
Preliminary Science Flight Report

Operation IceBridge Antarctica 2011



Flight: F05
Mission: Sea Ice Weddell Sea – Twisted

Flight Report Summary

Aircraft	DC-8 (N817NA)
Flight Number	120105
Flight Request	128009
Date	Tuesday, October 18, 2011 (Z), Day of Year 291
Purpose of Flight	Operation IceBridge Mission Twisted (Weddell Sea)
Take off time	12:19 Zulu from Punta Arenas (SCCI)
Landing time	23:14 Zulu at Punta Arenas (SCCI)
Flight Hours	11.0 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) of three sea ice transects in the Weddell Sea. Completed entire mission as planned.• Surveyed two 110-km-long segments 3 times within one hour for sea ice drift estimates.• ATM, snow and Ku-band radars, gravimeter, and DMS were operated on the survey lines.• MCoRDS was not in operation on this flight due to the sea ice mission• Conducted two ramp passes (1500 ft AGL) at Punta Arenas airport for DMS, ATM, and snow and Ku-band radar instrument calibration after takeoff.
Geographic Keywords	Weddell Sea, Antarctica
ICESat Tracks	None.
Repeat Mission	None.

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"/>	54 GB	None
MCoRDS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A	None
Snow Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	315 GB	None
Ku-band Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	315 GB	None
DMS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	118 GB	None
Gravimeter	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	510 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)

Today's mission represents an alternative survey pattern over the Weddell Sea compared to previous missions, generally rotating (a.k.a. 'twisting') the Seelye Loop pattern northward, closer to sea ice edge. We also flew two 30 minute backtrack loops, in order to repeat portions of the track three times to enable determination of sea ice drift rates.

The weather over all other science targets was poor today. The GFS model indicated a layer of high clouds in the Weddell Sea that we could see in the satellite image. As in previous missions the model predicted low clouds along the Peninsula and clear conditions towards the east. Since the high clouds obscured the view to the ground we could not verify the model with satellite images. We encountered opposite conditions than expected. The area near the Peninsula was cloud free at our survey elevation and the eastern side was covered in sometimes dense clouds that we could not underfly. We collected good data along 85% of the line.

Individual instrument reports from experimenters on board the aircraft:

ATM: The ATM systems worked well and collected good data. About 15% of the line, or one hour, was obscured by low-level clouds.

MCoRDS: The MCoRDS system was not operated on this flight due to the high-altitude mission.

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. Occasional clouds obscured the surface.

DC-8 on board data: System worked well.

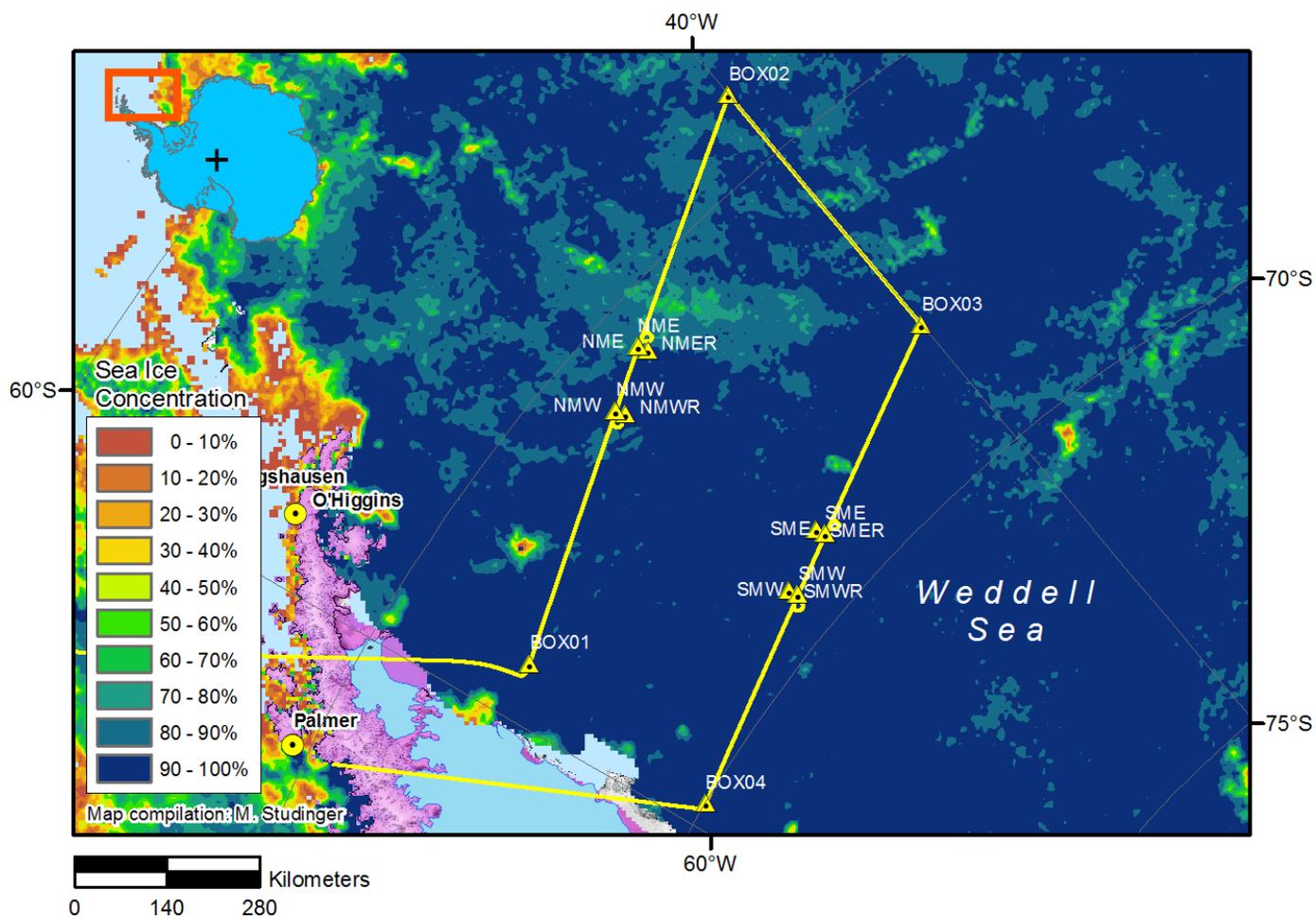


Figure 1: Sea ice mission plotted over sea ice concentration from AMSR-E data (Oct 4, 2011)