Science Flight Report
Operation IceBridge Arctic 2012

Flight: **F08**
Mission: **Canada Basin**

Flight Report Summary

Aircraft	**P-3B (N426NA)**
Flight Number	9
Flight Request	12P006
Date	Friday, March 23, 2012 (Z)
Purpose of Flight	Operation IceBridge Mission Canada Basin
Take off time	11:01 Zulu from Thule Air Base (BGTL)
Landing time	17:50 Zulu at Thule Air Base (BGTL)
Flight Hours	7.1 hours
Aircraft Status	Airworthy.
Sensor Status	All installed sensors operational.
Significant Issues	None
Accomplishments	• Low-altitude survey (1,500 ft AGL) of sea ice transects over the Arctic Basin. • Completed entire mission as planned. • ATM, snow, Ku-band and accumulation radars, gravimeter, magnetometer, DMS and KT-19 skin temperature sensor were operated on the survey lines. • MCoRDS radar was not in operation on this flight due to the sea ice mission. • Several pitch and roll maneuvers over sea ice for snow and Ku-band radar calibration. • No ramp pass at Thule due to low ceiling.
Geographic Keywords	Arctic Ocean, Arctic Basin, Canada Basin
Satellite Tracks	None
Repeat Mission	None

Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
ATM	☑	☒	☒	47 GB	None
MCoRDS	☒	☒	☒	N/A	N/A
Snow Radar	☑	☒	☒	400 GB	None
Ku-band Radar	☑	☒	☒	400 GB	None
Accumulation Radar	☑	☒	☒	102 GB	None
DMS	☑	☒	☒	74 GB	None
KT-19 Skin Temp.	☑	☑	☑	4.75 MB	30 minute drop out
Gravimeter	☑	☑	☑	1.5 GB	None
Magnetometer	☑	☑	☑	100 MB	Spikes

Mission Report (Michael Studinger, Mission Scientist)

This is a new mission, designed to sample sea ice in a large region between the North Basin Transect and the Beaufort-Chukchi Diamond that has been poorly sampled in past IceBridge campaigns. We chose the Canada Basin over the ZigZag West mission today, because it has higher priority and the conditions over the Canada Basin area are expected to deteriorate early next week based on the current forecast. We had to shorten the original mission plan since on Fridays the aircraft needs to be back in the hanger one hour earlier than usual. Fortunately, we got permission to take off this morning before the ATI rotator flight and did not lose time in the morning.The weather in the area was good as expected. Some of the legs were fairly dark, with the sun coming up above the horizon only towards the end of the line providing good sun illumination for DMS and CAMBOT photography.

Individual instrument reports from experimenters on board the aircraft:

ATM: Both ATM systems worked well and collected good data along the entire line in cloud free conditions. The backup laser for the ATM T3 narrow scanner worked fine as well. ATM collected a total of 3.9 hours of science data and got 100% coverage during the low-altitude parts of data collection. The KT-19 sensor had a 30 minute data gap. The cause is unclear and is being investigated.

MCoRDS: The MCoRDS system was not operated on this flight due to the sea ice mission.

Snow and Ku-band radar: The snow and Ku-band worked well and collected data along the entire line with the new (primary) system. Less than 2 minutes of data were lost during a disk change.

Accumulation radar: Worked well and collected 3.9 hours of data.

Gravimeter: Worked well. No issues.

Magnetometer: The same spikes as on the two previous flights occurred again despite the fact that the magnetometer and electronic box have been changed after yesterday's flight. On the high altitude transit back data acquisition was switch from the new data logger to the SGL system that has been used last year and it seems the spikes disappeared in addition to seeing a much lower noise level on the 4^{th} difference of the magnetic data. It appears that the new data logger may be causing the spikes.

DMS: DMS worked well and collected data only on the primary system today.

KT-19 skin temperature sensor: System worked well.

