Science Flight Report
Operation IceBridge Arctic 2010

Flight: 03
Mission: Petermann 01

Flight Report Summary

Aircraft	**DC-8 (N817NA)**
Flight Number	100205
Flight Request	108013
Date	Wednesday, March 24, 2010 (Z), Day of Year 083
Purpose of Flight	Operation IceBridge Mission Petermann 01
Take off time	11:02:49 Zulu from Thule Air Base (BGTL)
Landing time	17:43:35 Zulu at Thule Air Base (BGTL)
Flight Hours	6.8
Aircraft Status	Airworthy
Sensor Status	All installed sensors operational.
Significant Issues	None
Accomplishments	• Low-altitude survey (1,500 ft AGL) of the upper catchment area of Petermann Gletscher, two flow lines along Peterman Gletscher, and one along the Heilpin and Tracy Glaciers, respectively. Two crossings of Humbolt Gletscher, one subparallel to 1,500 m surface elevation contour along ICESat track 324 and one subparallel to the 2,000 m surface elevation on a north Greenland master grid line. • Completed all of the planned survey lines. • ATM, DMS, POS/AV, MCoRDS and snow radar were operated throughout survey areas. • Ku-band radar was not operated. The team used the flight for trouble shooting the instrument. • Gravimeter operational throughout entire flight. • LVIS was not operated on this flight due to the low altitude mission. • Conducted one pass over runway at Thule Air Base at low elevation (2,000 ft) for ATM instrument calibration.
Geographic Keywords	Heilprin Gletscher,Tracy Gletscher, Petermann Gletscher, Humbolt Gletscher, Knud Rasmussen Land, Prudhoe Land, Thule
ICESat Tracks	324
Repeat Mission	Heilprin Gletscher,Tracy Gletscher, Petermann Gletscher. All 2009.

Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
ATM	☑	☒	☒	107.6 GB	None
MCoRDS	☑	☒	☒	2.4 TB	None
Snow Radar	☑	☒	☒	310 GB	None
Ku-band Radar	☒	☒	☒	N/A	System testing
LVIS	☒	☒	☒	N/A	Not operated on this flight
DMS	☑	☑	☑	142 GB	Camera replacement
POS/AV (510 + 610)	☑	☑	☑	2 GB	None
Gravimeter	☑	☑	☑	80 MB	None
DC-8 Onboard Data	☑	☑	☑	25 MB	None

Mission Report (Michael Studinger, Mission Scientist)

The main goal of today's mission is to map the bed of part of the upper catchment area of Petermann Gletscher. The grid lines are spaced 10-km apart and are aligned with the north Greenland "master grid". The mission also continues dh/dt monitoring of Petermann Gletscher by flying along two parallel flowlines which have been flown previously. These flowline-parallel survey lines will supplement field activities on the ground and help guide future ground-based work on Petermann Gletscher. We also reoccupied two lines first flown during the 2009 IceBridge deployment over two small glaciers north of Thule, known as Heilprin and Tracy Gletschers.

The weather was excellent during this flight with clear atmospheric conditions in all survey areas. There was some very light haze over Petermann Gletscher that did not impact the laser measurements. We have encountered the weather conditions that we had expected from the forecast at the weather briefing.

Individual instrument reports from experimenters on board the aircraft:

ATM: The ATM systems worked fine with the clear atmospheric conditions.

MCoRDS: The MCoRDS system worked well and collected 2.4 TB of data.

Snow and Ku-Band radar: Snow radar worked well and collected 310 GB of data. The team used the flight to trouble shoot the Ku-Band radar.

