

Preliminary Science Flight Report

Operation IceBridge Arctic 2011



Flight: D09

Mission: Box 5 Flight 1

Flight Report Summary

Aircraft	LaRC B200 (NASA529)
Flight Number	D09
Flight Request	11-028 LaRC
Date	Thursday, April 21, 2011 (Z)
Purpose of Flight	Monitor surface elevation in the Southwestern part of Greenland, First dedicated flight in Box 5 grid (North of Kangerlussuaq and to the Southern end of Disko Bay).
Take off time	1033 Zulu from Kangerlussuaq (BGSF)
Landing time	1614 Zulu at Kangerlussuaq (BGSF)
Flight Hours	5.7
Aircraft Status	Airworthy.
Sensor Status	All installed sensors operational.
Significant Issues	None.
Accomplishments	<ul style="list-style-type: none"> • High-altitude survey (28,000 ft AGL) of the southwestern Greenland • Completed 1 ICESat Tracks in Box 5 and 6 grid lines obtaining a 10 km grid spacing in coastal portion of Box 5. • LVIS and camera were operated on the survey lines. • 2 Ramp passes at BGSF. • 2 Pitch and Roll maneuver over frozen fjord at BGSF
Geographic Keywords	Ice Sheet southwestern flank, North of Kangerlussuaq, Russell Glacier, Isunguata Sermia
ICESat/CryoSat Track	323
Repeat Mission	No

Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
LVIS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	~56 GB	None
LVIS Camera	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	~16 GB	None
POS/AV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2 GB	None

Mission Report (Shane Wake, Instrument Operator and Lora Koenig, Mission Scientist)

Today's mission was the first mission to be flown in Box 5 which is located north of Kangerlussuaq. The southern end of the Box 5 is at Kangerlussuaq and the northern end at the southern end of Disko Bay. As shown in the satellite image (Figure 1) the region was clear of clouds. Box 5 is one of two highest priority boxes and today was the first forecasted clear day in the region. Today's flight was planned to survey 1 ICESat Track and 6 additional grid lines to complete a 10 km grid spacing from the coast. This was a very ambitious flight given the endurance of the plane, planned at 5.5 hours. The pilot slowed the plane slightly to get maximum fuel efficiency and flew for 5.7 hours.

The B200 took off at 1033 Z from Kangerlussuaq and completed a pitch and roll and a ramp pass. The plane transited to the ICESat Track 323 in Box 3 and headed south for 125 nmi on the ICESat Track. The plane then flew north and south on 6 grid lines from the interior to the coast completing a 10 km grid spacing with a 5 km grid spacing closest to the coast. The plane landed at Kangerlussuaq at 1614 Z.

LVIS had relatively clear skies, there was a thin haze transiting to the box but it did not affect the laser. LVIS did not lose any data during the flight due to clouds.

Figure 3 below shows the coverage to date of the LVIS/ B200 grids line from this campaign. To date data has been gathered in Boxes 2, 3, 4 and 5 given good coastal coverage from the southern end of Disko Bay to Narsarsuaq.

Below are the detailed Flight notes from the Instrument Operator. Times from the Instrument Operator on the plane are in local Kangerlussuaq time (-2 hours from Z)

07:15 Plane pulled out of the hangar

07:20 All three Javad's GPS receivers started (plane stationary), and Applanix 510&610 turned on

07:25 Power turned on to instrument

08:29 Taxi

08:33 Take off

08:35 Instrument up and running, no issues

08:38 Roll and Pitch maneuvers performed

08:45 Ramp Pass over airport

*Still noise on Ch3 (Detector C) while radio transmitting

08:48 Proceeded to first line for beginning of data collection over desired lines

14:00 Ramp Pass

14:05 Roll and Pitch maneuvers over Fjord

14:14 Landed

14:16 Stopped on Ramp (Countdown to GPS turnoff begins)

Individual instrument reports from experimenters on board the aircraft:

LVIS: Worked well, ~99% or better coverage, there was continued radio interference on transmit from some radio transmission. The interference should not cause any significant problem to the altimetry data.

