Preliminary Science Flight Report
Operation IceBridge Arctic 2011

Flight: **F21**
Mission: **SW Mopup 02**

Flight Report Summary

Aircraft	**P-3B (N426NA)**
Flight Number	021
Flight Request	11P006
Date	Saturday, April 16, 2011 (Z)
Purpose of Flight	Mission SW Mopup 02
Take off time	10:55 Zulu from Kangerlussuaq (BGSF)
Landing time	16:36 Zulu at Kangerlussuaq (BGSF)
Flight Hours	5.8 hours
Aircraft Status	Airworthy.
Sensor Status	All installed sensors operational.
Significant Issues	None
Accomplishments	• Low-altitude survey (1,500 ft AGL) of several lines on Jakobshavn and Russell Glacier. • Completed two north-south master grid lines. • ATM, MCoRDS, accumulation, snow and Ku-band radars, gravimeter, magnetometer, POS/AV, and DMS were operated on the survey lines. • Ramp pass at 2,000 ft AGL for ATM calibration.
Geographic Keywords	Jakobshavn Glacier, Russell Glacier
ICESat/CryoSat Track	None.
Repeat Mission	None.

Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
ATM	☑	☒	☒	50 GB	None
MCoRDS	☒	☒	☒	1.8 TB	None
Snow Radar	☑	☒	☒	290 GB	None
Ku-band Radar	☑	☒	☒	290 GB	None
Accumulation Radar	☒	☒	☒	230 GB	None
DMS	☑	☒	☒	82 GB	None
POS/AV	☑	☑	☑	2 GB	None
Gravimeter	☑	☑	☑	440 MB	None
Magnetometer	☑	☑	☑	330 MB	None

Mission Report (Michael Studinger, Mission Scientist)

Today's flight was a mop-up of a mop-up mission. The weather over south-east Greenland and the Geikie Plateau area was poor and even the Jakobshavn Lakes region was forecasted to be cloudy on the inland side. We decided to re-fly the Jakobshavn lines that were clouded in on the transit from Thule to Kangerlussuaq. Re-flying the Jakobshavn grid lines will be a test to evaluate the repeatability of the magnetic measurements. It was also a good opportunity to get MCoRDS data over these lines since we had switched off MCoRDS on the transit mission to avoid interference with another science aircraft with an MCoRDs system in the area. We combined the Jakobshavn lines with a re-fly of the 11 grid lines we flew last year over Russell Glacier that did not have a fine-tuned MCoRDS system last year. Today's grid and two previous missions have produced a 500 m grid over Russell Glacier that was all flown in cold conditions.

The autopilot failed on today's mission and most of the beginning was hand-flown. We replaced the control box during flight and were able to couple most of the remaining lines.

The weather during today's mission was excellent.

Individual instrument reports from experimenters on board the aircraft:

ATM: worked very well.

MCoRDS: The MCoRDS system worked well.

Snow and Ku-band radar: The snow and Ku-band radars collected 100% data along the line.

Accumulation radar: worked well.

Gravimeter: Worked well. No issues.

Magnetometer: worked well.

DMS: worked very well. Imaged 12 calving fronts today.

