

Preliminary Science Flight Report

Operation IceBridge Arctic 2011



Flight: D11

Mission: Box 5 Flight 3

Flight Report Summary

Aircraft	LaRC B200 (NASA529)
Flight Number	D11
Flight Request	11-030 LaRC
Date	Monday, April 25, 2011 (Z)
Purpose of Flight	Monitor surface elevation in the Southwestern part of Greenland, Completed 2 interior grid lines in Box 5 grid (North of Kangerlussuaq and to the Southern end of Disko Bay).
Take off time	1020 Zulu from Kangerlussuaq (BGSF)
Landing time	1351 Zulu at Kangerlussuaq (BGSF)
Flight Hours	3.5
Aircraft Status	Airworthy, Windshield cracked
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 2 ICESat Track in Box 5. • Transit on Russell/Isunguata Sermia glacier line. • LVIS and camera were operated on the survey lines. • Ramp passes at BGSF at 19,000 ft. • Pitch and Roll maneuver over frozen fjord at BGSF
Geographic Keywords	Ice Sheet southwestern flank, North of Kangerlussuaq, Isunguata Sermia, Russell Glacier
ICESat/CryoSat Track	174
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"/>	~30 GB	None
LVIS Camera	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	~9 GB	None
POS/AV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1 GB	None

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

Today's mission was the third mission to be flown in Box 5 which is located north of Kangerlussuaq. The southern end of 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 had some alto cumulus clouds at take off. The clouds were encountered by the plane in the center portion of Box 5 but they did not affect the surface return from LVIS. Box 5 is one of two highest priority boxes. Today's flight was planned to survey 3 ICESat Track, 3 additional grid lines in the ice sheet interior portion of Box 5 and transit on the Russell/Isunguata glacier line (Figure 2). Only the transit on the Russell/Isunguata glacier line, 1 grid line and 1 ICESat track were actually flown today on today's flight due to a crack aircraft windshield cutting the flight short (Figure 3).

The B200 took off at 1020 Z from Kangerlussuaq and completed a pitch and roll and a ramp pass at 19000 ft. The plane was held at this altitude by Air Traffic Control as it transited on the Russell/Isunguata glacier line. After about a quarter of this line was completed the plane was cleared to 28,000 feet. The plane transited to the eastern end of Box 5 and then preformed a southward turn to line up on ICESat track 174 which it followed for 131 nmi to the north. The plane headed south on the eastern most grid line in Box 5. As the plane turned to head north again the windshield on the right side of the plane cracked. The science portion of the mission was ended. The plane descended in altitude, reduced speed and returned to Kangerlussuaq landing at 1351. The crack windshield will be replaced as soon as possible.

Figure 4 below shows the coverage to date of the LVIS/ B200 grids line from this campaign.

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)

07:10 Plane pulled out of the hangar
 07:13 All three Javad's GPS receivers started (plane stationary)
 07:15 Applanix 510&610 turned on
 07:30 System checked out, no issues
 08:15 Taxi
 08:20 Take off
 08:24 Instrument up and running, no issues
 08:25 Roll and Pitch maneuvers performed
 08:30 Ramp Pass over airport at 19000ft
 08:52 Level at 28000ft (@ 1/4 of the glacier line from coast)
 09:35 Finished glacier line and started first line of Box 5 @ point 526A

*After second of Box 5 lines, heard a pop sound and the front window pilots side was covered in cracks. The PIC (pilot in command) ended science mission and began transit to airport with descending and slowing the aircrafts speed

11:50 Landed

11:54 Stationary on Ramp

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

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.

