

Preliminary Science Flight Report

Operation IceBridge Arctic 2011



Flight: F07
Mission: Sea Ice ZigZag East

Flight Report Summary

Aircraft	P-3B (N426NA)
Flight Number	007
Flight Request	11P006
Date	Saturday, March 26, 2011 (Z)
Purpose of Flight	Mission Sea Ice ZigZag East
Take off time	11:00 Zulu from Thule Air Base (BGTL)
Landing time	18:46 Zulu at Thule Air Base (BGTL)
Flight Hours	8.2
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 sea ice transects along an ICESat ground track and several zigzag lines north of Greenland. • ATM, snow and Ku-band radars, gravimeter, magnetometer, POS/AV, and DMS were operated on the survey lines. • The accumulation radar was not in operation on today's flight to allow work on the MCoRDS system. MCoRDS was not in operation on this flight due to the sea ice mission. Instrument team used time on the aircraft during the flight to work on the system and collect test data. • Conducted one ramp pass at Thule Air Base for ATM instrument calibration at 1,500 ft AGL.
Geographic Keywords	Arctic Ocean, Lincoln Sea
ICESat/CryoSat Track	ICESat track 0414
Repeat Mission	Yes, 2010.

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"/>	46 GB	None
MCoRDS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A	None
Snow Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	270 GB	None
Ku-band Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	270 GB	None
Accumulation Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A	None
DMS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	92.5 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"/>	80 MB	None
Magnetometer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	TBD	None, but issues with HF

Mission Report (Michael Studinger, Mission Scientist)

Today's mission is similar to the 2010 Sea Ice F04 flight, but with the zigzags shortened slightly because of the slower transit speed of the P-3 compared to the DC-8. We sampled the thick multi-year ice near the Greenland coast as well as the gradient to thinner ice closer to the pole and also collected data along ICESat track 0414. The weather forecast was good for the area with some significant clouds visible on the satellite image (Fig. 2), that we interpreted as above our flight elevation. It turned out we made the right call and we were able to survey beneath the clouds and in thin layers of haze that did not pose and problems to instruments or aircraft.

At 10:51 Z this morning we were on the runway, ready for takeoff, but had to wait 9 minutes for the official opening of the airfield at 11:00 Z. We were cleared for takeoff and started our takeoff run at 11:00:00 Z, not a single second late. We were airborne at 11:00:36 Z. At 12:35 Z we reached waypoint 041401 and started surveying at 1500 ft. At 17:23 Z we reached the end of the line at NS06 heading back to Thule. It was an uneventful flight with only some occasional issues coupling the autopilot to the ATM navigation.

Individual instrument reports from experimenters on board the aircraft:

ATM: Both systems worked well and only lost an insignificant amount of data due to clouds.

MCoRDS: The MCoRDS system was not operated on this flight due to the sea ice mission, but the instrument team used the time to work on the system during the flight.

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

Accumulation radar: not in operation today to allow work on MCoRDS.

Gravimeter: Worked well. No issues.

Magnetometer: worked well.

DMS: worked very well and collected 14,092 images, 90-95% of which were cloud free.

