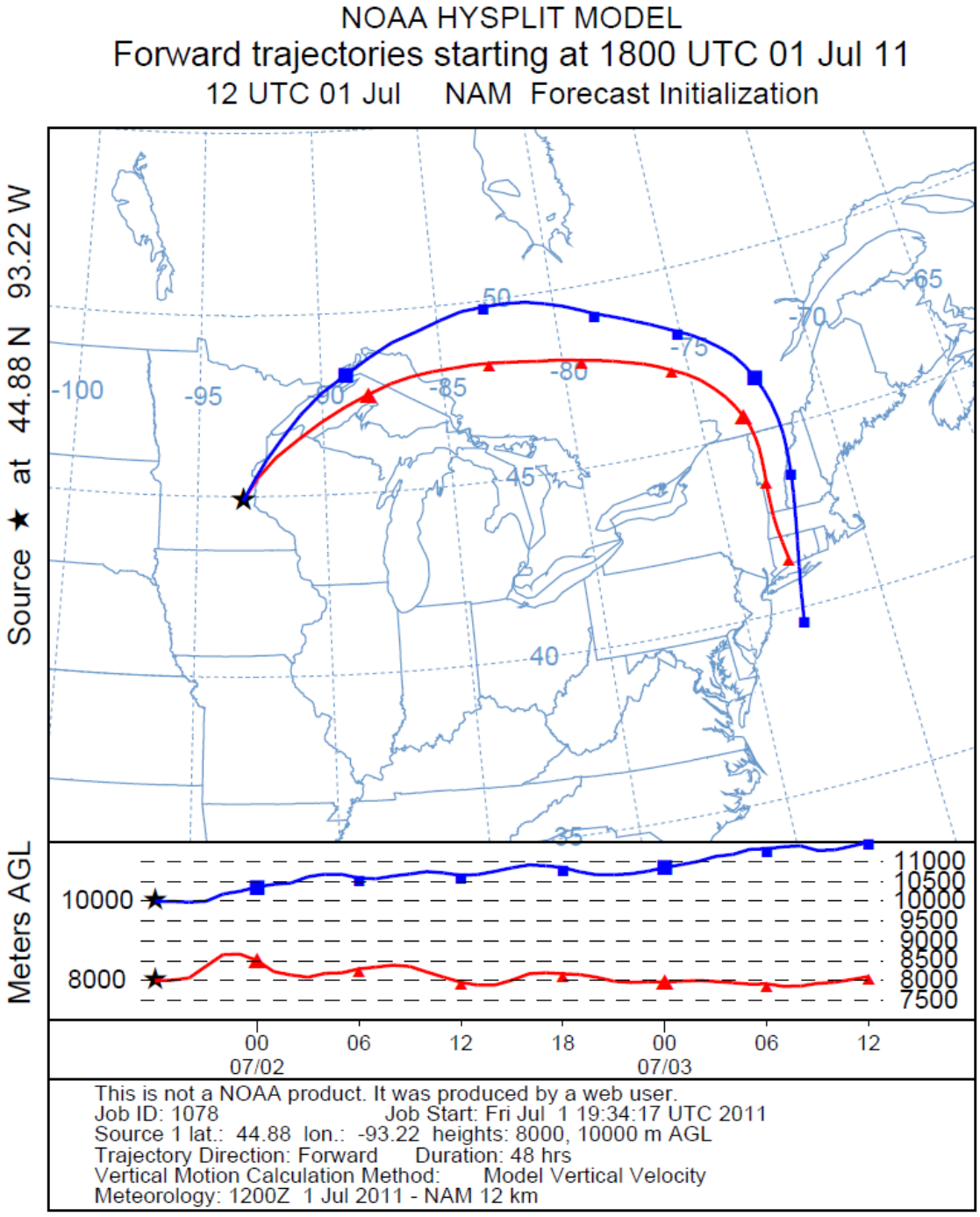

P29H Vld Sam-Sat 17Z 02 Juil-Jul 2011 GEM-Reg LAM-3D
Nuage Total - Total Cloud
Model puts convection in eastern PA and Ci transport into BWI by 1300 EDT
nt (%)
100.00
97.50
95.00
92.50
90.00
87.50
85.00
82.50
80.00
77.50
75.00
72.50
70.00
67.50
65.00
62.50
60.00
57.50
55.00
52.50
50.00
47.50
45.00
42.50
40.00
37.50
35.00
32.50
30.00
27.50
25.00
22.50
20.00
17.50
15.00
12.50
10.00
7.50
5.00
2.50
0.00

SPC: Place slight (15%) chance of tstorms in OH tomorrow—potential for Ci to move into our region