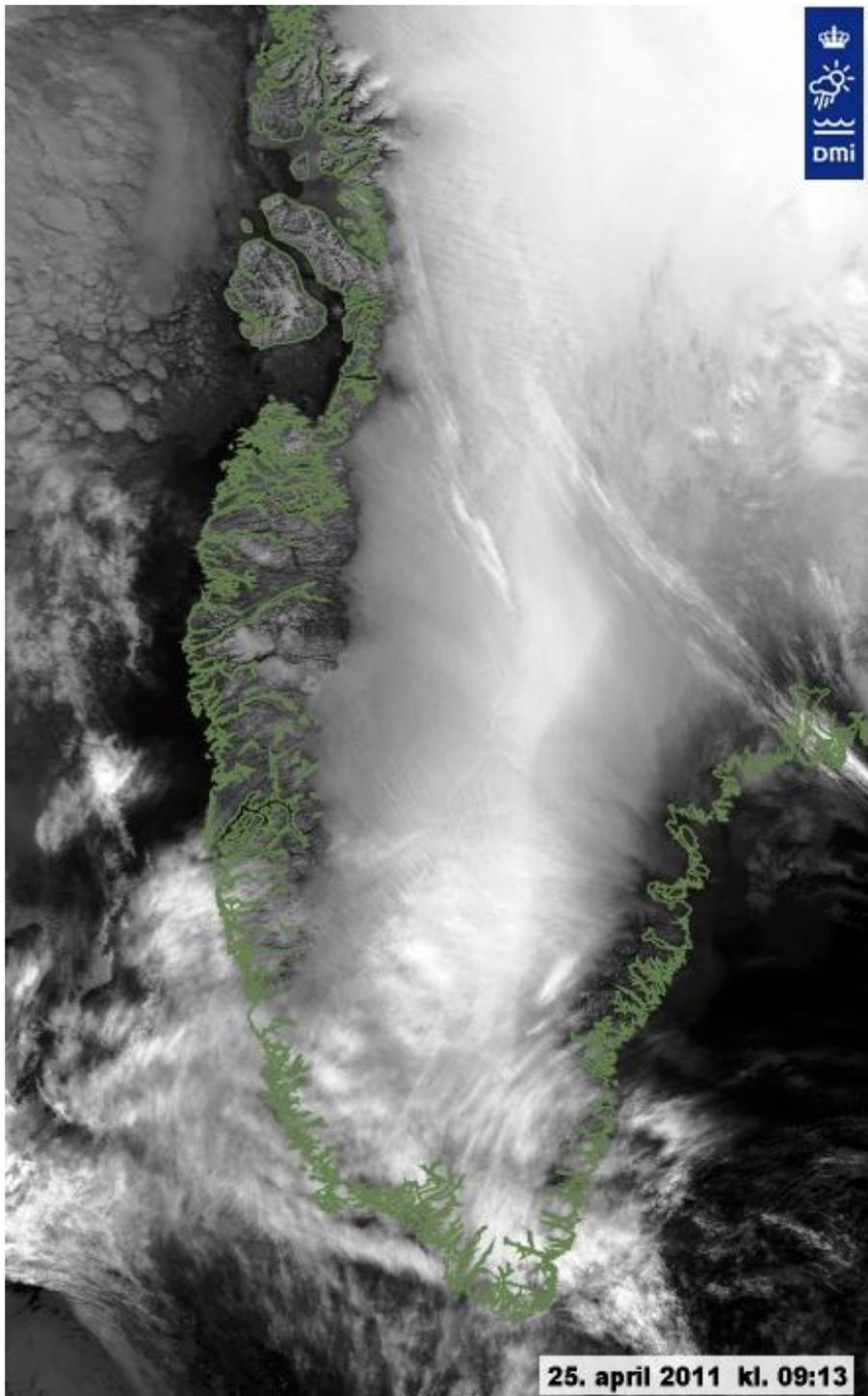


Figure 1: IR Satellite image taken during the flight.

