DC-8 10/15/12

Aircraft: DC-8 - AFRC (See full schedule)
Flight Number: 130107
Payload Configuration: OIB Antarctic 2012
Nav Data Collected: Yes
Total Flight Time: 11.6 hours
Submitted by: Frank Cutler on 10/15/12
Flight Segments:

From:	SCCI	**To:**	SCCI
Start:	10/15/12 11:59 Z	**Finish:**	10/15/12 23:35 Z
Flight Time:	11.6 hours		
Log Number:	138003	**PI:**	Michael Studinger
Funding Source:	Bruce Tagg - NASA - SMD - ESD Airborne Science Program		
Purpose of Flight:	Science		
Comments:	Depart SCCI at 1159Z. Perform calibration ramp pass to the SE and overfly targets at 1208Z at 2000 AGL. Climb to cruise block altitude of FL310 to FL350. Collected high altitude ATM data during 0.4 hours of the transit flight while over peninsula region. Descend to 1500 ft AGL to cross first science waypoint at 1621Z. Fly circuitous path over Foundation Lakes area. Overfly last low altitude waypoint at 1917Z. Climb to FL400 for transit to Punta Arenas continuing to collect high altitude ATM and Gravimeter data during first 1.3 hours of return leg. Perform 15 deg. bank to bank maneuvers for radar instruments calibration during return transit. Xchat with school children in class rooms across USA during mission. Land SCCI at 2335Z.		

Flight Hour Summary:

	138003
Flight Hours Approved in SOFRS	200
Total Used	215.7
Total Remaining	-15.7

138003 Flight Reports

Date	Flt #	Purpose of Flight	Duration	Running Total	Hours Remaining	Miles Flown
10/02/12	130101	Check	5	5	195	
10/03/12	130102	Check	3.2	8.2	191.8	
10/08/12 - 10/09/12	130103	Transit	10.7	18.9	181.1	
10/10/12	130104	Transit	3.2	22.1	177.9	
10/12/12	130105	Science	11.2	33.3	166.7	
10/13/12 - 10/14/12	130106	Science	10.9	44.2	155.8	
10/15/12	130107	Science	11.6	55.8	144.2	
10/16/12 - 10/17/12	130108	Science	11.8	67.6	132.4	
10/18/12	130109	Science	11.6	79.2	120.8	
10/19/12 - 10/20/12	130110	Science	10.2	89.4	110.6	
10/22/12	130111	Science	11.2	100.6	99.4	
10/23/12 - 10/24/12	130112	Science	11.3	111.9	88.1	
10/25/12	130113	Science	11.4	123.3	76.7	
10/27/12	130114	Science	11.4	134.7	65.3	
10/28/12 - 10/29/12	130115	Science	11.3	146	54	

11/01/12 - 11/02/12	130116	Science	12	158	42
11/02/12 - 11/03/12	130117	Science	10.6	168.6	31.4
11/04/12	130118	Science	11	179.6	20.4
11/06/12 - 11/07/12	130119	Science	9.4	189	11
11/07/12 - 11/08/12	130120	Science	11.5	200.5	-0.5
11/09/12	130121	Transit	3.3	203.8	-3.8
11/10/12 - 11/11/12	130122	Transit	11.6	215.4	-15.4
11/11/12	130123	Transit	0.3	215.7	-15.7

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 10/15/12 Science Report

Mission: OIB
Mission Summary:

F03 Foundation Lakes 01

Accomplishments

- Low-altitude survey (1,500 ft AGL) along the Foundation Ice Stream and Support Force Glacier and several subglacial lakes nearby.
- Completed all planned survey lines.
- Collected additional high-altitude gravity data over the Ronne Ice Shelf on transits to and from the main survey area.
- Collected additional high-altitude ATM and DMS data over the Ronne Ice Shelf and the Antarctic Peninsula.
- ATM, MCoRDS, snow and Ku-band radars, gravimeter, and DMS were operated on the survey lines.
- Conducted ramp pass at 2,000 ft AGL at Punta Arenas airport after takeoff for DMS, ATM, snow and Ku-band radar instrument calibration.
- Hosted several question and answer sessions on x-chat during the flight with 104 students and 7 teachers from across the United States.
- Satellite Tracks: none
- Repeat Mission: none

