

Preliminary Science Flight Report

Operation IceBridge Arctic 2011



Flight: F27
Mission: Geikie 01

Flight Report Summary

Aircraft	P-3B (N426NA)
Flight Number	027
Flight Request	11P006
Date	Tuesday, April 26, 2011 (Z)
Purpose of Flight	Mission Geikie 01
Take off time	10:14 Zulu from Kangerlussuaq (BGSF)
Landing time	18:27 Zulu at Kangerlussuaq (BGSF)
Flight Hours	8.3 hours.
Aircraft Status	Airworthy.
Sensor Status	All installed sensors operational.
Significant Issues	None
Accomplishments	<ul style="list-style-type: none"> • Low-altitude surveys (1,500 ft AGL) of several outlet glaciers around the Geikie Plateau and two ICESat lines over the Geikie Plateau. • Survey along the EGIG Traverse route for ESA's CryoVEx 2011. • ATM, MCoRDS, accumulation, snow and Ku-band radars, gravimeter, magnetometer, POS/AV, and DMS were operated on the survey lines. • Ramp pass at 1,500 ft AGL for ATM calibration. • Pitch maneuvers over fjord for snow and Ku-band radar.
Geographic Keywords	Geikie Plateau, EGIG Traverse, Vest Fjord, Sortebrae, Kronborg Gletscher, De Reste Bugt, Nansen Fjord, Christian den Ivs Gletscher, Daugaard Jensen Glacier.
ICESat/CryoSat Track	ICESat tracks 1296 and 1334.
Repeat Mission	2010.

Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
ATM	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	70 GB	None
MCoRDS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.9 TB	None.
Snow Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	390 GB	None
Ku-band Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	390 GB	None
Accumulation Radar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	325 GB	None
DMS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	101 GB	None
POS/AV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2 GB	None
Gravimeter	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	640 MB	None
Magnetometer	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	480 MB	None

Mission Report (Michael Studinger, Mission Scientist)

Today's mission is a repeat of a 2010 IceBridge mission. It includes reflights of the Daugaard-Jensen, Vestfjord and Kong Christian IV glaciers, and the "X" pattern over the Geikie Plateau, all of which have pre-IceBridge altimetry from ATM. It also reflies the Eielson, De Reste Bugt, Sortebrae and Kronborg glaciers, first flown in 2010. After we finished the glacier runs around the Geikie Plateau we went up Daugaard Jensen Glacier and continued on to the interior of the ice sheet back to Kangerlussuaq. We flew along the EGIG traverse route (l'Expedition Glaciologique Internationale au Groenland) in support of ESA's CryoVEx 2011 campaign. The CryoSat-2 Validation and Calibration Experiment (CryoVEx) along the EGIG route is designed to provide ground truth for the ASIRAS and SIRAL radars over ice sheets, extend the accumulation record by 4 years (currently circa 25 years), investigate firn densification over short time scales, and to improve the backscatter model for the percolation zone used for the waveform retracker on CryoSat-2.

The original plan was to fly glacier centerlines are flown in the reverse direction from the 2010 flight in order to assist in the recovery of gravity data for these sinuous lines, but we had to fly the mission in reverse to avoid deteriorating weather conditions during the day over the Geikie Plateau area.

The weather in the area was mainly good. We only had to abort our flight up Nansen Fjord and Christian Gletscher because of a 3,000 ft cloud base and 13,000 ft terrain. Other than that it was a perfect day.

Individual instrument reports from experimenters on board the aircraft:

ATM: worked very well. Clouds over Christian Gletscher.

MCoRDS: The MCoRDS system worked well. 15 minutes at begin was used for noise analysis.

Snow and Ku-band radar: The snow and Ku-band radars worked well.

Accumulation radar: worked well.

Gravimeter: Worked well. No issues.

Magnetometer: worked well.

DMS: worked very well.

