Met briefing, AM 041031

Today's flight:

The likelihood of showers today has diminished substantially, as the maximum in precipitable water has moved northward toward the quasistationary front. Over the gulf, we appear to have a bit more cloudiness than expected from the AVN model forecast, but we expected that anyway, given that the AVN underestimates the cloud cover (see yesterday's met briefing). The latest visible image (first plot) shows significant cloudiness just south of west central Louisiana. The area under the satellite track, though, appears clearer. The model relative humidity (second plot) suggests that the northern part of the flight track will be clearer than the southern part. Note that comparisons of model RH with clouds have shown a reasonable corresspondence between the incidence of significant cloudiness and the subtle variations in RH seen in the plot. In any case, the prospects of finding 5 by 8 km areas that are clear are good.

Overall Weather Outlook

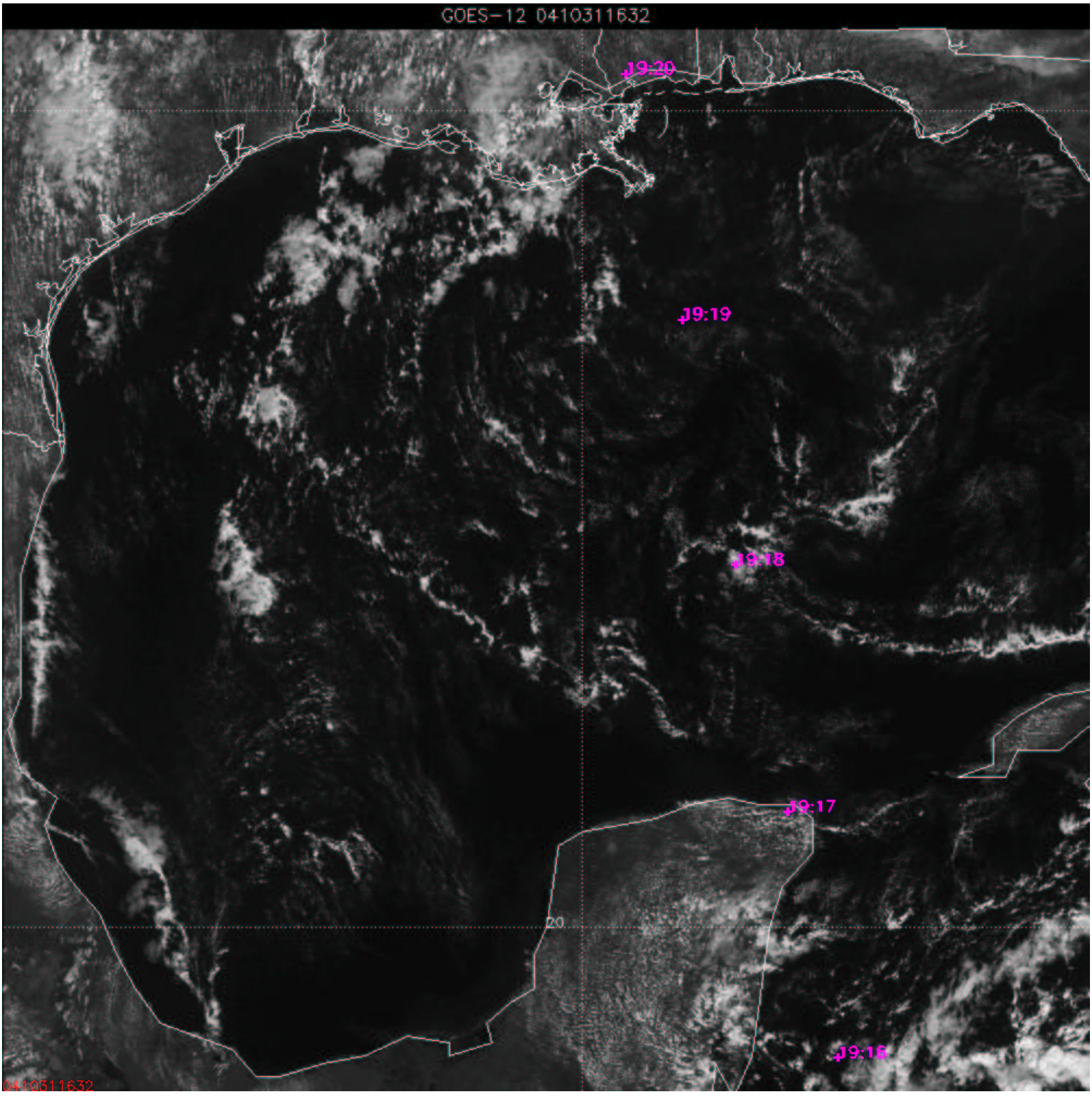
As of midnight this morning, the upper level (500mb) flow shows the main trough in the west tilting from central Arizona southwestward through central Baja California. The northeastward 500mb flow east of this trough marks a warm front extending from the Big Bend in the Rio Grande towards central Oklahoma and Arkansas. Convective cells are currently (9 AM CST) being generated along this front. By tomorrow noon the trough will have a more north-south orientation, will deepen, and will be over eastern New Mexico. The result will be a cold front that should pass over our area by Monday night, generating lots of rain and thunderstorms starting Sunday night. Some severe thunderstorms are possible during the day on Monday. This is not a good day for flying. Eric Ray may have to stay with us another day, which is really the only upside (for us, that is). Showers should be minimal by Tuesday, but temperatures will be 20 or so degrees cooler, and it will be windy. Sustained winds could be 20 – 25 knots from the northwest. This should not be a problem, since that is only 30 degrees off the runway. It will clear out through Tuesday (clouds in the earlier part of the day), and be clear and sunny by Wednesday with weaker winds. So, Tuesday and Wednesday should be good for flying, as well as Thursday.

