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# Preliminary Science Flight Report

## Operation IceBridge Antarctica 2011



**Flight:** F10  
**Mission:** Sea Ice Seelye Prime

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### Flight Report Summary

<b>Aircraft</b>	DC-8 (N817NA)
<b>Flight Number</b>	120114
<b>Flight Request</b>	128008
<b>Date</b>	Tuesday, October 25, 2011 (Z), Day of Year 298
<b>Purpose of Flight</b>	Operation IceBridge Mission Seelye Prime
<b>Take off time</b>	11:53:54 Zulu from Punta Arenas (SCCI)
<b>Landing time</b>	23:16:53 Zulu at Punta Arenas (SCCI)
<b>Flight Hours</b>	11.5 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 two sea ice transects in the Weddell Sea. Completed entire mission as planned.</li><li>• ATM, snow and Ku-band radars, gravimeter, POS/AV, and DMS were operated on the survey lines.</li><li>• MCoRDS was not in operation on this flight due to the sea ice mission.</li><li>• Conducted two ramp passes (1500 ft AGL) at Punta Arenas airport after takeoff for DMS, ATM and snow and Ku-band radar instrument calibration.</li></ul>
<b>Geographic Keywords</b>	Weddell Sea, Antarctica, Cape Norvegia, Brunt Ice Shelf
<b>ICESat Tracks</b>	None.
<b>Repeat Mission</b>	Yes (2009, 2010 and 2011).

## 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"/>	70 GB	None
<b>MCoRDS</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A	None
<b>Snow Radar</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	400 GB	None
<b>Ku-band Radar</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	400 GB	None
<b>DMS</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	176 GB	None
<b>Gravimeter</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.5 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 an exact repeat of the IceBridge flight from 2009, 2010 and the 2011 mission we flew two weeks ago. The purpose is to measure gradients in sea ice freeboard and thickness along the "gate" connecting the tip of the Peninsula with Cape Norvegia. This gate is the line across which ice export is typically computed, and the export from this area is a major contributor to total ice volume exported into the Antarctic Circumpolar Current. The purpose of flying the same mission twice in one campaign is to measure temporal change in snow conditions and assess impact for snowmelt on radar data quality. We began our flight with two ramp passes for DMS at Punta Arenas airport in order to make sure we have daylight to illuminate the surveyed targets on the ramp.

We encountered a mix of clouds, fog and sunshine as expected which occasionally resulted in brief periods of data loss, not more than 5% of the total length.

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

**ATM:** The ATM systems worked well and collected good data. About 5% of the line was obscured by low-level clouds.

**MCoRDS:** The MCoRDS system was not operated on this flight due to the sea ice mission.

**Snow and Ku-band radar:** The snow and Ku-band radars collected data along the entire line. Frequent altitude changes required 4 different waveform setting that resulted in less than one minute loss of data for adjustments.

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

**DMS:** DMS worked well. No issues. Occasional clouds obscured the surface. 28,349 frames were collected.

**POS/AV:** Systems worked well. No issues.

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

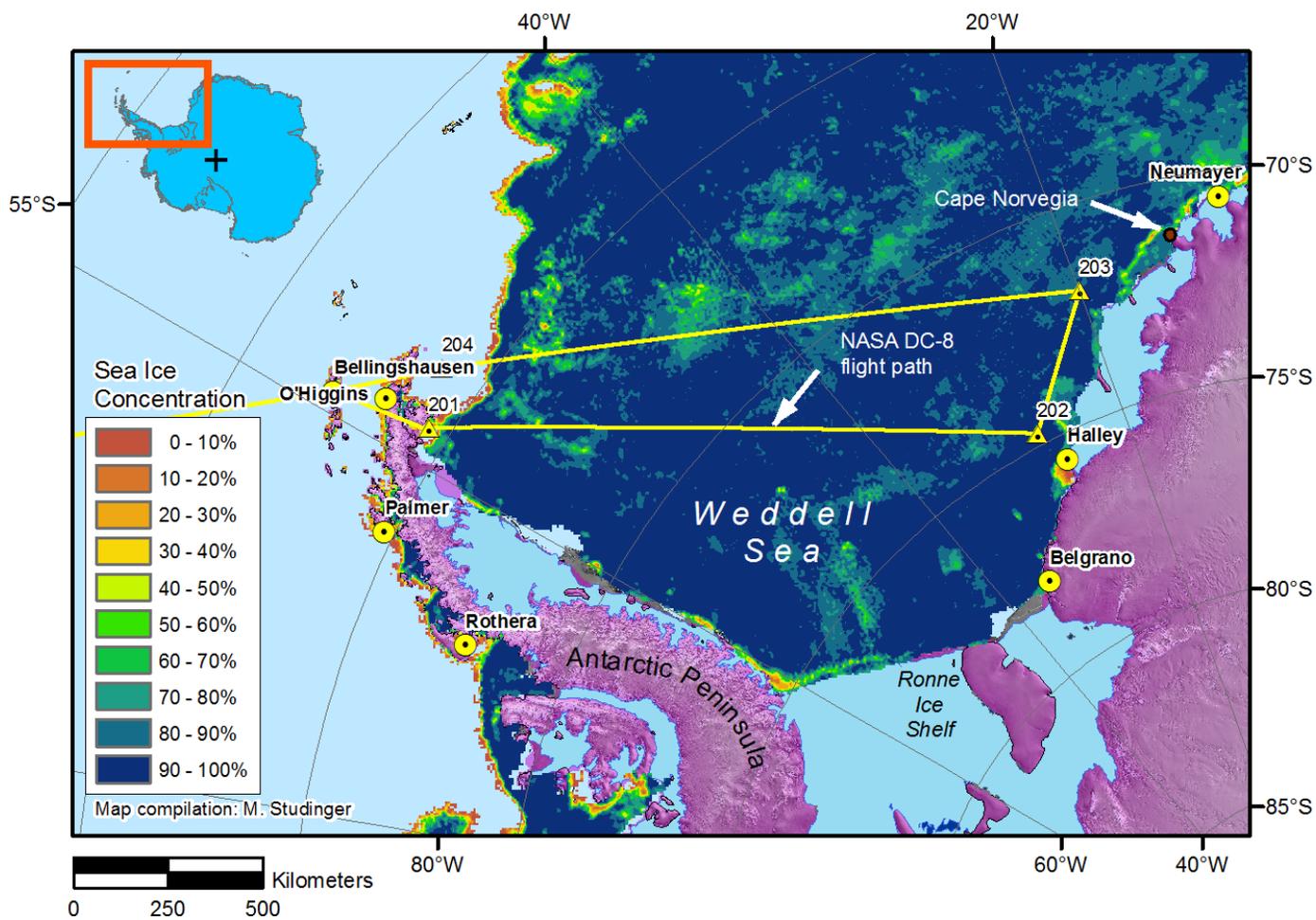


Figure 1: Sea ice mission plotted over sea ice concentration from AMSR-E data (Oct 4, 2011)