Science Data Report Summary

Instrument	Operated	Data Volume	Instrument Issues/Comments
ATM	yes	38 GB	None
DMS	yes	62 GB	None
Snow Radar	yes	340 GB	None
Ku-band Radar	yes	340 GB	None
MCoRDS	yes	710 GB	None
KT-19	yes	20 MB	None
Gravimeter	yes	1.2 GB	None
DC-8 On-board Data	yes	40 MB	None

Mission Report (Michael Studinger, Mission Scientist)

Our plan last night was to fly the high-priority sea ice mission in the Weddell Sea called "Endurance", which is

the most important of all planned sea ice missions on this deployment. The AMPS model indicated excellent conditions for almost the entire Weddell Sea area. Furthermore, the CryoSat-2 orbit geometry and timing would have allowed for a near-synchronous underflight of the CryoSat-2 spacecraft. It is fairly rare that all these conditions are met on a single day. At the weather brief this morning in the met office at the airport we got a forecast for the Weddell Sea that was drastically different from the AMPS model. We spent almost 25 minutes with a very experienced and skilled forecaster to understand the situation. Since we did not have a recent satellite image of the area and had to depend entirely on two contrasting forecast models we decided the risk of losing data was too high. We therefore adjusted our plans to collect data over a safer area. We were hoping to get a view into the Weddell Sea on today's transit into the survey area and will also download the satellite imagery for our daily post-flight analysis to help understand the differences in the various forecast models.

After we canceled the mission plan "Endurance" we decided to try a new high-priority land ice mission called "Foundation Lakes 01". The weather in the survey area was perfect. We were able to collect 0.4 hours of high-altitude data over the Ronne Ice Shelf with ATM and DMS from 33,000 ft. After descending into the survey area we collected data along Foundation Ice Stream. We then surveyed 13 subglacial lake locations that have been identified from changes in ice surface elevation over time by Ben Smith and colleagues based on ICESat data. The real-time display of MCoRDS data did not show any of the typical signatures of subglacial lakes over any of the sites, but we will need to wait until the data has been processed before any conclusions can be derived. We continued the flight along the Support Force Glacier before we started climbing to 40,000 ft for the transit home. ATM and DMS collected additional data over the entire Ronne Ice Shelf and a good part of the Antarctic Peninsula in cloud free conditions. We also collected gravity data at high altitude over the Ronne Ice Shelf. These gravity lines have the purpose of collecting additional low-resolution high-altitude gravimetry data over the Ross Ice Shelf to improve the poorly known bathymetry below the floating ice shelf.

Shortly after takeoff we flew a ramp pass at 2,000 ft AGL at Punta Arenas airport for ATM, DMS, and snow and Ku-band radar instrument calibration.

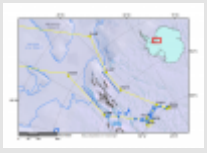
During today's flight we hosted several question and answer sessions on x-chat with a total of 7 teachers and 104 students (3rd, 5th and 6th graders) from classrooms across the US.

We got 100% of the planned survey lines and a very good amount of additional data on today's flight.

	Time (UTC)	Hours
Begin high altitude data collection	15:53	
Begin low altitude data collection	16:15	0.4
End low altitude data collection	19:19	3.0
End high altitude data collection	20:41	1.3
Total		4.7

Images:

Flight path of science mission #3



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Dufek Massif in the Pensacola Mountains seen from the Foundation

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View of the Neptune Range in the Pensacola Mountains

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Submitted by: Michael Studinger on 10/15/12

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