

Flight Report: DC-8 flight 4, 4 April 2008

This mission was the first ARCTAS sortie by the DC-8 from Fairbanks, and the east-bound leg of the first Thule suitcase trip. Primary objective was to make a timed spiral under OMI in a BrO hotspot ($68^{\circ} 18' \text{ N}$, $100^{\circ} 30' \text{ W}$) followed by an extended boundary layer run across the hot spot. Chemical forecasts indicated that west of the spiral we would be sampling air with Asian origin, and near Thule after the boundary layer run we should encounter North American air masses.

Profiling enroute to the spiral point consisted of sequential 15-minute legs at 33, 20, 10, 3, 15 and 22 thousand foot (K ft) pressure altitudes before ascending to 37 K ft to set up the spiral. The 33 and 37 K ft legs were both above the tropopause, at the top of the spiral we were in an intrusion and O_3 exceeded 600 ppb. Pollution tracers were elevated in several layers west of the spiral, but the plumes were not exceedingly strong. A notable exception was the 15 K ft run with high levels of SO_2 and aerosol sulfate. During the 3 K ft run (1000 feet AGL) just prior TOGA and PTRMS reported large enhancements in a large number of light NMHC.