Weather Briefing, 20050615

The 500mb trough in the westerlies that has been moving slowly across the northern tier is now (11 UT, 20050615) over Michigan. A ridge is over the TX/NM border, with another trough off the west coast. Smaller disturbances are rotating around both of these troughs. By Friday, a combination of this rotation and general amplification produces a clear deepening of both of these features with less than 10 degrees of longitudinal eastward movement. We remain under the influence of the ridge over the Great Plains. Both the eastern trough and this ridge develop a SW/NE tilt by Friday, giving us a more northerly flow component. We will definitely be on the east side of this ridge. The tilting eastern trough digs southwestward enough that we may be affected by disturbances rotating southeastward around it by Friday, though the consensus is that significant convective activity will stay well to the northeast of us. After Friday, the ridge continues to develop the SW/NE tilt, and the eastern trough begins to develop a cutoff, which drifts southwestward. By Tuesday (imaginationland), the cutoff is over Mississippi. If this develops, we could be subject to disturbances rotating around this cutoff. However, this will not affect us until after Sunday. So, the short forecast is for less than 20% chance of showers and T-storms through Sunday, with 20% chance thereafter (through Wednesday).

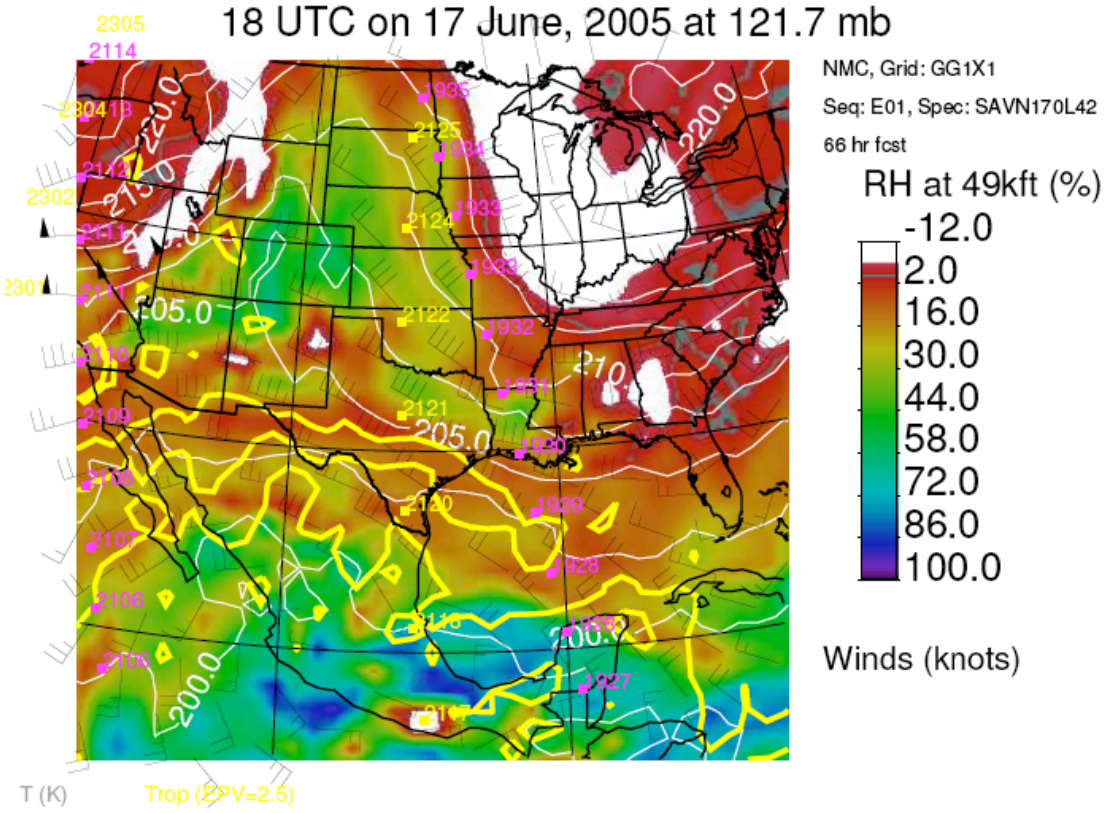
For today, the strong convective activity will be across the High Plains from the TX panhandle northward. Synoptic scale surface winds in our area will be from the west and northwest (weak), but we should expect easterlies (seabreeze) in the afternoon. The air mass is potentially unstable, with the CAPE increasing progressively since June 11 (due to cooling at midlevels and the removal of the 700-850 mb inversion (which has kept the "cap" on the convection). The interpretation of the convection yesterday was the coupling of a seabreeze, the absence of the usual strong southeasterly low level flow, and an unstable air mass. The first two factors allowed convergence to develop, with the last setting up the thunderstorm. Nevertheless, the activity in our area was isolated, and the whole thing was over in less than an hour. This is due to the remaining overall subsidence at mid to low levels in our area (associated with the ridge). Much the same situation can be expected today, and the TAF says as much (T-storms in the vicinity of Hobby from 2 PM to 7 PM). For science, we can expect relatively clear skies today over Texas today, especially early in the flight. The clouds in the southern Gulf of Mexico have backed off a bit from yesterday's forecast, though there are clearly some clouds in the IR picture to 25N right now. There will be clouds along the track, but whether there is enough thickness to them to help OMI may be an issue.

