Science Flight Report
Operation IceBridge Arctic 2010

Flight: 02
Mission: Sea Ice 05

Flight Report Summary

Aircraft	**DC-8 (N817NA)**
Flight Number	100204
Flight Request	108013
Date	Tuesday, March 23 2010 (Z), Day of Year 082
Purpose of Flight	Operation IceBridge Mission Sea Ice 05
Take off time	11:01:35 Zulu from Thule Air Base (BGTL)
Landing time	18:54:59 Zulu at Thule Air Base (BGTL)
Flight Hours	8.0
Aircraft Status	Airworthy
Sensor Status	All installed sensors operational.
Significant Issues	None
Accomplishments	• Low-altitude survey (1,500 ft AGL) of multi-year sea ice north of Ellesmere Island along ICESat track 0195 and several zigzag tracks. • Completed all of the planned survey lines. • ATM, DMS, POS/AV, and snow radar operational throughout survey areas. • MCoRDS was not operated on this flight because it was a sea ice mission. The MCoRDS team used the flight to fine tune the system. • The Ku-band radar was not in operation during this flight. The team used the flight for testing and troubleshooting the instrument. • Gravimeter was in operation throughout the entire flight. • LVIS was operated throughout high-altitude transits. • Conducted two passes over runway at Thule Air Base: one at low elevation (1,500 ft) for ATM instrument calibration, one at high-elevation (10,000 ft) for LVIS instrument calibration.
Geographic Keywords	Lincoln Sea, Arctic Basin, Lomonosov Ridge, Ellesmere Island, Thule
ICESat Tracks	195
Repeat Mission	No
Planned Events	Complete remaining missions based on weather and crew hours.

Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
ATM + Cambot	☑	☒	☒	81.2 GB	None
MCoRDS	☒	☒	☒	N/A	None
Snow Radar	☑	☒	☒	340 GB	None
Ku-band Radar	☒	☒	☒	N/A	System testing
LVIS	☑	☒	☑	38 GB	None
DMS	☑	☑	☑	168 GB	None
POS/AV (510 + 610)	☑	☑	☑	2 GB	None
Gravimeter	☑	☑	☑	70 MB	None
DC-8 Onboard Data	☑	☑	☑	25 MB	None

Mission Report (Michael Studinger, Mission Scientist)

The goal of today's mission is to survey the thick multi-year sea ice north of Ellesmere Island and the gradient to thinner ice toward the North Pole. The first segment of this mission is along ICESat ground track #0195.

The weather forecast we got during the weather briefing at 6:30 am local predicted light haze in about ¼ of the survey area. The haze that we encountered during flight was significantly denser in parts of the survey area than we had expected making occasional changes in flight elevation necessary in order to receive a laser signal from the surface. Icing on the aircraft had to be closely monitored but was not a significant problem. Visibility during the flight was occasionally poor. We flew over many large leads that will be helpful for sea ice freeboard estimates.

Time (UTC)	Latitude	Longitude	Event
11:01:35			Takeoff
12:16:14	+83° 54.6'	-060° 28.5'	WP 19501
12:22:46	+84° 15.5'	-063° 25.4'	WP 19502
12:36:00	+84° 55.8'	-071° 21.2'	WP 19504
13:09:23	+85° 57.8'	-100° 16.6'	WP 19509
13:21:51	+86° 00.6'	-113° 39.7'	WP 19511
14:25:43	+80° 60.0'	-104° 60.0'	WP RK01
15:45:53	+85° 55.1'	-095° 21.1'	WP RK02
16:29:22	+82° 48.6'	-084° 47.0'	WP RK03
17:06:37	+84° 59.8'	-075° 01.7'	WP RK04
17:31:02	+83° 47.9'	-059° 39.7'	WP NS06
18:54:59			Landing

Individual instrument reports from experimenters on board the aircraft:

ATM: The ATM systems worked well. There were a few areas of low ice fog and clouds that occasionally required descents to 1000' but the ATM sensors were able to penetrate almost all the cloud layers.

MCoRDS: Was not in operation during today's flight. The team used the flight to test the system and fine tune the settings.

Snow and Ku-Band radar: Snow radar worked well and collected 340 GB of data. The team used the flight to trouble shoot the Ku-Band radar.

Gravimeter: System worked normally. No problems.

DMS: System worked well. No problems.

LVIS: The system worked well and recorded data during both high-altitude transits. No problems**.**

POS/AV: Systems worked well. No issues.

DC8 on board data: System worked well.

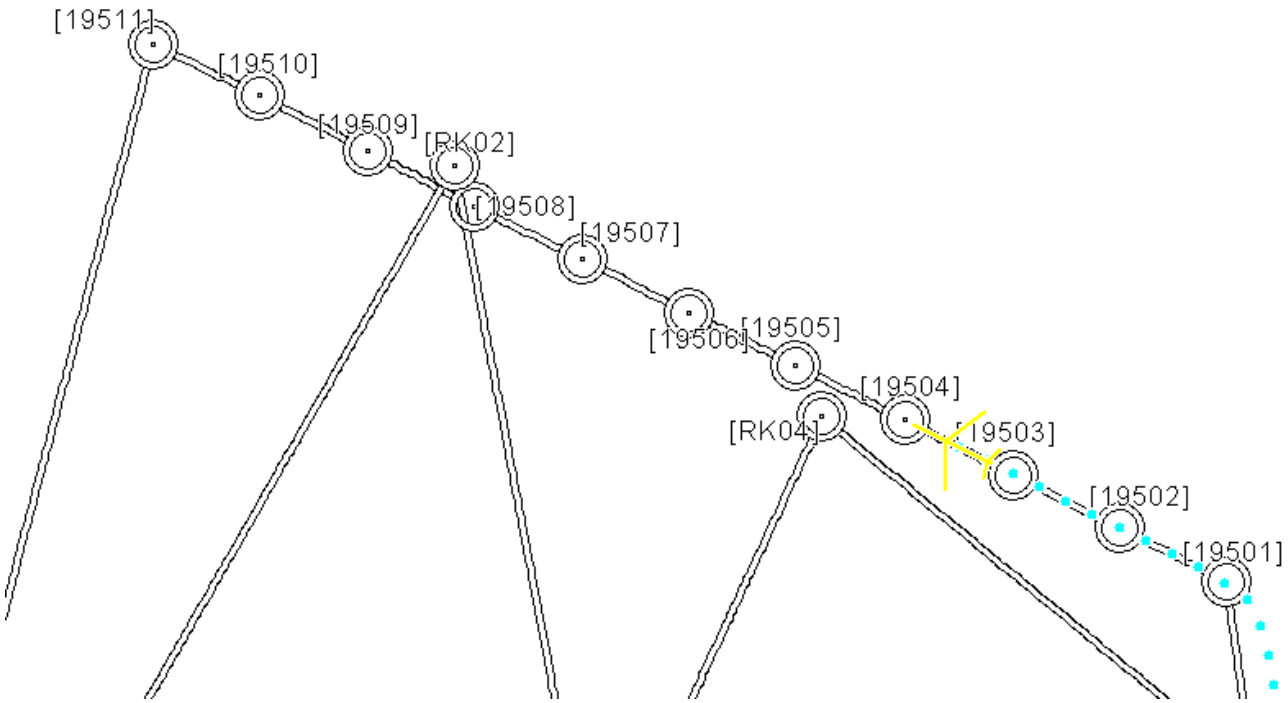

Figure 1: Waypoints and survey area of Flight 02 from John Sonntag.