Table of King Air Boundary Layer Flights: Western Track

Date	Track	65 m legs	Other Heights	Other Measurements	Comments	65mWind(m/s)	Horizontal Variability	Cloud
19 May	W	6/10	2 in EZ 2 (0.5h)	Falcon, P3, lidars, LLNL samples, MAPR	Time WCR msg	-0.76,13.19	Warmer to north. This seems to disappear at lower levels later on, but persists I upper bl. More flucturations in water vapor to S. Deeper BL to south, despite warmer theta to N.	2-0 3-0 1-cld at 17 UTC
20 May	W	2/10	2 (0.15h) 0.3h,0.7h) 1 top EZ, 1(~0.85h)	Falcon, MAPR, MIPs, quad-Doppler network along track, lidars.	WCR down	-4.89,12.12	Warmer to north and generally moist to south. $\partial v / \partial y < 0$.	1-0 2-0 3-0?
25 May	W	10/12	1 (2zi) 1 ~zi	MIPs, Falcon, lidars.	Good comp. S-Pol hum field with KA	-1.79,1.69	Warm to north, moist to south, and there is horizontal variability on 30 km-scale; satellite shows thin cloud or smoke in morning, some ci in afternoon possible.	1-0 to 21Z 2-0 to 18Z; blip at 19 3-Rnet reduced
29 May	W	5/14	4(~0.7zi) 4(~0.4zi) 2 > EZ.	DOWs Along track, Homestead, Falcon, P3 moisture map		0.97,4.82	Warmer, deeper BL N side. Wet S, dry N. Clouds to west shade northern stations.	1-0 2-0 3,10-influenced by clouds.
7 June	W	7/13	6 (0.7 zi)	Falcon (DIAL+HRDL), P3, DOWs, MIPs, Mobile Rad Extra ISS	No Heiman. Significant Variability BL depth due to weak cap.	3.45,10.06	Pattern less clear. Mostly warmer north, pattern becoming slightly more established with time. Higher variance near north end suggests that BL shallower, but could mean more entrainment penetrates downward. Will have to check WCR. Driest air above BL I've seen (we thought Licor wasn't working)	1-0 2-0 3-0 Clear.

IHOP King Air Boundary Layer Heterogeneity Flights – Central Track

Date	Track	65 m legs	Other Heights	Other Measurements	Comments	65mWind(m/s)	Horizontal Variability	Cloud
21 May	C	6/7	1 (0.6h)*	P3, Falcon	Wheat mature.	-3.53,10.09	Warmer to W. Drier to west, pattern becomes more distinct with time. There are actually horizontal discontinuities in last leg at 70 m.	4-<0.1 thin ci 5-<0.1 cu 5 <0.1 cu
31 May	C	7/10	3 (0.7h).	Falcon (but it had temperature problems)	Haze layer, less distinct than 30th; W warmer and moister	0.67,6.55	Warmer to West. Drier to west for some legs. BL appears deeper to west.	Smooth Rnet on 7-9; satellite shows. Hazy. Few patches Ci, few forced Cu E end of track.
6 June	C+	0/12	3(0.3h.0.8 0.55h, >h)	Falcon (with DIAL and HRDL)	No Heiman. Vrbl BL depth. Warmer W	2.01,4.93	Warmer to west, moisture pattern less clear.	4-6 all look clear. Haze, cu east of track.
16 June	C	8/12	2 (0.7h), 1 (0.5h), 1 (0.3h).	P3 for comparison and water-vapor field; Lehr. ISS sdgs 15, 18, 21 UT	Lightest winds. ML top const. ELDORA saw BL structure.	-0.78,-0.28	θ_{min} in the middle, q_{max} W then middle. $\frac{\partial u}{\partial x}$ >0. Legs 10 and 11, u_x concentrated around θ_{min} and q_{min}.	4-6 nearly clear, Satellite confirms scat cu humulis

IHOP King Air Boundary Layer Heterogeneity Flights – Eastern Track

Date	Track	65 mlegs	Other Heights	Other Measurements	Comments	65mWind(m/s)	Horizontal Variability	Cloud
27 May	E	8/15	7 in EZ	P3 flew over track between 1724 and 1841	Lots of clouds, very low BL.	-1.81,5.24(W to E only)	Consistently warmer to west. Starts out moister to west, but as boundary layer grows and gets deeper to the west, the BL actually becomes dry to the west. On leg 11, the transition is abrupt. Changes on same scale in U.	All 3 – thin clouds am, more in pm. Sci report say alto cu and ci. 9 have more clouds am.
30 May	E	8/16	5 (0.7 h) 2 > h.	DC-8+Proteus moisture map; NWS sdgs	Distinct haze layer at top of BL	-1.39,3.69	Warm to west, dry to west by 4th leg (1720), q pattern more definite with time (deeper BL?) Hazy	Some ci, a few forced cu. 7,8,9 all smooth Rnet during flight legs. Hazy
17 June	E	6/18	6 (0.7h) 6 (0.15h)	Lehr drops 4 sondes around pattern.	Warmer W part of the track.	2.73,7.17	Warm to west, moist west (first half), dry extreme E (last ¼), u_x <0 early, ~0 later.	All ~0 to 1800, then small dips Cu hu streets.
20 June	E	5/16	5(0.7h) 4(0.4h) 2(0.15h).	King Air only.	Warmer W part of the track.	-1.60,5.08	Warm W 1/3; usually dry. Some pattern in u. Scat cu, more to east.	7, 8, 9 all have a few clouds, most at 9.
22 June	E	11/19	6(0.7h) 1(h, 0.4h)	King Air, P3, Lehr (4 sondes)	Roll vortices on satellite picture.	-0.22,9.42	Start: warm and dry to E Leg 4 and after: warm and dry to W. Entrainment layer looks closer W (shallower BL?). Initial warmth in E could be due to more clouds in W	7,8,9 all have a few clouds. Sat. suggests periodic dry slot to W. Hazy

Table Summarizing Weather Conditions

	Western Track					Central Track				Eastern Track				
Criterion	19M	20M	25M	29M	7J	21M	31M	6J	16J	27M	30M	17J	20J	22J
Cloud Amount ++ = clear + = nearly clear - = few clouds	+	- (3, 10)	+	- (3,10)	++	-	++	++	++	-	++	+-	-	-
Haze							Y	Y			Y			Y
Wind direction at 60 m	177	158	133	191	199	161	186	202	70	161	159	201	162	179
Wind speed at 60 m	13.2	13.1	2.5	4.9	10.6	10.7	6.6	5.3	0.8	5.5	3.9	7.7	5.3	9.4
Horizontal Variability Θ	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Horizontal Variability q*		Y	Y	Y		Y	Y-		Y	Y	Y	Y	Y	Y
Horizontal Variability u_s**		Y							Y			Y		Y

*Typically the moisture evolution is more complex than temperature evolution.

**u_s is along-track component of the wind. This was not systematically looked for, but most days seemed to have little along-track convergence, in contrast to CASES-97.

Other notes: There is a Landsat image over the Eastern track the morning of 22 June.
No day has really extensive clouds.

Onsite Times

Day	Tstart	Tend	Day	Tstart	Tend	Day	Tstart	Tend
19 May	1703	1905	21 May	1837	2044	27 May	1600	1841
20 May	1722	1938	31 May	1744	2035	30 May	1643	1951
25 May	1701	2021	6 June a	1654	1947	17 June	1647	2020
29 May	1640	2024	6 June b	2122	2248	20 June	1642	2036
7 June	1650	1959	16June	1645	2024	22 June	1708	2116