Science Implications

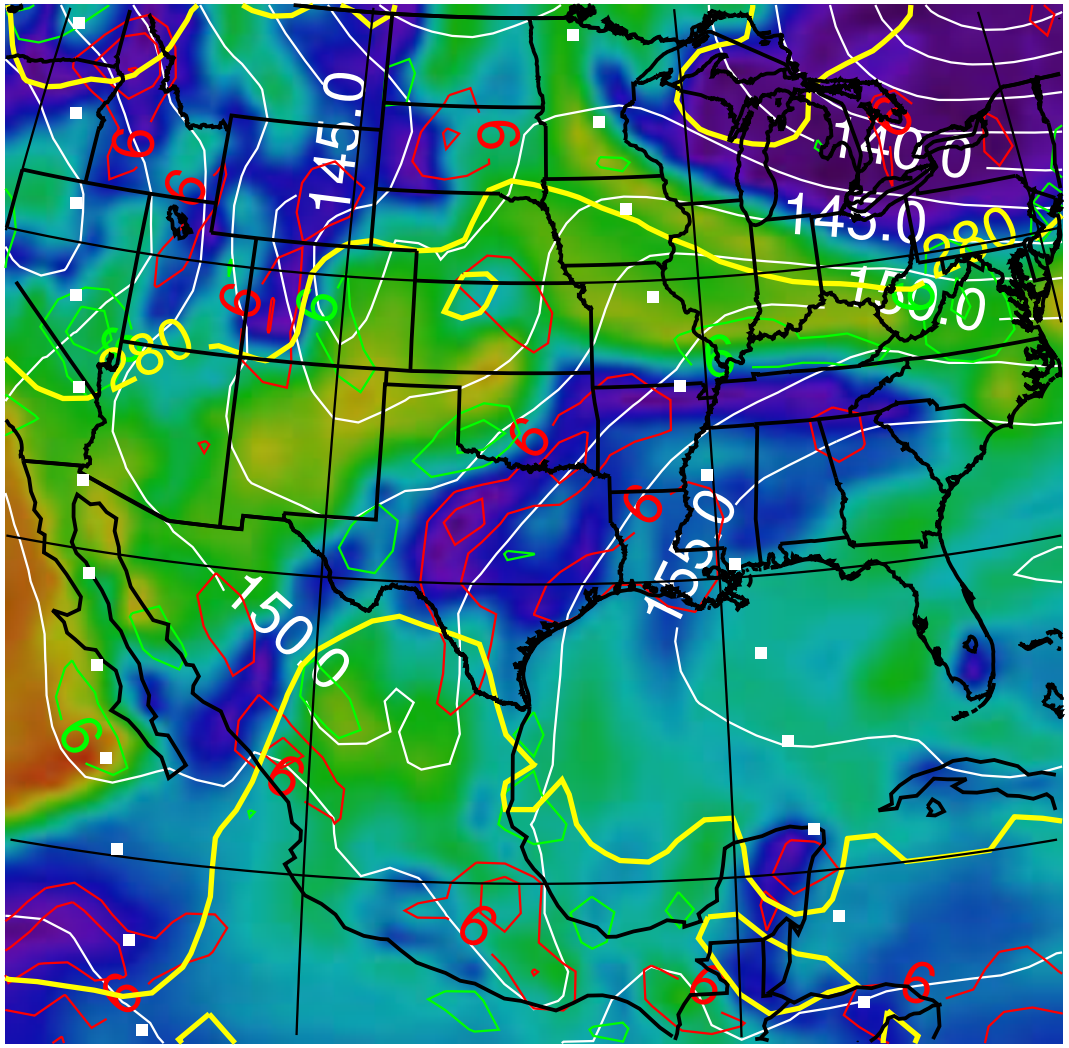
Tuesday: The third plot shows the 500 mb flow with total cloud forecast superimposed, as well as vertical velocity. The yellow line shows the tropopause. The forecast is roughly consistent with yesterday's model run, with the new run showing faster movement toward the east. The yellow line indicates a tropopause fold. This is a strong storm with significant strat-trop exchange implications. The clouds indicated on the plot are mostly low cloud. High and middle cloud is largely ahead of the trough. Clouds ahead of the trough should be pretty solid, with the high upward vertical velocities. The fourth and fifth plots show MPV in plan view at upper levels and in cross section. High PV air clearly penetrates far south, and the nose of the fold can be seen sticking out in the cross section at low levels (5 km). The Aura track is not very close, but this does not matter much for OMI.

