Weather Briefing for 20050611

This morning finds a deep 500 mb trough over the western US centered over Arizona and a ridge over the east coast centered around the longitude of Pennsylvania. In the past few days, storms have rotated around the trough producing significant weather west and north of us. We have largely been spared, both due to the position of the trough, and the subsidence induced by tropical storm Arlene, now (19Z) close to making landfall at the end of the Florida panhandle. Forecasts indicate that the trough over the western US will move eastward as the eastern ridge seems to slip westward under the trough. The large scale pattern will thus be much more zonal by Monday afternoon, with a strong short wave over eastern Nebraska. This wave moves gradually eastward, spreading rain over the northern tier of the US. We, however, are headed into a dry period which should persist through about Wednesday. This is due to the fact that the midlatitude jet and its dynamics (which can trigger thunderstorms in the moist conditions prevalent here) is far from us. Occasional streamers of vorticity might be shed by the midlatitude jet, inducing some upward motion, but the showers should be very isolated. Our own pattern becomes quite tropical, and there is the possibility of some easterly wave related precipitation towards midweek. Models indicate that this will be either east or south of us. Thus, the forecast is for dry conditions through midweek. Winds will be generally weaker than they have been, from slightly west of south tomorrow, shifting to easterly by Tuesday, and becoming quite light on Wednesday (keep in mind the length of the forecast here). Clearest conditions will probably be on Monday and Tuesday (with the strongest subsidence at midlevels).

Science:

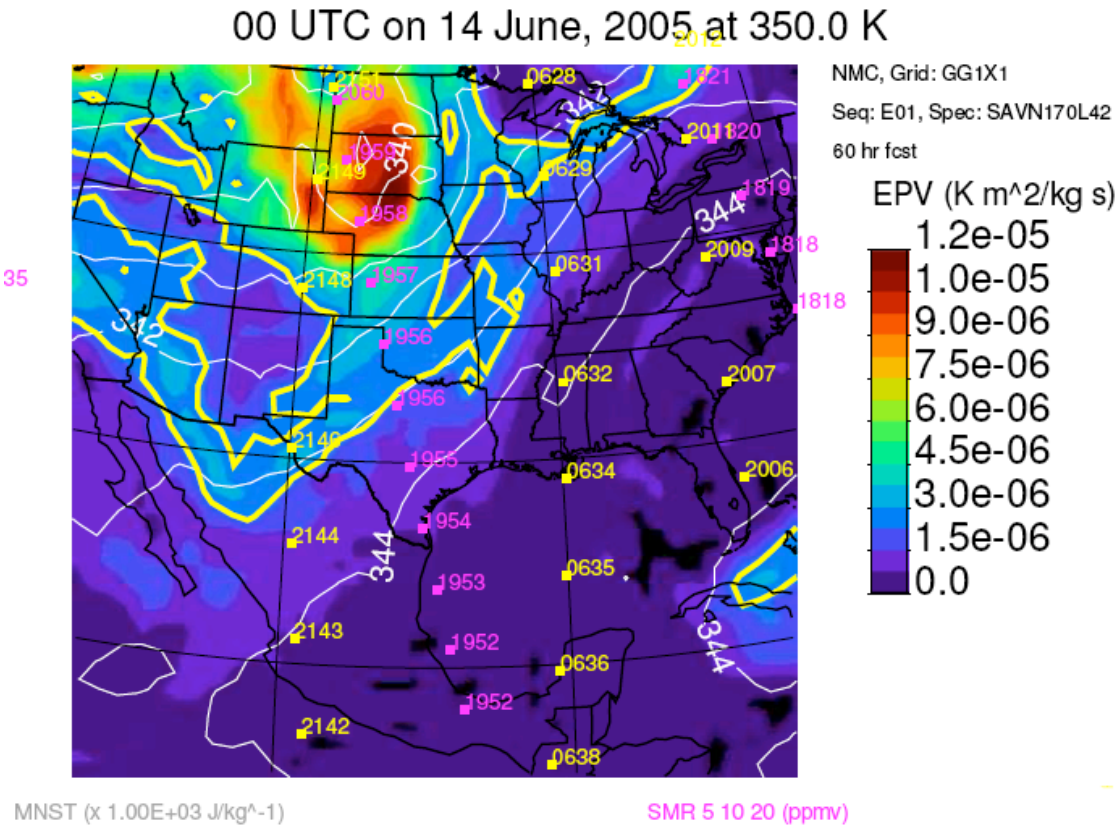
Tomorrow (6/12): (A flight is unlikely, but will include a discussion nevertheless for completeness). Our decision to fly today (6/11) instead of tomorrow (other than the tropical storm event) is looking even, as the HIRDLS run over us looks even more unlikely to see significant coherent gradients than in previous model runs. Skies should be generally clear, with maybe fewer puffy clouds because of the slightly west of south direction to the wind. It would not be a bad day for an air pollution run.