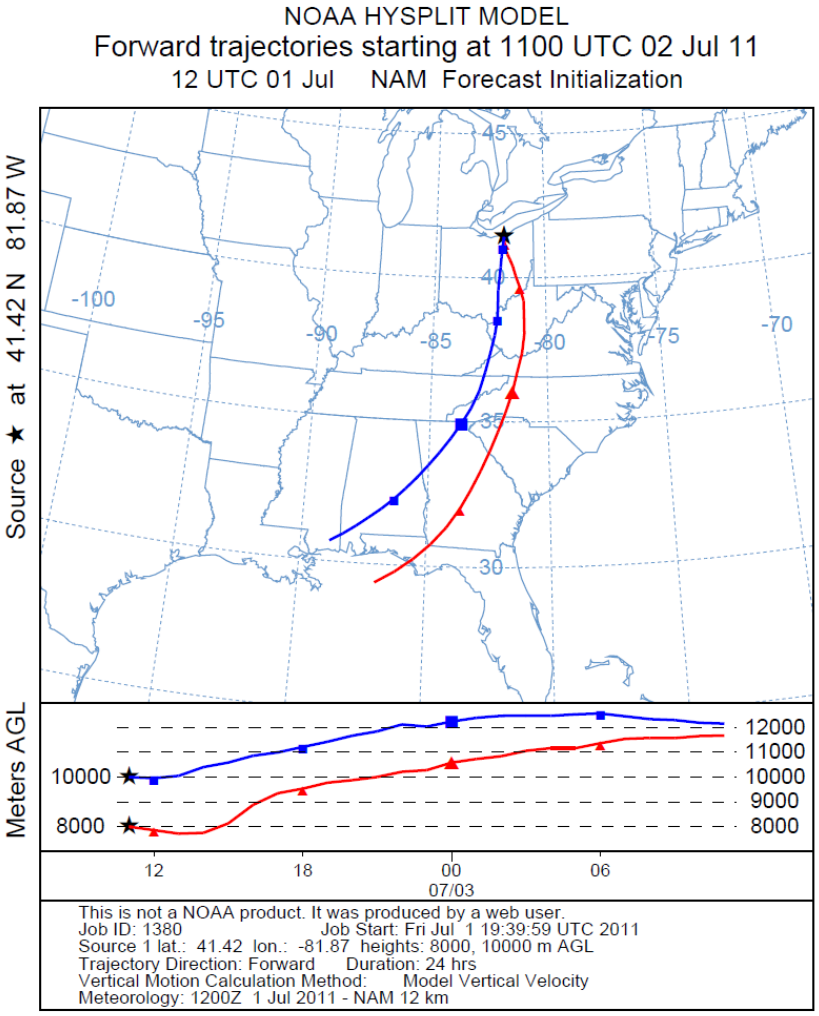


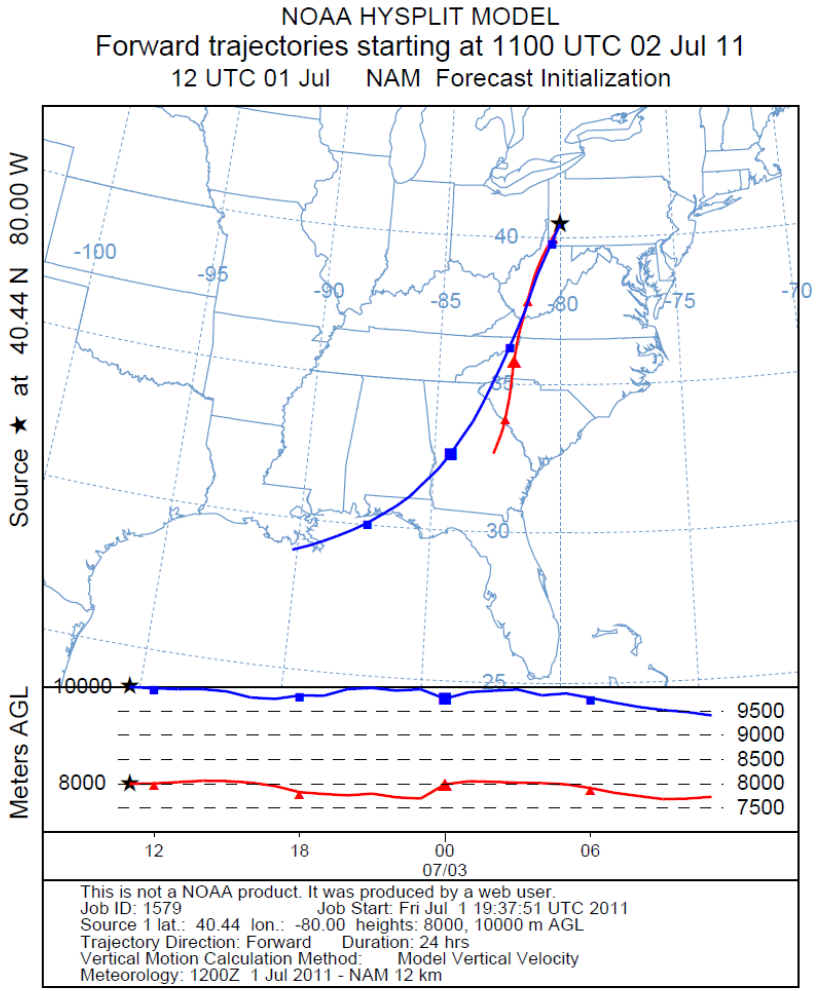
300 mb Heights (dm) / Isotachs (knots)



