Aircraft: DC-8 - AFRC (See full schedule)

Flight Number: 150111

Payload Configuration: Operation IceBridge 2014

Nav Data Collected: Yes

Total Flight Time: 11.9 hours

Submitted by: Frank Cutler on 10/27/14

Flight Segments:

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<td>Michael Studinger</td>
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Funding Source: Bruce Tagg - NASA - SMD - ESD Airborne Science Program

Purpose of Flight: Science

Comments: Pole Hole West at 1,500 ft AGL

Flight Hour Summary:

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Flight Reports began being entered into this system as of 2012 flights. If there were flights flown under an earlier log number the flight reports are not available online.

Related Science Report:

OIB - DC-8 10/26/14 Science Report

Mission:
OIB

Mission Summary:

F06 Pole Hole 88 West

Accomplishments

- Low-altitude survey (1,500 ft AGL) along 88ºS.
- ATM, albedo, KT-19, snow, Ku-band, MCoRDS, gravimeter, and DMS were operated on the survey lines.
- Ramp pass at Punta Arenas after takeoff at 1,300 ft AGL.
- Satellite tracks: samples half of all future ICESat-2 tracks and half of all CryoSat-2 tracks
- Repeat Mission: new mission.

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<th>Data Volume</th>
<th>Instrument Issues/Comments</th>
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<td>ATM</td>
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<td>CAMBOT</td>
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<td>DMS</td>
<td>yes</td>
<td>55.6 GB</td>
<td>UPS for Applanix failed causing 2 minutes of data outage shortly after takeoff. DMS will use ATM Applanix data for processing. Recorded 4,321 frames.</td>
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<td>None. The first 84 files (out of 624) were not written to disk resulting in a 14 minute data loss at the beginning of the survey line.</td>
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Mission Report (Michael Studinger, Mission Scientist)

Today's mission plan is a new design, and its purpose is to sample the surface topography at the southern apex of half of all planned ICESat-2 orbits. Specifically, this flight samples the ground tracks on the western side of the Pole. In this way, we can provide "ground truth" for every ICESat-2 orbit with just two flights, including Pole Hole 88º East as well as this one. The vertical stability of the surface must also be quantified for this approach to succeed, and this flight provides a baseline measurement for this purpose. In addition to this 88ºS also covers all the CryoSat-2 orbits.

Today's decision to fly the western part of the circle around 88ºS was by far the easiest weather call on this deployment. We quickly eliminated most other areas except for Hull Land during the weather brief this morning. Satellite images, GFS and AMPS model, as well as the forecast from the Chilean Antarctic Base Eduardo Frei, indicated scattered low clouds at 1,500 ft AGL and therefore conditions that are high risk for a science flight, in particular given the terrain in the survey area. South Pole on the other hand was sky clear with perfect conditions. This was the first "baseline" mission of the land ice flights today, the mission plans that have the highest priority. We have been to the geographic South Pole twice this week and have flown a complete 360° circle along 88ºS and covered not only all future ICESat-2 orbits, but also all current CryoSat-2 orbits. This is a tremendous data set for future ICESat-2 calibration and validation as well as for CryoSat-2.

We flew directly over South Pole at 19:01:40 UTC at 32,000 ft MSL. We turned off all radars and LiDARs 60 nm before the Pole and switch them back on 60 nm behind the Pole in order to avoid potential interference with any measurements on the ground. When we reached the corner of the Clean Air Sector (ASMA #5) the radar altimeter showed us at 15,000 ft AGL and climbing, and therefore well above the 6,000 ft AGL overflight restriction.

LiDAR data collection started at 10/26/2014 17:04 UTC and ended at 18:45 UTC. In total we collected 1.7 hours of LiDAR data. ATM recorded 100% surface returns in perfect conditions.

Images:

**Figure 1: Today's trajectory in yellow.**

![Figure 1: Today's trajectory in yellow.](image1)

[Read more](#)

**Figure 2: Obligatory DMS image from 32,000 ft MSL of Scott-Amundsen Station.**

![Figure 2: Obligatory DMS image from 32,000 ft MSL of Scott-Amundsen Station.](image2)

[Read more](#)

Submitted by: Michael Studinger on 10/26/14
Source URL: https://espo.nasa.gov/seac4rs/flight_reports/DC-8_10_26_14_-_10_27_14