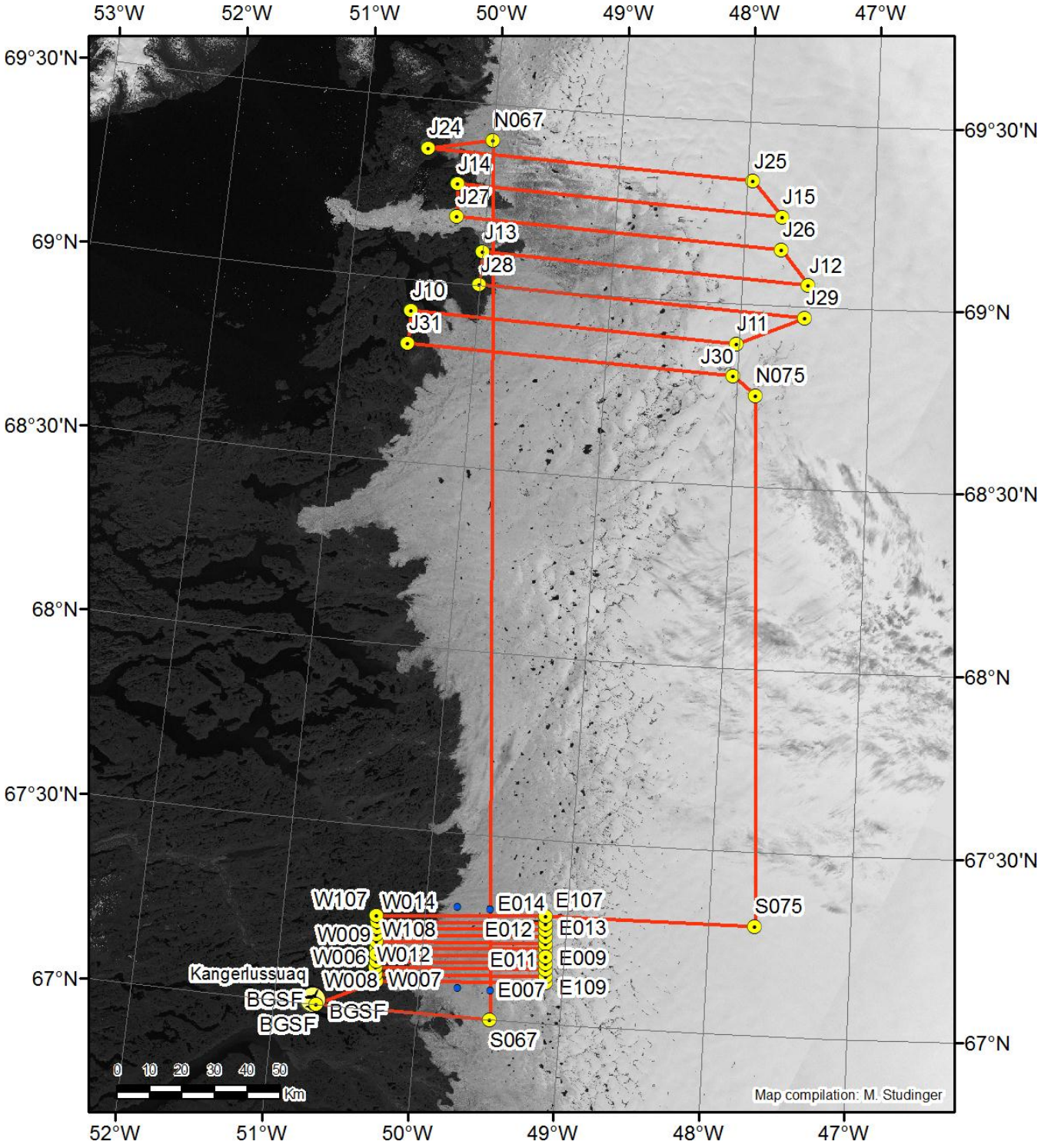

Figure 1: Mission plan for today's flight.

