Science Flight Report
Operation IceBridge Arctic 2010

Flight: 08
Mission: Sea Ice 06

Flight Report Summary

Aircraft	**DC-8 (N817NA)**
Flight Number	100210
Flight Request	108013
Date	Monday, April 5, 2010 (Z), Day of Year 095
Purpose of Flight	Operation IceBridge Mission Sea Ice 06
Take off time	10:59:51 Zulu from Thule Air Base (BGTL)
Landing time	18:34:21 Zulu at Thule Air Base (BGTL)
Flight Hours	7.7
Aircraft Status	Airworthy
Sensor Status	All installed sensors operational.
Significant Issues	None
Accomplishments	• Low-altitude survey (1,500 ft AGL) of a sea ice profile in the Beaufort Sea along an ENVISAT ground track of the April 5, 2010 satellite orbit. • ATM, POS/AV, DMS, Ku-band and snow radar were operated on the survey lines. • LVIS was operated on the high-altitude transits. • Gravimeter was in operation throughout the entire flight. • MCoRDS was not operated because this was a sea ice mission, but both, the team and instrument were in stand-by during the flight. • Completed all of the planned survey lines. • Conducted pitch and roll maneuvers over Baffin Bay for LVIS instrument calibration. • Conducted one high-elevation pass over the runway at Thule Air Base at 16,000 ft AGL for LVIS instrument calibration and one at low elevation at 1,200 ft for ATM instrument calibration.
Geographic Keywords	Beaufort Sea, Arctic Ocean, Ellesmere Island, Thule
ICESat Tracks	None. ENVISAT ground track of April 5, 2010 satellite orbit
Repeat Mission	2006 Flight No 20060327 along ENVISAT ground track

Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
ATM + Cambot	☑	☒	☒	91.2 GB	None
MCoRDS	☒	☒	☒	N/A	None
Snow Radar	☑	☒	☒	360 GB	None
Ku-band Radar	☑	☒	☒	490 GB	None
LVIS	☒	☒	☑	21 GB	None
DMS	☑	☑	☑	106 GB	None
POS/AV (510 + 610)	☑	☑	☑	2 GB	None
Gravimeter	☑	☑	☑	80 MB	None
DC-8 Onboard Data	☑	☑	☑	20 MB	None

Mission Report (Michael Studinger, Mission Scientist)

Today's mission is an exact repeat of a mission flown in 2006 along an ENVISAT ground track. The waypoints of this mission depend on the ENVISAT satellite orbit of a particular day. April 5th (today) and 6th were the optimum days to fly this mission. The Sea Ice 06 mission was the only mission with clear weather in the survey area today. It was an easy decision to make following the weather brief in the morning. We encountered some light clouds and areas with ice fog along the survey line that were no problem for the ATM laser. Today's Sea Ice 06 mission is in collaboration with NOAA.

Individual instrument reports from experimenters on board the aircraft:

ATM: The ATM systems collected data over the entire survey line. Occasional descents to 800 ft were necessary because of low clouds/ice fog to maintain a signal from the ice surface.

MCoRDS: The system was not operated due to a sea ice mission but was in stand-by mode during the entire flight.

Snow and Ku-band radar: Both systems worked well. The snow radar collected about 360 GB of data and the Ku-band radar collected about 490 GB of data.

Gravimeter: System worked normally. No problems.

DMS: DMS worked well. No issues.

LVIS: LVIS worked well and collected data during the high-altitude transits.

POS/AV: Systems worked well. No issues.

DC-8 on board data: System worked well.