box5_425 option

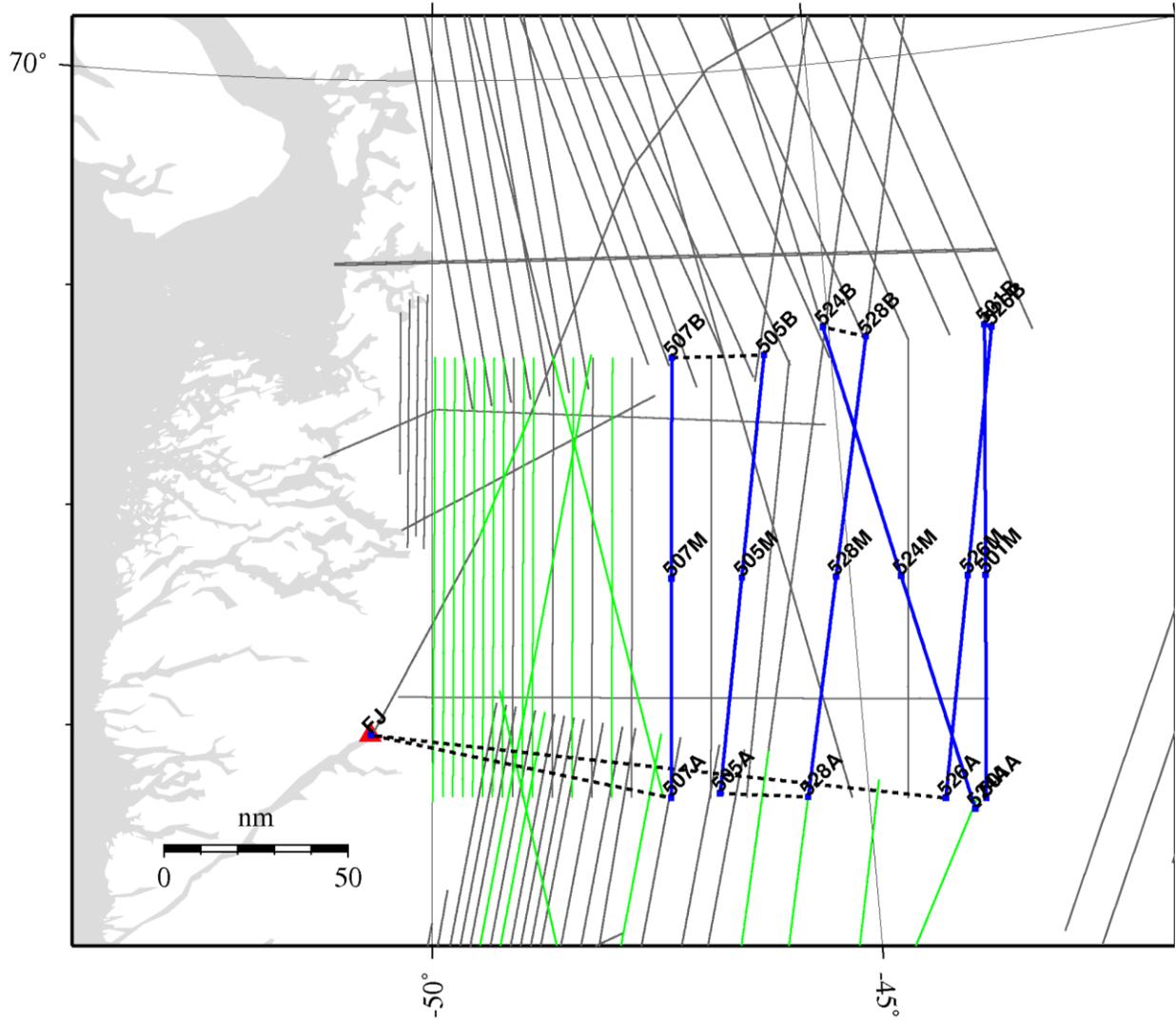


Figure 2: Proposed B200 flight plan for April 25, 2011 (blue). Green lines are previously flown lines. Only the eastern most lines were flown due to a cracked aircraft windshield.



Figure 4: Actual trajectory of today's flight showing the Isunguata Sermia/Russell Glacier line and the two eastern most lines were accomplished before the aircraft windshield cracked and the aircraft returned to Kangerlussuaq.

