

Science Flight Report

Operation IceBridge Arctic 2012



Flight: F07
Mission: Connor Corridor/Envisat ground track

Flight Report Summary

Aircraft	P-3B (N426NA)
Flight Number	8
Flight Request	12P006
Date	Thursday, March 22, 2012 (Z)
Purpose of Flight	Operation IceBridge Mission Connor Corridor
Take off time	11:01 Zulu from Thule Air Base (BGTL)
Landing time	18:34 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 sea ice transects over the Arctic Basin along an Envisat ground track. • 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 because of 1000 ft ceiling and light snow at Thule.
Geographic Keywords	Arctic Ocean, Arctic Basin, Lincoln Sea, North Pole
Satellite Tracks	Envisat orbit
Repeat Mission	Similar to 2009, 2010, 2011

Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
ATM	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	55 GB	None
MCoRDS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	N/A	N/A
Snow Radar	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	470 GB	None
Ku-band Radar	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	470 GB	None
Accumulation Radar	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	110 GB	None
DMS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	105 GB	None
KT-19 Skin Temp.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	6.5 MB	None
Gravimeter	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.5 GB	None
Magnetometer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	120 MB	None

Mission Report (Michael Studinger, Mission Scientist)

This mission is intended to sample sea ice along the Envisat ground track. Days with suitable Envisat orbits during our deployment are March 13th, 21st and 29th, with March 22nd (today) as a somewhat less optimal day. We choose this medium priority mission today over the high priority Canada Basin plan because the chances that the weather is suitable for flying this mission on March 29th are small. Since the Canada Basin can be flown any day more opportunities remain to accomplish this mission. We flew both the outbound and inbound legs at 1500 ft AGL as requested by the Sea Ice Science Team. In addition to Level 1 Requirements 4.1.1.A.3a and b, the flight addresses sea ice level 1 baseline requirement 4.1.1.A.3d by conducting a sampling mission that is time-coincident with an Envisat track that extends southwesterly into the Arctic Basin.

The weather in the area was good as expected. We lost 10 miles along the coast due to poor visibility and proximity to terrain as expected. The low clouds have been clearly visible in the IR image (Fig. 2). The westbound leg was fairly dark, with the sun coming up above the horizon only towards the end of the line but the westbound pass had 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 4.6 hours of science data and got 100% coverage during the low-altitude parts of data collection.

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. 5 minutes of data were lost during a disk change.

Accumulation radar: Worked well and collected 4 hours and 10 minutes of data.

Gravimeter: Worked well. No issues.

Magnetometer: Two 20 minute periods with spikes impacted data quality. The same happened on yesterday's flight and the reason is not understood.

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

KT-19 skin temperature sensor: System worked well.

