

Science Flight Report

Operation Ice Bridge Fall 2009



Antarctic Flight No 21
Mission Plan: Thwaites, Smith, and Kohler Glaciers 4 (TSK 4)

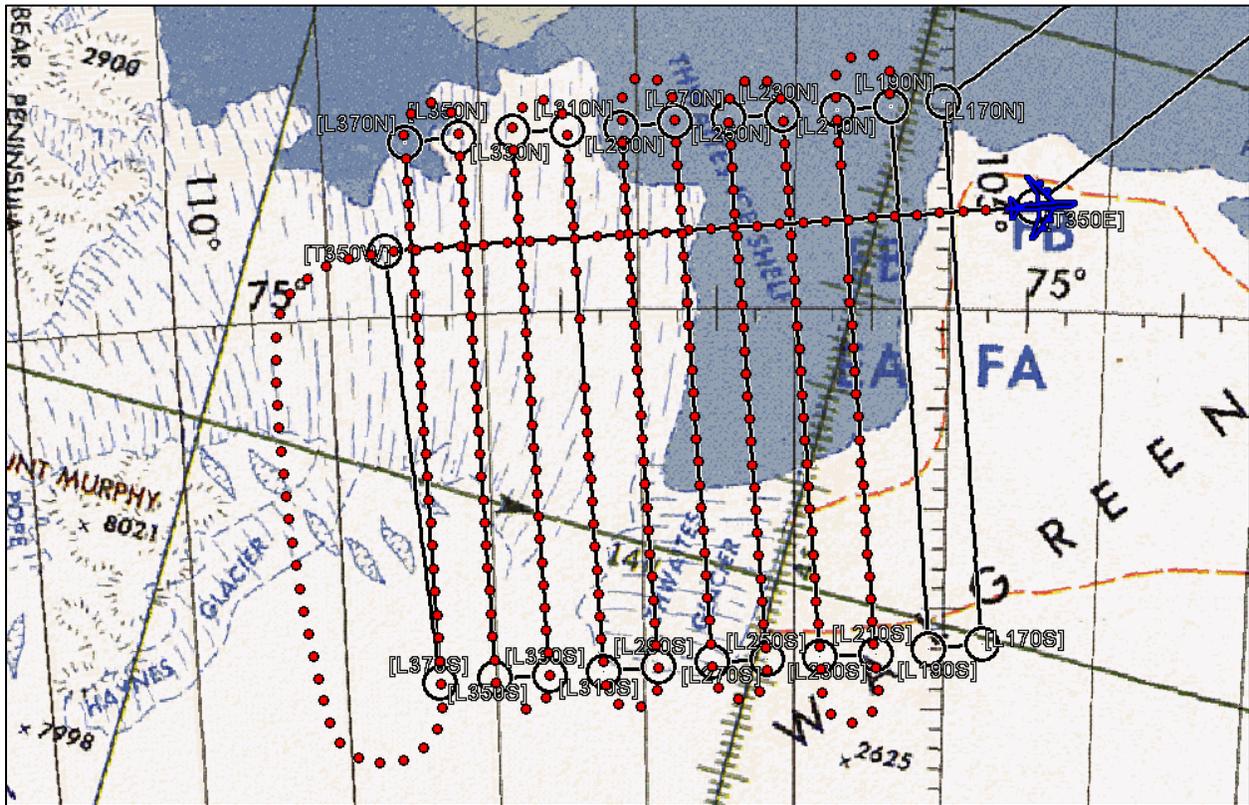
Aircraft	DC-8 (N817NA)
Flight Number	DC8-100129
Flight Request Number	108002
Flight Hours	10.8
Date	Wednesday, Nov 18 2009, Day of Year 322
Purpose of Flight	Operation Ice Bridge Mission TSK 4
Aircraft Status	Airworthy.
Sensor Status	All installed sensors operational.
Significant Issues	None
Accomplishments	<ul style="list-style-type: none"> • Low level survey over Thwaites Glacier (1500 ft AGL). • Completed all of the planned survey lines. • ATM, DLH, gravimeter, MCoRDS, Ku-band radar, snow radar, DMS, and POS/AV operational throughout target areas. • LVIS, AVOCET, DACOM, and WAS were not operated on this mission. • Conducted two passes over runway at Punta Arenas airport for ATM instrument calibration.
Planned Events	<ul style="list-style-type: none"> • Complete the remaining missions based on weather and crew hours.

Mission Log (Michael Studinger, Mission Scientist)

Today's mission is a laser, ice-penetrating radar, and gravity survey of the grounding line and floating ice tongue of Thwaites Glacier. The Thwaites Glacier grid requires two missions to be completed. Today we start surveying by flying every other grid line and one tie line on the way back. This will provide us with a 10 km coverage of the entire grid area in case we can not complete the survey with a second mission this year.

The weather turned out to be fine and we encountered the conditions that we have expected from the forecast. A thick cloud layer was visible behind the Mount Murphy area, that we have also seen in the satellite images and the AMPS model. Hopefully, it will stay there for tomorrow's flight.

