Flight Notes

General Impressions: Today the central track as extended westward so that it was roughly 55 nm long, in order to optimize performance of the lidars on the Falcon. The purpose of the flight was intercomparison of fluxes (requiring continuous turbulence), and document the evolution of the PBL during the mission. This constrained us to fly msl altitudes for all legs, rather than following the terrain. A tower on the western part of the track set the low limit for flying at 2500 feet msl. The continuous-turbulence requirement required us to set levels according to the shallowest part of the BL, which was about half the depth of the deepest part. Note that the area was very dry on the ferry back – the humidity measurements on the onboard display were pegging at zero.

The boundary layer depth varied by about a factor of two along the track, with the deeper ABL over the winter wheat area, and the shallower BL over the hilly pasture land north of Medicine Lodge.

This particularly mission required two sorties. We flew the first 8 tracks during the first sortie, and the last 4 on the second. A set of Rodi maneuvers was flown on the way home. This was exhausting.

Summary of Flux Legs

	Time1	Time2	Height ft msl	Remarks
1	1654 (E)	(W)	5000	Leg above the top of the mixed layer. Hedged height Up to make sure the leg will be above the BL the whole time.
2	171600 (W)	173620 (E)	4000	No clouds. Tested the APN159 by comparing to pilot's altimeter at location of tower along track. Suggests APN measured too high at this altitude. Maximum plumes to 4700 ft msl. (700 ft above us) or 3200' agl.
3	173820 (E)	175740 (W)	3250	This height splits the difference between 4000 ft msl and our min safe altitude, 2500 ft msl. **Picture** showing winter wheat fields. BL tops between 4450 and 5250' msl or 3100-3700 ft agl from WCR.
4	174920 (W)	181940 (E)	2500	3600 ft agl, range 3300-4200 ft. Saw aircraft below us.
5	1823 (E)	184209 (W)	6500	Conway Springs ML is 1000' below us (5000' or lower), But we got bumps at 182848. **Picture** to right at 1826. BL rnage in heights between 3000 and 4000 agl.
6	184430 (W)	190413 (E)	4200	See falcon overhead at 18425. BL top 1200 ft above us at 1900, or 5400 ft msl (4000 agl?).

				Saw clouds at east end of track, could be east of ICT.
7	190600 (E)	192830 (W)	3500	BL depts. 2900 to 5230 ft agl from WCR.
8	1927 (W)	194713 (E)	2700	Photo at W end of leg. WCR BL depth 2200'4400 agl. Photo Conway Springs. At end of track, maintain altitude and turn to NW; could have bonus flux info. Land 195859 at ICT airport.
9	211211	214010	6500	BL top to 6000 feet. We are not at top of haze layer but close. Looks like the top more distinct toward west end of track. Turbulence at our level at teims. BL top still as low as 3000 feet agl. **Photo** 23 of haze and landscale to right.
10	214450	220444	4200	See falcon above us at 214720. We are still in haze layer. BL at 2700' to 5064 agl. **Photo** 23, 24 to SE of winter wheat almost ready to harvest. At 215050; **Photo** 25 of WW to SE.
11	220705	222530	3500	BL top 3400 to 5200 ft agl. **Photo** of west end during descent at 222638.
12	222800	224820	2800	BL top 3700-5200 ft agl. **Photo** of site 4 at 233650. See third low-lying aircraft at 192241. One small cu to east end of leg.

Soundings

	Time1	Time2	H (ft agl)	
1	1645	1651	2500	Descent to eastern part of track
2		1716	3000	Descent from Leg 1
3	211345	2112	3700	Sounding roughly to 6500 feet msl. The inversion is weak, so the sounding is consistent with lots of horizontal variability. Even 5000' agl has some BL air.
4	214010	214450	4000	Ascend to 7000 feet after completion of last leg to see if we get to top of haze layer, then descend to 4200 ft msl for next leg. The inversion is much stronger than on the east side of the leg.
5	224820		4800	Top of neutral layer; cloud base is at 6500 feet.

NOTE: OKC BL top at about 4700 feet agl.
Rodi maneuvers starting at 225430.