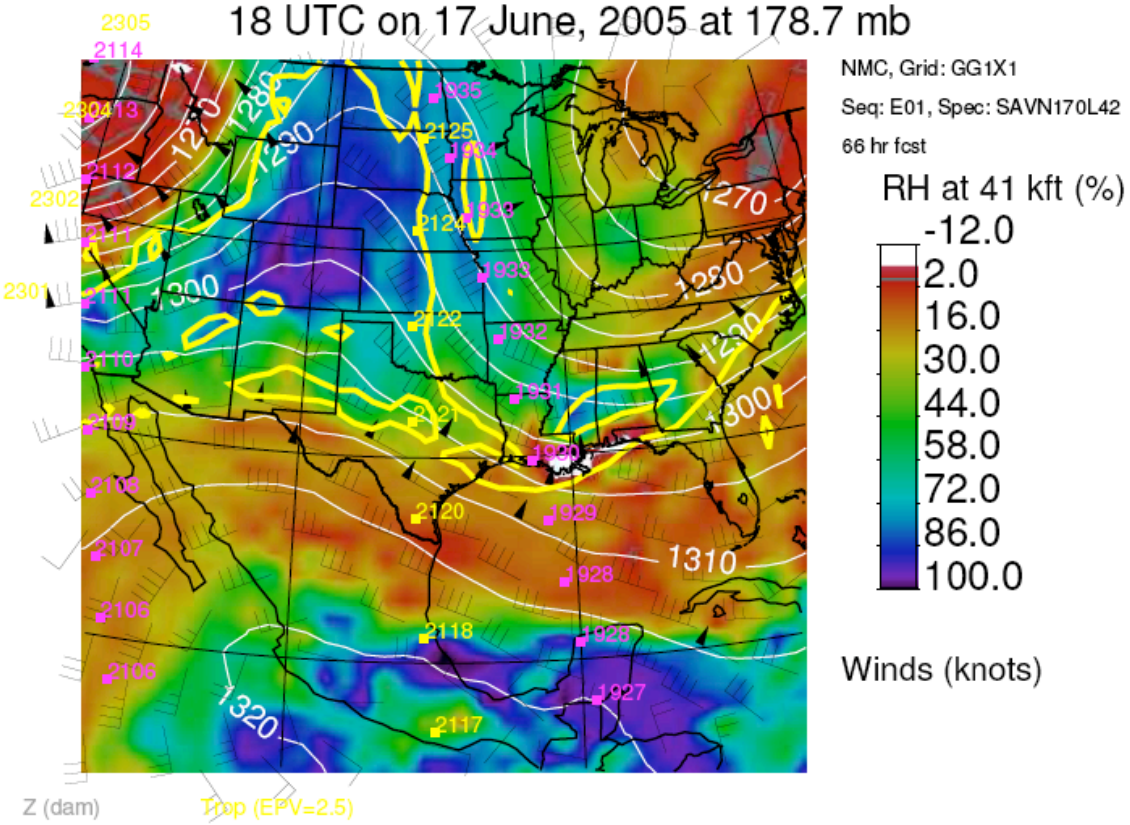
The issue for Friday is the possibility of mesoscale convective systems propagating along the top of the ridge (between the mid-American ridge and eastern trough mentioned above) from OK southeastward. The model runs have been consistent in keeping the activity northeastward, with closest approach being southwestern Louisiana. This is reflected in the Houston office's forecast, which calls for rain/T-storm chances at less than 20% through Saturday. If this does develop as modeled, we could expect compensating subsidence in our area, reducing our rain chances even more. This bears