12:03:16 Zulu: takeoff
 15:04:30 Zulu: begin descent into survey area
 15:33:21 Zulu: start of first survey line at waypoint L170N
 18:45:53 Zulu: end of last survey line at waypoint T350E, starting to climb
 22:45:41 Zulu: touchdown



Individual instrument reports from experimenters on board the aircraft:

ATM: The ATM systems worked well in the favorable weather conditions and collected approximately 150 million laser elevation measurements over the course of the survey.

MCoRDS: The MCoRDS system collected almost 1 TByte of data during the 3 hour and 15 minutes survey. The bottom echo was detectable at least 80% of the time.

Snow and Ku-Band radar: System performed as expected. Snow radar collected 277 GByte of data. Ku-band radar collected 274 GByte of data.

LVIS: Was not in operation during today's flight.

DLH: System worked well.

AVOCET, DACOM, WAS: Systems were not operated on this mission.

DMS: System worked well. No problems.

Gravity: System worked normally. No problems.

POS/AV: System worked well. No issues.

DC8 on board data: System worked well.

Thwaites-Smith-Kohler 4

11.1 hrs total / 4.1 hrs survey
440 knots transit / 250 knots survey

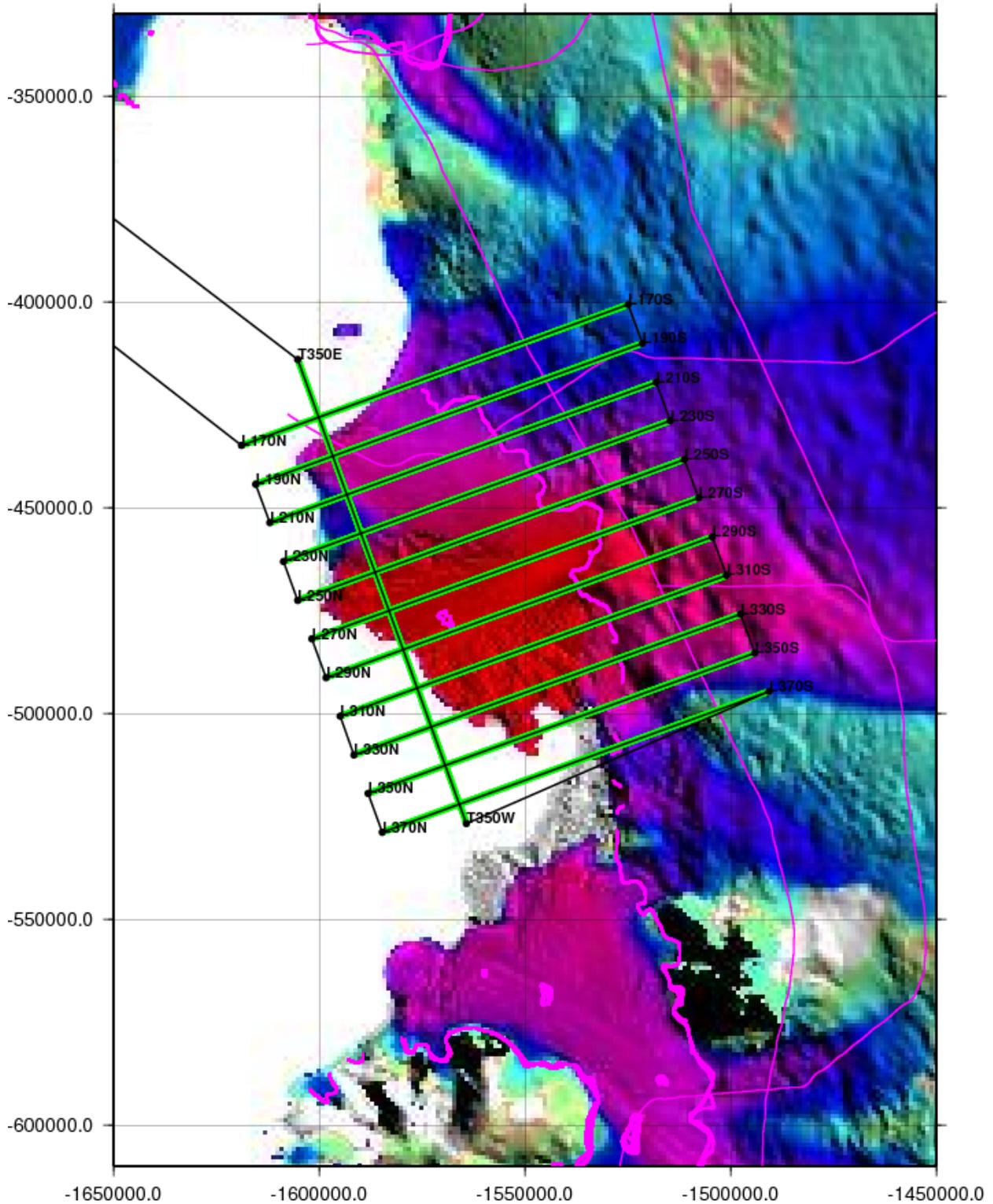


Figure 1: Waypoints and survey area of Flight 21 from John Sonntag – Mission ID TSK 4.