LVIS Camera: Worked well, no issues.

POS/AV: Worked well, no issues.

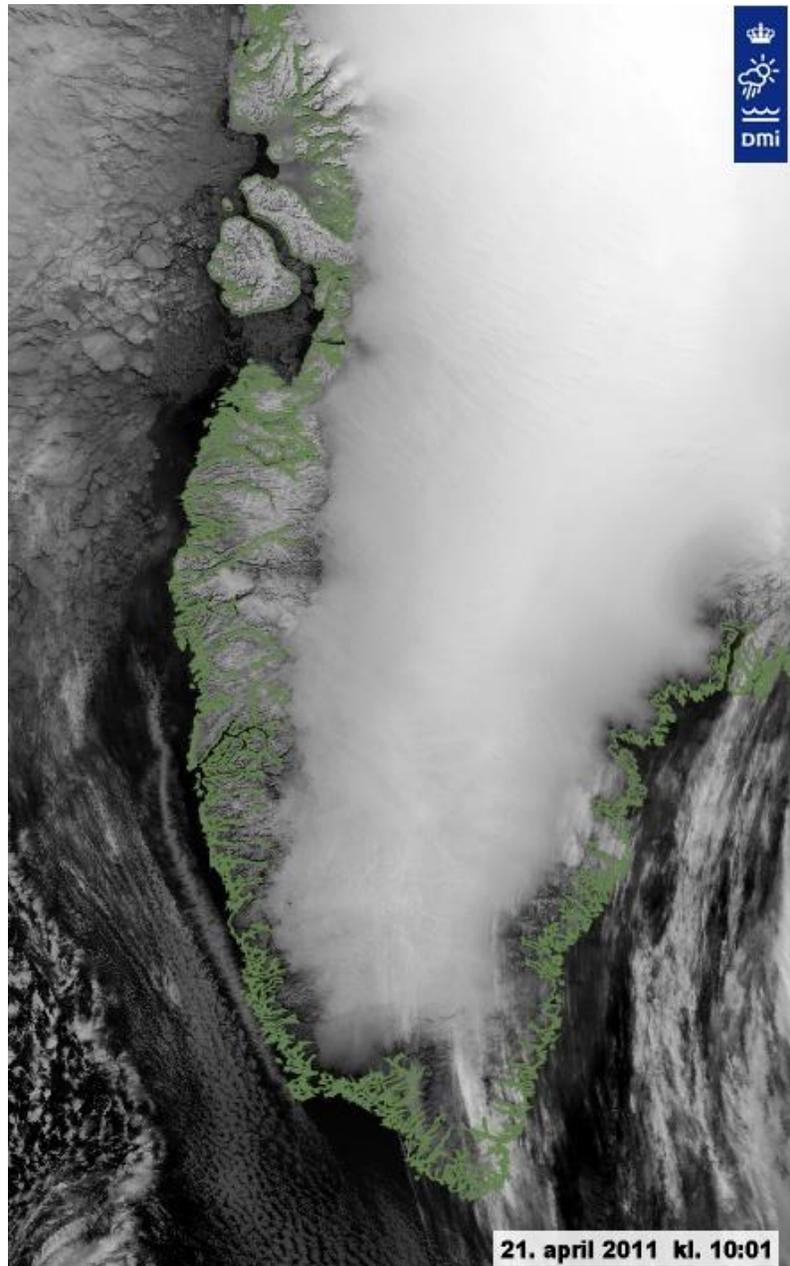


Figure 1: IR Satellite image taken during the flight.

