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# Preliminary Science Flight Report

## Operation IceBridge Antarctica 2011



**Flight:** F21  
**Mission:** North Peninsula

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### Flight Report Summary

<b>Aircraft</b>	DC-8 (N817NA)
<b>Flight Number</b>	120125
<b>Flight Request</b>	128008
<b>Date</b>	Monday, November 14, 2011 (Z), Day of Year 318
<b>Purpose of Flight</b>	Operation IceBridge Mission North Peninsula
<b>Take off time</b>	12:52:54 Zulu from Punta Arenas (SCCI)
<b>Landing time</b>	22:31:47 Zulu at Punta Arenas (SCCI)
<b>Flight Hours</b>	9.7 hours
<b>Aircraft Status</b>	Airworthy.
<b>Sensor Status</b>	All installed sensors operational.
<b>Significant Issues</b>	None
<b>Accomplishments</b>	<ul style="list-style-type: none"><li>• Low-altitude survey (1,500 ft AGL) over glaciers and grounding lines at the northern Peninsula. Completed entire mission as planned.</li><li>• Did pitch and roll maneuvers at 20,000 ft over water for MCoRDS calibration.</li><li>• ATM, MCoRDS, snow and Ku-band radars, gravimeter, and DMS were operated on the survey lines.</li><li>• Conducted two ramp passes (1,500 ft AGL) at Punta Arenas airport after takeoff for ATM and DMS and snow radar instrument calibration.</li></ul>
<b>Geographic Keywords</b>	Antarctic Peninsula
<b>ICESat Tracks</b>	None.
<b>Repeat Mission</b>	2002, 2009, 2010.

## Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
<b>ATM</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	54 GB	None
<b>MCoRDS</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.0 TB	None
<b>Snow Radar</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	300 GB	None
<b>Ku-band Radar</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	300 GB	None
<b>DMS</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	76 GB	None
<b>Gravimeter</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.3 GB	1 GPS unit failed
<b>DC-8 Onboard Data</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	40 MB	None

### Mission Report (Michael Studinger, Mission Scientist)

This flight combines centerline flights of glaciers that feed the old Larsen-A embayment (Drygalski), the old Larsen-B embayment (Hektor, Crane and Melville), the remnant Larsen-B ice shelf (Flask, Leppard and Starbuck), and the northern Larsen-C (Attlee), plus segments of the Peninsula grounding line on both the east and west sides, extending all the way to the northern tip. The grounding line segments are new for this season, while the northern glaciers were first occupied by ATM/KU in 2002 and several years since, including 2009 and 2010 IceBridge. Note, however, that the 2010 flight coverage was limited by marginal weather conditions.

Today was the first day on our deployment where conditions over the targets on the Peninsula justified a launch. For the most part we had excellent conditions, with the exception of the west side on the northern part of the Peninsula, where low clouds obscured the terrain. The main purpose of these lines was to get ice thickness and therefore the loss of laser altimeter and DMS data is not critical.

We had some time left after completing the planned lines and decided to fly another pass over Crane Glacier along a different, previously flown center line for ATM and at a different altitude to help MCoRDS radar processing. In total we collected 5.5 hours of science data.

Considerable efforts by the pilots, navigator, mission directors and scientists were made to make sure we stay far enough away from the numerous wildlife locations in the vicinity of the survey lines.

### Individual instrument reports from experimenters on board the aircraft:

**ATM:** Both systems worked well. 4.5 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. Due to the higher than planned flight elevation because of clouds on the west side of the Peninsula it was difficult to collect good data over this portion.

