As this week’s heat wave is getting into place today, southeasterly flow has pushed today’s maximum ozone to the west and northwest of the main emission corridor. The winds will shift to more southwesterly tomorrow, leading to higher ozone within the corridor tomorrow. The 500 hPa ridge intensifies over the eastern US tomorrow, leading to hotter temperatures, along with high dew points. This pattern continues on Friday, with high temperatures around 100 F on both days. Dew points are forecast to be even higher on Friday, leading to the greater possibility of late afternoon/evening thunderstorms at about a 25% probability. We’ll need to reassess this tomorrow. Code Orange or greater ozone is forecast for both days. Saturday and Sunday will likely have greater cloudiness, but the pollution episode will likely continue. We definitely recommend flying tomorrow to catch a day with little cloudiness and high ozone.
Recommendations July 21st-24th

July 21, Thursday: Can Fly
July 22, Friday: Can Fly – Possible PM Tstorms
July 23, Saturday: Clouds?
July 24, Sunday: Clouds?
Current Conditions at BWI, 11 am

- Temp: 87F
- Dew point: 74F
- Partly Cloudy, Haze
- Scat. Clouds, 2600 ft
- Vis: 6 mi.
Today: Influence from the surface high near Bermuda will produce a light easterly flow. Slight chance of isolated thunderstorms as a result of bay breeze or terrain circulation forcing. The light easterly flow may aid a farther expansion of the bay breeze. Scattered fair weather cumulus are expected to develop across the region.
Tomorrow: Upper level high pressure builds eastward across the Mississippi River by Thu morning. Strong westerly flow predicted. This will result in the advection of a very warm airmass into our area. Subsidence and a cap will probably inhibit convection despite a well-mixed boundary layer and high moisture content. As a result, maxima should reach the upper 90s and lower 100s, with heat indices possibly approaching warning thresholds.
Today: Southeasterly flow with hazy, very hot, very humid conditions.
Thursday: Southwesterly flow with even more heinous conditions.

Today → Thursday →

Juicy

Clouds <50%
Friday: A dangerous heat episode is expected Friday with widespread maxima above 100 and dewpoints in the low and mid 70s. The other danger for Friday is thunderstorm development. Deep mixing and very high dewpoints will cause instability to be extreme. Although shear will be weak, the instability may be sufficient to sustain pulse convection with the potential for isolated damaging wind gusts and hail. As of the 7/20/11 0Z forecast, there is a 25% chance of thunderstorms starting ~5 pm.
Friday: Dewpoints >75F w/ heat indices 110-114F! PM Clouds.

Saturday: Lower dewpoints & clouds (>50%) all day.

Check on the elderly.
- Fair weather cumulus clouds Thursday

- Chance of precip Friday and Saturday
Sunday-Monday: More typical summertime conditions. Keep an eye on cloud forecasts.
Thursday 8 am: GFS forecasts 10% high-level cloud cover.
Thursday 2 pm: GFS forecasts 10% high-level cloud cover.
Thursday 8 pm: GFS forecasts 10% high-level cloud cover.
Friday 8 am: GFS forecasts 0-10% high-level cloud cover.
Friday 2 pm: All models clear.
Friday 8 pm: GFS forecasts 10% high-level cloud cover with thick low clouds to our west. NAM predicts high-level cloud cover (18K+ ft).
Saturday 8 am: GFS forecasts 70-80% high-level cloud cover. NAM predicts high-level cloud cover (18K+ ft).
Saturday 8 pm: GFS forecasts 10-50% low level and ~40% high-level cloud cover. NAM predicts high-level cloud cover (18K+ ft).
Sunday 8 am: GFS forecasts 30-50% high-level cloud cover.
Sunday 8 pm: GFS forecasts 40-60% high-level cloud cover.
Extended forecast (Sunday through Tuesday):

A respite from the heat is forecasted for Sunday and beyond. An upper level ridge builds westward and falling heights are associated with an amplifying upper level trough over Eastern Canada.
MDE Surface Sites

