

OIB - P-3 Orion - WFF 05/15/19 Science Report

Aircraft:

[P-3 Orion - WFF](#) ([See full schedule](#))

Date:

Wednesday, May 15, 2019

Mission:

OIB

Mission Location:

Kangerlussuaq, Greenland

Mission Summary:

Mission: Jakobshavn 02 augmented (priority:high)

This mission is a repeat of similar 2009, 2010, 2011, 2012, 2013 and 2014 OIB flights. The primary science objectives are to (a) complete the basic Jakobshavn grid, specifically the east-west lines, and (b) repeat longitudinal surveys of the Rink and Kangerdlugssup Glaciers. We also occupy a line connecting Swiss Camp and a pair of Eric Lutz-requested points nearby. Finally we fly the main Jakobshavn centerline twice. For 2019 we replace ICESat-1 line 0085 with ICESat-2 line A0727, which is occupied by the spacecraft on 15 May 2019. Since this mission was a short one at 6 hrs and we had no particular time limitations today, we augmented it with two pairs of IceSat-2 ground tracks (left and right strong beams, 1L and 3L) of relatively low latency over the Umanaq Peninsula and Disko Island. These lines were borrowed from, or are similar to, lines in the "IceSat-2 Disko-Umanaq" mission, and are intended to aid in tuning and improving geolocation for IceSat-2.

This morning's weather satellite images presented a grim spectacle at first glance, with almost all of southern and central Greenland clouded. However, we knew from multiple weather models and from surface observations that low-level winds along the west-central flank of the ice sheet were southeasterly, and therefore blowing downhill (katabatic winds). From this we could confidently predict that there were no low clouds beneath the abundant high clouds over the Jakobshavn basin and surrounding areas. Clouds rarely blow downhill, thanks to the Ideal Gas Law. This was indeed the case for our entire flightline today - we observed only medium- and high-level clouds. We experienced only occasional light turbulence, since the katabatics were considerably weaker than yesterday.

Headwall SWIR did not operate today, but otherwise all instruments performed well. As expected, ATM experienced challenges on some of the IceSat-2 geolocation lines over Umanaq Peninsula and Disko Island. The steep terrain under some of those lines made it impossible for us maintain a constant AGL altitude, and the surface was often alternately snow covered (bright) and bare rock (dark). These conditions yielded an unusually large dynamic range for the laser returns, which could not always be tracked - primarily because the ATM design is optimized for ice/snow. ATM estimates 100% altimetry data recovery over ice today, and perhaps 50% over the Disko and Umanaq lines. We performed a ramp pass at 3000' prior to landing.

IceSat-2 RGT latencies (+/- indicates OIB surveyed after/before IceSat-2)

0658 +4 days
0643 +5 days
0529 +13 days
0727 -3 hours

OIB reached a milestone today, breaking 10,000 nm of IceSat-2 reference ground tracks flown. We have now flown 10,090 nautical miles (18,687 km) of IceSat-2 ground tracks so far this season.

Data volumes:

ATM: 141 Gb

CAMBOT: 265 Gb

FLIR: 17 Gb

KT19: 13 Mb

MCoRDS: 2.28 Tb

Narrow Swath ATM: 192 Gb green

Narrow Swath ATM: 152 Gb IR

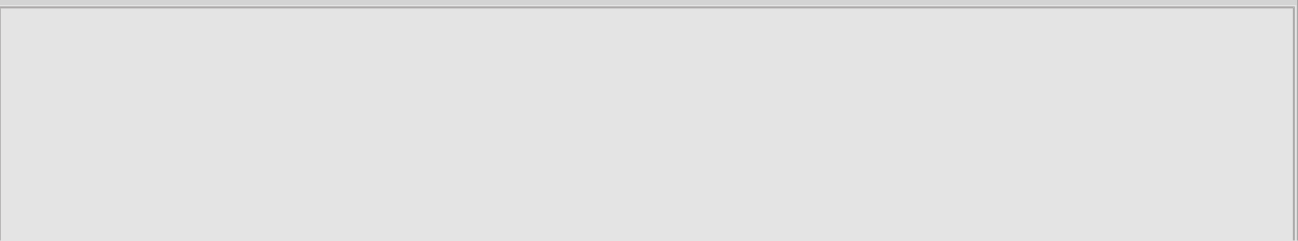
VNIR 63 Gb

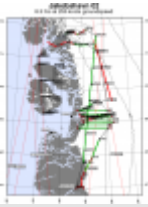
Snow Radar: 1.57 Tb

total data collection time: 7.9 hrs

Images:

Map of Jakobshavn 02 (augmented)





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Jaobshavn terminus



[Read more](#)