**Gravimeter:** Worked well. One out of three GPS units failed not impacting overall data collection.

**DMS:** DMS worked well.

**DC-8 on board data:** System worked well.

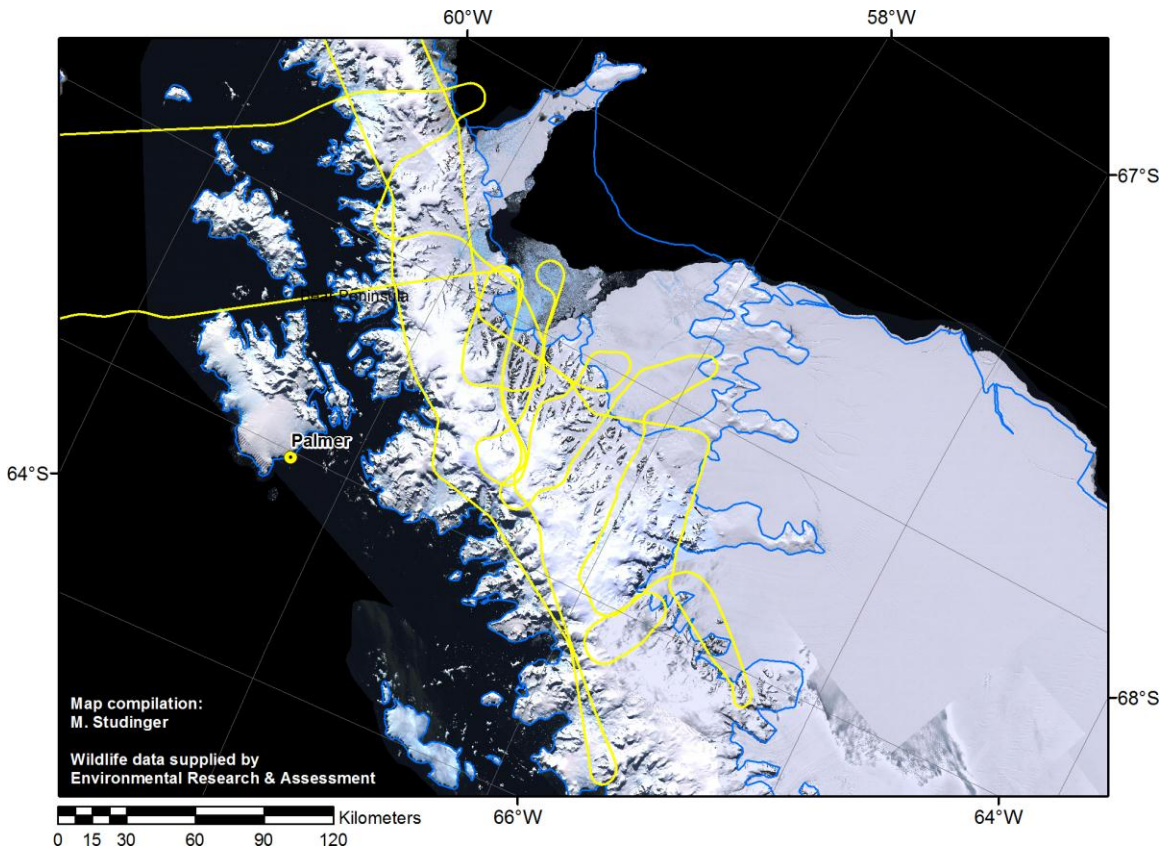
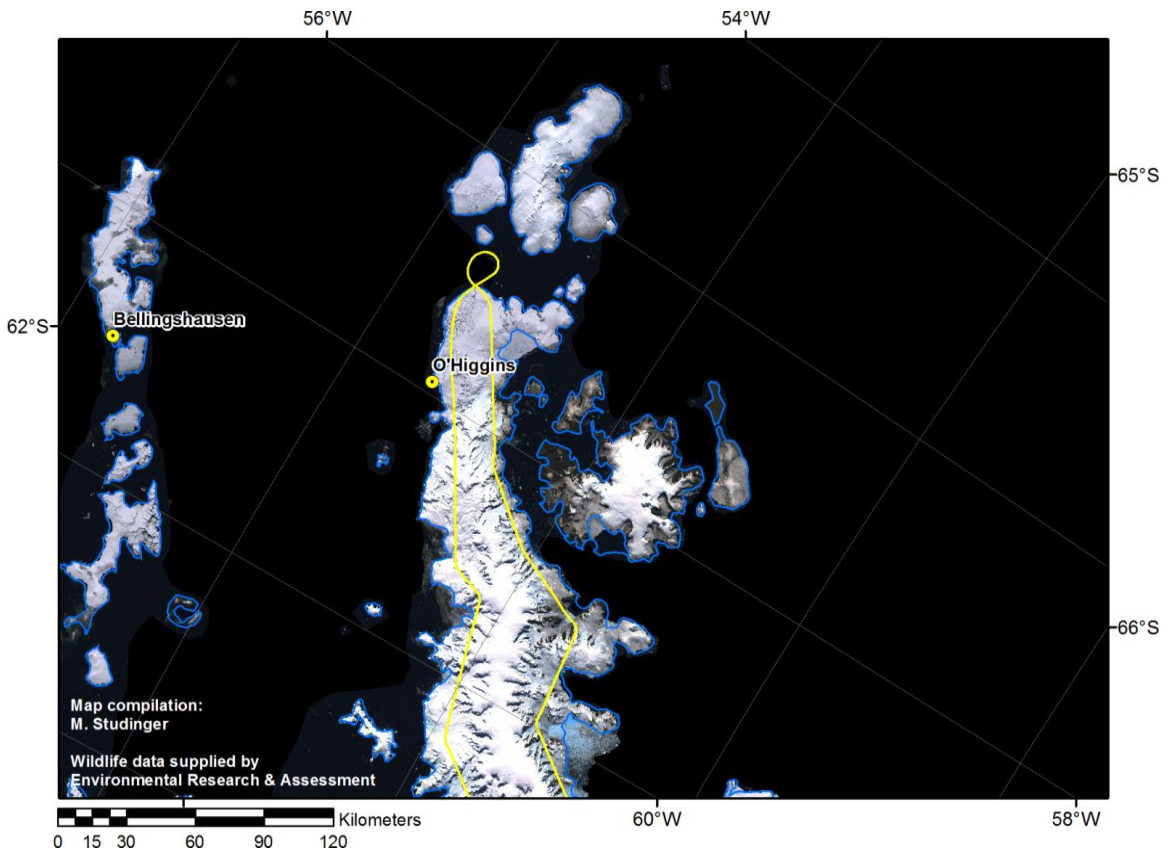


Figure 1: DC-8 trajectory of today's flight over the northern Peninsula. Background image is LIMA mosaic.