Wednesday: The sixth plot shows total cloud and 500mb flow for Wednesday. The Aura track is right over the ARM-SGP site (almost), and the skies look clear. If anything, the new model run is even more optimistic about clear skies, with more downward motion than the old model run.

Thursday: The last plot shows total cloud and 500mb flow for Thursday. Aura tracks are about as far from us as they can be. A streamer of high PV at 70 mb (not shown) can be found over northern Nebraska, but otherwise no obvious feature of interest presents itself at this stage.


GOES-12 0410311632
19:20
19:19
19:18
19:17
19:16
20
0410311632

18 UTC on 31 October, 2004 at 850.0 mb



NMC, Grid: GG1X1

Seq: E01, Spec: SAVN170L42

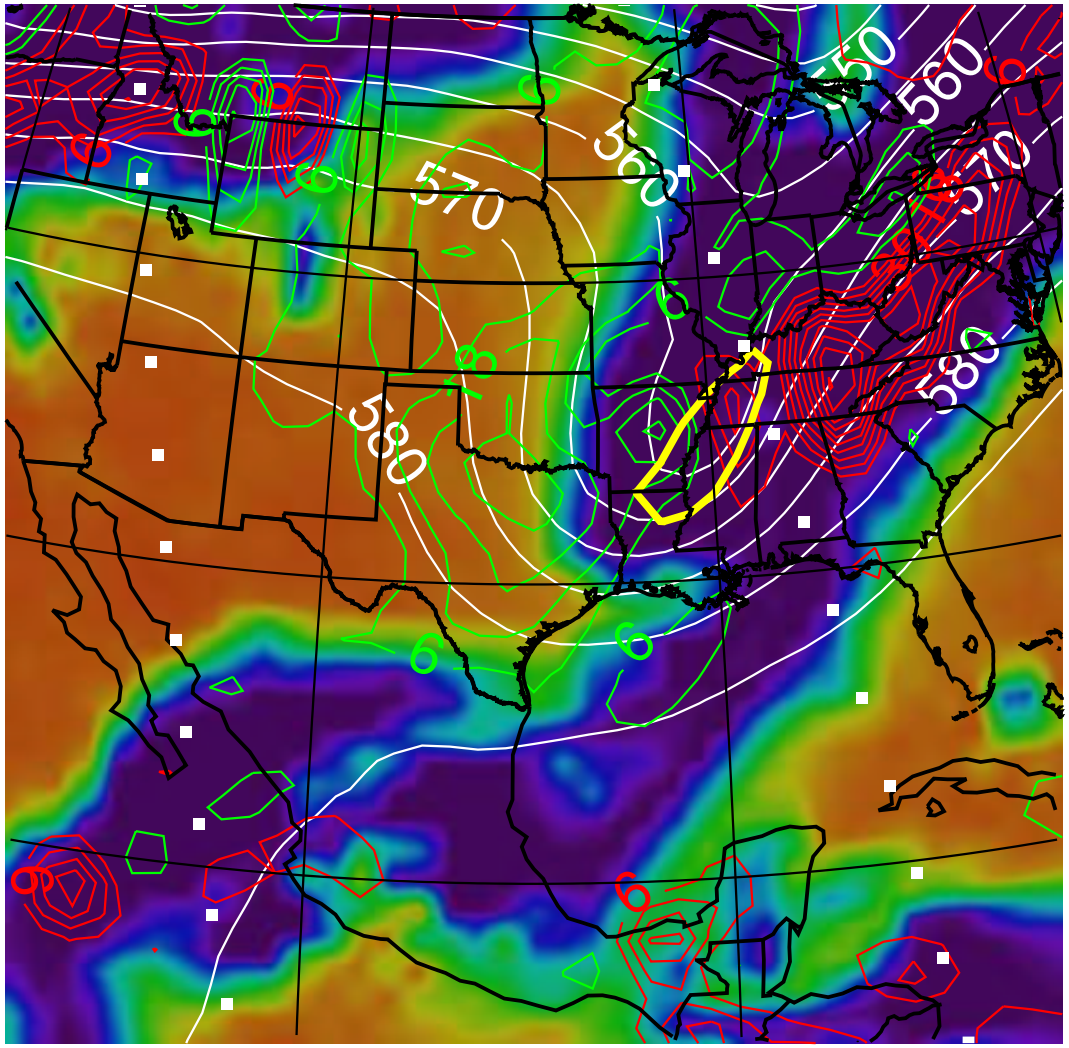
18 hr fcst

RH at 850 MB (%)

-12.0
2.0
16.0
30.0
44.0
58.0
72.0
86.0
100.0

Z (dam) Ascent (6 mb/hr) Descent (6 mb/hr) T (K)

00 UTC on 3 November, 2004 at 500.0 mb



NMC, Grid: GG1X1

Seq: E01, Spec: SAVN170L42

72 hr fcst

Total CF ()