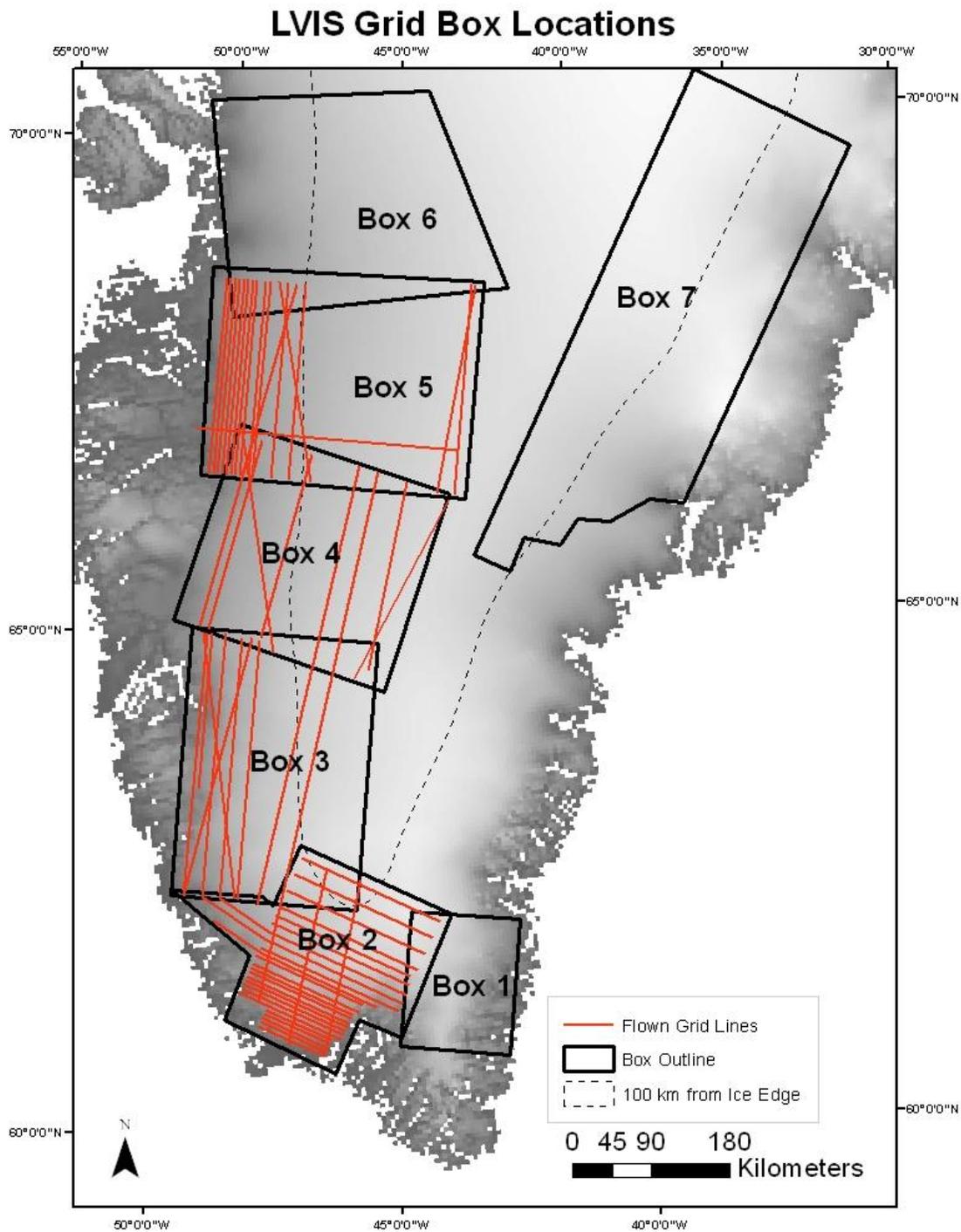


Figure 3: LVIS grid lines flown to date during the B200 Arctic 2011 Operation IceBridge Campaign.