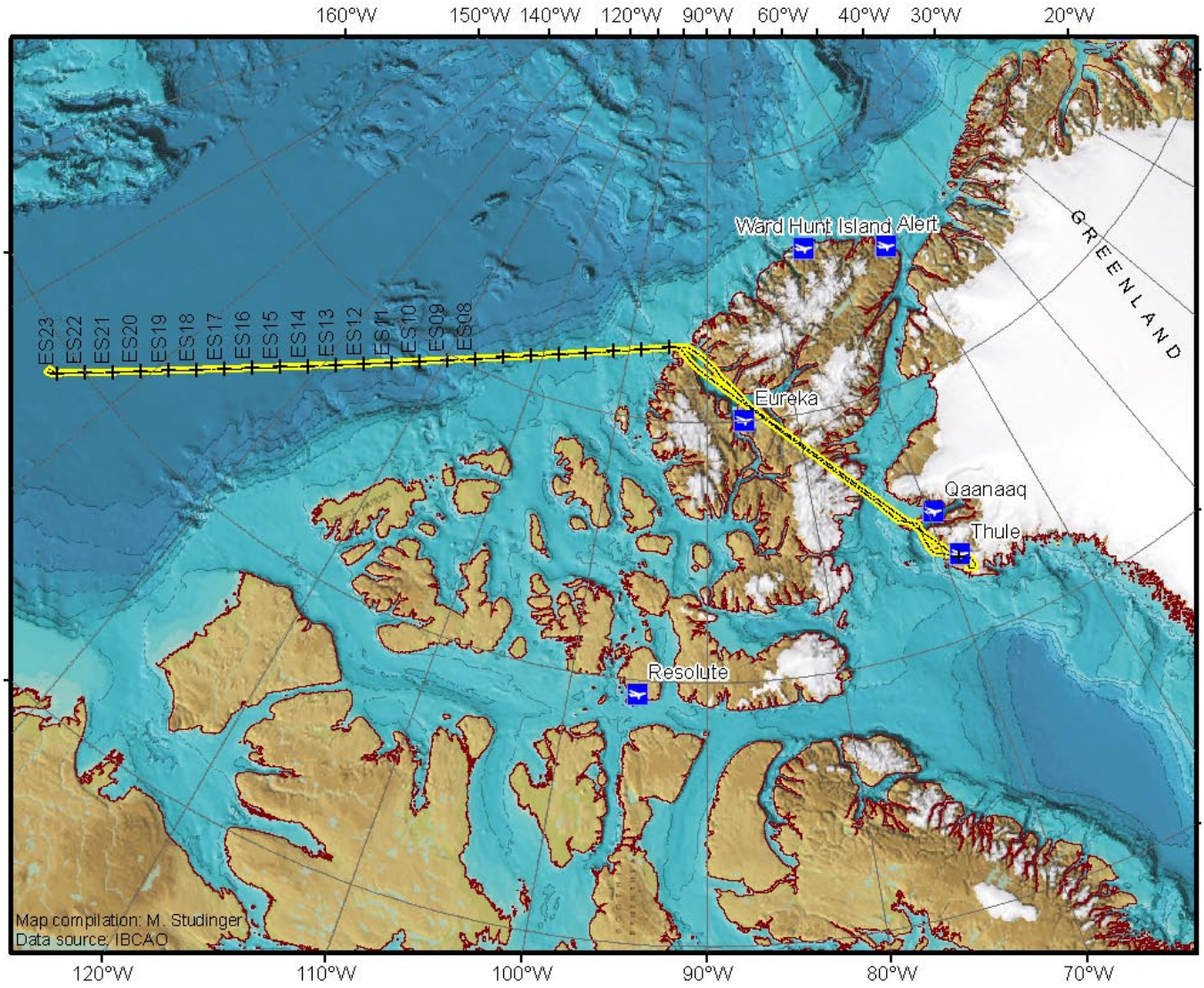

Figure 1: Mission plan for Sea Ice 06, with the actual flight path plotted in yellow using GPS positions from the REVEAL DC-8 onboard data system.

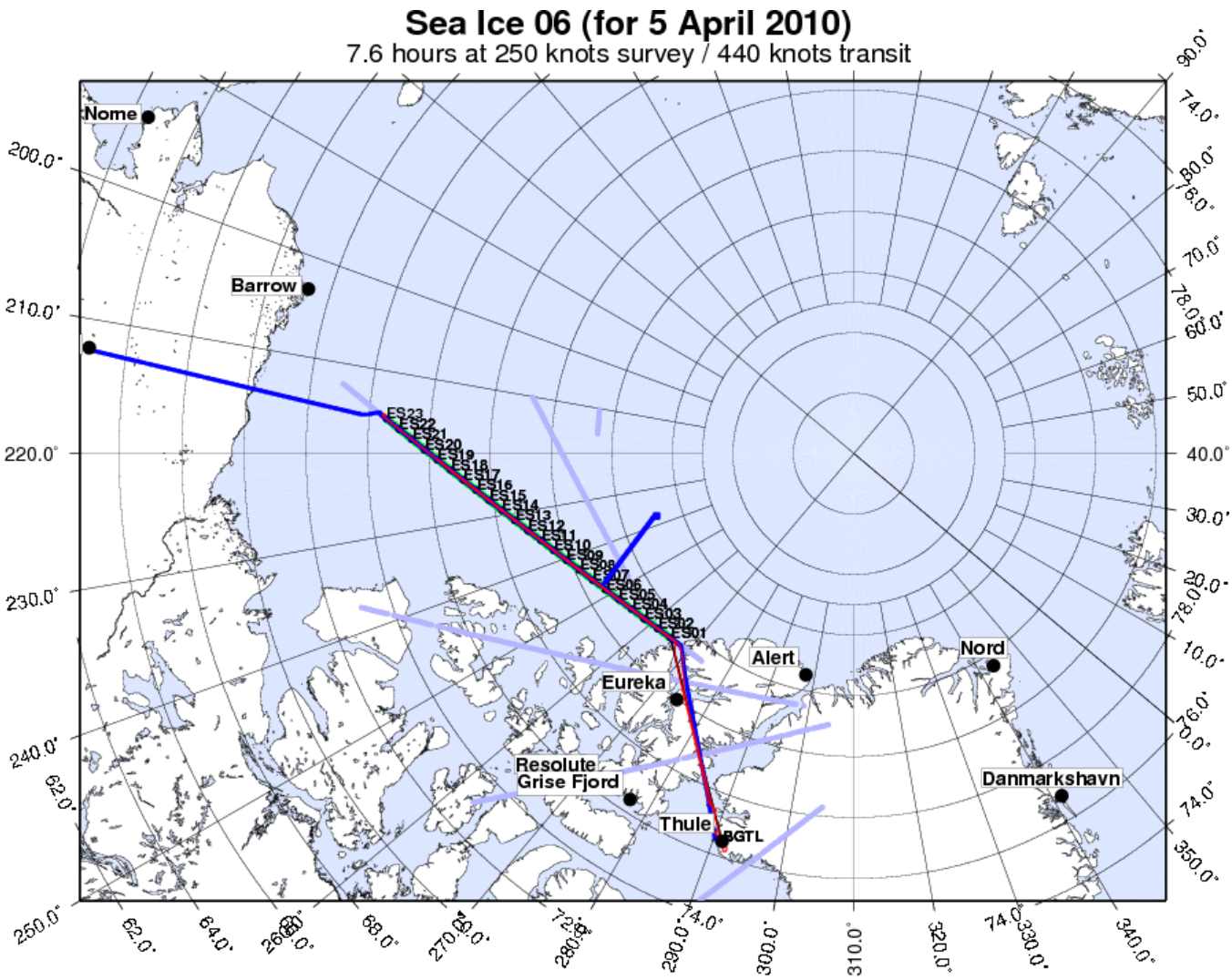

Figure 2: Waypoints and survey area of Flight 08 from John Sonntag.