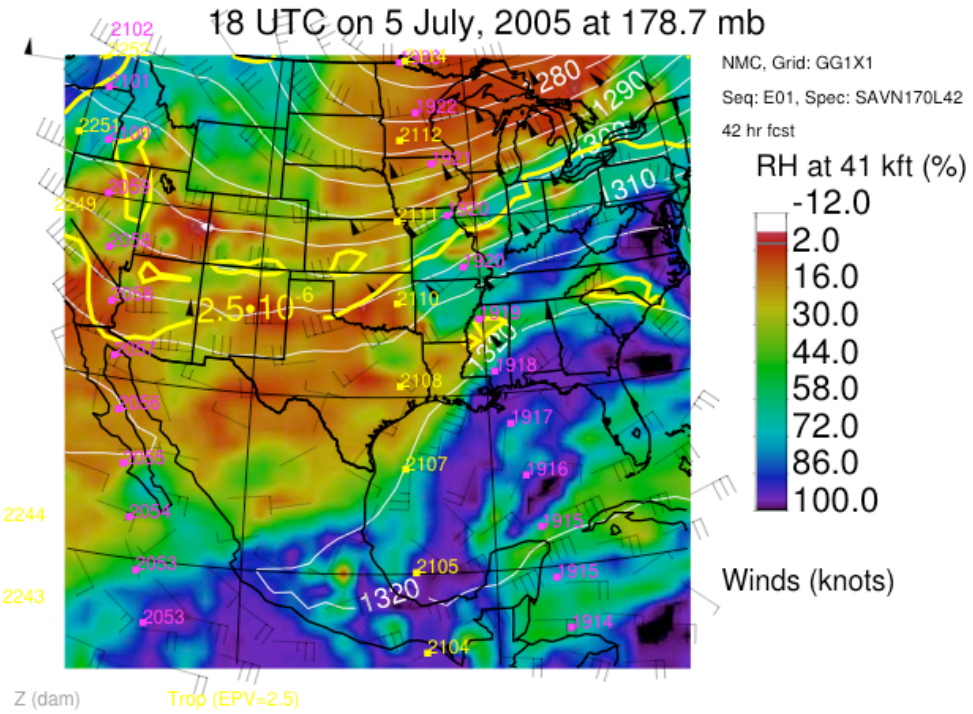
Weather Briefing, Independence Day 2005

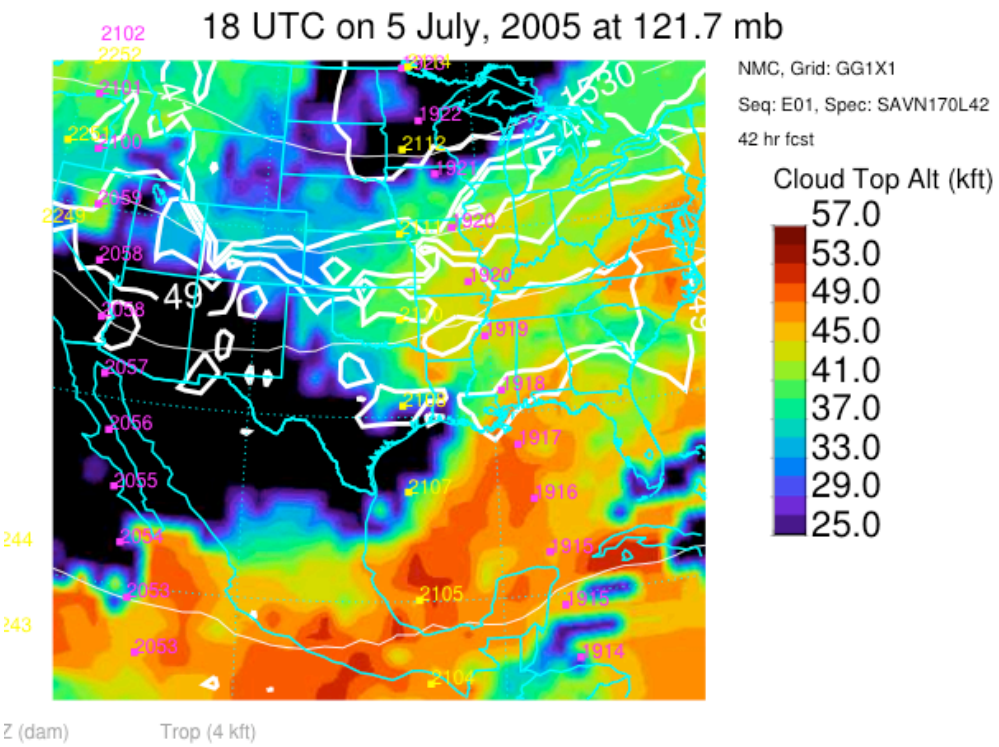
Our attention turns to the Tropical Depression now centered over the east central Yucatan Peninsula, arguably headed for landfall in the Texas Louisiana area early Thursday morning. I say arguably, because this one is still highly uncertain. Hurricane hunters did establish the presence of a closed circulation (thus the depression, rather than wave, designation) late yesterday, and, in fact, there is substantial convection near the center of the circulation right now (suggesting strengthening possibilities). However, models disagree on what might happen, and the pros are really not sure why. They are also not sure why none of the models are predicting really significant strengthening to hurricane force. I suggest keeping track of this by reading the discussions at http://www.nhc.noaa.gov. The implications for the aircraft's ability to operate are murky. We should be in good shape for Tuesday (20% chance of afternoon thundershowers), but the models differ after that. UKmet suggests a rainy Wednesday (I don't believe this), GFS indicates higher rain chances Thursday and Friday. I agree that rain chances will increase Thursday and Friday, but the key question is how much. A lot depends on the development and course of TD3, which, as indicated above, is highly uncertain. We should nevertheless revisit the flight schedule early tomorrow, especially since the possibilities for a Friday flight are small.

