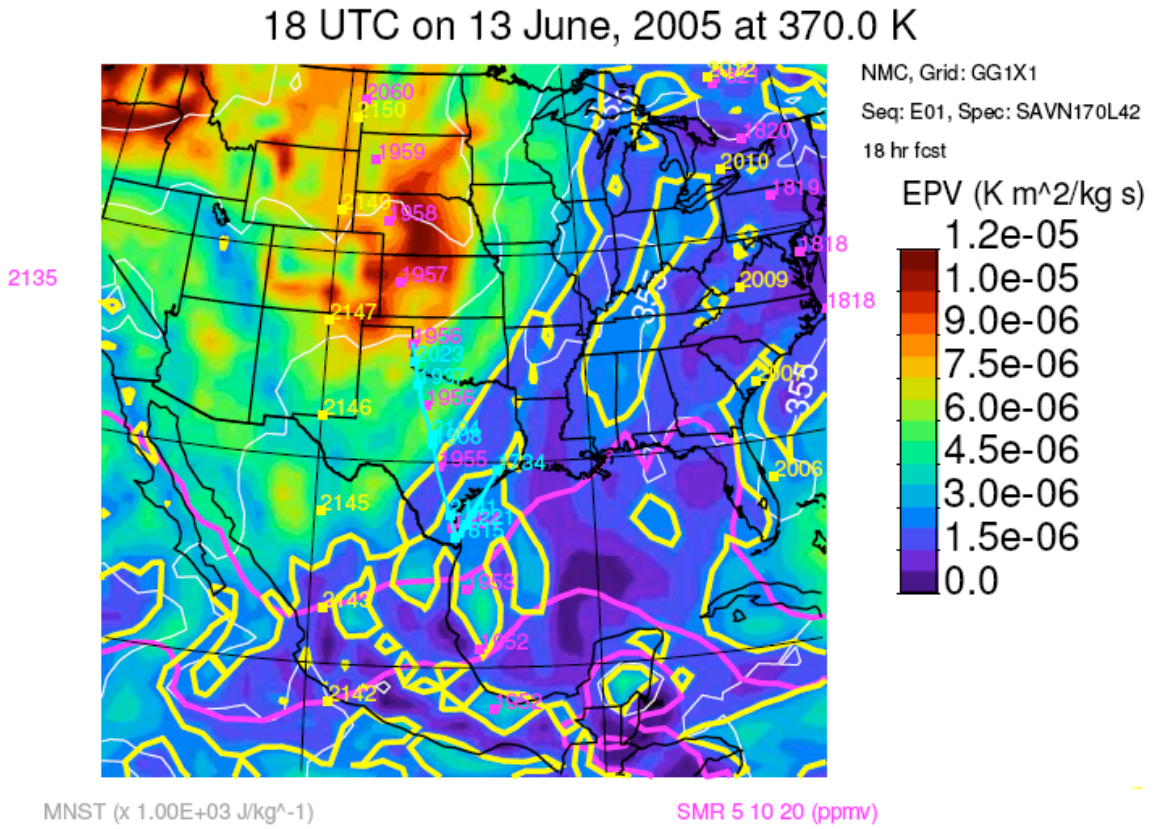
Weather Briefing for 20050613

The 500mb trough that has been sitting over the western US is has been moving eastward since yesterday, and we expect it to move into eastern Nebraska by early this afternoon. In the process, the entire pattern over the US is becoming more zonal, except for the strong shortwave trough which will move from Nebraska today to Lake Huron by Wednesday. As this occurs, a 500 mb ridge builds over the Great Plains by Wednesday (axis tilting south southwest-north northeast positioned about over easter Colorado). This will remain through the forecast period (5 days – through Friday), with a strong trough developing off the California coast. For us, the implications are as follows. Today, we expect no rain, with surface winds of about 10 knots from just west of south. Though the eta model shows a little disturbance at 500 mb over the flight track, conditions are sufficiently dry that we expect no thunderstorms popping up anywhere along the flight track. For Wednesday, though the models project a substantial amount of CAPE in the sounding (warm moist air near the surface with cooler air aloft), the convective inhibition is strong enough to reduce the chance of showers and thunderstorms in the official forecast to 20% on Wednesday. My thinking is that the weather will be northeast of us on this day, so I believe we should be OK to fly. The situation bears watching. Surface winds on Wednesday will be light and variable – i.e., the steady pattern from the southeastern quadrant we have been having for the past week will not be present. By Friday, we are well into a "northwest flow" situation, which means that Mesoscale Convective Systems can slide down from the northwest. The GFS has one sliding into southwestern Louisiana on Friday. It is too early to tell whether the placement, or even the existence, of this system is correct. The GFS also suggests some thunderstorms may underly the HRDLS flight track. To quote the official forecast, today no precip, and 20% chance of showers and thundershowers for the rest of the week.