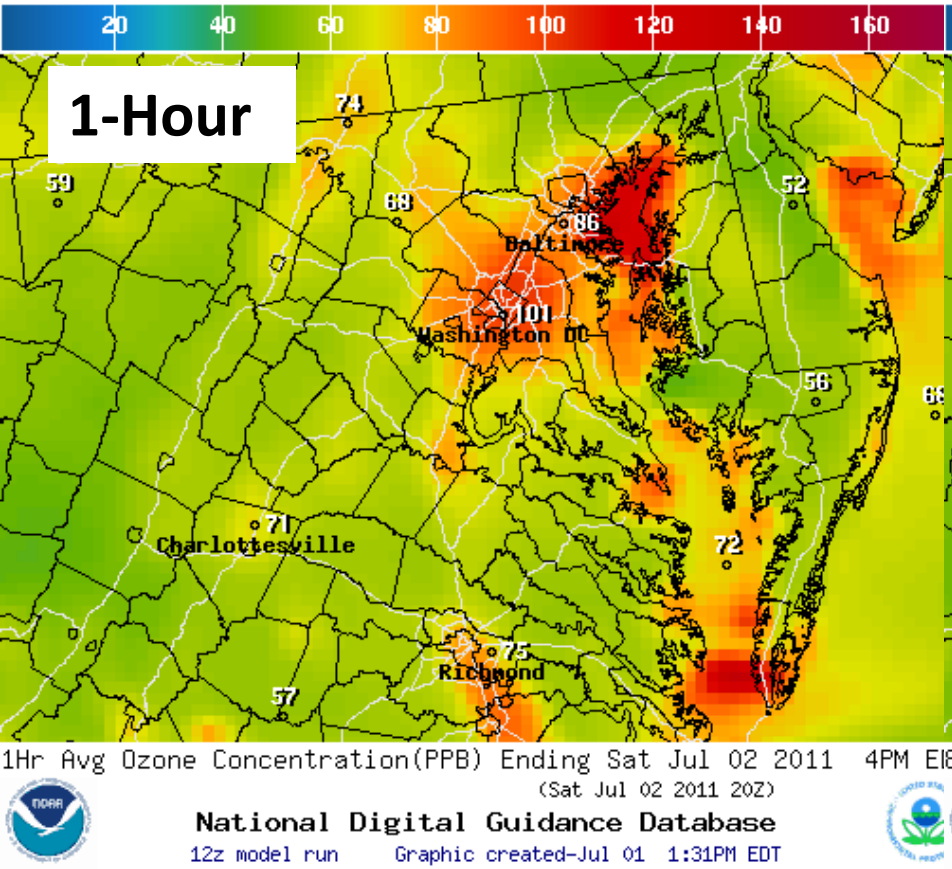


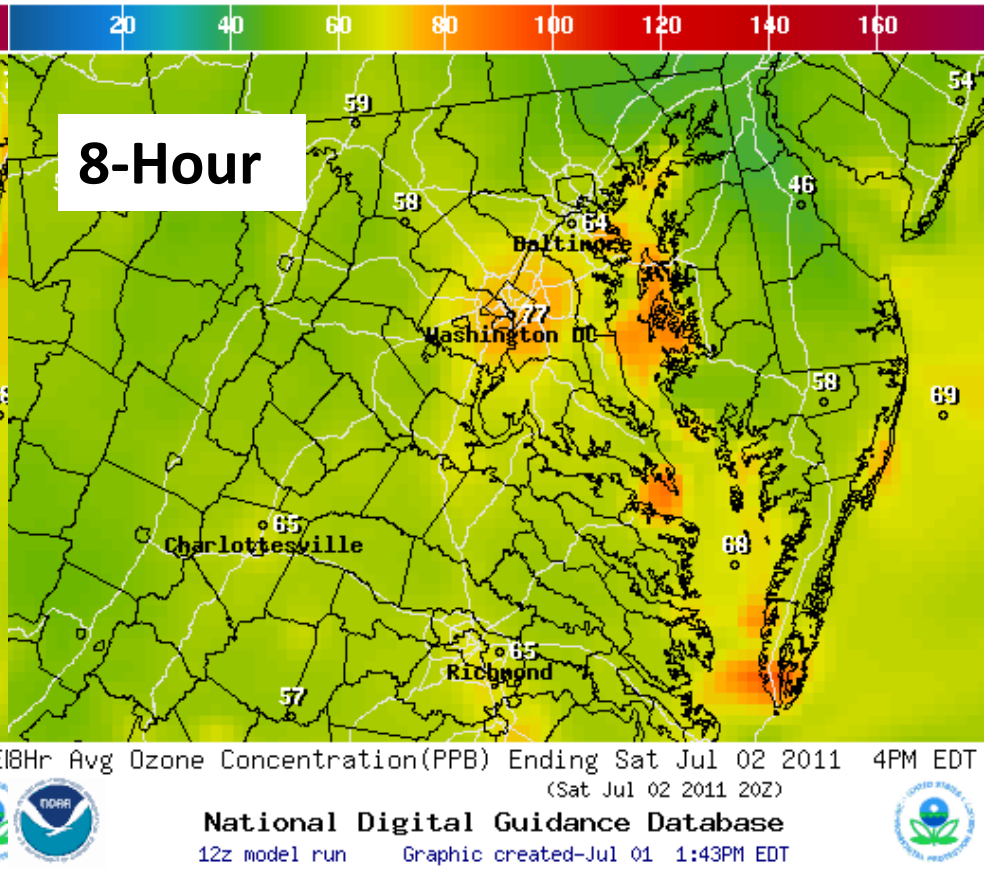
Convective outflow from storms in MN this afternoon only goes as far as Quebec by tomorrow afternoon





Convective outflow originating in early afternoon over E OH or W PA heads S or SSW


20 40 60 80 100 120 140 160
1-Hour
74
59
68
86
Baltimore
52
101
Washington DC
56
71
Charlottesville
72
75
Richmond
57
1Hr Avg Ozone Concentration(PPB) Ending Sat Jul 02 2011 4PM EDT
(Sat Jul 02 2011 20Z)
National Digital Guidance Database
12z model run
Graphic created-Jul 01 1:31PM EDT