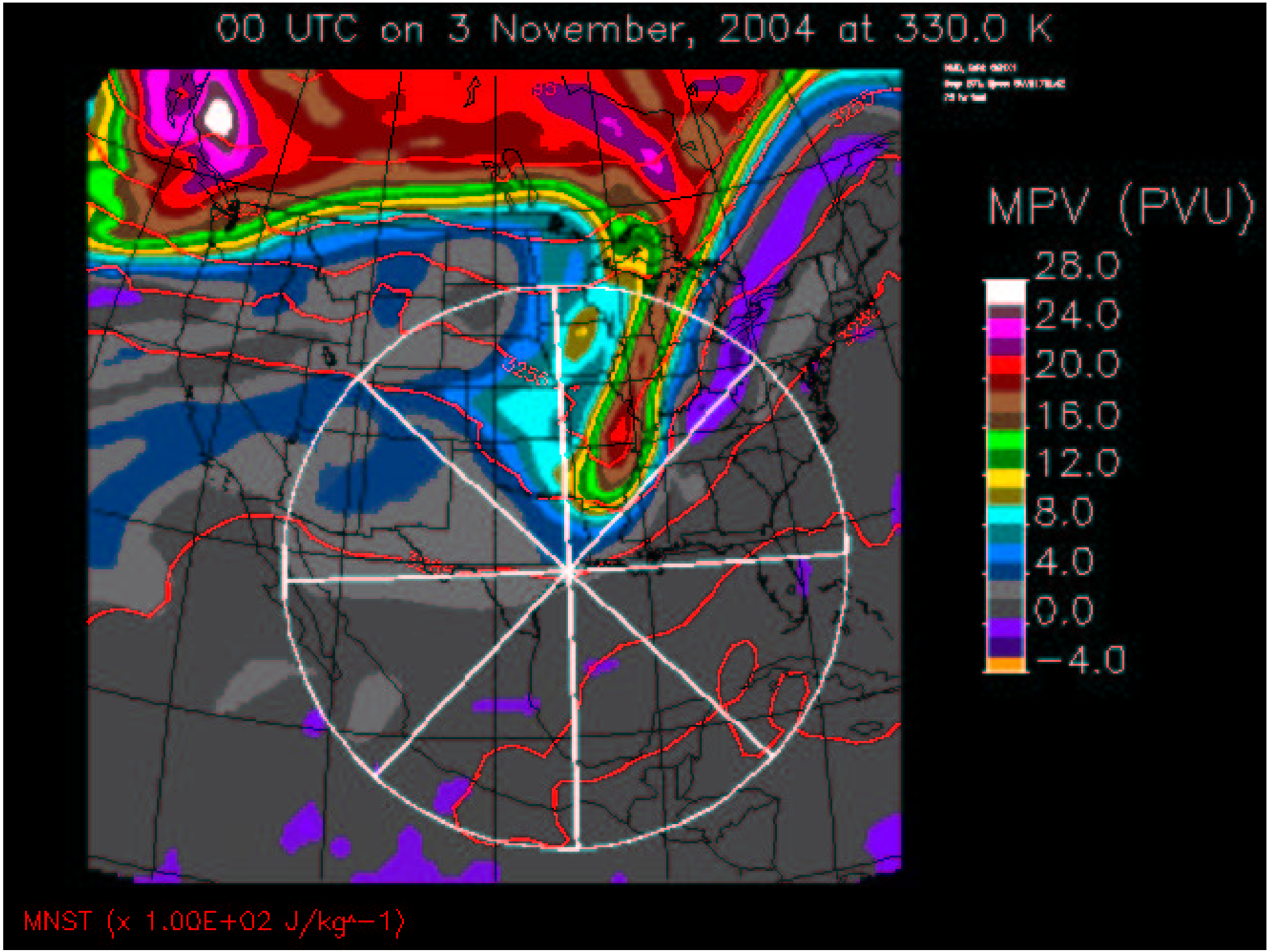
-0.20
-0.05
0.10
0.25
0.40
0.55
0.70
0.85
1.00