watching. Surface winds (other than seabreeze) will be from the south. For Sunday, there is no evidence in the models yet for any development in our area.

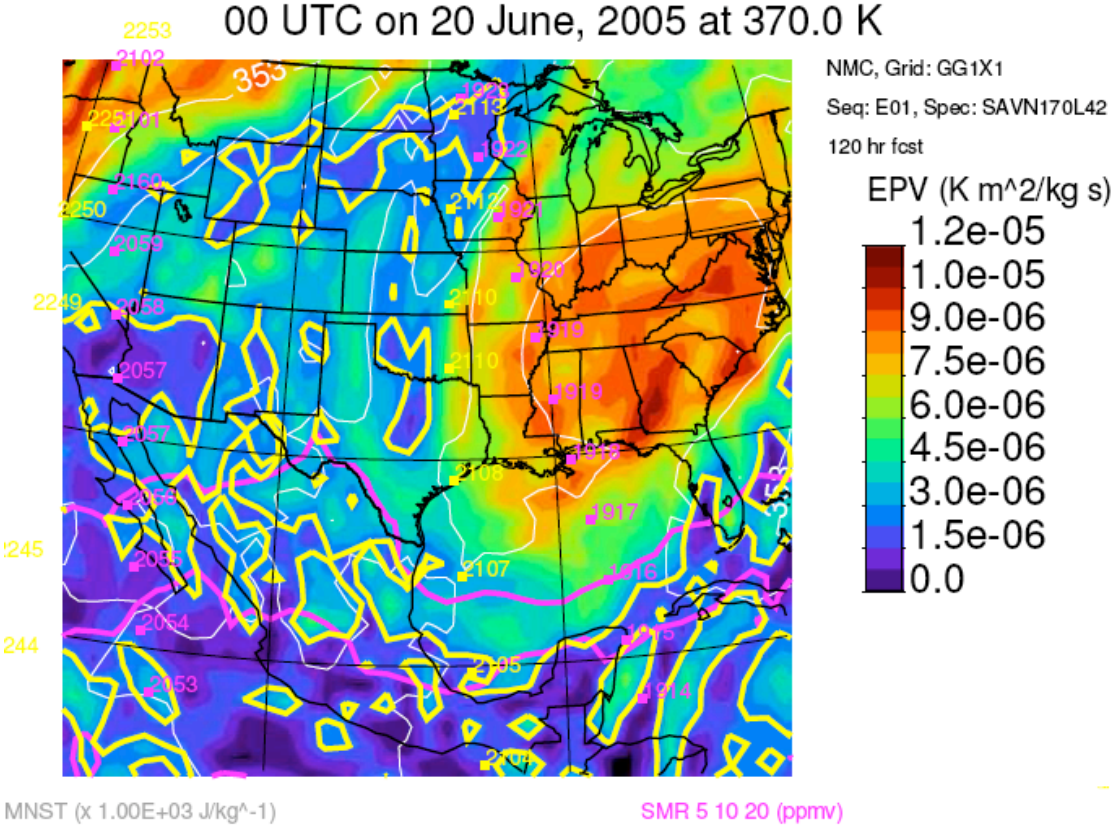
Science:

Friday: HIRDLS track from Brownsville northward. Not the clear sharp gradients across the subtropical jet requested in the validation presentation, but we should get to the south of the STJ nevertheless. There should be a clear tropopause crossing along the track between 41 and 49 thousand feet. Unless we get into Kansas, we should not have any trouble with clouds at flight level according to the current forecast. Kansas clouds are likely to be high cirrus. Convective activity is most likely on an arc from Louisiana into Oklahoma, and the HIRDLS track grazes the west end of this arc.