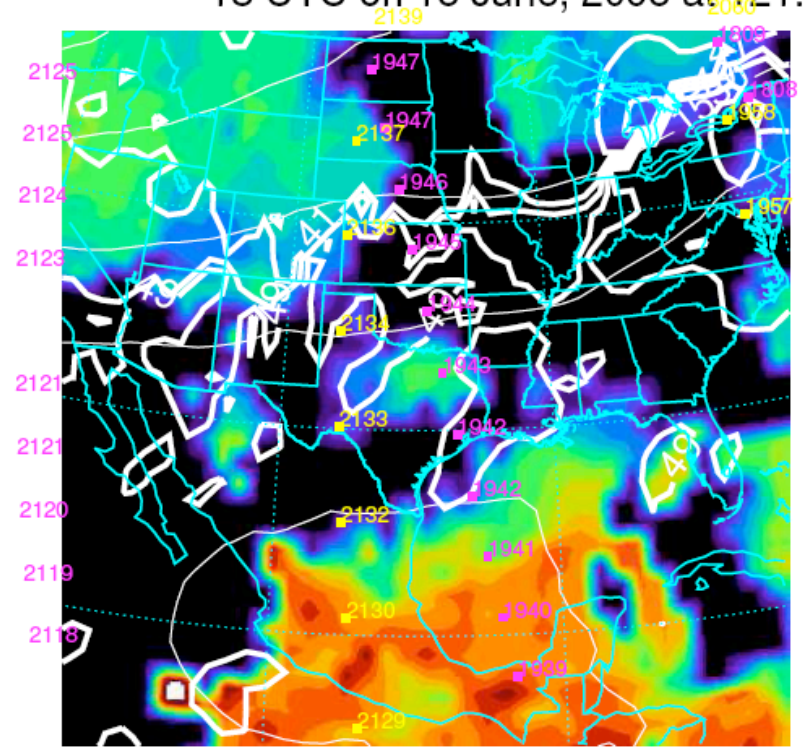
Science:

Today: Flight up the MLS track going from Brownsville to the eastern Texas panhandle. I do not see any weather developing along the flight track. Forecasts for the upper levels are consistent with yesterday's. A 370K PV map is attached.



Wednesday: MLS opportunity again. Some convection possibilities over the southern Gulf of Mexico (forecast cloud altitudes of 45-49 kft, tropopause above 50 kft, but otherwise no obvious hazards at the low flight levels (41kft). Subtropical jet maximum at 41 kft is just south of us on that day, so should be able to manage tropopause crossing and deep penetration south at the same time. Gradients are not very strong, but it is summer after all. Cloud altitude and 370K PV are attached.

