

C-130 IMPEX / INTEX-B Flight Summary

date: 15 May 2006 (20060515)
flight number: 12
Take-off: 16:47:53 GMT
Landing: 23:38:10 GMT

Objectives:

- transit from Seattle to JeffCo to complete a successful IMPEX
- compare with the NASA DC-8
- sample old Asian pollution over Colorado above more recent US pollution

Instrument status.

All instruments, except SABL and FODIRS, were operating.

Flight summary.

The air was clean on ascent out off Seattle and toward the rendezvous point with the DC-8, as predicted by the models. While CO, NO_y, O₃, and particles were all less than usually encountered, a dust layer was sampled near 18 kft.

The comparison started at about 18:18 GMT at an altitude of 17 kft. The air was fairly clean, although dust and some organics were occasionally sampled. At the end of the 15-minute leg, the DC-8 and C-130 descended through very clean air to ~6 kft, where DIAL had seen a more polluted layer. The last 15-minute leg was at 1 kft above the ocean, where variable concentrations of many pollutants were encountered. Thus, the comparison spanned from quite clean air to air containing enhanced levels of a wide range of trace constituents.

After the comparison ended, the C-130 dipped down to 500 ft and found constant, enhanced levels of trace constituents that were observed to be variable at 1000 ft during the comparison. CO was above 140 ppbv, O₃ was ~70 ppbv, and NO_y was ~0.8 ppbv.

The C-130 ascended to the east through clean air. For much of the trip across the continent toward Colorado, clean air with a few relatively weak layers was sampled above the more polluted North American boundary layer.

Within an hour of landing, the C-130 climbed to 23 kft in search of aged Asian pollution that had been predicted by the models. A fairly uniform pollution layer was encountered above 21 kft, with CO (125-130 ppbv) enhanced relative to the surrounding air, but NO_y, NO_x, and particles fairly low. On descent, the C-130 passed through air that contained about 30-40 ppbv less CO. As the C-130 continued to descend, it passed into the North American boundary layer and increased pollution.

Overall summary. The transit was successful; the comparison with the DC-8 appears to have been successful; the sampling of aged Asian pollution may have been successful. A complete analysis will be needed to know for sure. But there is no doubt that IMPEX was a success. Thanks to all.