Science Flight Report
Operation IceBridge Arctic 2010

Flight: 09
Mission: LVIS Rink Isbræ

Flight Report Summary

Aircraft	**DC-8 (N817NA)**
Flight Number	100301
Flight Request	108014
Date	Friday, April 9, 2010 (Z), Day of Year 099
Purpose of Flight	Operation IceBridge Mission LVIS Rink Isbræ
Take off time	11:07:57 Zulu from Thule Air Base (BGTL)
Landing time	18:32:25 Zulu at Thule Air Base (BGTL)
Flight Hours	7.5
Aircraft Status	Airworthy
Sensor Status	All installed sensors operational.
Significant Issues	None
Accomplishments	• High-altitude (>35,000 ft AGL) mapping of Rink Isbræ in support for the DESDynI mission development. • LVIS, MCoRDS, POS/AV, and DMS were operated on the survey lines. • Gravimeter was in operation throughout the entire flight. • ATM, snow radar, and Ku-band radar were not operated because this was a high-altitude mission, but the teams and instruments 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 two high-elevation passes over the runway at Thule Air Base one at 37,000 ft AGL and one at 24,000 ft for LVIS instrument calibration.
Geographic Keywords	Rink Isbræ, Greenland, Thule
ICESat Tracks	None
Repeat Mission	None

Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
ATM + Cambot	☒	☒	☒	N/A	None
MCoRDS	☑	☒	☒	2.4 TB	None
Snow Radar	☒	☒	☒	N/A	None
Ku-band Radar	☒	☒	☒	N/A	None
LVIS	☑	☒	☑	30 GB	None
DMS	☑	☑	☑	18 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 a target of opportunity survey of Rink Isbræ and its upstream catchment area in collaboration with the LiDAR instrument development team of the DESDynI mission. At the 6:30 am weather briefing satellite imagery and weather forecasts indicated that all remaining IceBridge mission areas were a no-go today but the conditions over Rink Isbræ looked promising. Today's mission is covered by a separate flight request No 108014 by the Instrument Scientist for the DESDynI LiDAR.

The mission goals for today's mission are specifically driven by mission design studies and sampling trade studies currently underway for the DESDynI mission. The mission was designed to capture an area with variable topographic change to evaluate the DESDynI sampling schemes to optimize data collection for cryospheric science goals. The high-altitude survey of Rink Isbræ consists of 14 parallel lines, spaced 1.5 km apart and covers an area 20 km wide and 120 km long. We repeated a portion of Line 8 because of an operator error during the LVIS data collection on the first pass.

The weather conditions were good throughout the entire survey area with only very light high-level clouds as indicated by the satellite imagery and forecast models.

Individual instrument reports from experimenters on board the aircraft:

ATM: The ATM systems were not operated due to the high-altitude mission but were in stand-by mode during the entire flight.

MCoRDS: The system worked well and collected 2.4 TB of data over the survey area.

Snow and Ku-band radar: The systems were not operated due to the high-altitude mission but were in stand-by during the entire flight.

Gravimeter: System worked normally. No problems.

DMS: DMS worked well. No issues.

LVIS: LVIS worked well and collected about 12 million laser shots will almost 100% return rate.

POS/AV: Systems worked well. No issues.

DC-8 on board data: System worked well.

