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 2^{nd}-July 5^{th}:

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.
Monday ->

Tuesday ->
Wednesday ->
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
Model puts convection in eastern PA and Ci transport into BWI by 1300 EDT
SPC: Place slight (15%) chance of tstorms in OH tomorrow—potential for Ci to move into our region
300 mb Heights (dm) / Isotachs (knots)

30-hour forecast valid 1800 UTC Sat 02 Jul 2011

NAM (WRF-NMM) (12z 01 Jul)
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
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.