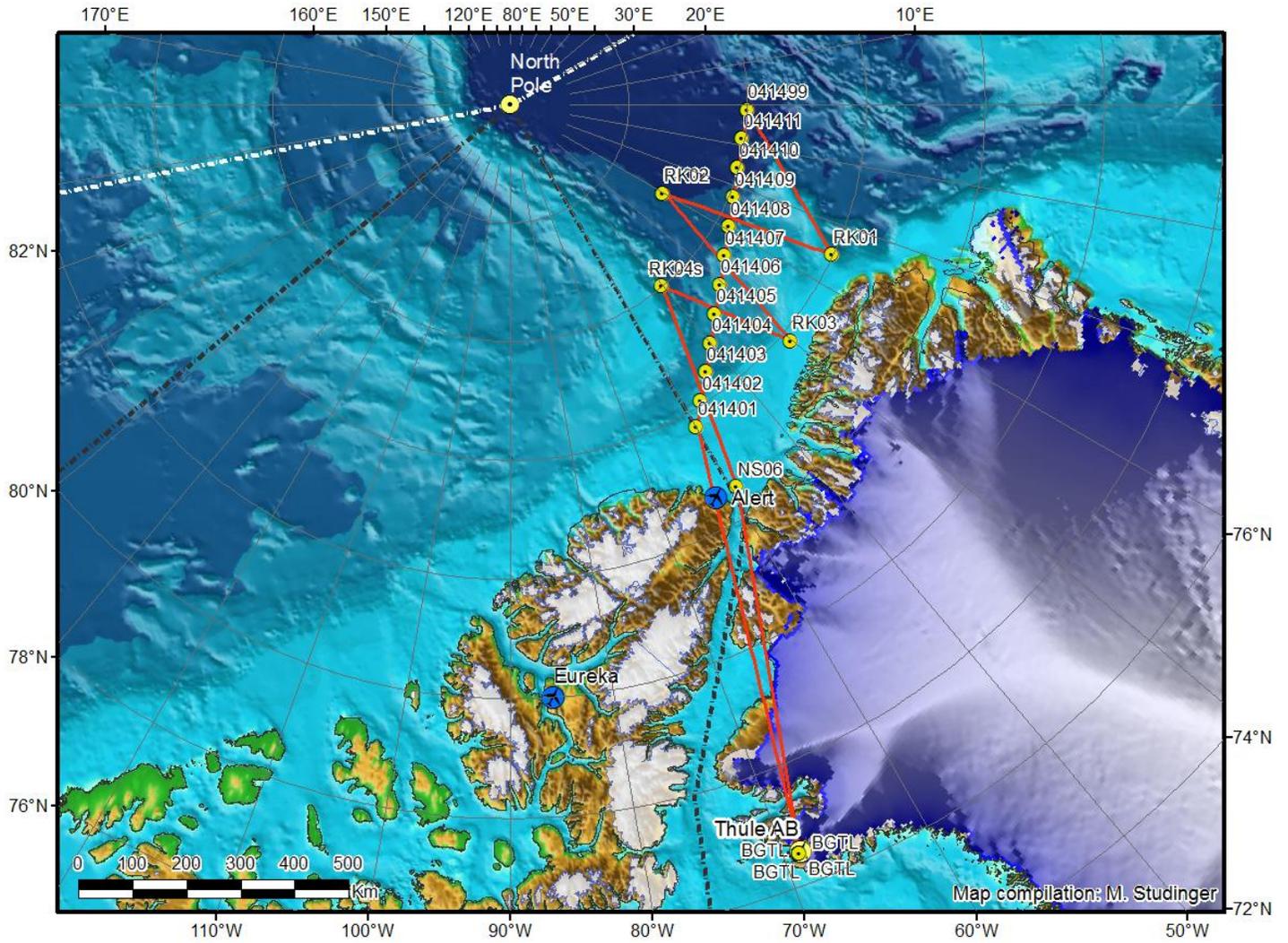


Figure 1: Sea ice mission plan for the ZigZag East mission (red).

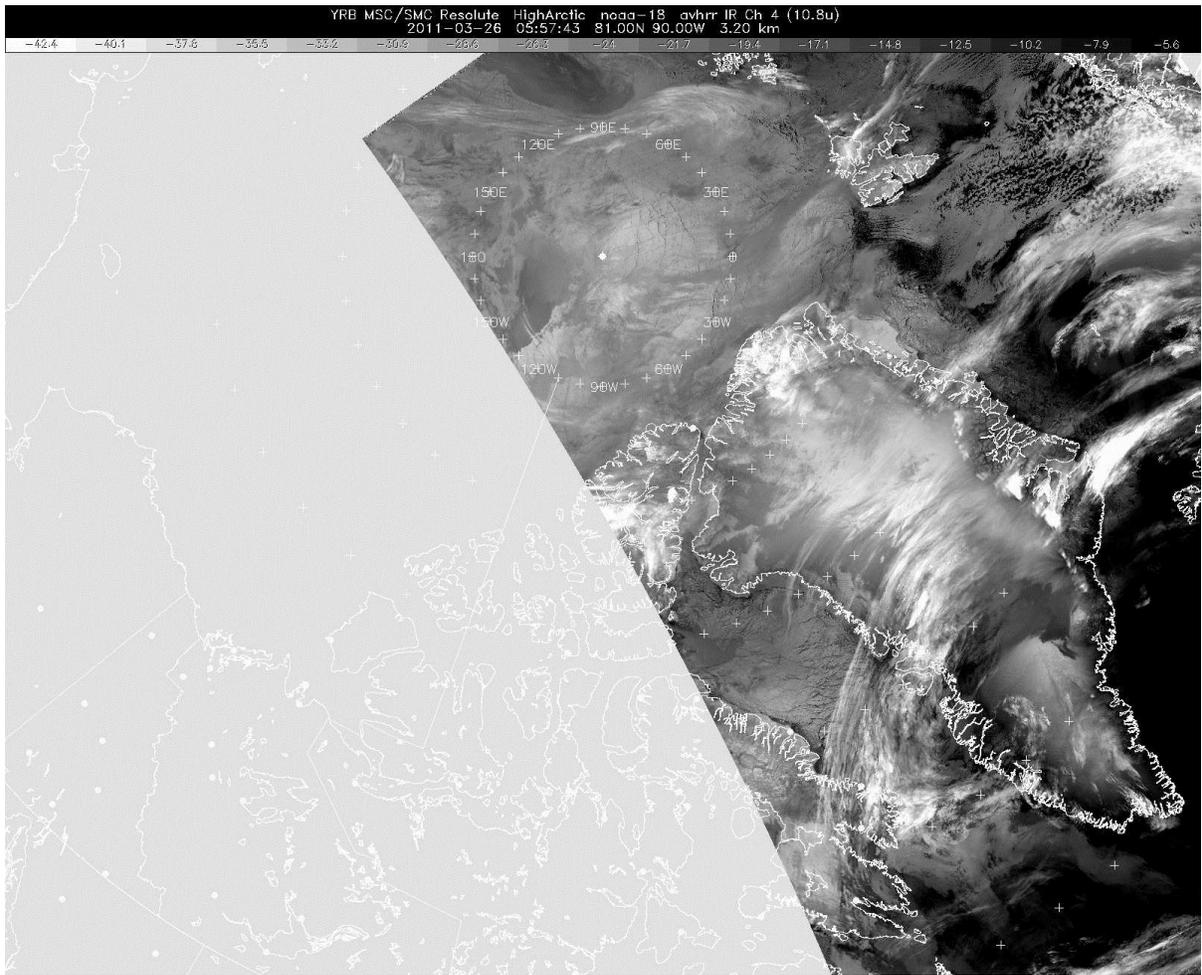


Figure 2: IR image downloaded shortly before takeoff showing significant clouds in the survey area.