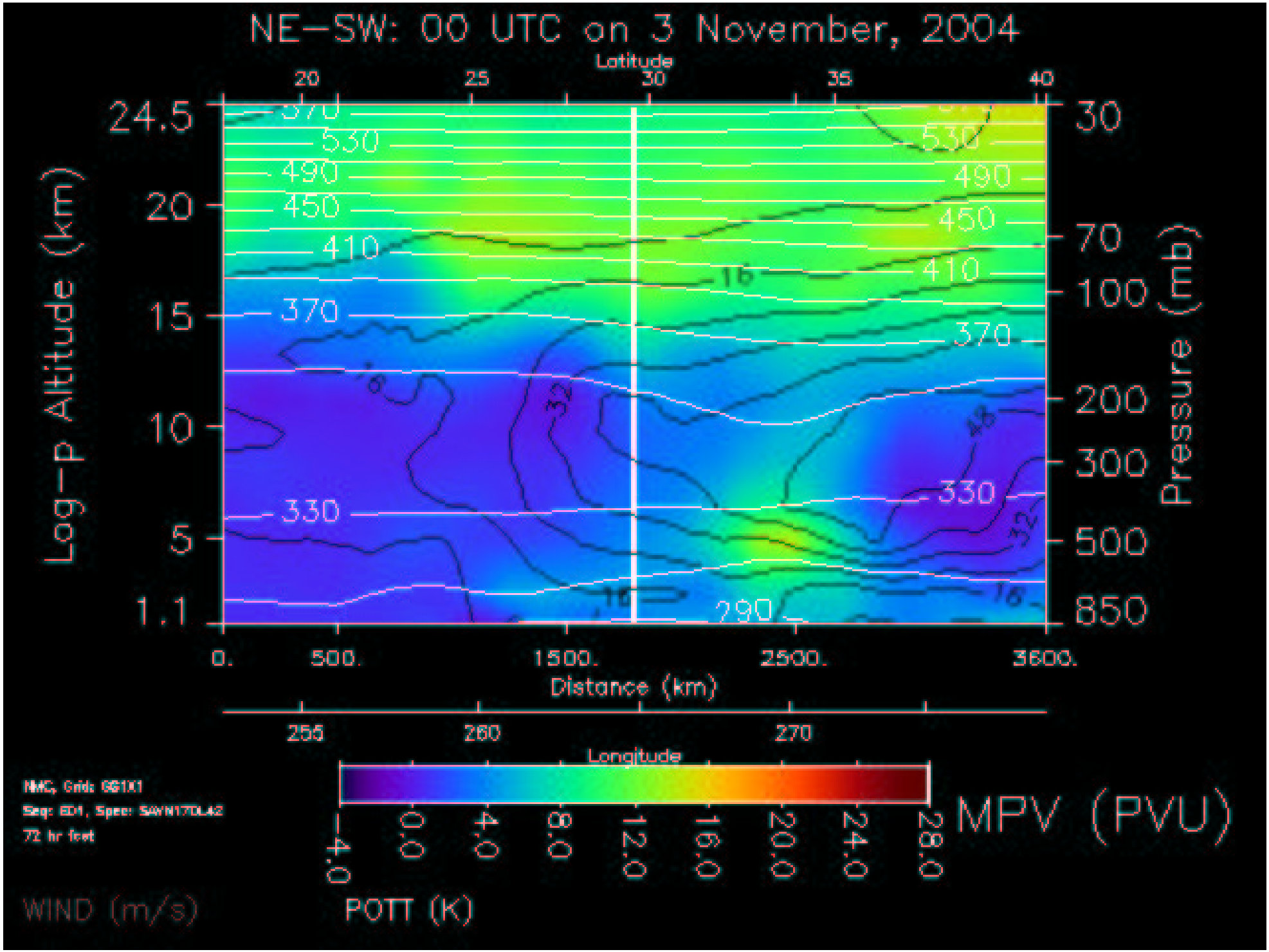
Z (dam)

Ascent (6 mb/hr)