18 UTC on 15 June, 2005 at 121.7 mb



NMC, Grid: GG1X1

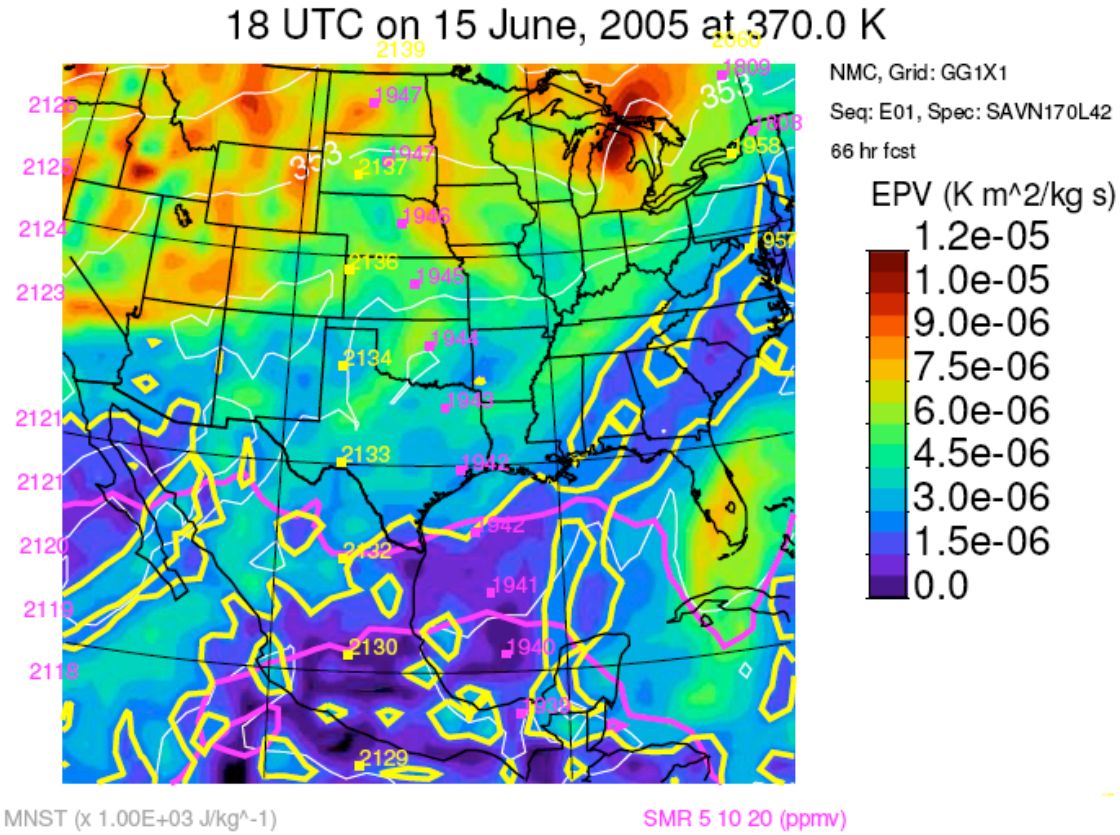
Seq: E01, Spec: SAVN170L42

66 hr fcst

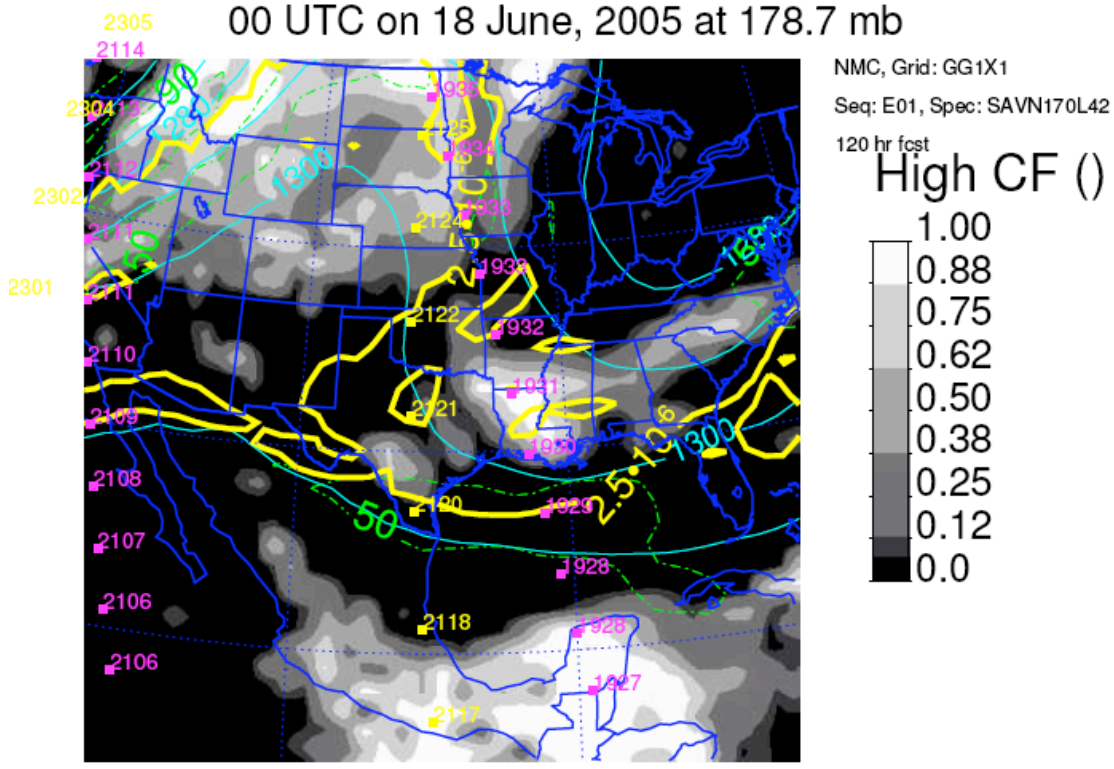
Cloud Top Alt (kft)

