

Preliminary Science Flight Report

Operation IceBridge Arctic 2011



Flight: F08
Mission: Sea Ice Fram Gateway

Flight Report Summary

Aircraft	P-3B (N426NA)
Flight Number	008
Flight Request	11P006
Date	Monday, March 28, 2011 (Z)
Purpose of Flight	Mission Sea Ice Fram Gateway
Take off time	11:00 Zulu from Thule Air Base (BGTL)
Landing time	18:46 Zulu at Thule Air Base (BGTL)
Flight Hours	TBD
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 two ICESat ground tracks and several lines north of Greenland and the Fram Strait. • ATM, snow and Ku-band radars, accumulation radar, gravimeter, magnetometer, POS/AV, and DMS were operated on the survey lines. • 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 over land ice from high altitude. • Conducted one ramp pass at Thule Air Base for ATM instrument calibration at 1,000 ft AGL.
Geographic Keywords	Arctic Ocean, Fram Strait
ICESat/CryoSat Track	ICESat tracks 0253 and 0265
Repeat Mission	2009 and 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"/>	52 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"/>	307 GB	None
Ku-band Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	307 GB	None
Accumulation Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	163 GB	None
DMS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	109 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 2009 and 2010 Fram Strait mission, though we shorten the eastern end of the line to avoid open water near Svalbard. The route also samples the ice at the top of Nares Strait crossing the Lincoln Sea ice arch (if present) and sea ice north of the Fram Strait. Also included in this flight plan is a line extending across the Gakkel Ridge, for collection of gravimetric data that will provide vital geoid information.

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 12:06 Z we reached waypoint NS04 and started surveying at 1,500 ft AGL. At 14:10 Z we reached the end of the first ICESat line and turned. At 15:12 Z we turned at F3035 and at 15:40 Z we started our second ICESat line at waypoint 025301. At 16:16Z we finished the ICESat line heading towards NS06. At 17:18 Z we began the second pass of the Nares Strait profile and reached the end of the line at NS04 at 17:36 Z. All in all an uneventful flight in good conditions often beneath the clouds.

Individual instrument reports from experimenters on board the aircraft:

ATM: Both systems worked well and collected data along the entire survey line.

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: worked well.

Gravimeter: Worked well. No issues.

Magnetometer: worked well.

DMS: worked very well and collected 14,975 images.