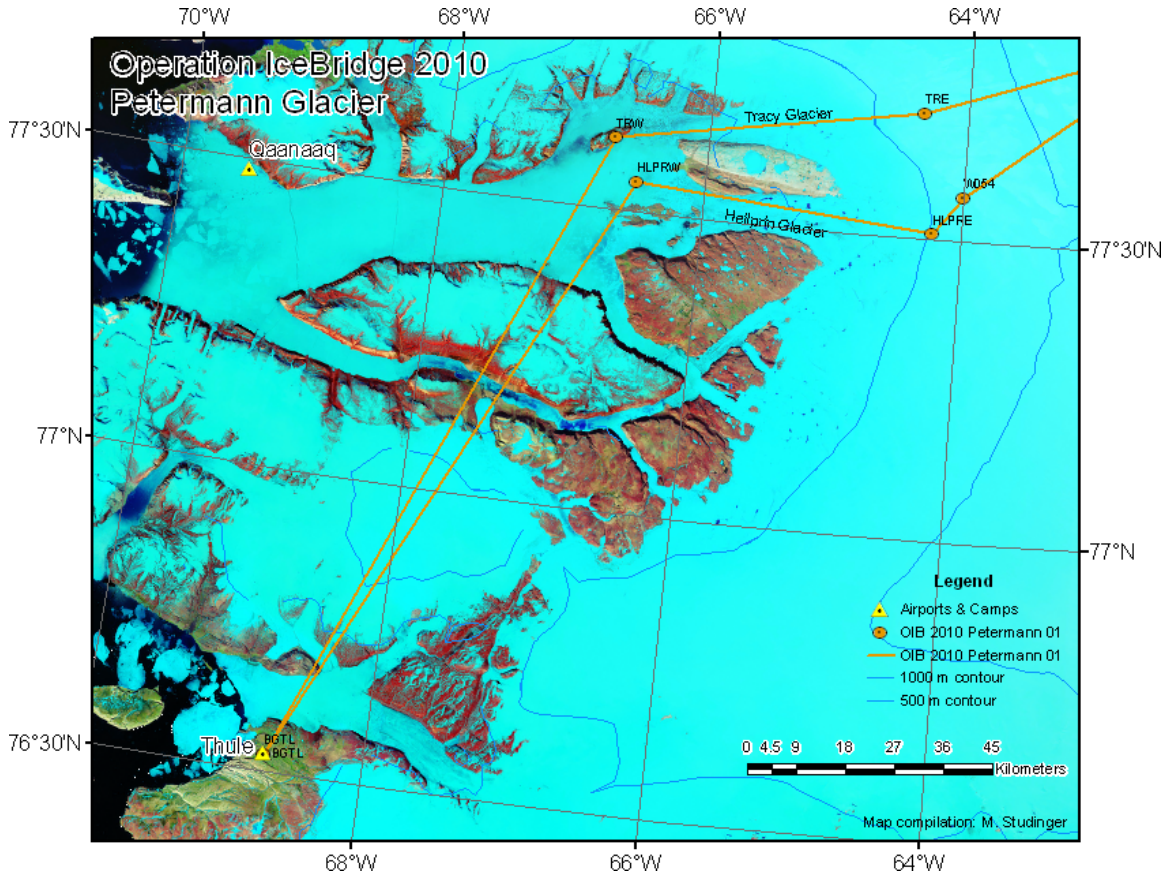
Gravimeter: System worked normally. No problems.