Padonia  Beltsville  Edgewood  Aldino  Essex  Fairhill

Ozone (ppbv) 1 hr

PM2.5 (ug/m³) 1 hr

PM is back!
Today's AQI Forecast
Wednesday, July 20, 2011

Air Quality Forecast

<table>
<thead>
<tr>
<th>Today's High</th>
<th>Tomorrow's High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality Index (AQI)</td>
<td>Air Quality Index (AQI)</td>
</tr>
<tr>
<td>124 Unhealthy for Sensitive Groups</td>
<td>137 Unhealthy for Sensitive Groups</td>
</tr>
</tbody>
</table>

Health Message: Active children and adults, and people with lung disease, such as asthma, should reduce prolonged or heavy exertion outdoors.

AQI - Pollutant Details

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Today's Value</th>
<th>Tomorrow's Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>124 Unhealthy for Sensitive Groups</td>
<td>137 Unhealthy for Sensitive Groups</td>
</tr>
<tr>
<td>Particles (PM2.5)</td>
<td>92 Moderate</td>
<td>97 Moderate</td>
</tr>
</tbody>
</table>

Forecast Discussion: Skies clear on Wednesday with hot and humid conditions. Ozone is expected to respond by rising into the Unhealthy for Sensitive Groups (USG) range and remain within these levels over the next few days. Fine particles will also be elevated along the Moderate/USG threshold. On Thursday, much hotter temperatures are expected to approach or exceed 100 F. The high pressure system over the Mid-Atlantic should be strong enough to inhibit the development of afternoon thunderstorms. On Friday, similar conditions continue, but there may be a better chance of thunderstorms arriving late in the day. Air quality in the USG range looks to continue through Friday. - MDE
NAQFC-MOS valid for Thursday

Edgewood

Beltsville
Ontario wildfire smoke stays just to our north today and then moves farther away for Thursday.

Vertical column coverage looks very similar as surface.
Ontario wildfire smoke. Also, Siberian wildfire smoke stays to our north (not shown), but keep an eye on.
SYNOPSIS... STRONG HIGH PRESSURE WILL BUILD ALOFT THROUGH THE LATTER HALF OF THE WEEK...LEADING TO HOT AND HUMID CONDITIONS. A RETURN TO SEASONABLE TEMPERATURES IS EXPECTED SUNDAY AND MONDAY BEFORE A COLD FRONT CROSSES THE REGION MONDAY NIGHT.

&.NEAR TERM /UNTIL 6 PM THIS EVENING/... UPDATED PUBLIC PRODUCTS WITH ONLY MINOR CHANGES. SLGT CHC/ISOLATED TSTM WORDING INCLUDED WITH ALL ZONES FOR THE UPDATE. ACTIVITY MAY DEVELOP WITH THE AMPLE MOISTURE/CAPE AND LOCAL INFLUENCES. WEAK FRONTAL BNDRY ACROSS THE NRN AREAS...PER HPC ANALYSIS. THIS MAY ALSO HELP TRIGGER A FEW TSTMS THIS AFTERNOON. WINDS VERY LIGHT FROM AN ERLY DIRECTION MOSTLY. HOT AND STICKY TODAY WITH RATHER LIGHT ELY FLOW...DEWPOINTS IN THE LOW 70S...AND AMPLE HAZY SUNSHINE HEATING THE AREA INTO THE MID 90S. HEAT INDICES ARE EXPECTED TO BE IN THE 100 TO 102F RANGE...WHICH... WHILE HIGH...WOULD BE JUST UNDER THE GENERAL HEAT ADVISORY THRESHOLD OF 105F.

