

Preliminary Science Flight Report

Operation IceBridge Antarctica 2011



Flight: F23
Mission: Middle Peninsula

Flight Report Summary

Aircraft	DC-8 (N817NA)
Flight Number	120127
Flight Request	128008
Date	Thursday, November 17, 2011 (Z), Day of Year 321
Purpose of Flight	Operation IceBridge Mission Middle Peninsula
Take off time	11:59:55 Zulu from Punta Arenas (SCCI)
Landing time	23:04:58 Zulu at Punta Arenas (SCCI)
Flight Hours	11.2 hours
Aircraft Status	Airworthy.
Sensor Status	All installed sensors operational.
Significant Issues	None
Accomplishments	<ul style="list-style-type: none"> • Low-altitude survey (1,500 ft AGL) over glaciers and grounding lines on the Peninsula. Completed entire mission as planned. • ATM, MCoRDS, snow and Ku-band radars, gravimeter, and DMS were operated on the survey lines. • Collected roll data from 26,000 and 32,000 ft during inbound and outbound transits for MCoRDS calibration. • Conducted one ramp pass (1,000 ft AGL) at Punta Arenas airport before landing.
Geographic Keywords	Antarctic Peninsula, Fleming Glacier
ICESat Tracks	Several 183-day ICESat tracks, which were first flown prior to the 2003 launch.
Repeat Mission	2008, 2009.

Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
ATM	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	58 GB	None
MCoRDS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2.3 TB	None
Snow Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	350 GB	None
Ku-band Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	350 GB	None
DMS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	100 GB	None
Gravimeter	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.3 GB	None
DC-8 Onboard Data	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	40 MB	None

Mission Report (Michael Studinger, Mission Scientist)

The main purposes of this mission are to fly approximations to the Peninsula grounding lines on parts of both the east and west sides, and to re-occupy many older flight lines as follows: (1) a number of ICESat ground tracks over the Dyer Plateau and one on the George VI ice shelf; (2) a pair of lines over the Fleming Glacier centerline, which feeds the remains of the Wordie Ice Shelf; and (3) several glacier lines at the south end of the Larsen-C. Most of these lines were first occupied by ATM/KU in 2002, and all were occupied during 2009 IceBridge. Parts of this mission were flown in 2010 as well, but persistent cloud cover reduced our ability to collect useable data.

We encountered precisely the conditions that were forecasted. Few and scattered clouds at low elevation in the north-east at the beginning of the survey did not pose a problem for the optical instruments or flight safety. At 20:00 Z at WP PGC21 we encountered low stratus clouds as expected. We expected the weather to deteriorate towards the end of the day and decided to launch since the primary purpose of these lines is the ice thickness. We were able to complete 88% of the planned lines in clear conditions.

In total we collected 6.9 hours of science data.

Considerable efforts by the pilots, the navigator, mission managers, and mission scientists were necessary to make sure we avoid the known wildlife locations near our planned survey route. We changed course and altitude several times to increase the buffer zone around listed wildlife locations.

Individual instrument reports from experimenters on board the aircraft:

ATM: Both systems worked well. 6.1 hours of science data collection.

MCoRDS: The MCoRDS system worked well.

Snow and Ku-band radar: The snow and Ku-band radars collected data along the entire line.

Gravimeter: Worked well.

DMS: DMS worked well.

DC-8 on board data: System worked well.

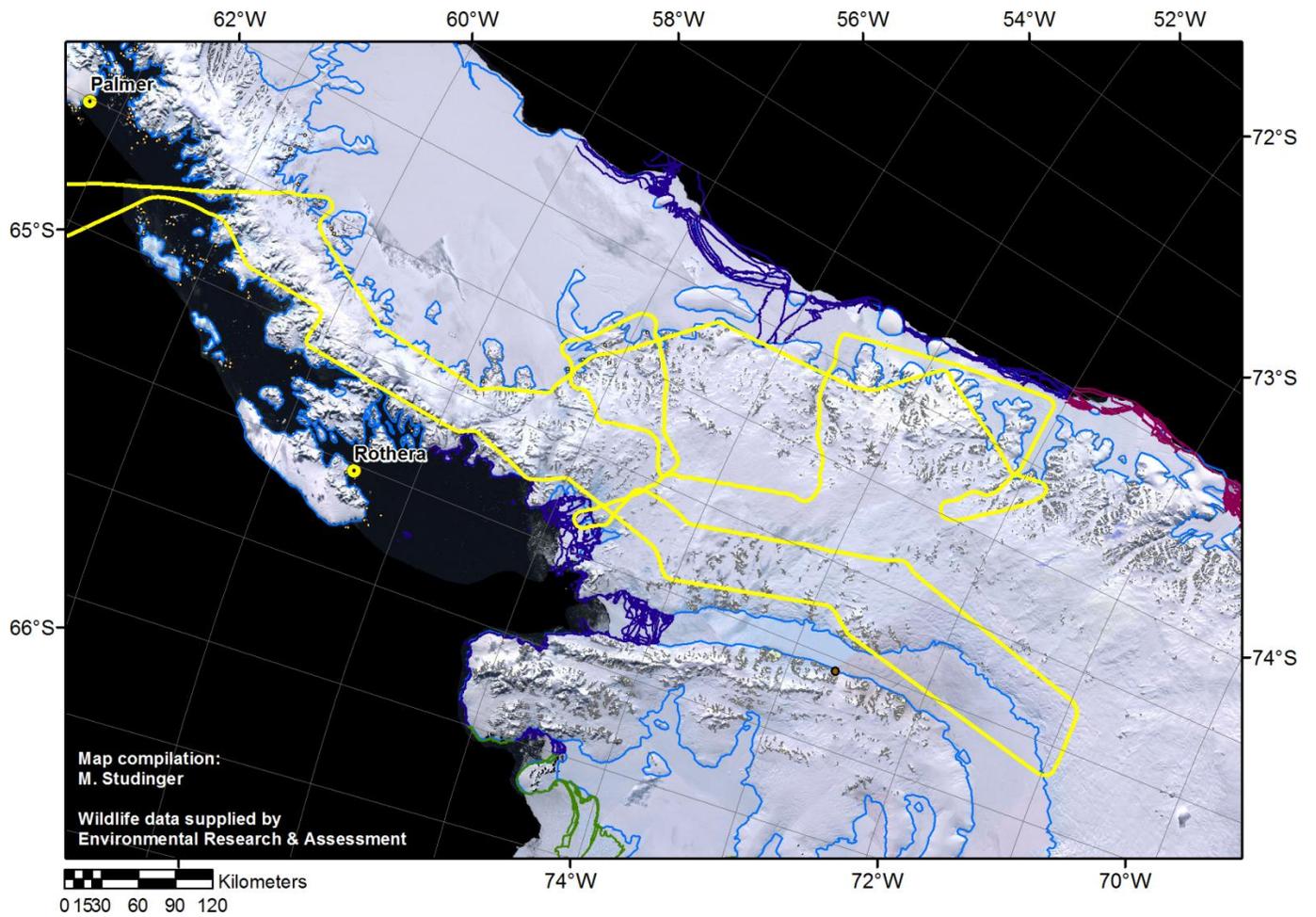


Figure 1: DC-8 trajectory of today's flight over the middle Peninsula. Background image is LIMA mosaic.