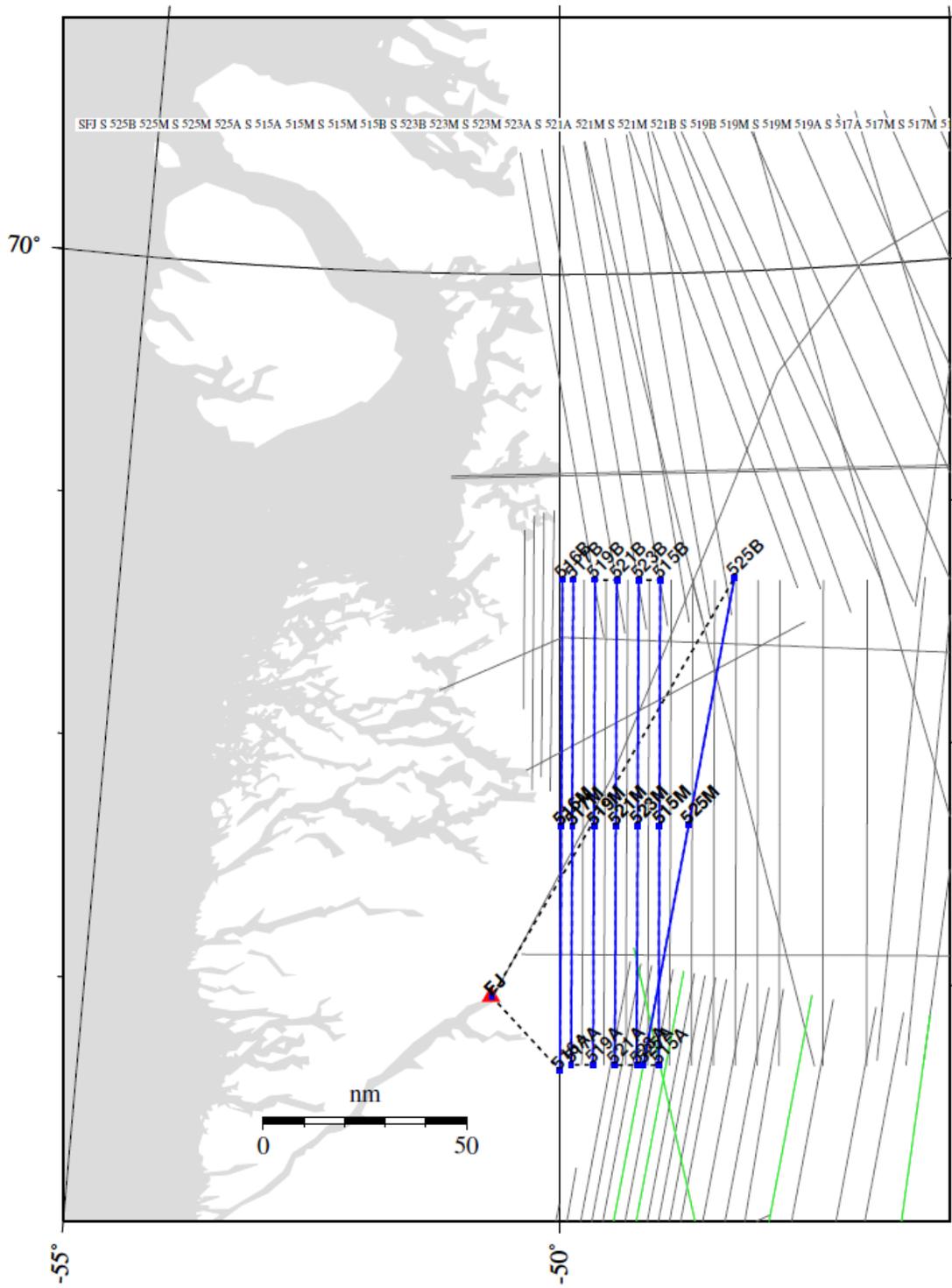


Figure 2: Proposed B200 flight plan for April 21, 2011 (blue). Green lines are previously flown lines.