20 40 60 80 100 120 140 160
8-Hour
59
54
58
46
64
Baltimore
77
Washington DC
58
69
65
Charlottesville
68
65
Richmond
57
8Hr Avg Ozone Concentration(PPB) Ending Sat Jul 02 2011 4PM EDT
(Sat Jul 02 2011 20Z)
National Digital Guidance Database
12z model run
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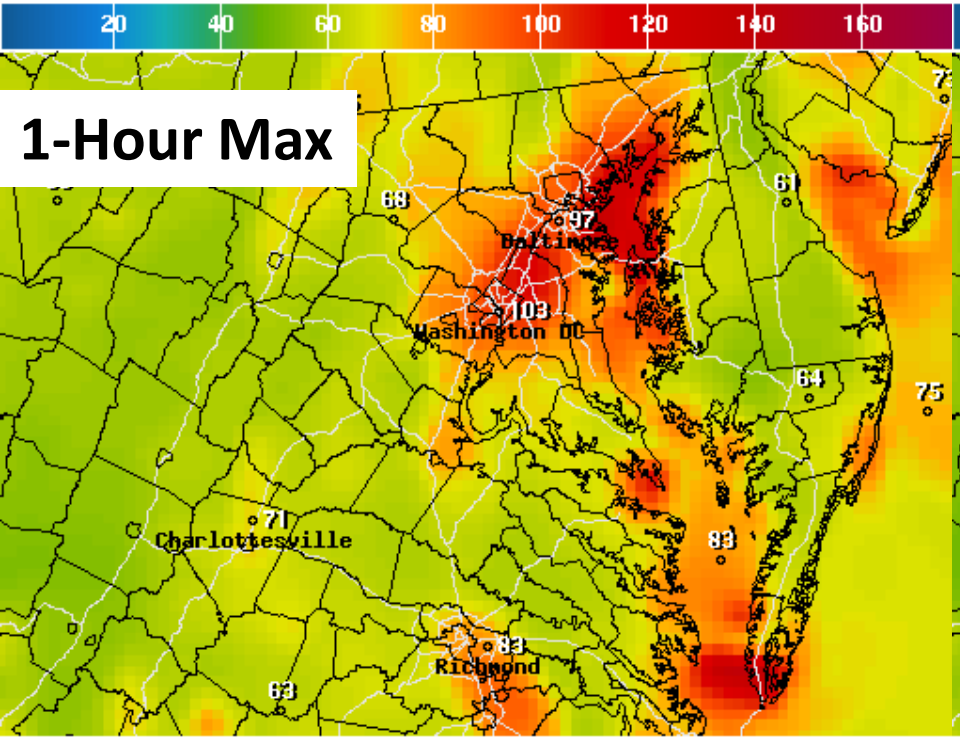
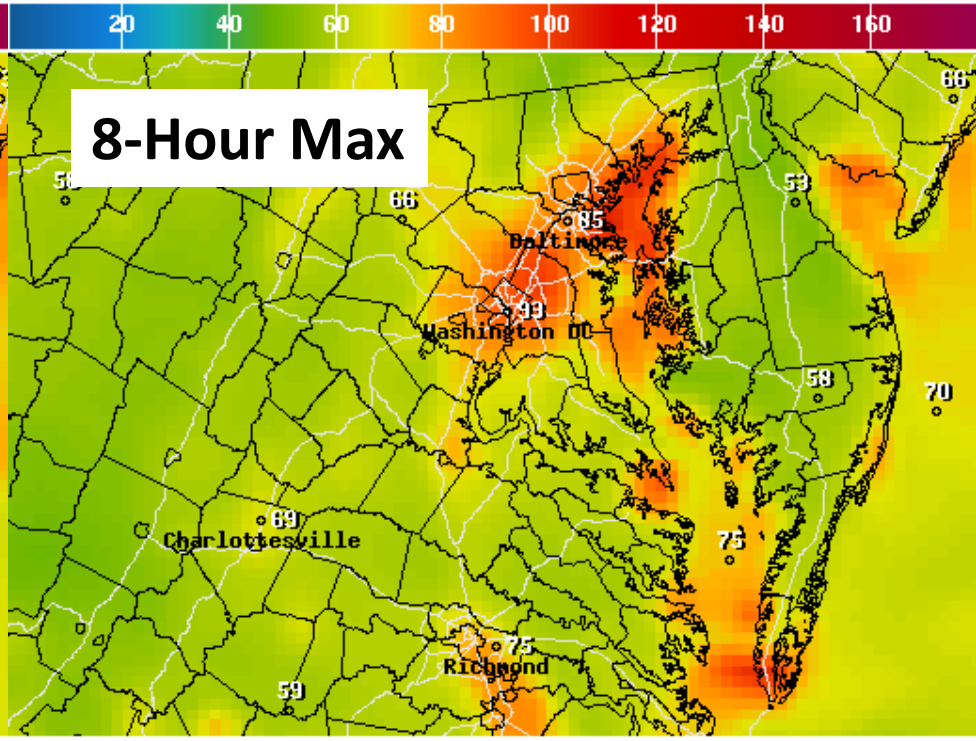


Maximum 1Hr Ozone(PPB) Ending Sun Jul 03 2011 12AM EDT

(Sun Jul 03 2011 04Z)