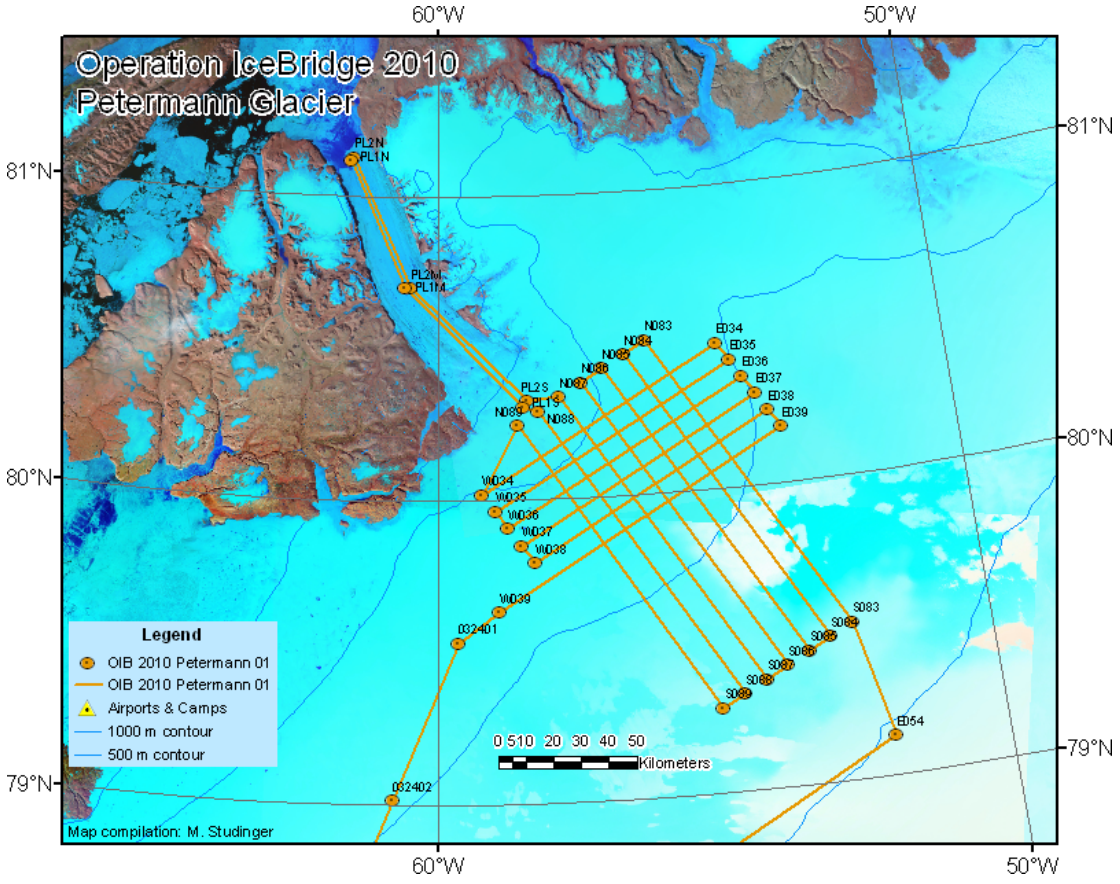
DMS: Camera System #2 had to be replaced with Camera System #1 over the Petermann grid because of a shutter failure. Approximately the last 1.5 grid lines of the grid have been lost. Other than that the DMS system recorded images throughout the entire flight.

LVIS: LVIS was not operated on this flight due to the low altitude mission**.**

POS/AV: Systems worked well. No issues.

DC8 on board data: System worked well.


Operation IceBridge 2010
Petermann Glacier
70°W
68°W
66°W
64°W
77°30'N
77°N
76°30'N
Qaanaaq
Tracy Glacier
TRE
TRW
HLPRW
HLPRE
Heilprin Glacier
Thule
BGTL
Legend
Airports & Camps
OIB 2010 Petermann 01
OIB 2010 Petermann 01
1000 m contour
500 m contour
0 4.5 9 18 27 36 45
Kilometers
Map compilation: M. Studinger


Operation IceBridge 2010
Petermann Glacier
60°W
50°W
81°N
80°N
79°N
PL2N
PL1N
PL2M
PL1M
PL2S
PL1S
ND83
ND84
ND85
ND86
ND87
ND88
ED34
ED35
ED36
ED37
ED38
ED39
WD34
WD35
WD36
WD37
WD38
WD39
032401
032402
SD83
SD84
SD85
SD86
SD87
SD88
SD89
ED54
Legend
OIB 2010 Petermann 01
OIB 2010 Petermann 01
Airports & Camps
1000 m contour
500 m contour
0 510 20 30 40 50
Kilometers
Map compilation: M. Studinger