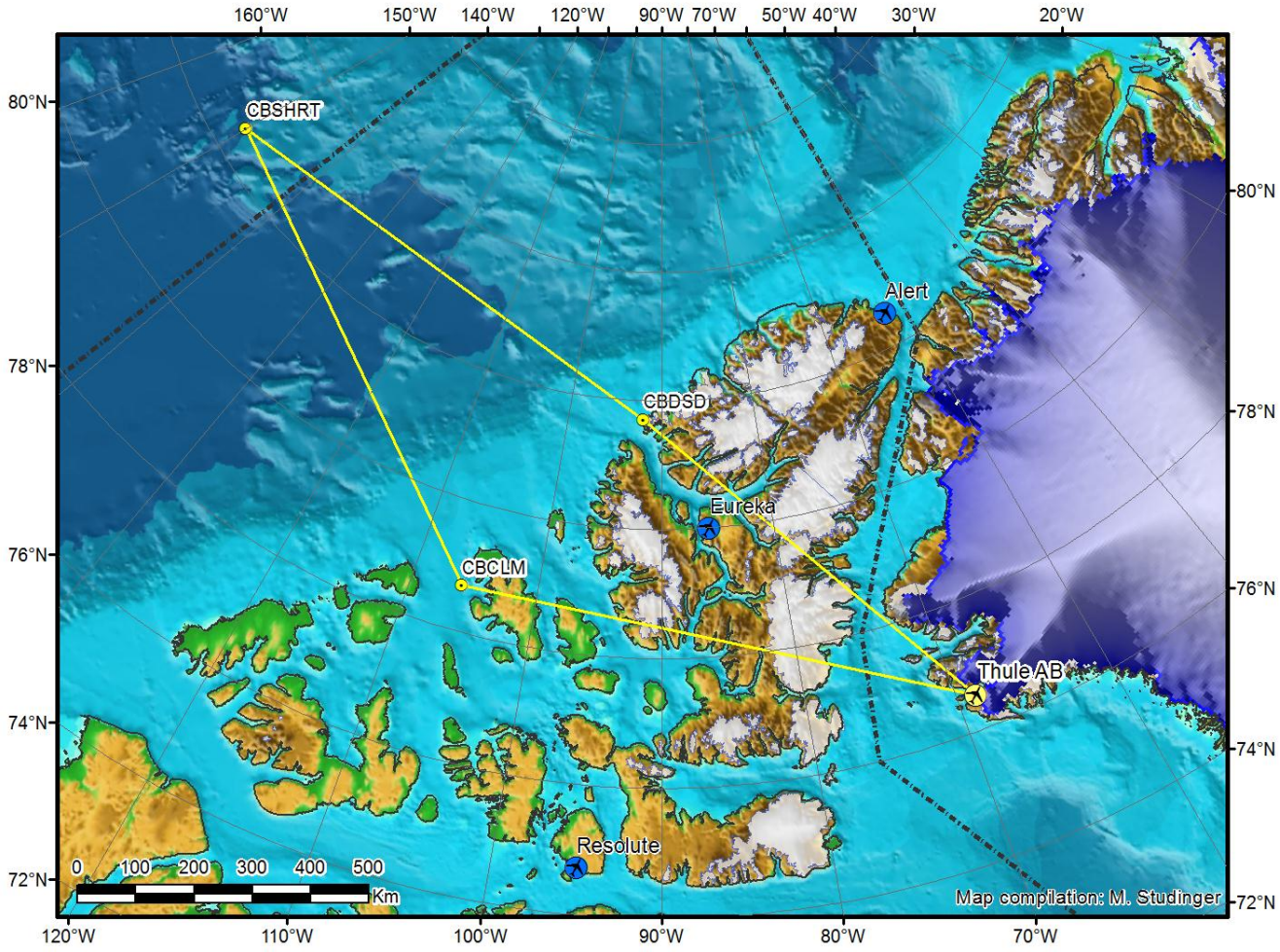

Figure 1: Today's slightly shortened sea ice mission plan (yellow).

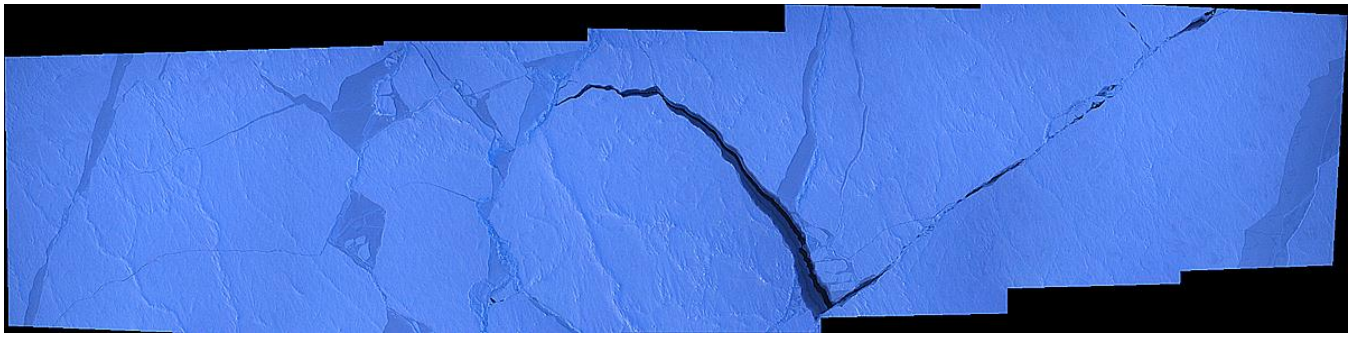

Figure 2: DMS mosaic from Eric Fraim showing leads in the sea ice.