
Preliminary Science Flight Report

Operation IceBridge Arctic 2011



Flight: F34
Mission: Petermann 02

Flight Report Summary

Aircraft	P-3B (N426NA)
Flight Number	034
Flight Request	11P006
Date	Saturday, May 7, 2011 (Z)
Purpose of Flight	Mission Petermann 02
Take off time	11:00 Zulu from Thule Air Base (BGTL)
Landing time	18:33 Zulu at Thule Air Base (BGTL)
Flight Hours	7.8 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 a grid in the catchment area of Petermann Gletscher and Tracy and Heilprin Glaciers near Thule.• ATM, MCoRDS, accumulation, snow and Ku-band radars, gravimeter, magnetometer, POS/AV, and DMS were operated on the survey lines.• Ramp pass at Thule at 1,000 ft AGL and 18,500 ft for ATM calibration.• Pitch maneuvers over North Star Bay for snow and Ku-band radar.
Geographic Keywords	Petermann Gletscher, Tracy Glacier, Heilprin Glacier.
ICESat/CryoSat Track	0324.
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"/>	66 GB	None
MCoRDS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.9 TB	None.
Snow Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	375 GB	None
Ku-band Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	375 GB	None
Accumulation Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	292 GB	None
DMS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	119 GB	None
POS/AV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2 GB	None
Gravimeter	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	640 MB	None
Magnetometer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	480 MB	None

Mission Report (Michael Studinger, Mission Scientist)

Today's mission is a new design with the main purpose to extend the 2010 Petermann 01 10-km-grid upstream in conjunction with Petermann 03. The satellite images available before takeoff showed dense cloud cover over the survey area but we convinced ourselves that these are high cirrus clouds and we hoped to be able to underfly the cloud cover. Both, Heilprin and Tracy Glaciers near Thule showed mid to low-level clouds and we had to skip the Tracy Glacier run in the morning. The high cirrus clouds over Petermann Gletscher dissolved during the day and we flew the mission in perfect conditions. It was amazing to see the drastic changes in Petermann Gletscher compared to last year. In August last year an ice berg four times the size of Manhattan has calved from Greenland's Petermann Glacier, an event that made headlines around the world. The calving had been long expected and the ATM and DMS data from last year showed the large crack in the floating glacier that eventually gave way. Petermann Gletscher has some impressive walls on both sides. Flying along the steep walls of rock with fjord ice in between them instead of a glacier was an amazing experience that makes you realize the changes that are going on in the cryosphere. On the way back to Thule, the clouds over Tracy and Heilprin Glaciers had cleared and we were able to fly both glaciers as planned. Many thanks go to the personnel at Thule Air Base who opened the airfield today which allowed us to complete another high-priority mission.

Individual instrument reports from experimenters on board the aircraft:

ATM: worked very well.

MCoRDS: worked well.

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

Accumulation radar: worked well.

Gravimeter: Worked well. No issues.

Magnetometer: worked well.

DMS: worked very well.