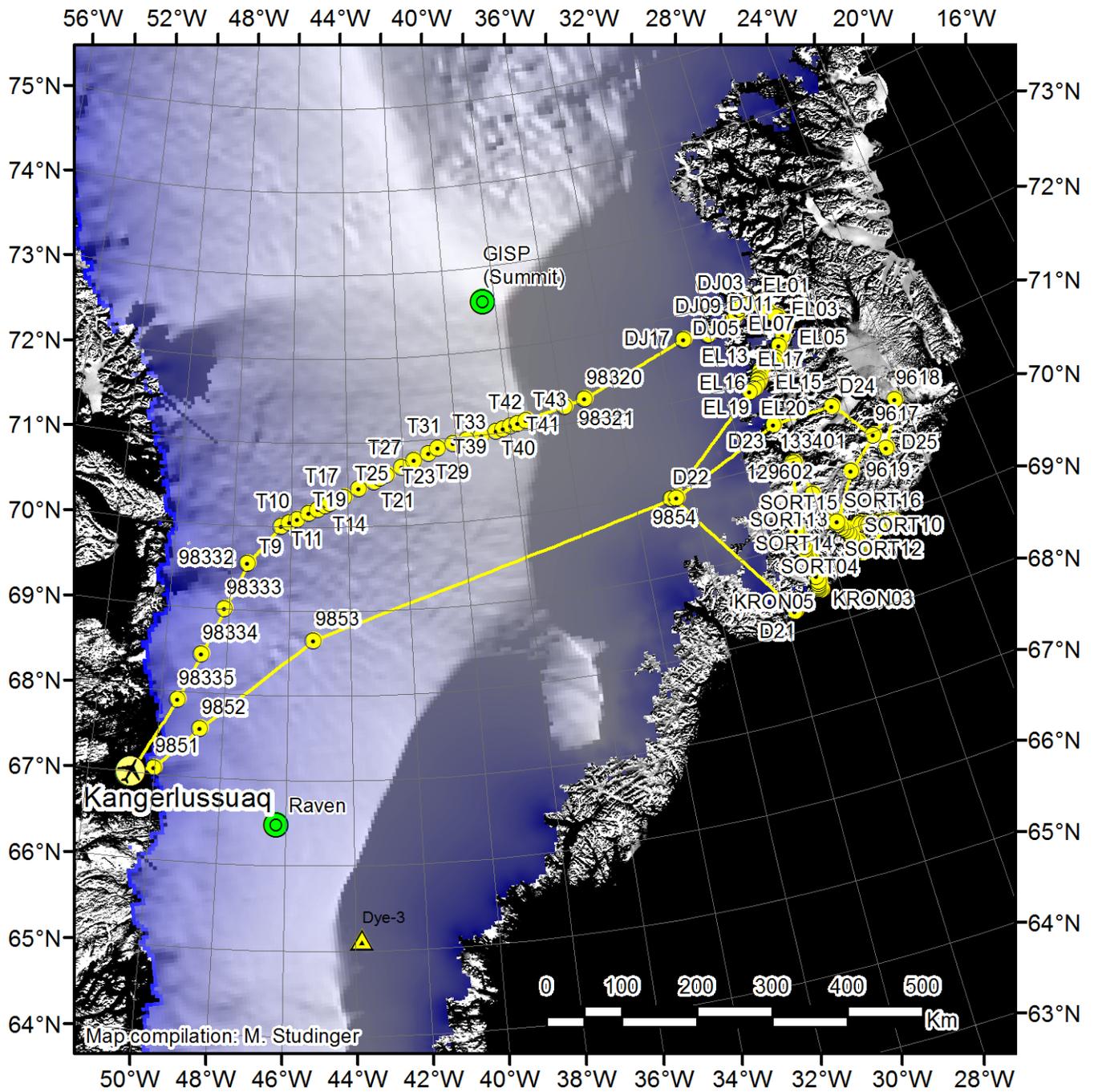


Figure 1: Mission plan for today's flight Geikie 01.

