First results from the BUFEX Dec 05 field experiment

31 December 2005

Preliminary results only
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Figure 1: Flinders University's Small Environmental Research Aircraft (SERA) at Lake King, Western Australia. The aircraft type is a Diamond Aircraft HK36TTC-ECO Dimona.
Figure 2: Flight pattern on 15 Dec 2005 (purple lines) – Legs: EW, 12, 34, 56, 78, 90. Data shown in following figures.
Figure 3 to Figure 8 show the following data (top to bottom):

- air temperature in °C
- specific humidity in g/kg
- CO₂ in ppm
- vertical wind in m/s
- horizontal wind components in m/s and as arrows
- sensible heat flux in W/m² averaged over 300m distance
- latent heat flux in W/m² averaged over 300m distance
- flux of CO₂ in ?mol/m²/s
- NDVI (normalised differential vegetation index)
- IR surface temperature in °C
- vegetation height in m
- terrain height and flying altitude in m

Abscissae are either UTM Northings (Figure 3) or UTM Eastings (other figures). Data is plotted at 50Hz sampling rate.

Data sources are:

- Oxford Technical Solutions RT3003 integrated IMU/GPS for position, altitude, ground speed, attitude and angular rates
- BATProbe with FUST for wind and temperature
- LiCor 7500 for humidity and CO₂
- Heimann KT15 for IR surface temperature
- FIAMS VegMeter for NDVI
- Riegli LD90 laser altimeter for vegetation height, terrain height and flying altitude above terrain

Data was processed using the RAMF Version 12 Software package.

All data from sensors and systems installed on the ARA/CAR/Flinders University’s Diamond Aircraft HK36TTC-ECO Dimona SERA research aircraft shown in
Figure 3: Data from transect 3_ew1. For explanations, see text.
Figure 4: Data from transect 3_a12.
Figure 5: Data from transect 3_a34
Figure 6: Data from transect a56
Figure 7: Data from transect 3_a78
Figure 8: Data from transect 3_a90