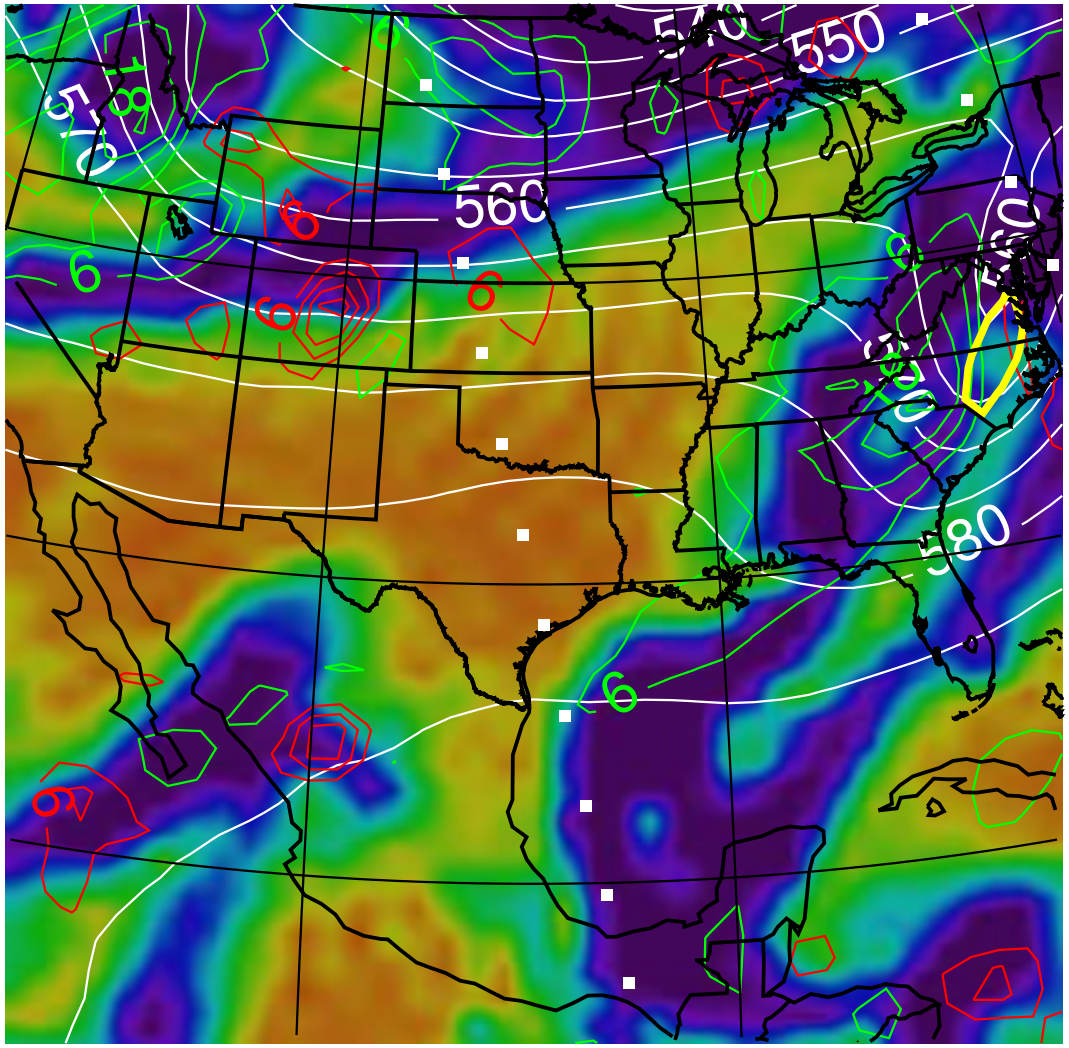
Descent (6 mb/hr)

Trop (EPV=2.5)


00 UTC on 3 November, 2004 at 330.0 K
MPV (PVU)
28.0
24.0
20.0
16.0
12.0
8.0
4.0
0.0
−4.0
MNST (x 1.00E+02 J/kg^−1)


NE–SW: 00 UTC on 3 November, 2004
Latitude
20
25
30
35
40
24.5
20
15
10
5
1.1
Log–p Altitude (km)
30
70
100
200
300
500
850
Pressure (mb)
530
490
450
410
370
330
290
0.
500.
1500.
2500.
3600.
Distance (km)
255
260
270
Longitude
NMC, Grid: 6561X1
Seq: 6D1, Spec: SAVN17DL42
72 hr fcst
-4.0
0.0
4.0
8.0
12.0
16.0
20.0
24.0
28.0
MPV (PVU)
WIND (m/s)
POTT (K)

00 UTC on 4 November, 2004 at 500.0 mb



NMC, Grid: GG1X1

Seq: E01, Spec: SAVN170L42

96 hr fcst

Total CF ()