National Digital Guidance Database

06z model run Graphic created-Jul 01 12:20PM EDT



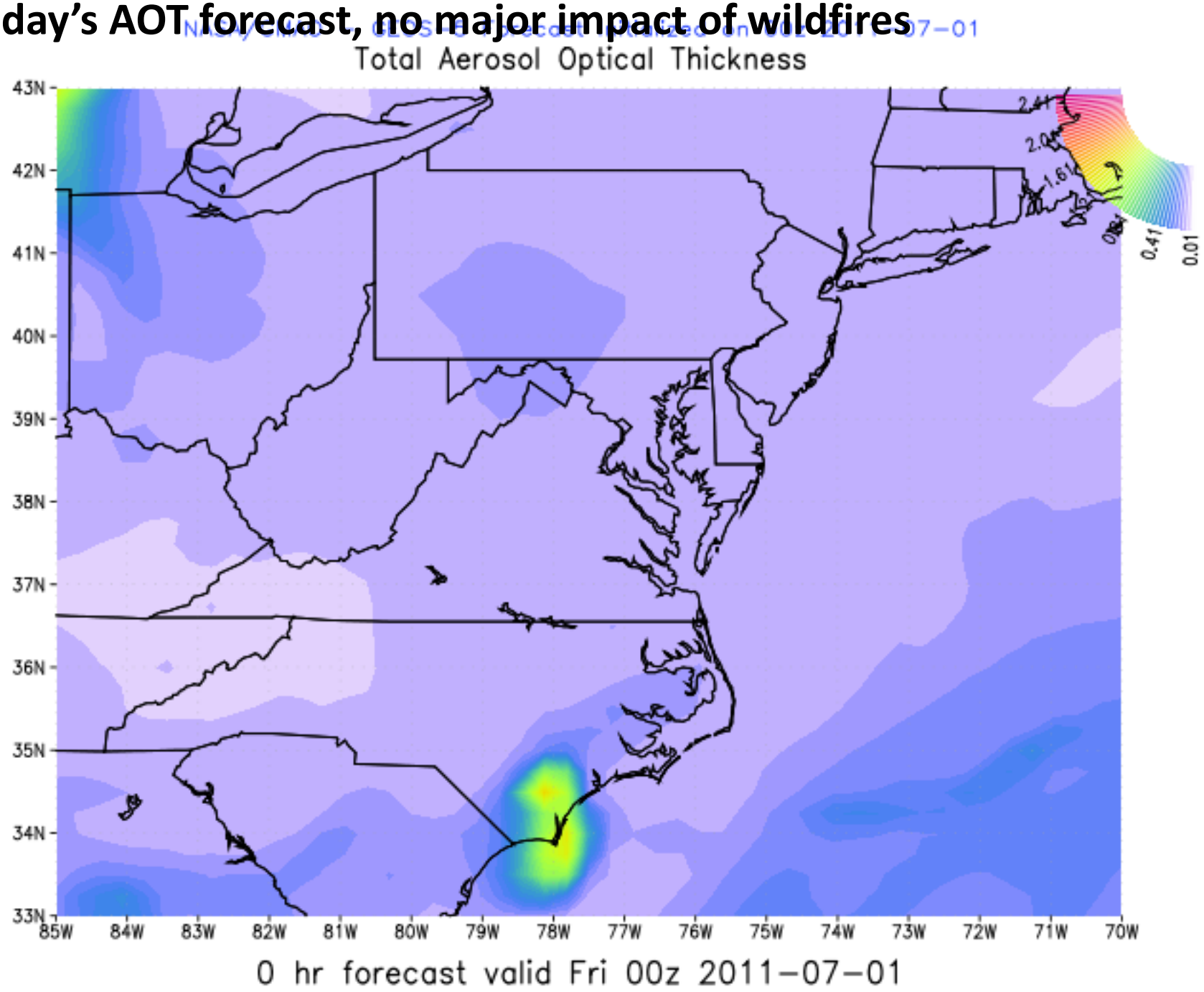
Maximum 8hr Ozone(PPB) Ending Sun Jul 03 2011 7AM EDT

(Sun Jul 03 2011 11Z)