&.SHORT TERM /6 PM THIS EVENING THROUGH FRIDAY/... TONIGHT...THE SFC QUICKLY DECOUPLES AFTER SUNSET. EXPECT A RATHER HUMID NIGHT. CLEAR SKIES ARE THE ONLY HINDRANCE TO RECORD HIGH MINS /SEE CLIMATE SECTION BELOW/. EXPECT UPR 70s IN URBAN AREAS AND NEAR LARGE BODIES OF WATER....MID 70s ELSEWHERE. UPR HIPRES WILL BUILD EWD ACRS MS RVR BY THU MRNG. NRN STREAM SHRTWV TROF AND ASSOCIATED SFC LOPRES OVER S-CNTRL CANADA WILL INDUCE STRONG WSWLY FLOW IN THE LOW LVLS ACRS MID-ATLC RGN. RESULT WILL BE ADVCTN OF VERY WARM AMS INTO FCST AREA...AIDED BY DOWNSLPG COMPONENT TO WIND AND GENLY CLR SKIES. SUBSIDENCE AND CAP WILL PRECLUDE CNVCTN THU AFTN DESPITE WELL- MIXED BNDRY Lyr AND HIGH MSTRT CONTENT. AS A RESULT...MAXIMA SHUD HAVE NO DIFFICULTY REACHING UPR 90s AND LWR 100s...WITH HEAT INDICES EASILY MEETING ADZY THRESHOLDS AND PSBLY WRNG THRESHOLDS. EXCESSIVE HEAT WATCH WAS RETAINED FOR THU. DANGEROUS HEAT EPISODE XPCD FRI AS MAXIMA IN EXCESS OF 100 DEG F XPCD TO BE WDSPRD WITH DEWPT TEMPS IN LOW-MID 70S. HEAT INDICES ABV 110 DEG F EASILY SHUD BE REACHED FRI AFTN...WITH MANY ABV 115 DEG F. EXCESSIVE HEAT HEADLINES LKLY WILL BE NEEDED FRI. ADDITIONAL CONCERN ON FRI WILL BE TSTM PSBLTY. AS UPR RDG FLATTENS...A LOW-AMPLITUDE SHRTWV TROF WILL CROSS THE OHVLY AND MOVE INTO WRN PA BY PEAK HEATING. WITH DP MIXING AND VERY HIGH DEWPTS...INSTBY WILL BE EXTREME. ALTHOUGH SHEAR WILL BE MEAGER....INSTBY MAY BE SUFFICIENT TO SUSTAIN PULSE CNVCTN WITH POTENTIAL FOR ISOLD DMGG WIND GUSTS AND HAIL. SAT WILL FEATURE A THIRD DAY OF HEAT CONCERNS AS LGT BUT DP WLY FLOW PREVAILS IN WAKE OF WEAK SFC TROF. HEAT INDICES LKLY WILL NOT BE AS HIGH AS THOSE ON FRI...BUT STILL WILL WARRANT HEAT HEADLINES. WITH DP WLY FLOW XPCD...CONCERN EXISTS FOR SLGTLY STRONGER CAP THAN MODELS SUGGEST. GUIDANCE POPS WERE UNDERCUT EXCEPT ON HIGHER TERRAIN...WHERE TERRAIN CIRCULATIONS COULD FOCUS CNVGNC SUFFICIENT TO SUSTAIN UPDRAFTS.

&.LONG TERM /FRIDAY NIGHT THROUGH TUESDAY/... A RESPITE FROM THE HEAT IS XPCD SUN AND BEYOND AS THE UPR RDG BUILDS WWD AND HEIGHT FALLS ASSOCIATED WITH AMPLIFYING UPR TROF OVER ERN CANADA PROMOTE A RETURN TO MORE CLIMATOLOGICAL MAXIMA IN THE LWR-MID 90S. PRESENCE OF LEE TROF AND CONTD LOW-LVL MSTRT SUN AND MON WARRANT SLGT CHC POPS. CDFNT WILL APRCH FROM NW LATE MON AFTN AND WILL CROSS FCST AREA MON NGT. CHC POPS WERE INCLUDED DURG THIS TIME AS BNDRY MAY HELP FOCUS CNVCTV DVLPMT DESPITE UNFAVORABLE TIME OF FROPA. UPR RDG NOSES NEWD AGAIN BY MID-WK...BUT MODEST HIPRES OVER NEW ENGLAND WILL PROMOTE LGT ONSHORE FLOW THAT MAY TEMPER HEAT THRU MUCH OF THE WK. NO POPS XPCD IN LATTER PDS.