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# Preliminary Science Flight Report

## Operation IceBridge Antarctica 2011



**Flight:** F12  
**Mission:** Recovery Glacier Grounding Line 1

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### Flight Report Summary

<b>Aircraft</b>	DC-8 (N817NA)
<b>Flight Number</b>	120116
<b>Flight Request</b>	128008
<b>Date</b>	Saturday, October 29, 2011 (Z), Day of Year 302
<b>Purpose of Flight</b>	Operation IceBridge Mission Recovery Glacier Grounding Line 1
<b>Take off time</b>	11:59:46 Zulu from Punta Arenas (SCCI)
<b>Landing time</b>	23:31:50 Zulu at Punta Arenas (SCCI)
<b>Flight Hours</b>	11.6 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) of a grid over the Recovery Glacier grounding line area. Completed entire mission as planned.</li><li>• Added a low altitude cross line over a small tributary at the end of the mission.</li><li>• ATM, MCoRDS, snow and Ku-band radars, gravimeter, and DMS were operated on the survey lines.</li><li>• Conducted one ramp pass (4000 ft AGL) at Punta Arenas airport for ATM instrument calibration before landing.</li></ul>
<b>Geographic Keywords</b>	Recovery Glacier, Shackleton Range, Antarctica
<b>ICESat Tracks</b>	None.
<b>Repeat Mission</b>	None.

## 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 checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	33 GB	None
<b>MCoRDS</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.2 TB	None
<b>Snow Radar</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	180 GB	None
<b>Ku-band Radar</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	180 GB	None
<b>DMS</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	69.9 GB	None
<b>Gravimeter</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	320 GB	None
<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)

Today's mission is a new design. The intention is to map the grounding line area of Recovery Glacier using all IceBridge low-altitude sensors. The grid lines are spaced 10 km apart. We also added a low altitude cross line at the end of the survey that is located over the small tributary towards the Shackleton Range.

The weather forecast continued to show poor conditions over all remaining target sites, with the exception of the Recovery Glacier area. The entire transit from the Antarctic Peninsula over the Weddell Sea was clouded in as expected. We decided to fly Recovery GL 1, the first low priority of the deployment, since the weather in the Slessor area, which had a higher priority showed some remaining low clouds in the forecast and on the satellite image. We encountered perfect conditions over the Recovery area with almost no wind.

Known wildlife colonies in the survey area were at safe distance to the flight path of the DC-8.

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

**ATM:** The ATM lasers worked well and collected good data along the entire survey line.

**MCoRDS:** The MCoRDS worked well. There was a software crash during a turn.

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

**Gravimeter:** Worked well. No issues.

**DMS:** DMS worked well. No issues.

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

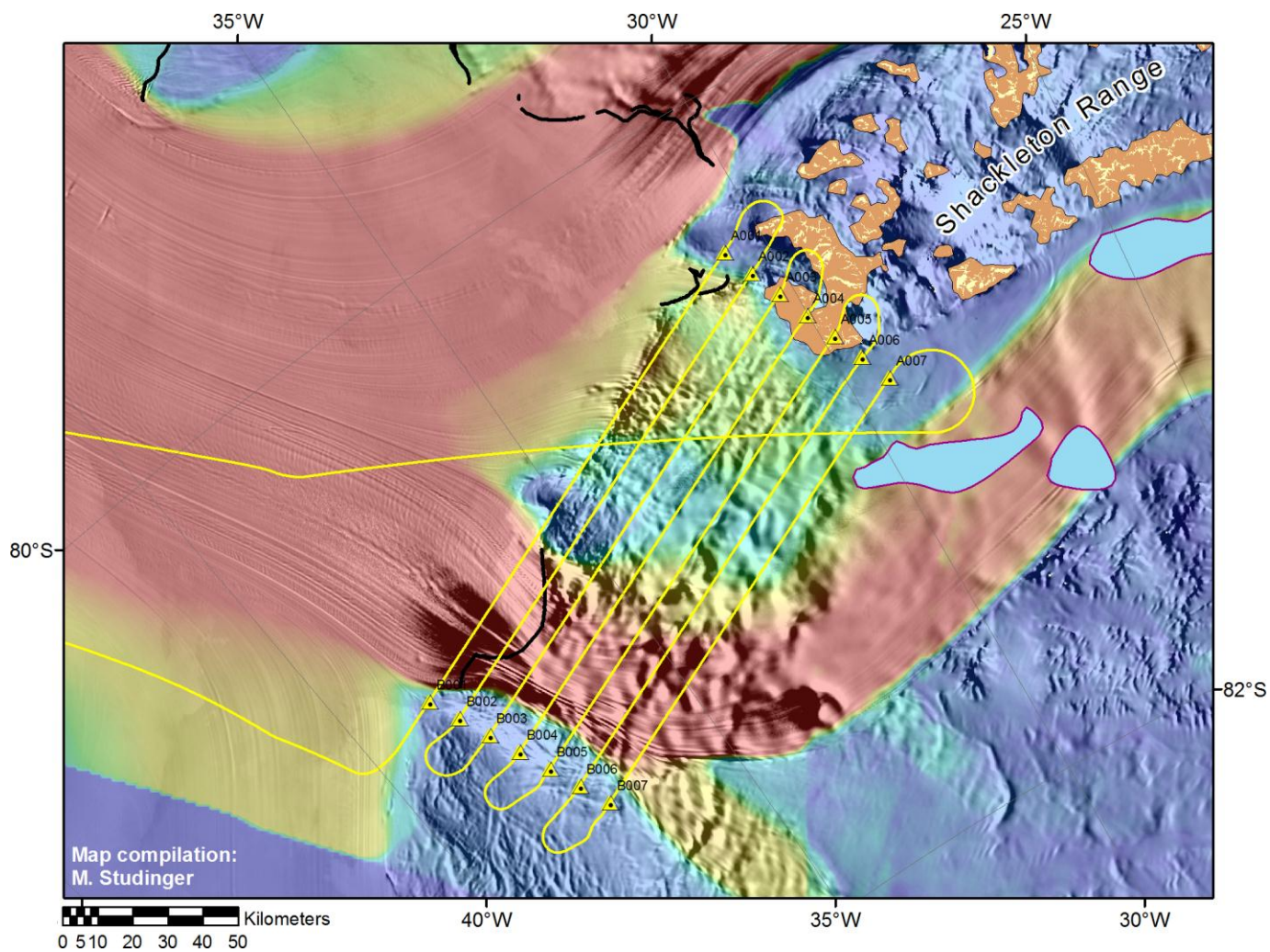


Figure 1: DC-8 trajectory over the Recovery Glacier grounding line area. Subglacial lakes are indicated by blue outlines. Background image is MODIS mosaic and ice surface velocity from InSAR.