Tributary of Kangerdlugssup Glacier



[Read more](#)

Qaarsut



[Read more](#)

Tombolo



[Read more](#)

Disko Island



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Waterfall



[Read more](#)

Submitted by:

John Sonntag on 05/15/19

Related Flight Report:

P-3 Orion - WFF 05/15/19

Flight Number:

2019 OIB Science Flight #23

Payload Configuration:

Operation IceBridge

Nav Data Collected:

No

Total Flight Time:

8.3 hours

Submitted by:

Mike Cropper on 05/15/19

Flight Segments:

From:	BGSF	To:	BGSF
Start:	05/15/19 10:20 Z	Finish:	05/15/19 18:35 Z
Flight Time:	8.3 hours		
Log Number:	19P017	PI:	Joseph MacGregor
Funding Source:	Bruce Tagg - NASA - SMD - ESD Airborne Science Program		
Purpose of Flight:	Science		

Flight Hour Summary:

	19P017
Flight Hours Approved in SOFRS	250
Total Used	216.3
Total Remaining	33.7

19P017 Flight Reports

Date	Flt #	Purpose of Flight	Duration	Running Total	Hours Remaining	Miles Flown
03/26/19	#2053: 2019 OIB ATF	Check	0.9	0.9	249.1	0
03/27/19	#2059: 2019 OIB PTF-Laser	Check	2.3	3.2	246.8	0
03/28/19	#2061: 2019 OIB PTF-Radar	Check	3.2	6.4	243.6	0
04/01/19	#2068: 2019 OIB WFF-BGTL Transit Flight	Transit	6.9	13.3	236.7	2458
04/03/19	#2070: 2019 OIB Science Flight #1	Science	7.6	20.9	229.1	1938
04/05/19	#2072: 2019 OIB Science Flight #2	Science	7.7	28.6	221.4	1910
04/06/19	#2073: 2019 OIB Science Flight #3	Science	7.2	35.8	214.2	2000
04/08/19	#2075: 2019 OIB Science Flight #4	Science	6.9	42.7	207.3	1780

04/09/19	#2076: 2019 OIB Science Flight #5	Science	7.8	50.5	199.5	2045
04/10/19	#2081: 2019 OIB Science Flight #6	Science	10.1	60.6	189.4	2702
04/11/19	#2082: BGSF- BGTL Transit	Transit	2.2	62.8	187.2	696
04/12/19	#2083: 2019 OIB Science Flight #7	Science	7.2	70	180	2109
04/15/19	#2086: 2019 OIB Science Flight #8	Science	4.8	74.8	175.2	1243
04/16/19	#2087: 2019 OIB Science Flight #9	Science	7.6	82.4	167.6	2036
04/17/19	#2088: 2019 OIB Science Flight #10	Science	7.7	90.1	159.9	1937
04/18/19	#2090: 2019 OIB Science Flight #11	Science	7.8	97.9	152.1	2008
04/19/19	#2091: 2019 OIB Science Flight #12	Science	7.6	105.5	144.5	2104
04/20/19	#2092: 2019 OIB Science Flight #13	Science	6.9	112.4	137.6	0
04/22/19	#2094: 2019 OIB Science Flight #14	Science	6.6	119	131	1867
04/23/19	#2099: 2019 OIB Science Flight #15	Science	7.7	126.7	123.3	1979
04/25/19	#2102: 2019 OIB BGTL-KBGR Transit Flight	Transit	6.2	132.9	117.1	0
04/26/19	KBGR to BGSF Transit	Transit	5.7	138.6	111.4	0
05/05/19	2019 OIB Science Flight #16	Science	7.8	146.4	103.6	0
05/06/19	2019 OIB Science Flight #17	Science	8.4	154.8	95.2	0
05/07/19	2019 OIB Science Flight #18	Science	8.5	163.3	86.7	0
05/08/19	2019 OIB Science Flight #19	Science	8	171.3	78.7	0
05/12/19	2019 OIB Science Flight #20	Science	9	180.3	69.7	0
05/13/19	2019 OIB Science Flight #21	Science	7	187.3	62.7	0
05/14/19	2019 OIB Science Flight #22	Science	7.9	195.2	54.8	0
05/15/19	2019 OIB Science Flight #23	Science	8.3	203.5	46.5	0
05/16/19	2019 OIB Science Flight #24	Science	6.3	209.8	40.2	0
05/17/19	2019 OIB Transit	Transit	6.2	216	34	0
05/17/19	2019 OIB Transit	Transit	0.3	216.3	33.7	0

Flight Reports began being entered into this system as of 2012 flights. If there were flights flown under an earlier log number the flight reports are not available online.

Page Editor: Brad Bulger

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