

Flight Notes: 7 June 2002

General impressions: Boundary layer grew from between 300 and 800 m agl to between 800 m and 1600 m agl during the time of the mission. There was considerable variability along the track, with the lowest thermals near the middle of the track. Thermals grew with time and became more widely separated. BL dried with time. Air significantly drier to west – part of the dry line?

The flux divergence data (7 200-foot, 6 higher-level) legs are supported by multiple passes of the Falcon and a moisture mapping mission by the P3.

Takeoff: 155520 UTC

	Time1	Time2	Ht feet	Remarks
1	165024 (S)	170027 (N)	200 agl	Boundary layer top not well defined, plumes reach 2200 to 2900 feet above us. Only a patch of Cirrus.
2	170215 (N)	171520 (S)	200 agl	
3	171730 (S)	172804 (N)	4300 msl	Height calculated assuming terrain height of 2800 m. This leg could have been above ml at times.
4	173150 (N)	174545 (S)	200 agl	Still only sparse patches of Ci are only clouds. Mixing Ratio around 11.5
5	174750 (S)	175823 (N)	4300 msl	Mixing ratio down to 10.5. Bl should be getting deeper. Large q variance indicates we must be close to top of BL. Thermals are hard to see.
6	180030 (N)	181415 (S)	200 agl	Plumes show boundary layer top between 2500 and 3400 feet above the surface. Bumpiest area is over sagebrush.
7	181658 (S)	182615 (N)	4750 msl	Lots of dust at this level.
8	182850 (N)	184200 (S)	200 agl	BL top around 3200 feet agl ++. Nominal height around 3600 feet. Sparse cirrus still. Turn off WCR at leg end.
9	184830 (S)	185825 (N)	5300 msl	
10	190104 (N)	191523 (S)	200 agl	Larry Oolman comments that BL is lowest in the middle. Radar back on. BL top 3000'-5000' above us. Spot armada at 190630. Plumes fewer but larger.
11	191800 (S)	191825 (N)		Quiescent, fewer plumes. One reach 3000 fet above us. Failed to write down altitude, but think it was higher than last 0.7 h legs.
12	193254 (N)	194658 (S)	200 agl	N end up to 4500 above us; Later, 3200 ft above us.
13	194928 (S)	195855 (N)	5600 agl	One thermal went 4000 above us; just before Beaver, one 500' below us (maybe just getting started?).

Soundings

	Time1	Time2	Loc	H (agl)	Remarks
1	163400	164900?	S	1000' (10k to 100')	Missed approach to Perryton airport. Several weak inversions, separated by neutral layers (residual layers?), weak inversions at 2500', 7000', 8300'.
2	172804	173150	N		Went up about 1000'
3					
4	191825	193254	N	3000, 5000	3000' going up, but had bumps higher up and inversions farther up. BL depth 5000' coming down.
5	195855		N	3000', 6600'	Diffuse BL top. First inversion (weak) 3000' agl, then one at 6600ft. Cap at 8000ft agl. This sounding taken on way to Liberal.
6		2010	Lib	6500'	Descent into Liberal. Dry layer above area in upper part of sounding, BL is significantly drier than out west.
7	210632		Lib	7000'	Dry layers start at 5700 ft agl; 7000 feet is start of gentle stable layer. Winds go to zero by the time we reach 15000 feet.