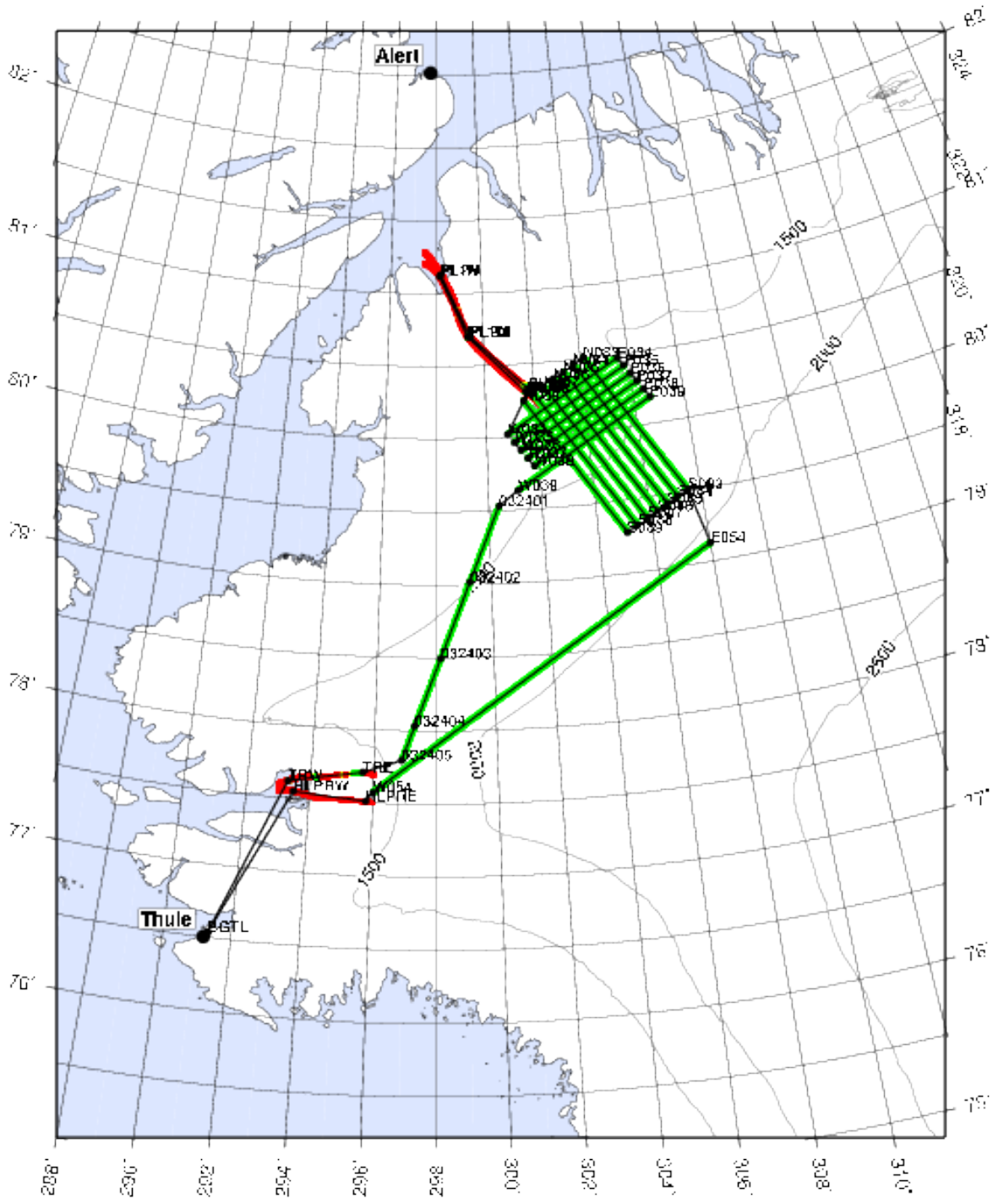


Figure 1: Waypoints and survey area of Flight 03 from John Sonntag.