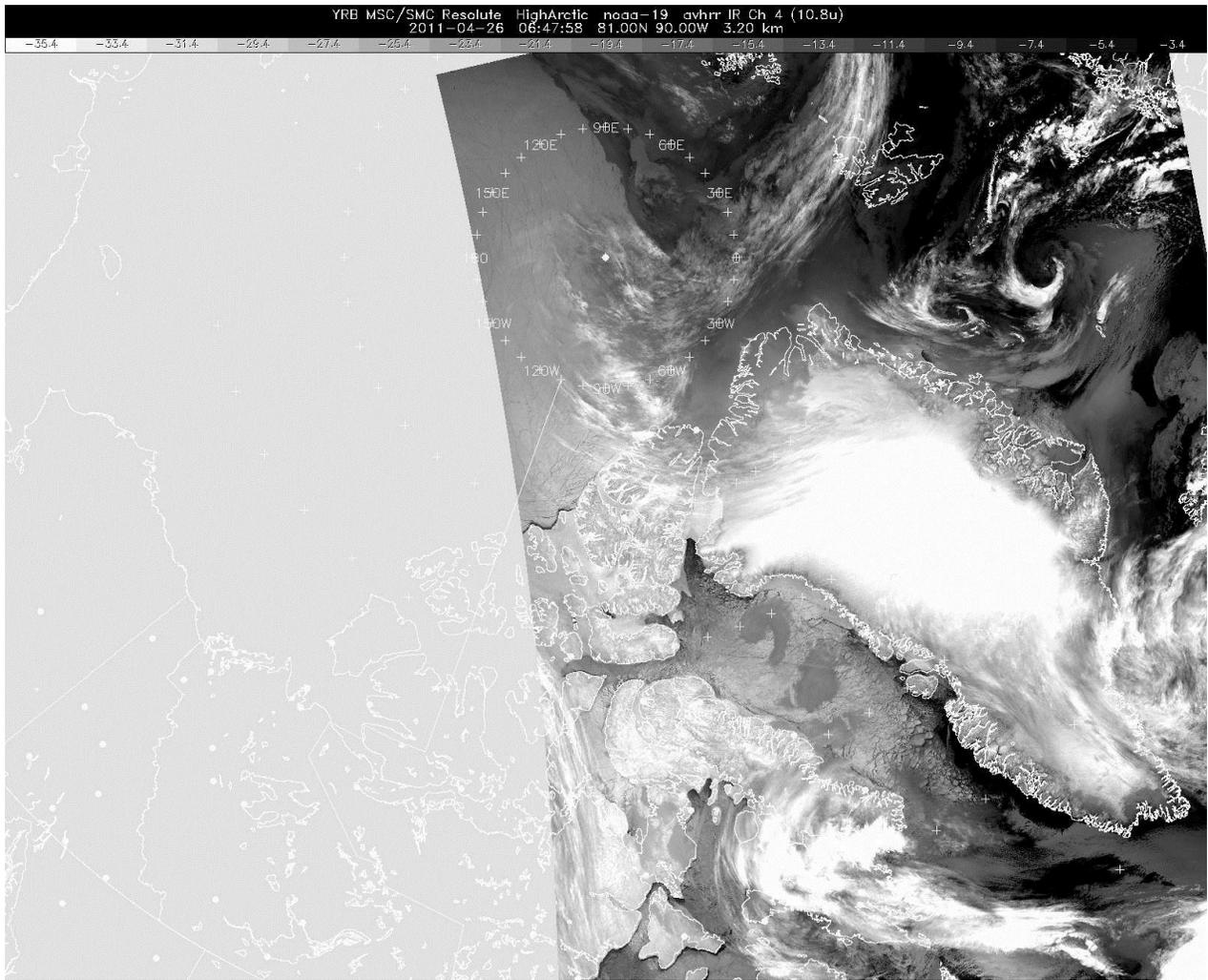


Figure 2: IR satellite image downloaded shortly before takeoff showing multiple layers of clouds in parts of the survey area.