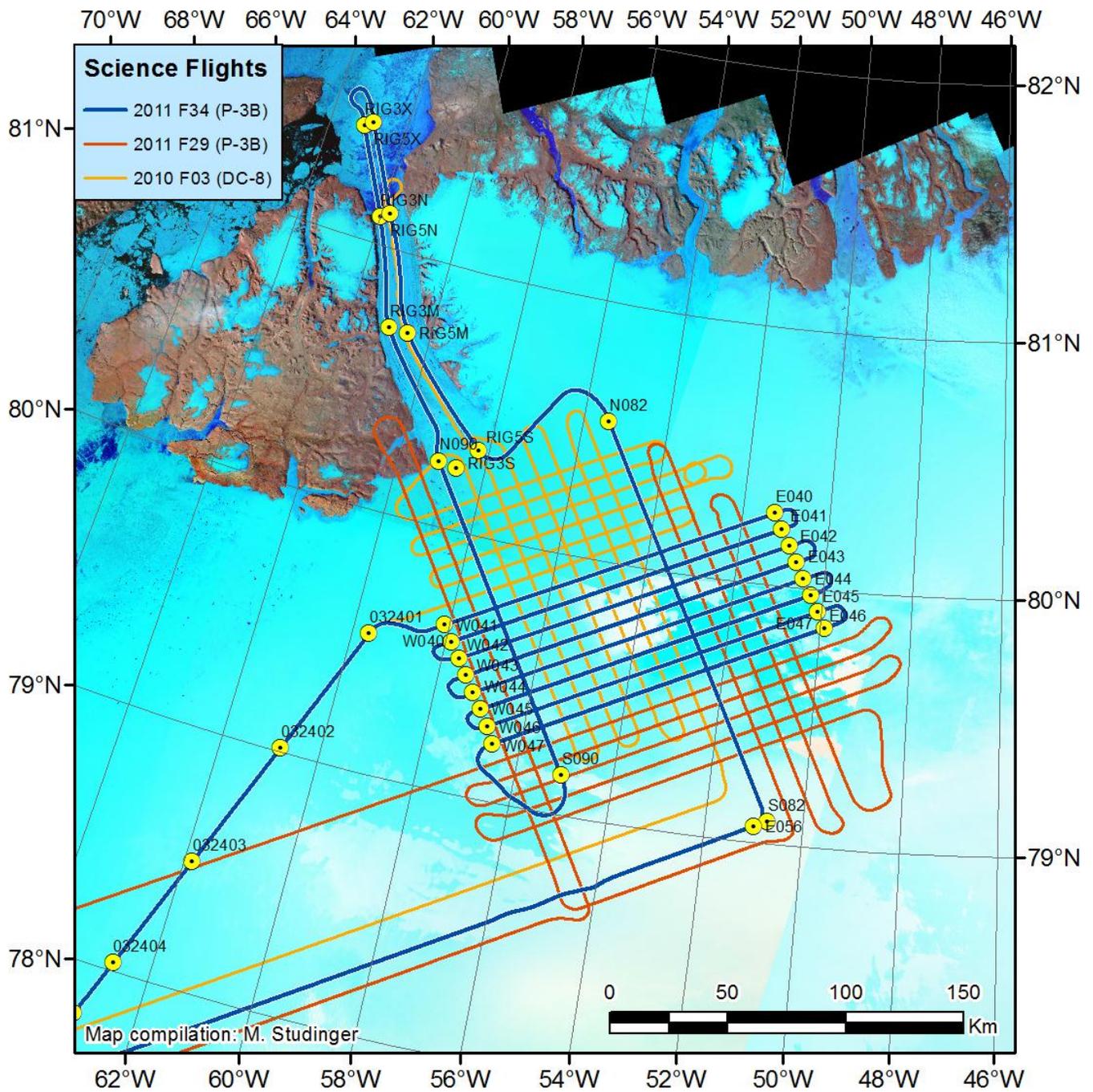


Figure 1: P-3 trajectory of today's flight in white with mission plan (blue) and P-3 and DC-8 trajectories from the Petermann 01 mission from last year and this year's Peterman 03 mission.

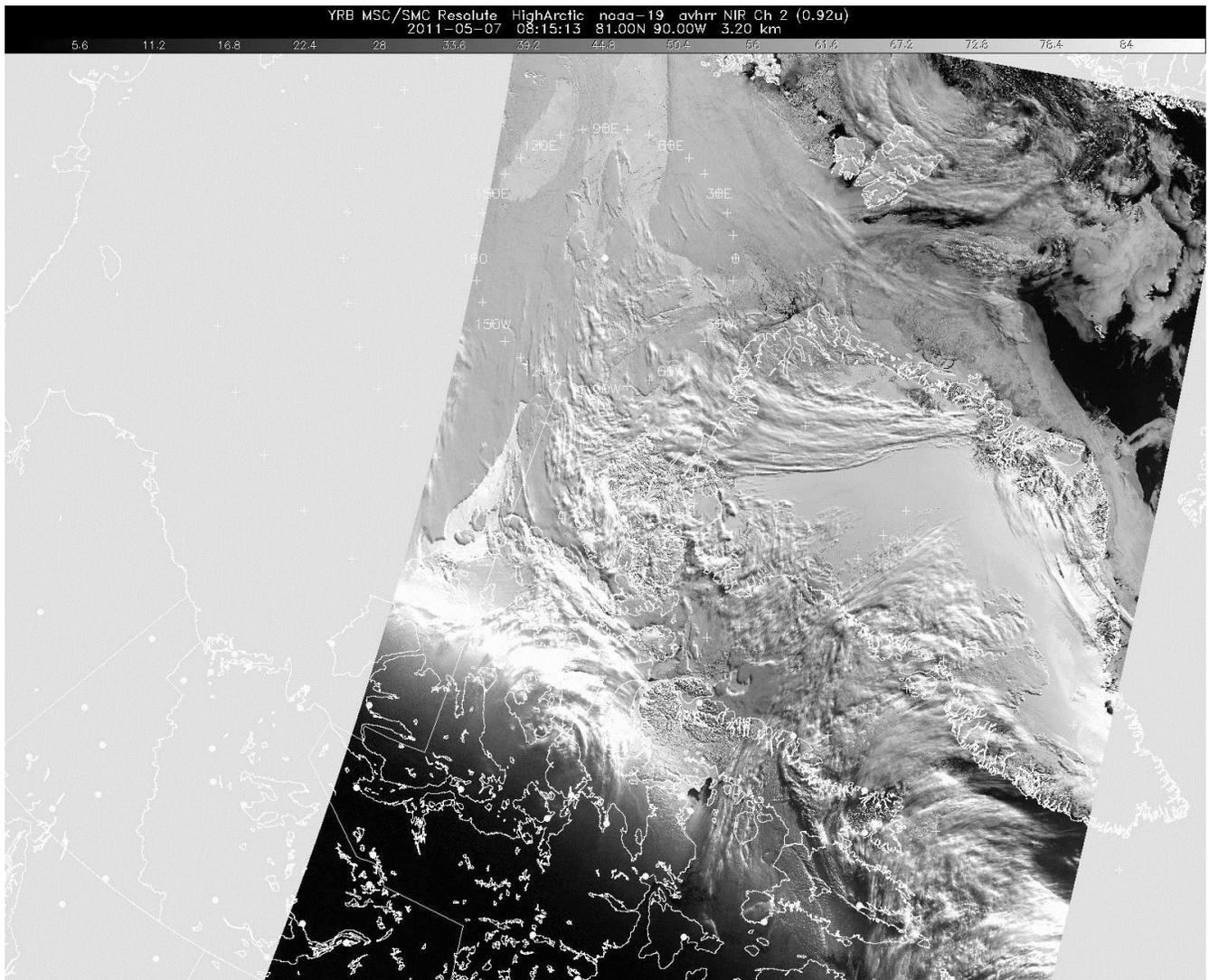


Figure 2: Visual satellite image downloaded shortly before takeoff showing. The image shows significant cloud cover in the survey area that we interpreted as high cirrus clouds over Petermann and low clouds over Heilprin and Tracy Glaciers near Thule.