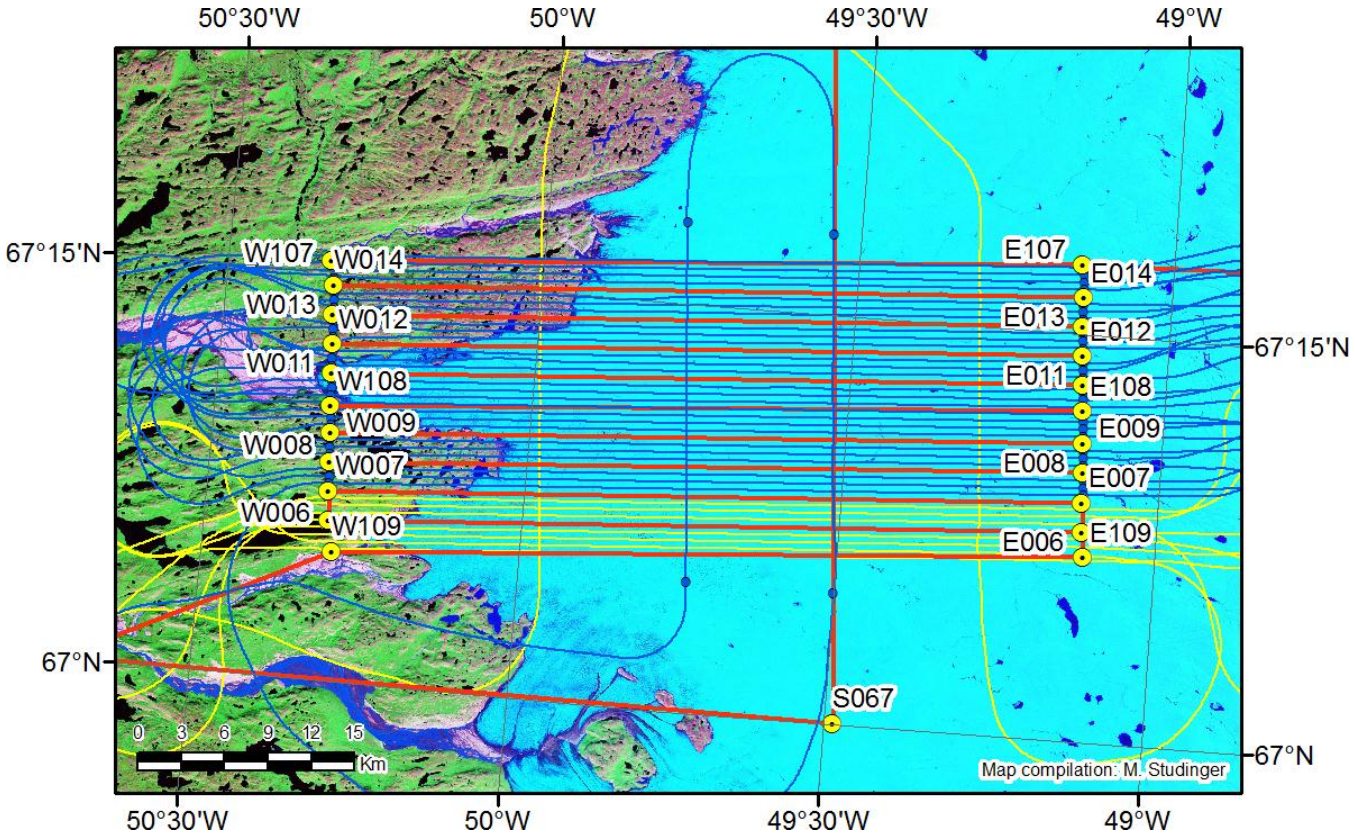

Figure 2: Mission plan over Russell Glacier (red) with trajectory data from two previous flights (yellow and blue) that together result in a 500 meter line spacing over Russell Glacier.

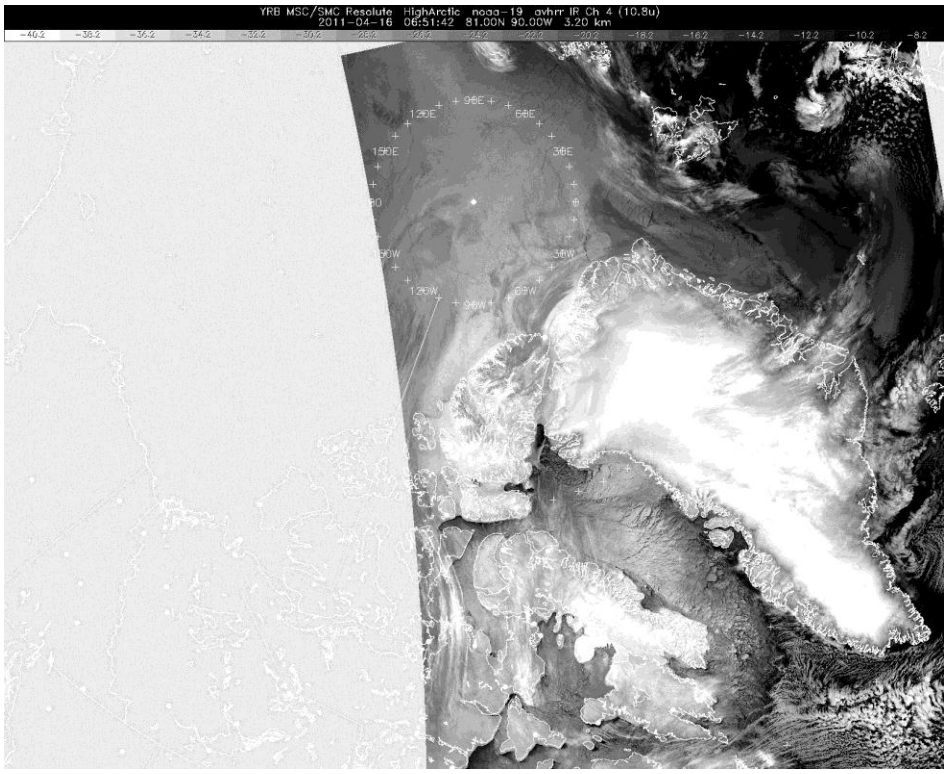

Figure 3: IR satellite image downloaded shortly before takeoff.