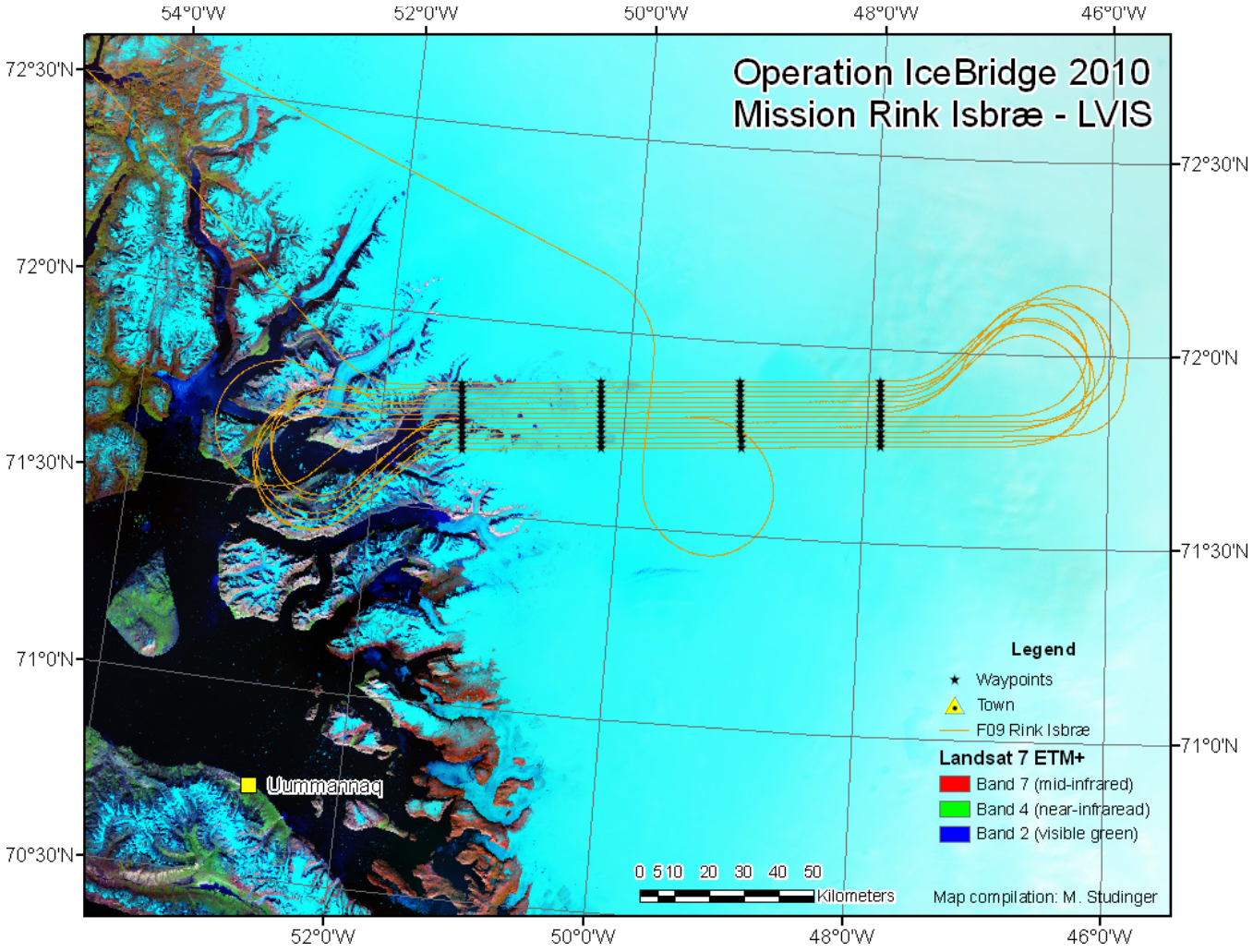

Figure 1: Waypoints and flight path LVIS Rink Isbrae F09.

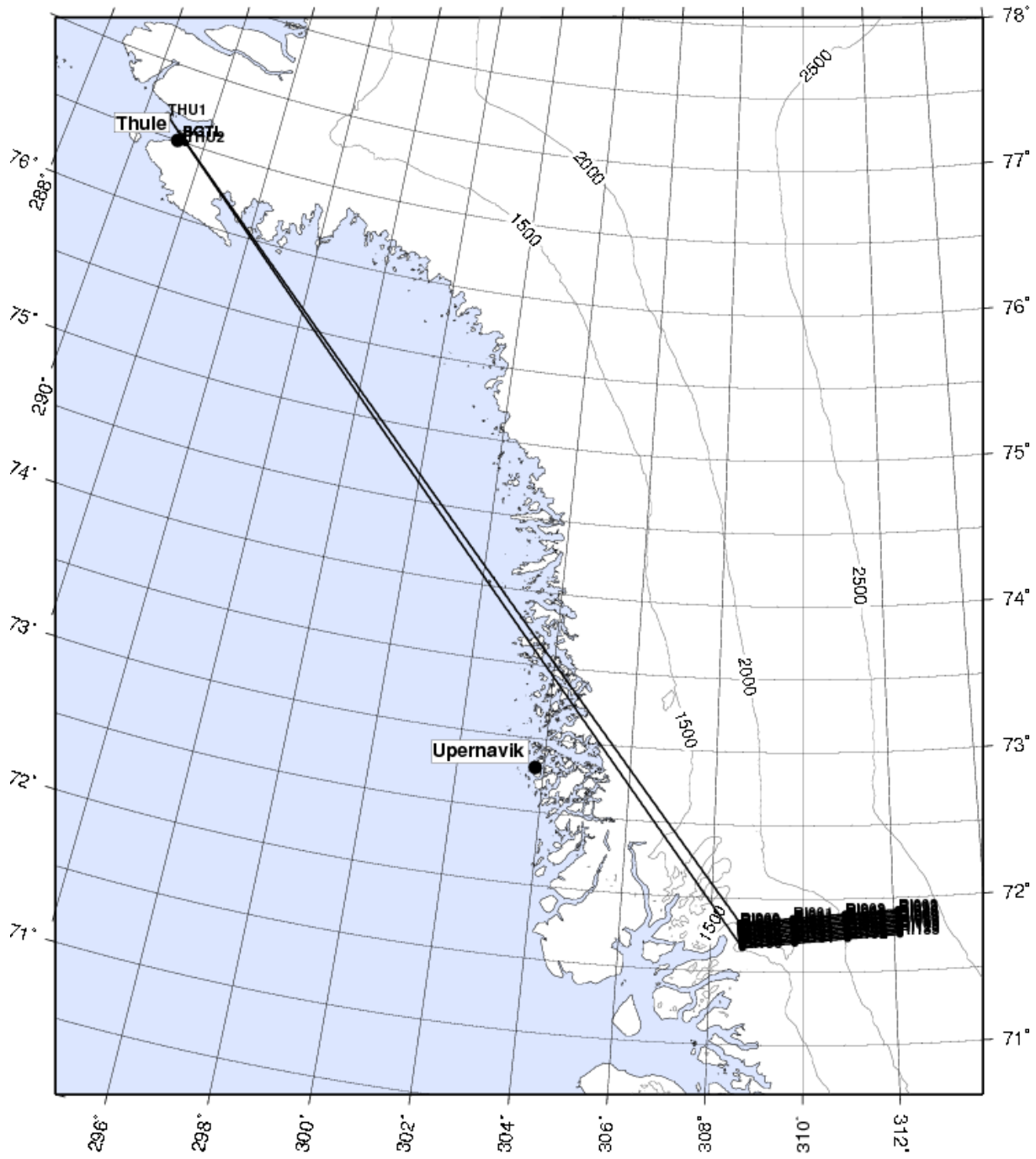

Figure 2: Waypoints and survey area of Flight 09 from John Sonntag.