-0.20
-0.05
0.10
0.25
0.40
0.55
0.70
0.85
1.00

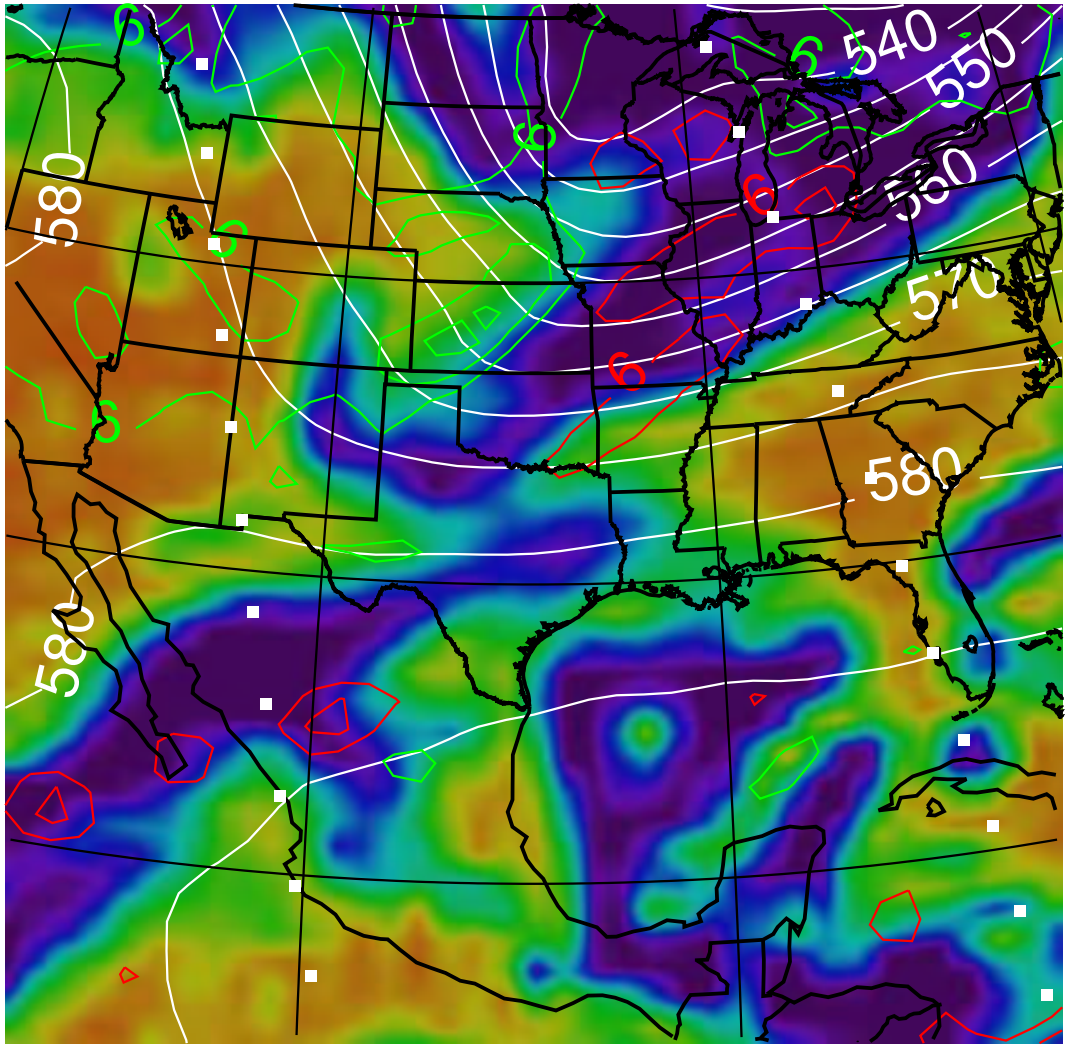
Z (dam)

Ascent (6 mb/hr)

Descent (6 mb/hr)

Trop (EPV=2.5)

00 UTC on 5 November, 2004 at 500.0 mb



NMC, Grid: GG1X1

Seq: E01, Spec: SAVN170L42

120 hr fcst

Total CF ()

-0.20
-0.05
0.10
0.25
0.40
0.55
0.70
0.85
1.00

Z (dam)

Ascent (6 mb/hr)

Descent (6 mb/hr)

Trop (EPV=2.5)