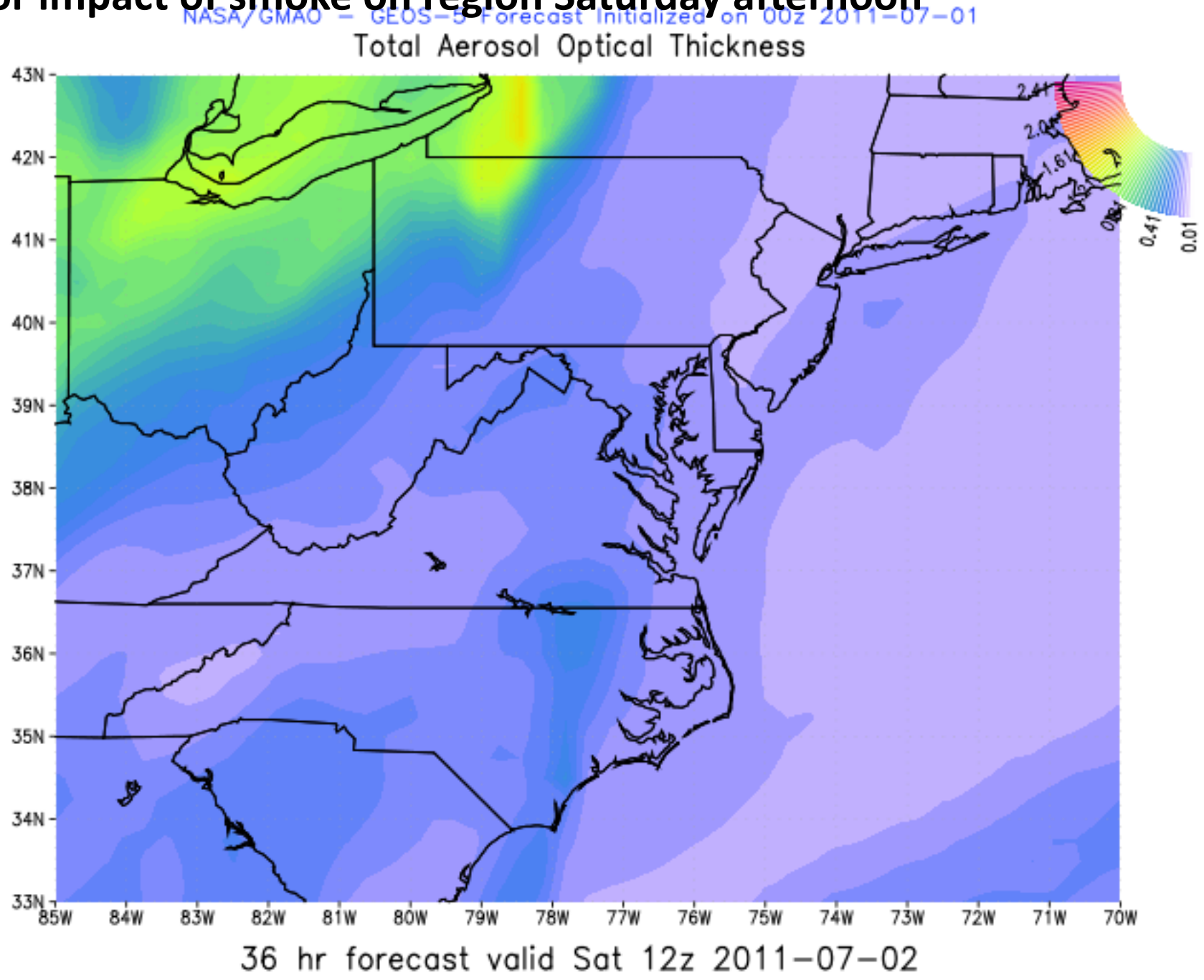
National Digital Guidance Database

06z model run Graphic created-Jul 01 12:20PM EDT

