

Preliminary Science Flight Report

Operation IceBridge Antarctica 2011



Flight: F18
Mission: Thwaites Glacier Upstream 1

Flight Report Summary

Aircraft	DC-8 (N817NA)
Flight Number	120122
Flight Request	128008
Date	Friday, November 11, 2011 (Z), Day of Year 315
Purpose of Flight	Operation IceBridge Mission Thwaites Glacier Upstream 1
Take off time	14:11:25 Zulu from Punta Arenas (SCCI)
Landing time	01:07:31 Zulu at Punta Arenas (SCCI) on Saturday, November 12, 2011.
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 the Thwaites Glacier grounding line area including Haynes Glacier. Completed entire mission as planned. • Added two high altitude passes over the newly formed rift in Pine Island Glacier. • Collected additional high altitude data over sea ice in the Bellingshausen Sea on return. • ATM, MCoRDS, snow and Ku-band radars, gravimeter, and DMS were operated on the survey lines. • Conducted one ramp pass (1500 ft AGL) at Punta Arenas airport before landing for ATM instrument calibration.
Geographic Keywords	Thwaites Glacier, Haynes Glacier, Pine Island Glacier, Mount Murphy, 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"/>	42 GB	None
MCoRDS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.2 TB	None
Snow Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	210 GB	None
Ku-band Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	210 GB	None
DMS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	62 GB	None
Gravimeter	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.2 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)

This is a new mission, designed with three goals in mind. First, we occupy a number of seismic and insitu GPS survey lines established by Penn State University scientists along two flowlines of Thwaites glacier. Second, we extend the upstream coverage of the grounding line grid from the Thwaites Grounding Line 1 and 2 missions, in conjunction with the UTIG AGASEA grid. The combined coverage of all three missions will include a 2.5 km grid across the lower part of the grounding line, a 5 km grid upstream of that, transitioning to the 15 km UTIG grid. Third, the upper part of the longer flowline is flown twice, once in each direction, to facilitate instrument self-consistency checks.

We delayed takeoff by 2 hours to take advantage of a weather window. Conditions improved throughout the day and we were able to fly the entire line as planned. We also did two high altitude passes over the newly formed rift in Pine Island Glacier ice shelf. We collected high altitude data over sea ice on the way back.

The only penguin colony in the area on Bear Peninsula was too far away to cause any issues.

Individual instrument reports from experimenters on board the aircraft:

ATM: Both systems worked well. 4.7 hours of science data collection.

MCoRDS: The MCoRDS worked well.

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.

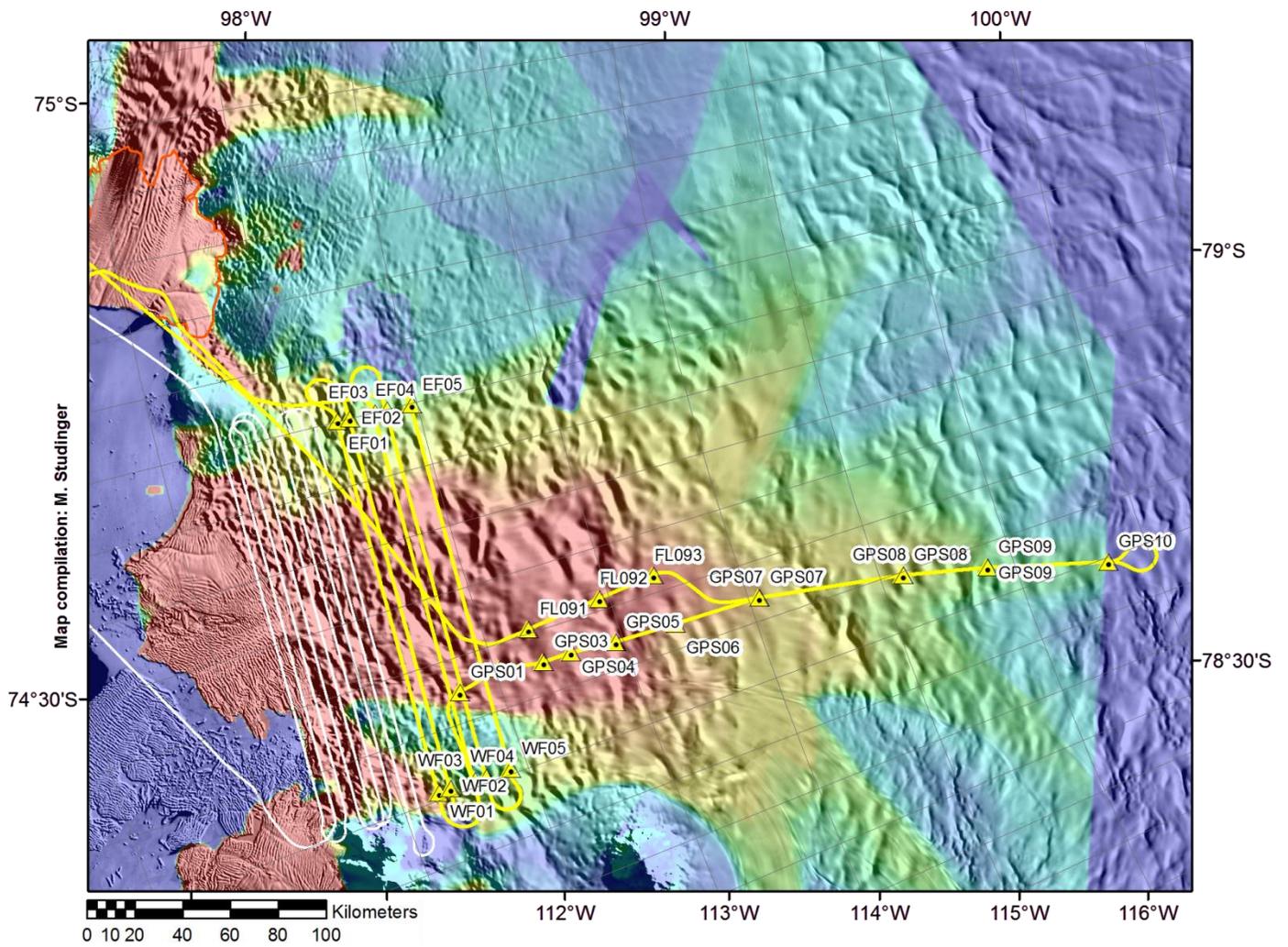


Figure 1: DC-8 trajectory over the Thwaites Glacier (yellow). Background image is MODIS mosaic and ice surface velocity from InSAR. White line indicates trajectory from Thwaites GL 1 mission.



Figure 2: DMS image of the apex of the rift.