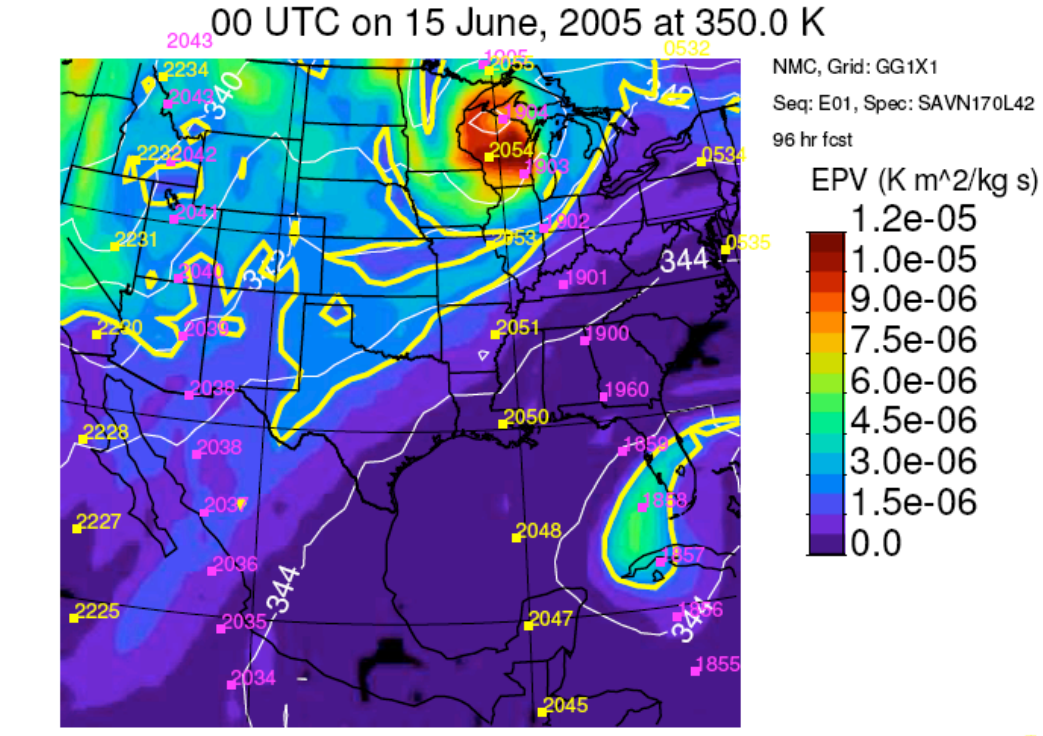
Monday (6/13): Good subsidence aloft, so rain unlikely. Winds at the surface are more southeasterly, so expect more puffy clouds than tomorrow. Eta shows substantial clouds over us, but I think this is overdone, reflecting boundary layer puffy clouds. MLS track penetrates a strong PV feature at 350K over Nebraska. This, combined with some OMI Air pollution surveys at high altitude would make a nice flight. HIRDLS track is over extreme west Texas.

Tuesday (6/14): Skies should still be fairly clear (with puffies) with winds just south of east. HIRDLS track is up the Mississippi river, with significant PV gradients starting around Illinois.

Wednesday (6/15): A bit less assurance of clear skies on this day and surface winds have a light and variable character. MLS track over east Texas, HIRDLS over west Texas. The PV patterns at 350 and 370K are diffuse north of us – i.e., gradients are weak.

What follows are 350K plots with satellite tracks (Yellow is HIRDLS, pink is MLS, OMI is about 5 degrees of longitude to the left of MLS) for Monday, Tuesday, and Wednesday at 7 PM CDT.




00 UTC on 15 June, 2005 at 350.0 K
NMC, Grid: GG1X1
Seq: E01, Spec: SAVN170L42
96 hr fcst
EPV (K m^2/kg s)
1.2e-05
1.0e-05
9.0e-06
7.5e-06
6.0e-06
4.5e-06
3.0e-06
1.5e-06
0.0
MNST (x 1.00E+03 J/kg^-1)
SMR 5 10 20 (ppmv)

00 UTC on 16 June, 2005 at 350.0 K