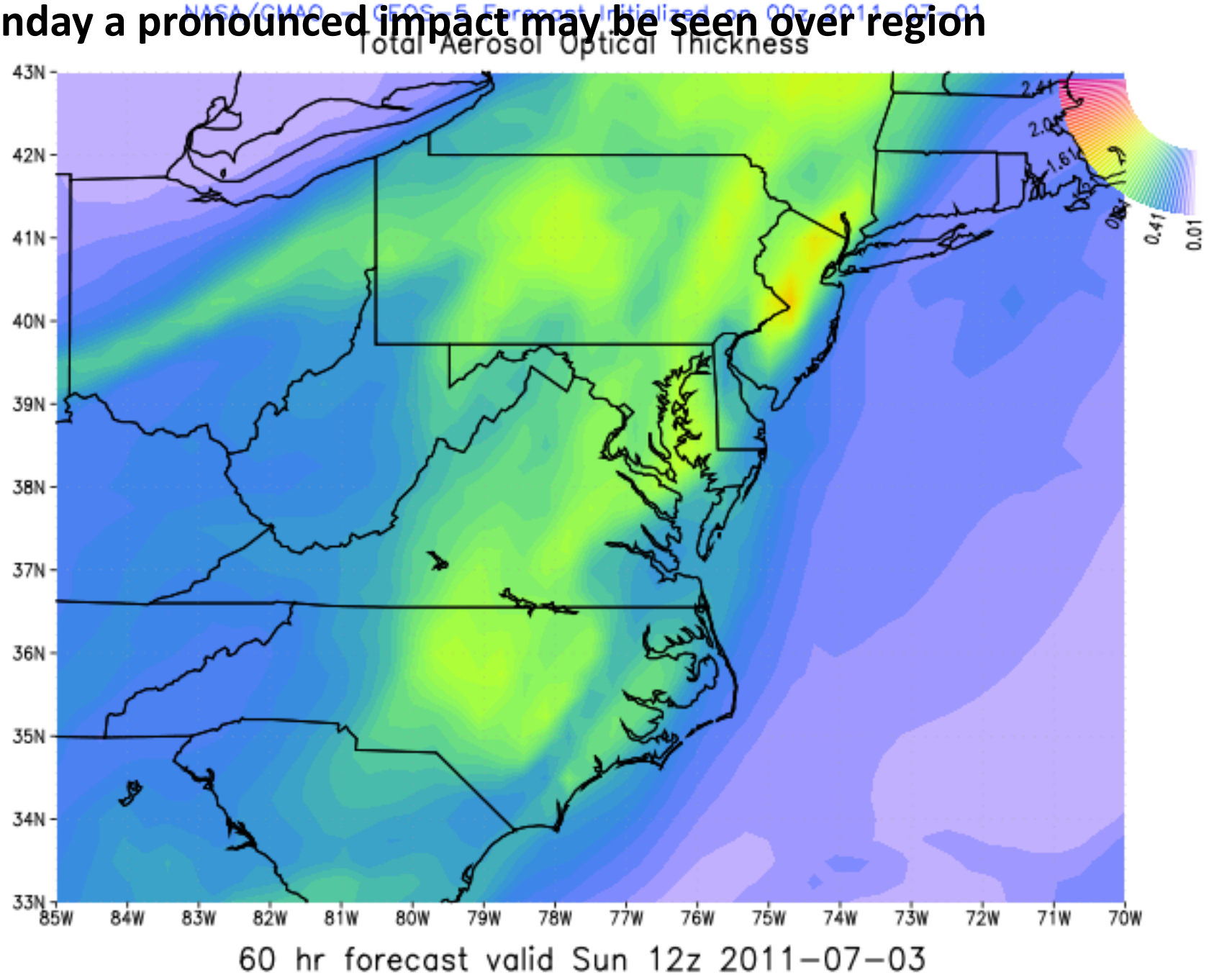
Today's AOT forecast, no major impact of wildfires



