Science Flight Report
Operation IceBridge Arctic 2012

Flight: F32
Mission: Umanaq and Magnetic Compensation

Flight Report Summary

Aircraft	**P-3B (N426NA)**
Flight Number	33
Flight Request	12P006
Date	Monday, April 30, 2012 (Z)
Purpose of Flight	Operation IceBridge Mission Umanaq and Magnetic Compensation
Take off time	12:30 Zulu from Kangerlussuaq (BGSF)
Landing time	18:25 Zulu at Kangerlussuaq (BGSF)
Flight Hours	6.1 hours
Aircraft Status	Airworthy.
Sensor Status	All installed sensors operational.
Significant Issues	None.
Accomplishments	• Low-altitude survey (1,500) of glaciers and ice sheet profiles. • Completed entire mission as planned. • Collected data for magnetic compensation offshore. • ATM, snow, Ku-band, accumulation radar, MCoRDS gravimeter, magnetometer, DMS and KT-19 skin temperature sensor were operated on the survey lines. • Pitch and roll maneuvers for snow and Ku-band radar. • Ramp pass 1,500 ft AGL at Kangerlussuaq.
Geographic Keywords	Umanaq
Satellite Tracks	None.
Repeat Mission	None.

Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
ATM	☑	☒	☒	38 GB	None
MCoRDS	☒	☒	☒	1.1 TB	None
Snow Radar	☑	☒	☒	560 GB	None
Ku-band Radar	☑	☒	☒	560 GB	None
Accumulation Radar	☑	☒	☒	120 GB	None
DMS	☑	☒	☒	33 GB	None
KT-19 Skin Temp.	☑	☑	☑	7 MB	None
Gravimeter	☑	☑	☑	1.5 GB	None
Magnetometer	☑	☑	☑	400 MB	None

Mission Report (Michael Studinger, Mission Scientist)

Today, the weather over almost all of southern Greenland was not suitable for a science mission. The only gap in the clouds was north of the Nusuaq Peninsula, in an area that is part of our last high priority mission. We had to delay takeoff in order for the visibility to improve at Kangerlussuaq airport. We modified the Umanag/Sarqardliupsermia Glacier mission plan, by nor flying the tomography grid over Sarqardliupsermia Glacier, because the weather there was poor and because we will get another chance at collecting tomography data from Thule. Also, the late takeoff would have made it very difficult to complete this mission. Instead, we flew a much shorter magnetic compensation box before we landed. We made good use of the very few holes in the cloud today.

Today we supplement the 2011 Umanaq 01/02 flights with an offset grid in the coastal area, which densifies the coverage in that region from 5 km to 1 km. The purpose of these lines is to map the bedrock of this area, which includes Store Glacier and several other outlet glaciers, in detail. The southern 10% of these lines have been covered in clouds as expected and could not be flown due to the rugged terrain in the area and poor visibility.

Individual instrument reports from experimenters on board the aircraft:

ATM: Both ATM systems worked well and collected good data along the entire line in mostly cloud free conditions. ATM collected a total of 3.4 hours of science data.

MCoRDS: The MCoRDS system worked well.

Snow and Ku-band radar: The snow and Ku-band radars worked well.

Accumulation radar: Worked well today.

Gravimeter: Worked well.

Magnetometer: Worked well and used the SGL data logger today without problems.

DMS: DMS worked well and collected 7164 frames.

KT-19 skin temperature sensor: System worked well.