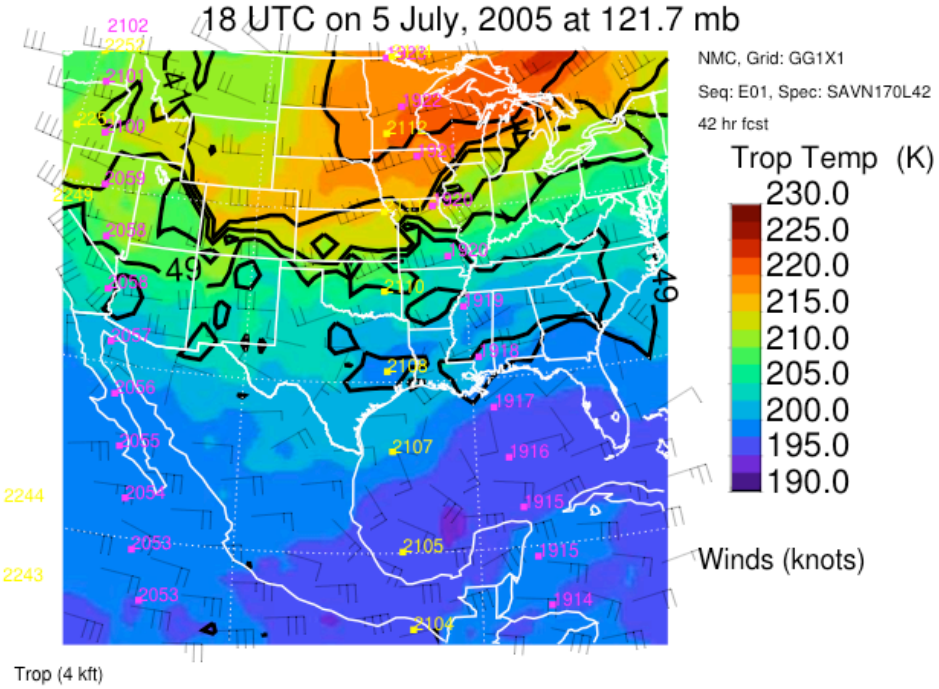
Science:

There are two classes of science possibilities for tomorrow's flight. One is the tropical wave which is forecast to cause significant convection along an arc from the eastern Gulf of Campeche to Pensacola. The basic character of this feature has been stable in the last few GFS forecasts, though keep in mind that other models are forecasting tropical storm development. Notably, the GFS, in the latest forecasts, is developing a separate cyclonic low level circulation within this arc, so we could see some changes in the forecasts. Strong convection is forecast has southward flow hits the coast at Pensacola.. This will produce high relative humidities at altitude, and good outflow cirrus over southern Georgia in the northwesterly flow winding anticyclonically around the top of the convection.



The highest clouds are actually forecast to be over the Gulf part of the convective arc. So, another possibility is to examine this region. There may be a bit of a break between the two convective portions (see above). Flow is from the SSW over this portion so we can catch outflow from the southern convective portion say, 300 NM south of New Orleans. An added bonus are unusually cold tropopause temperatures.





We cloud also investigate an MCS that is forecast to be over the Arkansas region. This development has also been fairly stable over the last two GFS forecast cycles, though the ETA puts it over southern Oklahoma. Cloud altitudes are not as impressive, but if this is

a strong system, we can expect some injection to higher altitudes. There is a trailing cold front over this region that is probably responsible for setting these things off in the models. Timing is much harder to predict, though. The Storm Prediction Center is suggesting that activity should follow the typical diurnal pattern (maximizing after dark rather than during the day).

Thursday suggests convective development much closer to us, perhaps too close, with a system just to the northwest of us. Of course, we had this yesterday (July 3). The Gulf is expected to be drier at high altitudes, so this seems a good day to look at local land-based convection. The uncertainty of the Tropical Storm outlook, however, makes further detailed discussion problematic.