

TC⁴ DC-8 Science Flight

28 July 2007

All times given in UT

General Information

Flight date – 28 July 2007

Flight description – Dust sampling; DC-8 alone (no ER-2)

Flight duration – 6.5 hours

Instruments operating: 2DS, APR-2, AVOCET, CAFS, CIMS, CPI, CVI, DACOM, DIAL, DLH, FastOz, LARGE, LASE, MMS, NO, PALMS, PIP, REVEAL, RICE, SAGA, SSFR, TD-LIF, WAS

Flight Log

Takeoff: 12:51:07

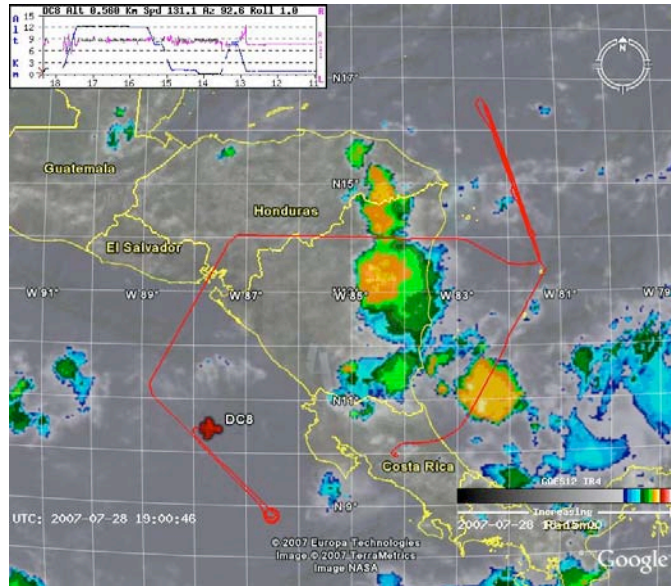
Landing: 19:21:46

Weather Observations

Clear over SJO. Convective systems building along Caribbean coast. Fair weather cumulous and cirrus overhead along N-S leg in Caribbean. West across the Nicaragua/Honduras border, there was cirrus at 40 kft off east coast, and mostly clear at flight level over land. Cloud deck below at ~3 km altitude. Clearing to the west. Mostly clear during Pacific tracks. Low cloud on approach to SJO.

Flight Profile

Spiral out over SJO. Head east at 24 kft. Descend to the boundary layer at south end of Atlantic run heading north. At north end, climb to 40 kft and fly to south end to observe the dust layer identified by the lidars. At south end, climb to 24 kft and fly to the north end. At north end, ascend to 40 kft and continue to south. Head across the Nicaragua/Honduras border to the Pacific. Head south at 40 kft. Spiral at south end to 4 kft. Head back north at 4 kft, ascending to 5 kft at north end. Return to SJO with a short level at 1 kft in the marine boundary layer.



Instrument Notes

- All instruments functioning nominally at start.
- CIMS single quad did not get data for first 2 hours; triple worked fine.
- NO had high background.
- PALMS had a short computer freeze.
- LARGE was shut off briefly during sampling at 4 kft on the Pacific to investigate a potential overheating problem.

Science Notes

- DIAL observes dust at ~2 km altitude on both Atlantic and Pacific. Optical depths considerably higher on the Atlantic.
- Relatively high cirrus on leg to east. Sea salt/sulfate in CVI residual on low level. Mixed dust / sea salt on 4 kft leg.
- Relatively high ozone throughout free troposphere, including in cirrus.
- Cirrus at 40 kft – mixed dust/sulfate.