

TC4 DC8 Science Flight: July 21, 2007 Tentative Flight Plan

Flight Scientists: P. Wennberg, Mark Schoeberl

Sortie: TBD

Pilot: Bill Brockett

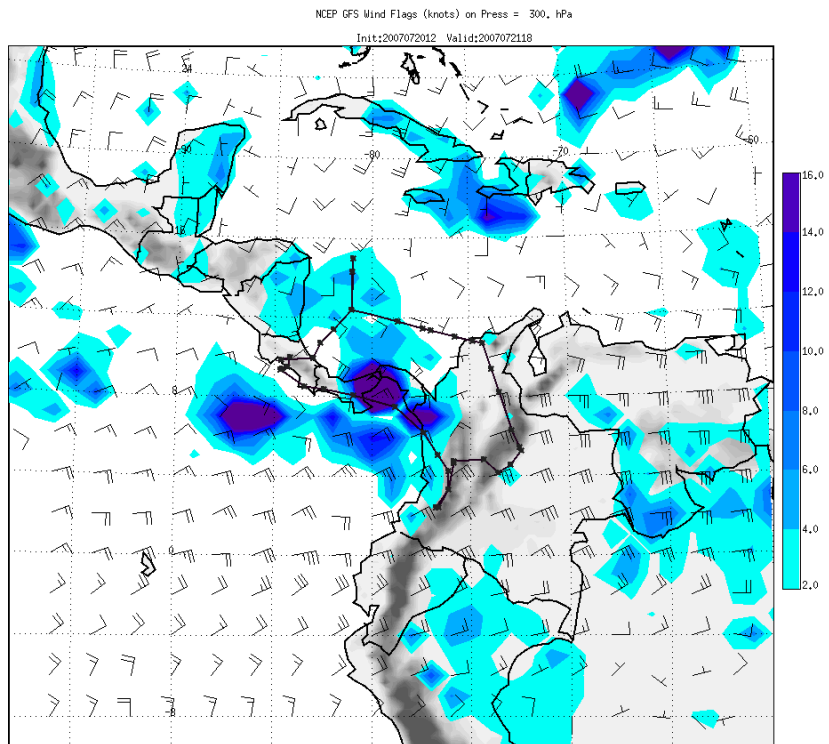
Takeoff (SJO): 1200 UTC

Landing (SJO): 1950 UTC (1:50 PM local)

Duration: 7:50

Objectives:

1. Sample marine boundary layer off western coast of CR
2. In situ sampling of convective remnants and lightning NO_x over the bight of Panama.
3. LIDAR observations of volcanic plume of Nevado del Hulia in Columbia.
4. In situ sampling of volcanic plume (assuming it is located).
5. Profile over Vanguardia air field east of Andes Mountains in Columbia north of the city of Villavicencio (<http://en.wikipedia.org/wiki/Villavicencio>) to evaluate methane columns (see next page) and biomass burning influence. Low level leg in boundary layer.
6. LIDAR observations east of CR to observe aerosol (Sahara?).
7. In situ profile of aerosol / boundary layer prior to return to SJO.



Total Precip.; Winds at 240 mb valid 18Z on flight day.

Flight track. We will do a boundary layer run before heading over the bite at max altitude (35Kft). We will run west of the Columbia volcanoes looking for the plume from Nevada del Huila. If we see the plume we will do an in situ profile before heading East. We will do a spiral over Villavicencio, followed by a boundary layer run to the north. We will head to the East of Costa Rica using the LIDAR to identify the aerosol plume expected from Africa. We will do a spiral in situ sample and boundary layer run before heading back into SJO. Tabulated way points and altitudes are not available at this time.

Nevado del Huila

Colombia



Volcano types:

Stratovolcano
Caldera
Lava domes

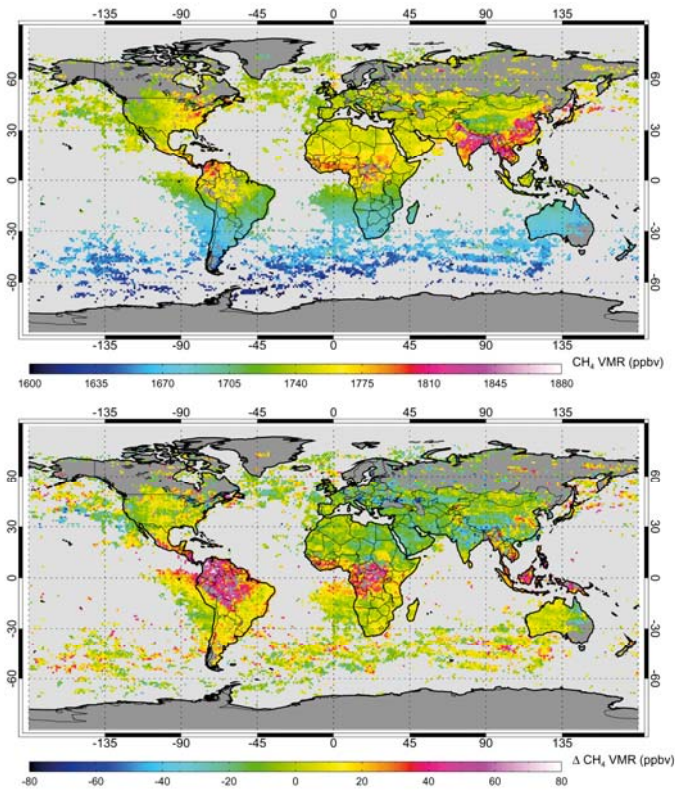
Summit Elev: 5365 m

Latitude: 2.93°N

Longitude: 76.03°W

Nevado del Huila, the highest active volcano in Colombia, is an elongated N-S-trending volcanic chain mantled by a glacier icecap. The 5365-m-high andesitic-dacitic volcano was constructed within a 10-km-wide caldera. Volcanism at Nevado del Huila has produced six volcanic cones whose ages in general migrated from south to north. Two glacier-free lava domes lie at the southern end of the Huila volcanic complex. The first historical eruption from this little known volcano was an explosive eruption in the mid-16th century. Two persistent steam columns rise from the central peak, and hot springs are also present.

Tropical Methane is a currently a “hot topic”. Column observations of Methane from SCIAMACHY (Frankenberg et al., 2005) suggest that tropical forests produce large amounts of methane. It has been suggested that plants directly emit methane. Northwest South America is the epicenter of the anomaly.



Methane concentrations for August–November 2003 (top). Emissions are high in India and parts of China due to agricultural activities but also over tropical rainforests with still unknown reason. This phenomenon becomes obvious when measurements are compared with model calculations. In the bottom panel the difference between retrieved and modeled densities is shown with discrepancy 'hot spots' in Indonesia, Central Africa and South America. (images: Frankenberg et al. 2005)

http://atmos.caf.dlr.de/projects/scops/sciamachy_book/

sciamachy_book_figures/chapter_10/fig_10_14.jpg