

C-130 IMPEX / INTEX-B Flight summary

date: 24 April 2006 (20060424)

flight number: 3

Take-off: 17:59:30 GMT

Landing: 23:15:10 GMT

Objectives:

- fly by and compare with Mt. Bachelor
- sample Seattle pollution within a regional context, thus providing a comparison to Asian pollution
- sample potential recirculated Asian pollution at higher altitudes above Seattle

Instrument status:

All instruments, except SABL, were operating for the first two hours of the flight. After that all instruments but one were operating.

Flight summary.

The flight's early part was devoted to flying by Mt. Bachelor, which is about an hour south of Seattle. An in-transit vertical profile was taken in Washington south of Tacoma, achieving the maximum altitude of 17.5 kft at the Washington/Oregon border. Haze was abundant up to about 6 kft. Ozone exceeded 100 ppbv above 16 kft in a dry layer. The fly-by of Mt. Bachelor's summit (9100 ft) was well executed and successful. Dan Jaffe reported that at the time of the fly-by, the air was still from the free troposphere and not upslope air.

Back in the Seattle area, the first curtain east of the city uncovered a broad plume of high CO and NO_y but modest O₃ at 3000 ft and to a lesser extent at 5500 ft. The last leg at 12.5 kft was in the type of air encountered during the flights to and from Mt. Bachelor. The second curtain to the west of Seattle, which legs at 2000 ft, 5500 ft, and 12,500 ft, had less pollution that was observed to the east of Seattle. The third curtain farther to the west was abandoned in favor of another 2000-ft curtain to the west of Seattle along the same track as before, but now ~1 hour later, a 3000-ft leg to the east of the city on the same track as before, and a 5500-ft leg along the same track but then returning to Paine Field.

A newer but somewhat aged Seattle pollution plume was encountered in the bottom legs south of downtown Seattle to both the east and west, although more strongly to the east. An older plume was encountered at the low legs both east and west to the north of Seattle's downtown. The mixed layer at Paine Field seemed to be about 3500 ft at 18:20 and at about 2000 ft at 23:10.

The first two objectives were met; the third may have been. Most investigators reported that they obtained interesting and highly variable measurements of several atmospheric constituents.