Preliminary Science Flight Report
Operation IceBridge Antarctica 2011

Flight: **F02**
Mission: **Sea Ice Weddell Sea – CryoSat-2**

Flight Report Summary

Aircraft	**DC-8 (N817NA)**
Flight Number	120105
Flight Request	128006
Date	Thursday, October 13, 2011 (Z), Day of Year 286
Purpose of Flight	Operation IceBridge Mission Endurance (Weddell Sea/CryoSat-2)
Take off time	12:33:28 Zulu from Punta Arenas (SCCI)
Landing time	23:38:02 Zulu at Punta Arenas (SCCI)
Flight Hours	11.2 hours
Aircraft Status	Airworthy.
Sensor Status	All installed sensors operational.
Significant Issues	None
Accomplishments	• Low-altitude survey (1,500 ft AGL) of three sea ice transects in the Weddell Sea. Completed entire mission as planned. • CryoSat-2 underpass in the southern Weddell Sea. • Surveyed a 135-km-long segement 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 (1000 and 1500 ft AGL) at Punta Arenas airport for ATM and snow and Ku-band radar instrument calibration. DMS did not record data because of low light conditions.
Geographic Keywords	Weddell Sea, Antarctica
ICESat Tracks	None. CryoSat-2 underpass.
Repeat Mission	Yes (2009, 2010).

Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
ATM	☑	☒	☒	52 GB	None
MCoRDS	☒	☒	☒	N/A	None
Snow Radar	☒	☒	☒	310 GB	None
Ku-band Radar	☑	☒	☒	310 GB	None
DMS	☑	☒	☑	131 GB	None
Gravimeter	☑	☑	☑	2 GB	None
DC-8 Onboard Data	☑	☑	☑	40 MB	None

Mission Report (Michael Studinger, Mission Scientist)

The first segment of today's mission is an exact repeat of the IceBridge missions in 2009 and 2010. The second and third segments have been changed to accommodate today's CryoSat-2 orbit. Cloud cover in the western Weddell Sea along the Peninsula was significantly worse than expected from the forecast and the satellite images, but we were able to underfly the clouds and got laser returns over 99% of the entire survey line. At around 17:21:52 Z CryoSat-2 passed overhead on a descending orbit.

Individual instrument reports from experimenters on board the aircraft:

ATM: The ATM systems worked well and collected good data. About 1% of the line 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.

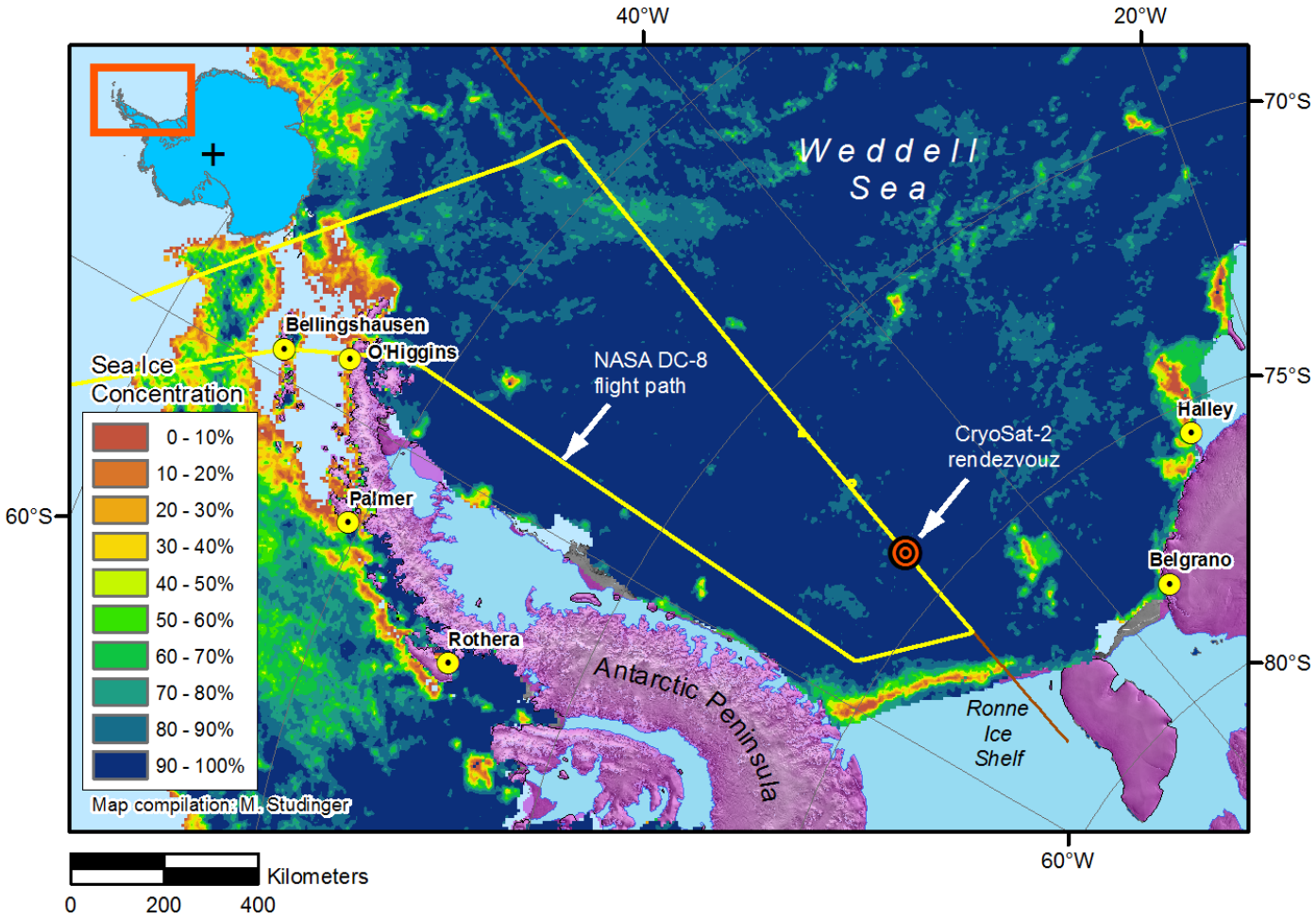

Figure 1: Sea ice mission plotted over sea ice concentration from AMSR-E data (Oct 4, 2011)