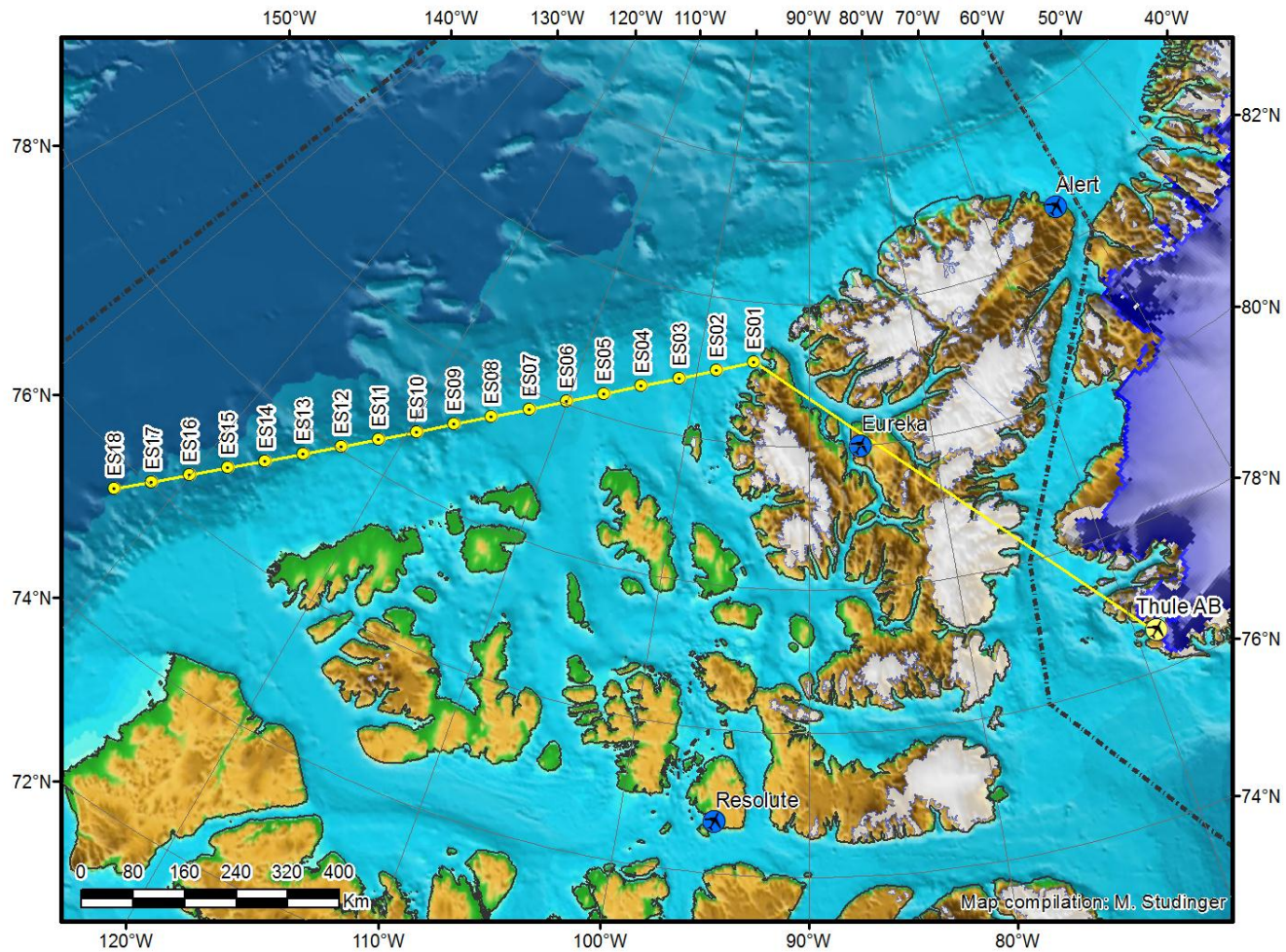


Figure 1: Today's sea ice mission plan (yellow) along an Envisat orbit.

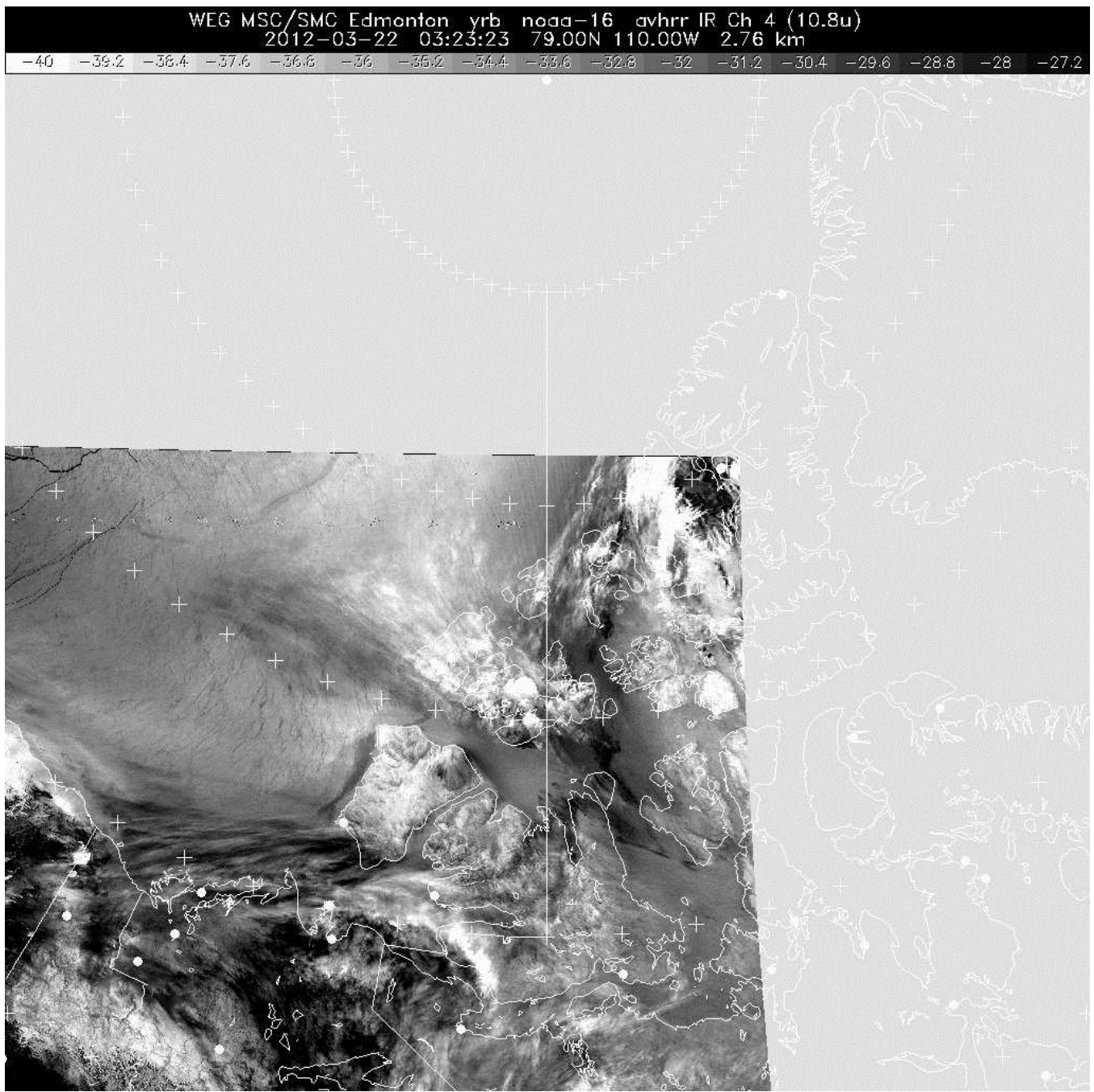


Figure 2: IR satellite image showing cloud conditions in the survey area.