Preliminary Science Flight Report
Operation IceBridge Antarctica 2011

Flight: **F17**
Mission: **WAIS Cores**

Flight Report Summary

Aircraft	**DC-8 (N817NA)**
Flight Number	120121
Flight Request	128008
Date	Tuesday, November 9, 2011 (Z), Day of Year 311
Purpose of Flight	Operation IceBridge Mission WAIS Cores
Take off time	12:13:30 Zulu from Punta Arenas (SCCI)
Landing time	00:37:16 Zulu at Punta Arenas (SCCI) on November 10, 2011
Flight Hours	12.5 hours
Aircraft Status	Airworthy.
Sensor Status	All installed sensors operational.
Significant Issues	None
Accomplishments	• Low-altitude survey (1,500 ft AGL) of the Thwaites Glacier and ice core site in West Antarctica. Completed entire mission as planned. • Surveyed sea ice along two ICESat tracks over Pine Island Bay and the Amundsen Sea. • ATM, MCoRDS, snow and Ku-band radars, gravimeter, and DMS were operated on the survey lines. • Conducted one ramp pass (2000 ft AGL) at Punta Arenas airport after takeoff for ATM and DMS instrument calibration.
Geographic Keywords	Thwaites Glacier, West Antarctic Ice Sheet, Antarctica
ICESat Tracks	0035 and 1306.
Repeat Mission	Some AGASEA lines

Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
ATM	☑	☒	☒	50 GB	None
MCoRDS	☒	☒	☒	1.6 TB	None
Snow Radar	☒	☒	☒	275 GB	None
Ku-band Radar	☑	☒	☒	275 GB	None
DMS	☑	☒	☑	80 GB	None
Gravimeter	☑	☑	☑	2 GB	None
DC-8 Onboard Data	☑	☑	☑	40 MB	None

Mission Report (Michael Studinger, Mission Scientist)

This is a new mission, and its primary purpose is to connect ice core sites high on the West Antarctic Ice Sheet to better interpret accumulation patterns in the region using the snow, KU-band, and MCoRDS radars in conjunction with the data revealed by the cores themselves. Its secondary purpose is to occupy parts of two ICESat lines first flown by OIB during the 2009 TSK2 flight. This flight extends altimetry measurements from the outlet glaciers to the glacial divide to monitor changes in thinning. Finally, we extend ICESat tracks 0035 and 1306 well into the Amundsen Sea in order to collect sea ice measurements in waters close by the glaciers in this area.

Today's decision to fly war the most difficult weather call on this deployment. We encountered some clouds above us in the survey area and were able to underfly some low clouds. We finished 100% of the planned survey lines without any impact on ATM or DMS data quality.

Individual instrument reports from experimenters on board the aircraft:

ATM: Both systems worked well.

MCoRDS: The MCoRDS worked well. No data collection over most of the sea ice segments.

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.

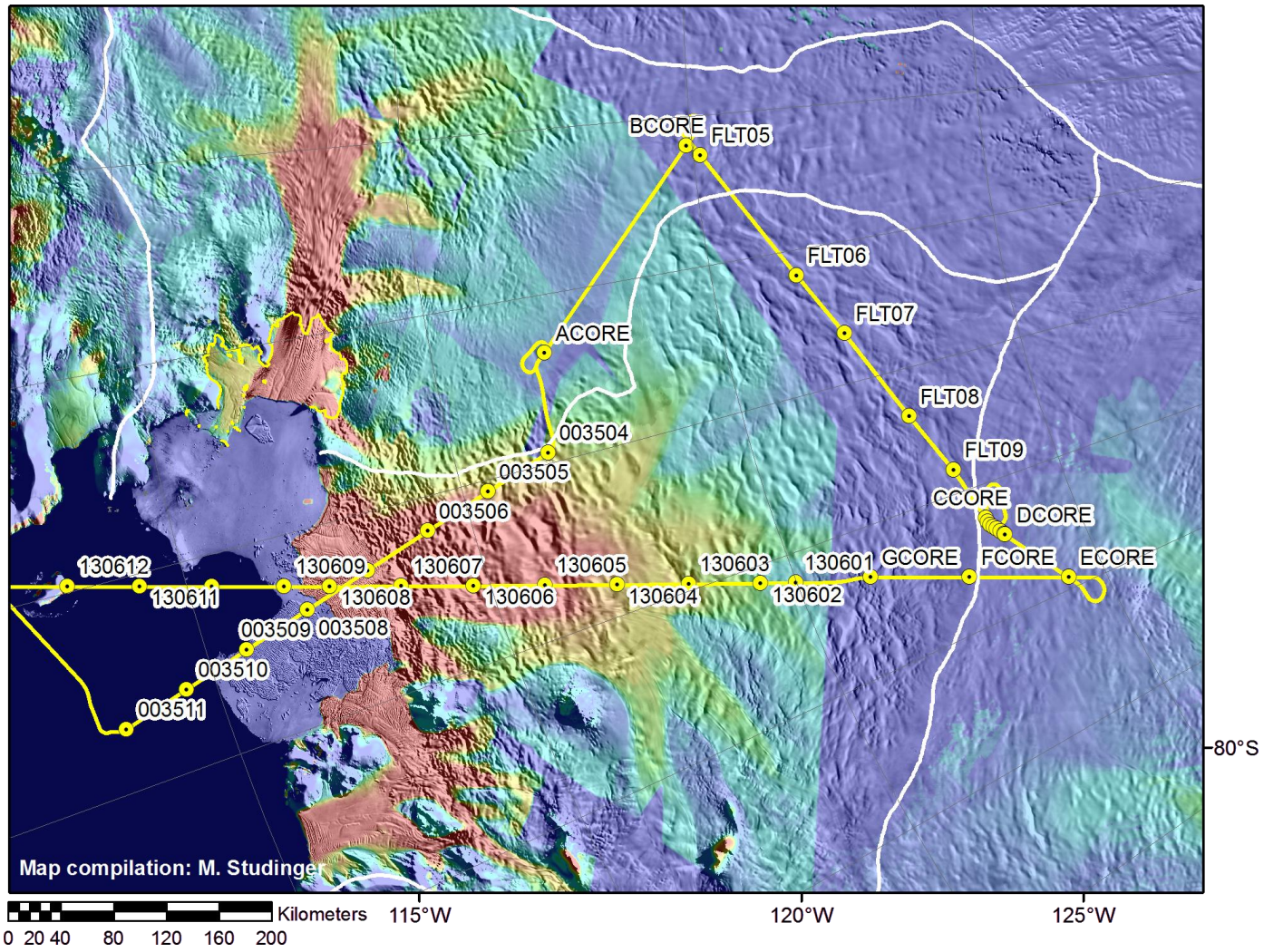

Figure 1: DC-8 trajectory (yellow) over the West Antarctic Ice Sheet ice cores and ICESat tracks. Background image is MODIS mosaic and ice surface velocity from InSAR. Ice divides are marked by white lines.