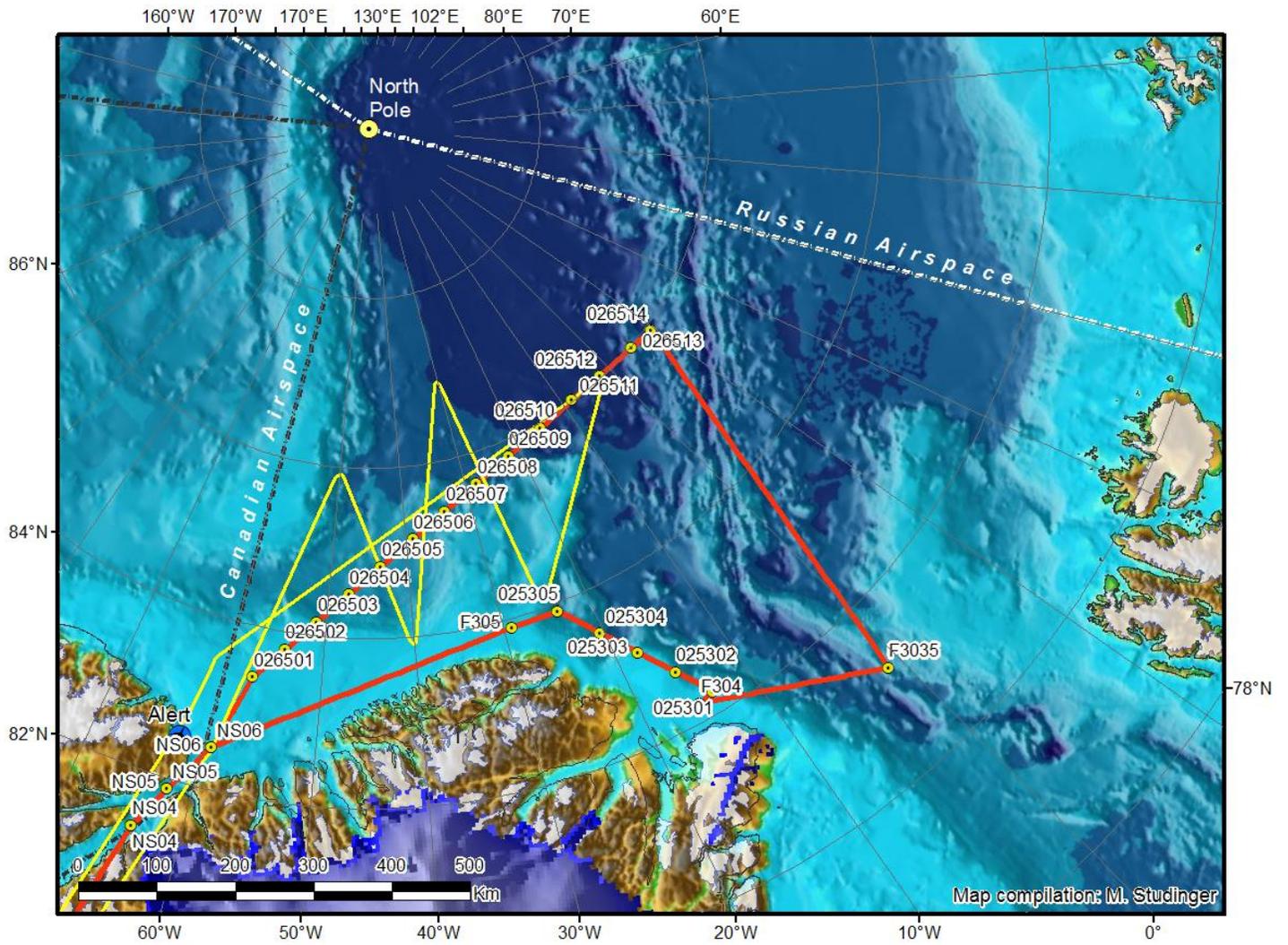


Figure 1: Sea ice mission plan for the Fram Gateway (red). Aircraft trajectory of the ZigZag East mission flown during last week (F07) is shown in yellow.

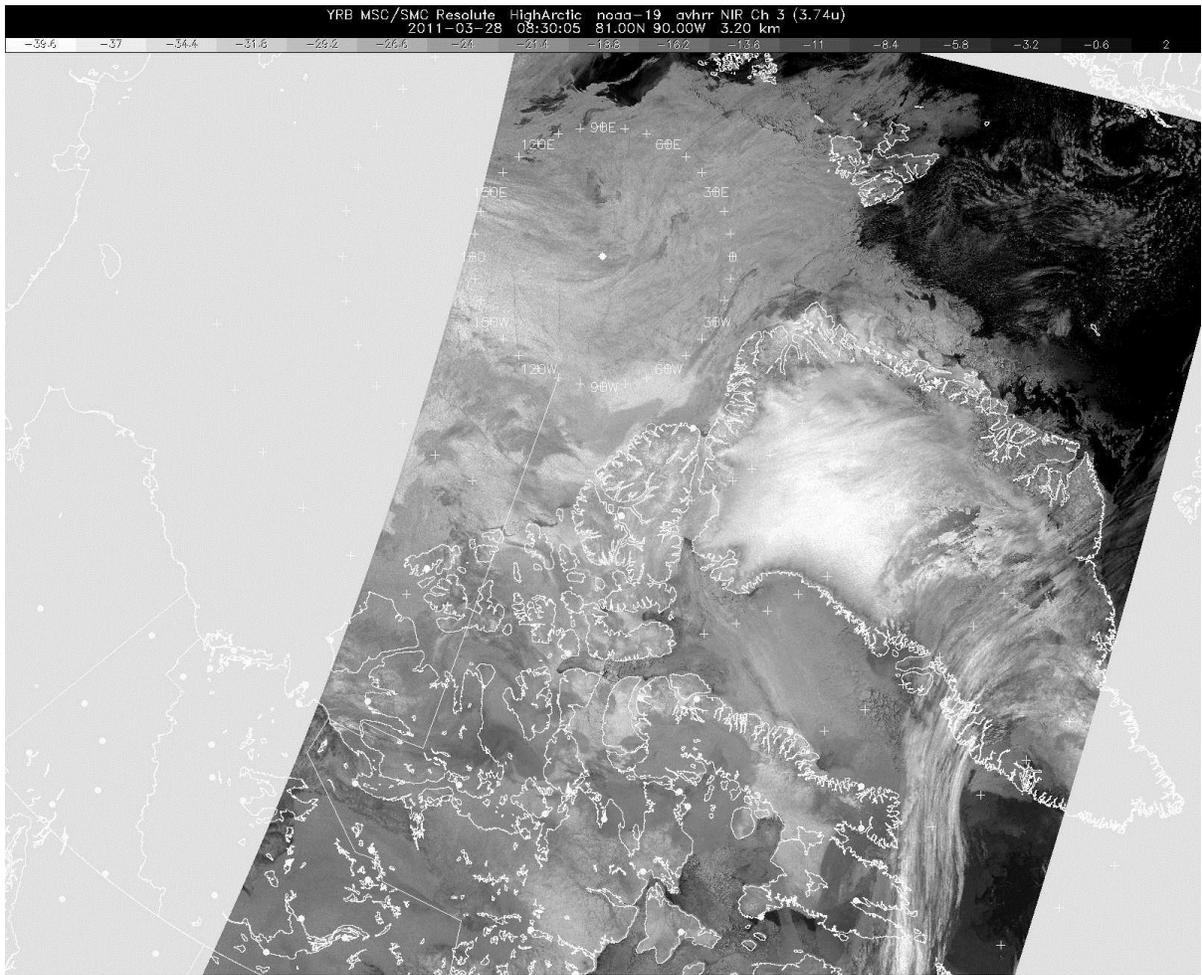


Figure 2: IR image downloaded shortly before takeoff showing clouds in the survey area.