Minor impact of smoke on region Saturday afternoon

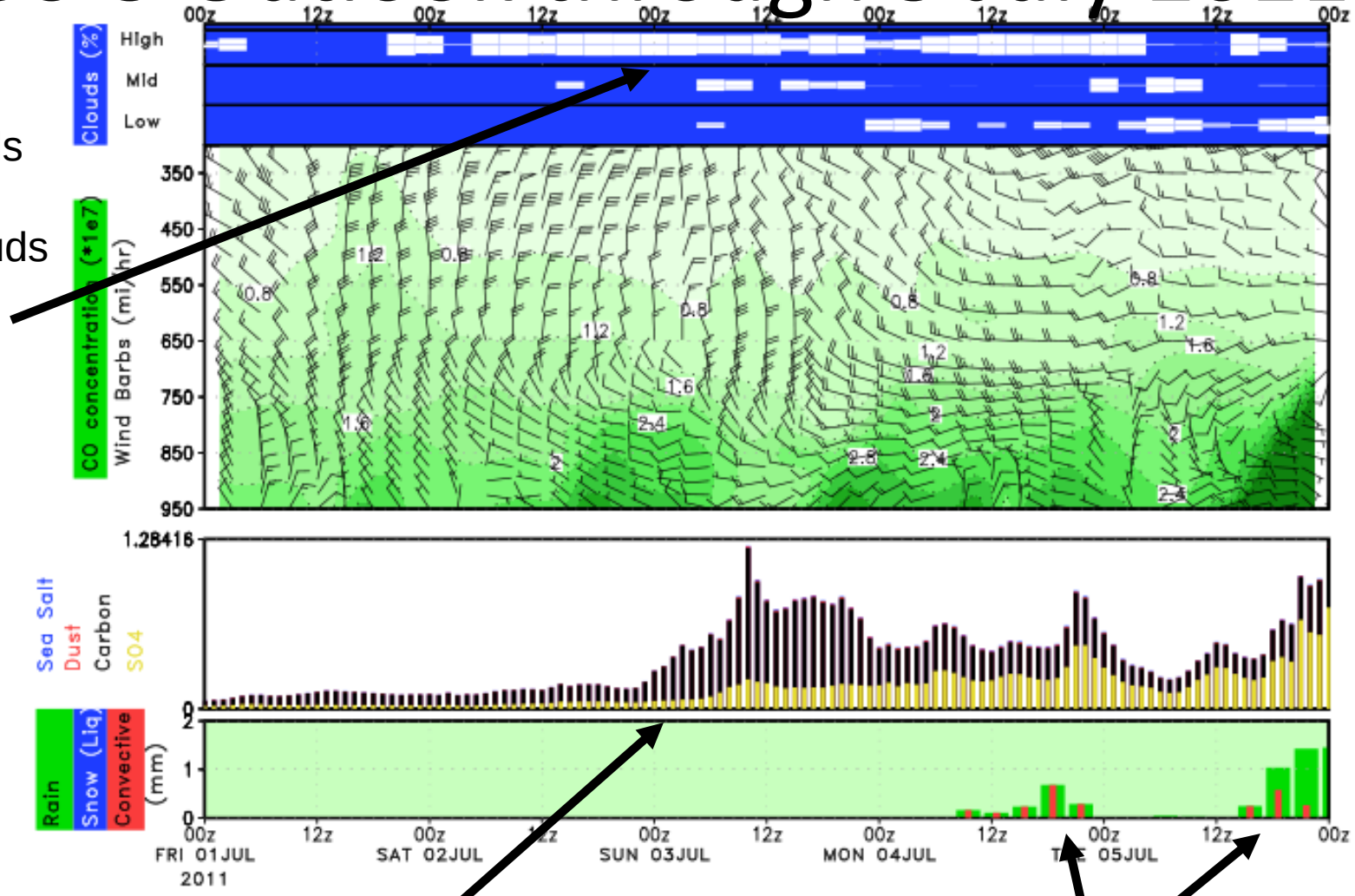


By Sunday a pronounced impact may be seen over region



GEOS-5 Outlook through 5 July 2011

High clouds Saturday. Mix of clouds Sunday - Tuesday



Smoke influence on late Saturday early Sunday, then persistent through Monday

Precip. on Monday and Tuesday