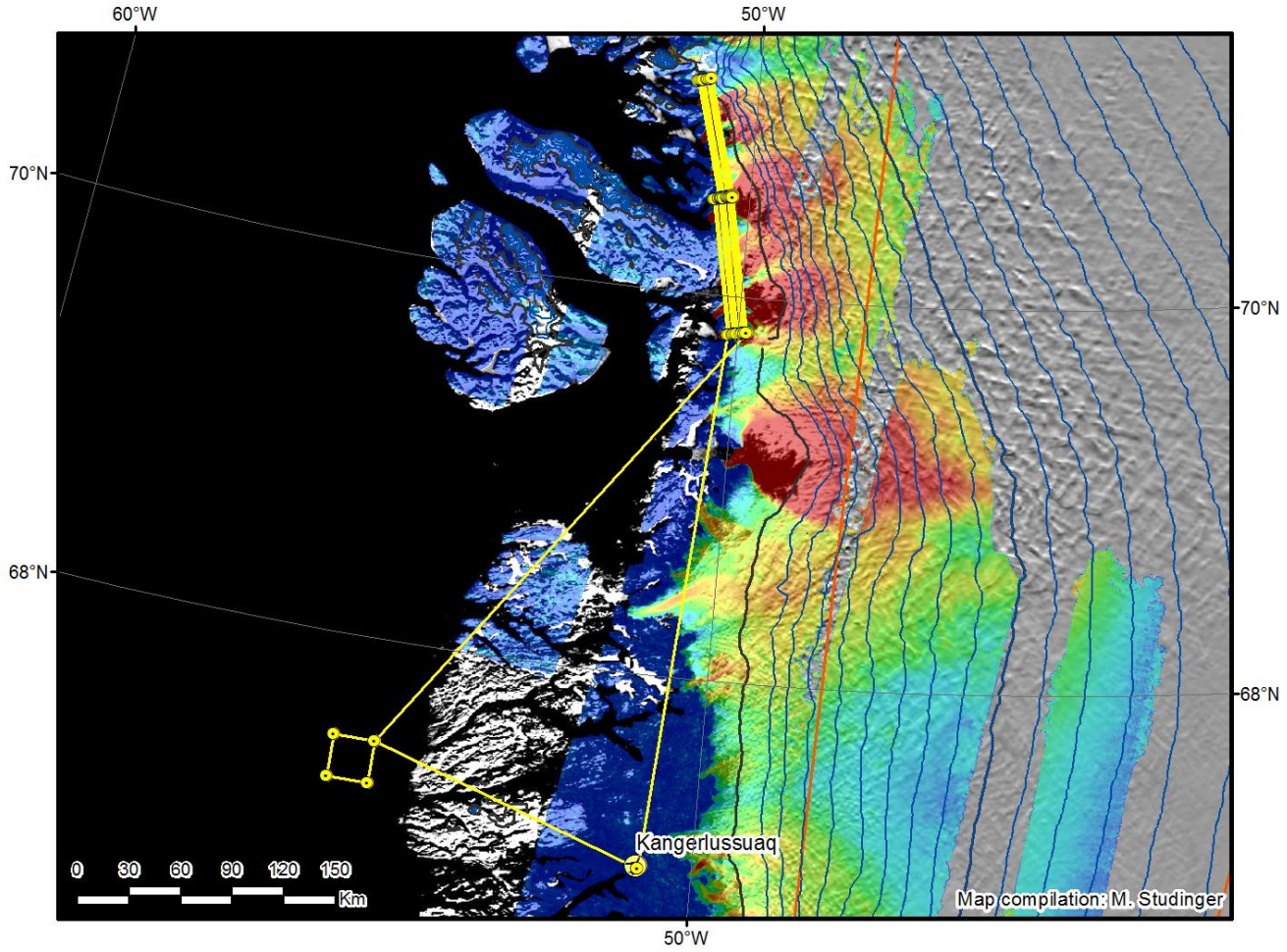

Figure 1: Today's mission plan (yellow).

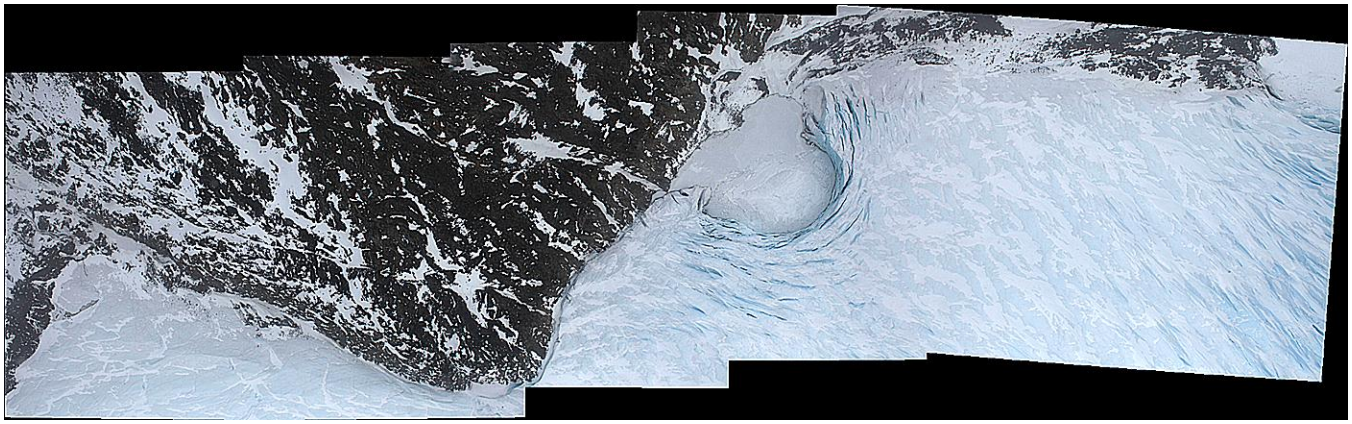

Figure 2: DMS mosaic. DMS/James Jacobson.