Sunday: HIRDLS track right on top of us. Again, we are slicing at the back end of the same trough, reflecting the slow moving weather patterns of this whole disucussion. Clouds should not be a problem along the flight track, except for the possibility of some convective activity propagating southward between the ridge to the west and trough to the east. This is forecast to be east of the track. Total cloud is also forecast to be favorable. Weak surface winds from the south.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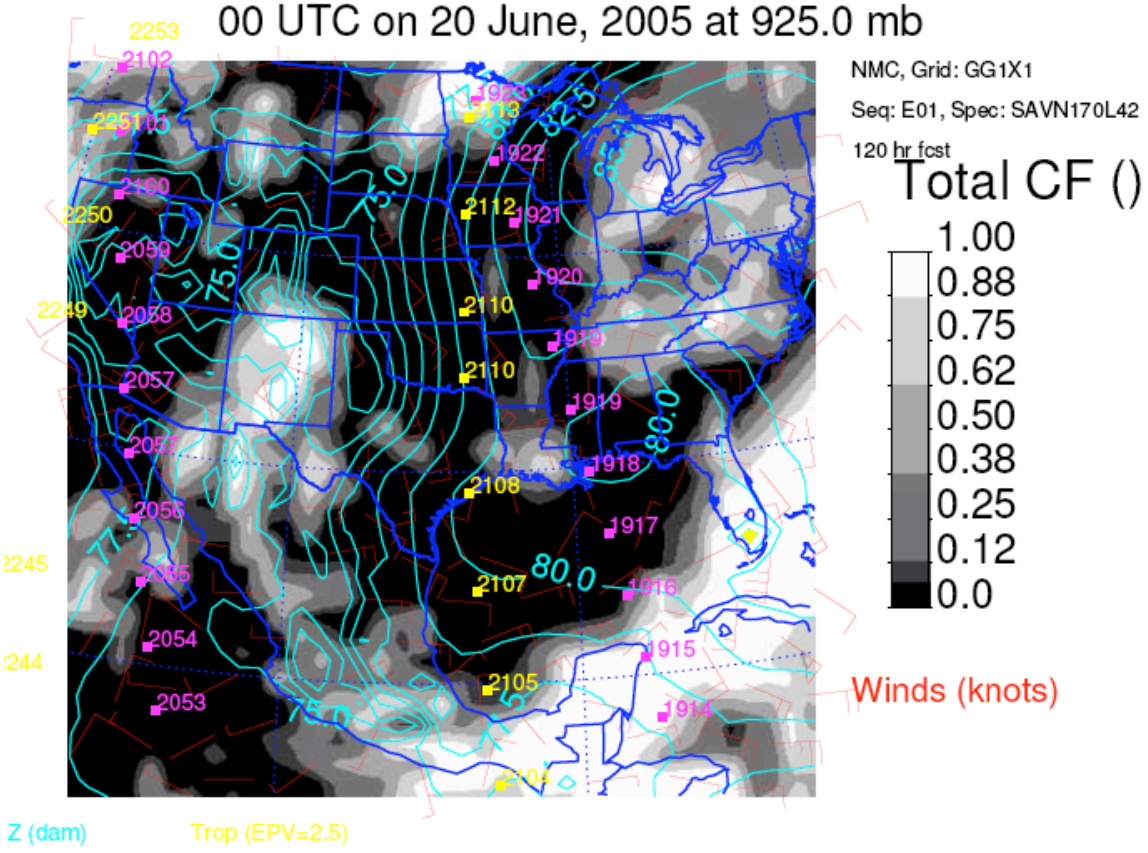
1.0e-05
9.0e-06
7.5e-06
6.0e-06
4.5e-06
3.0e-06
1.5e-06
0.0
MNST (x 1.00E+03 J/kg^-1)
SMR 5 10 20 (ppmv)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0.75
0.62
0.50
0.38
0.25
0.12
0.0
Winds (knots)
Z (dam)
Trop (EPV=2.5)