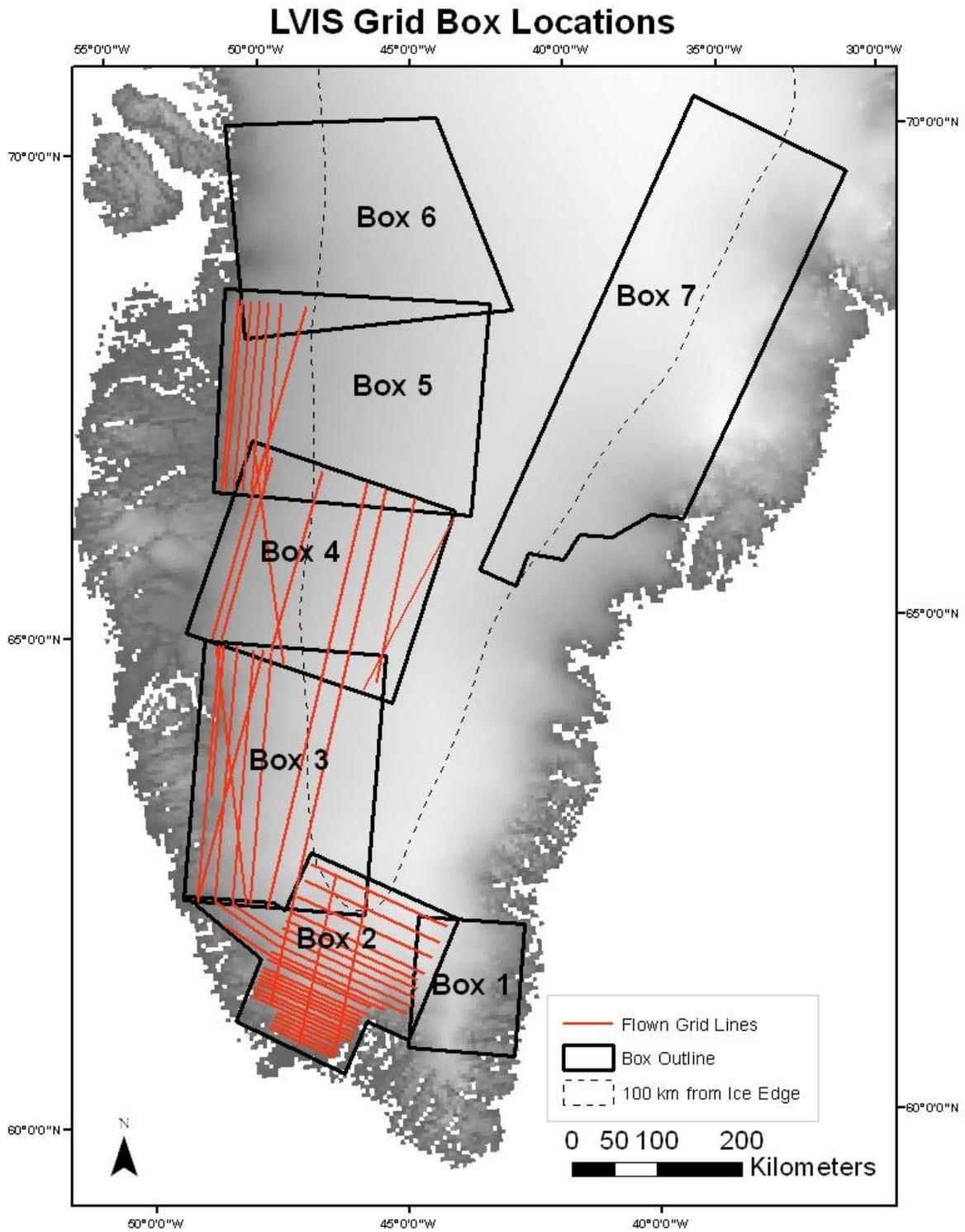


Figure 3: LVIS grid lines flown to date during the B200 Arctic 2011 Operation IceBridge Campaign.