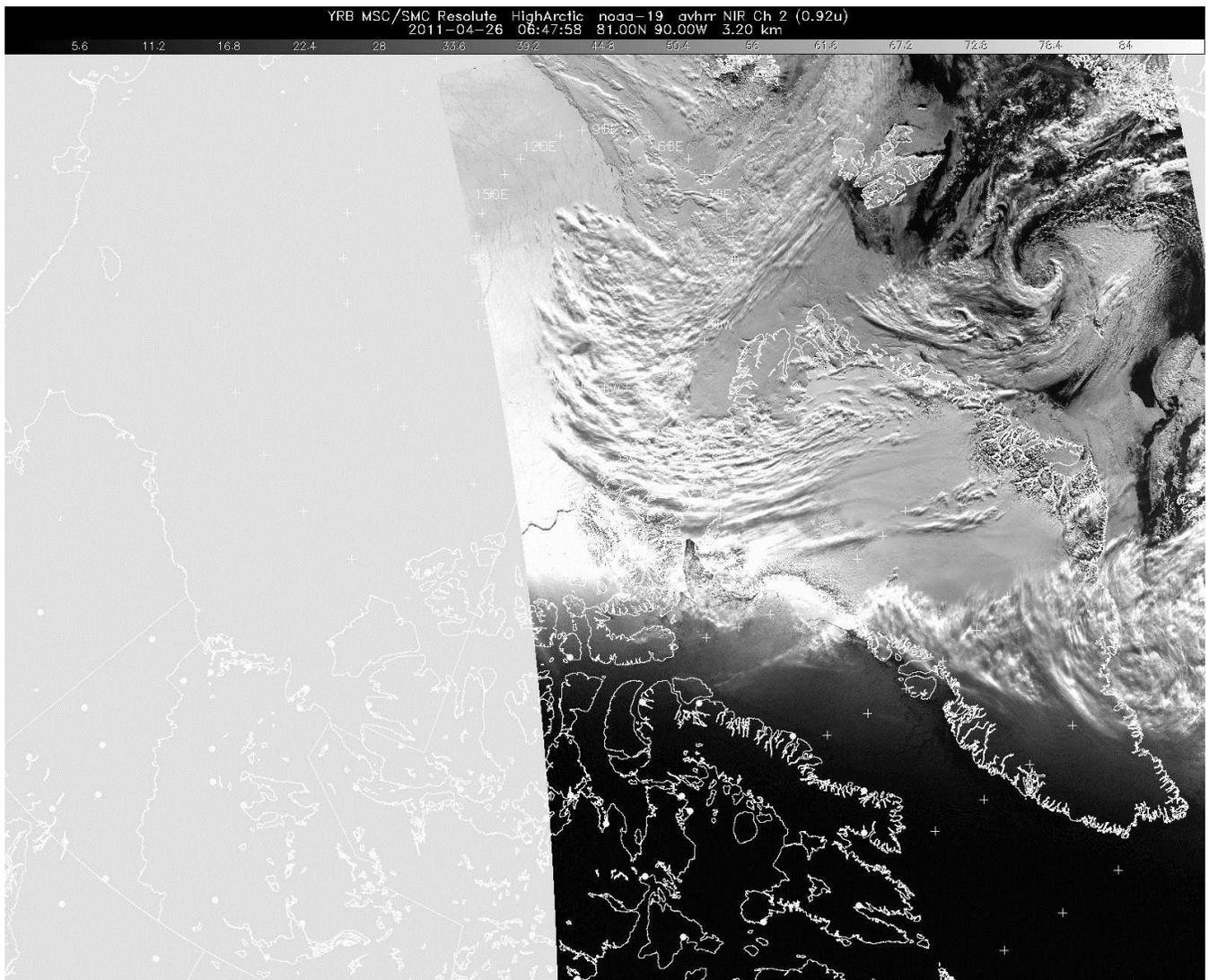


Figure 3: Visual satellite image downloaded shortly before takeoff showing multiple layers of clouds in parts of the survey area.