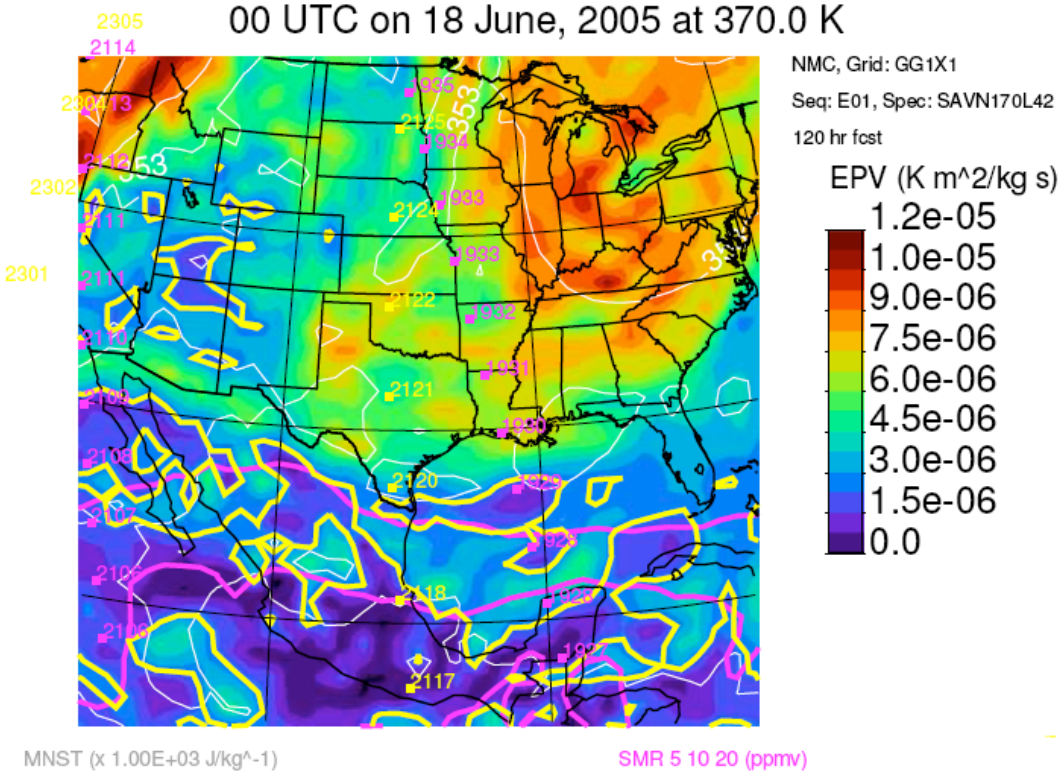
57.0
53.0
49.0
45.0
41.0
37.0
33.0
29.0
25.0

Z (dam) Trop (4 kft)



Friday: Good HRDLS track today. Weak south-southeast winds at the surface, though the GFS is predicting more significant cloud than has been typical over us, probably due to the forecast MCSs north and east of us and a shortwave trough at high levels moving southeastward along the front of the ridge generating cirrus. All somewhat speculative this far out. Unambiguously tropospheric air may escape us at 41kft on this day, depending on whether you use the thermal definition (high tropopause) or the PV definition (lower tropopause).


00 UTC on 18 June, 2005 at 178.7 mb
NMC, Grid: GG1X1
Seq: E01, Spec: SAVN170L42
120 hr fcst
High CF ()
1.00
0.88
0.75
0.62
0.50
0.38
0.25
0.12
0.0
Z (dam)
Wspd (20 kts)
Trop (EPV=2.5)


00 UTC on 18 June, 2005 at 370.0 K
NMC, Grid: GG1X1
Seq: E01, Spec: SAVN170L42
120 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)