

P-3 Orion - WFF 04/16/19

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

Flight Number: #2087: 2019 OIB Science Flight #9

Payload Configuration: Operation IceBridge

Nav Data Collected: No

Total Flight Time: 7.6 hours

Submitted by: Kelly Griffin on 04/22/19

Flight Segments:

From:	BGTL	To:	BGTL
Start:	04/16/19 10:50 Z	Finish:	04/16/19 18:24 Z
Flight Time:	7.6 hours		
Log Number:	19P017	PI:	Joseph MacGregor
Funding Source:	Bruce Tagg - NASA - SMD - ESD Airborne Science Program		
Purpose of Flight:	Science		
Miles Flown:	2036 miles		

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.

Related Science Report:

OIB - P-3 Orion - WFF 04/16/19 Science Report

Mission: OIB

Mission Summary:

Mission: North Central Gap 01 IS-2
Priority: High

This mission, along with the North Central Gap 02 and 03 missions, are primarily designed to fill a gap in altimetry and radar coverage of the north-central portion of the ice sheet. The flight was modified for 2015, where we removed the centerlines of Zachariæ Isstrøm and Storstrømmen Glaciers (covered in other flights), and added reflights of four 2010 grid lines on the upper Zachariæ/79N catchment, extended upstream centerlines of both glaciers, and a flowline passing through the TUNU core site. For 2019 we modify the east-west crossings to target low-latitude IS-2 crossover latitudes, we replace the 2010 grid lines with low-latitude ICESat-2 ground tracks, and we also fly parallel extensions of previous lines on the upper NEGIS. These extension lines are new.

Satellite imagery brought us again to our highest priority mission remaining in northeast Greenland. We proceeded along the southernmost low-latency ICESat-2 crossovers, both expecting and encountering low clouds that we passed above until about ~200 km in to the line. One of our ICESat-2 tracks in the grid above Zachariæ Isstrøm was low-latency (see below). Unfortunately, ATM T6 wide scan experienced a scanner motor failure and that motor will need to be replaced. About a third of the way through the survey, during the upstream grid, we decided to operate T6 in profiling mode after the mirror was adjusted so that the beam would be pointed at nadir. Given available time, we opted to extend our return line up from 79N to EGRIP at 16:22:40 UTC prior to rejoining the line across the ice sheet along a low-latency cross-over parallel in the hope of extending ice and snow layering records from the coast to that site. Clouds again returned as we crossed the central ice divide. ATM T7 narrow scan continues to function well. Headwall SWIR had to be restarted. MCoRDS and snow radar worked well. Due to low ceilings upon our return to Thule AB, we were again unable to perform a ramp pass.

ICESat-2 reference ground track (RGT) / targeted ICESat-2 beam / latency (positive/negative = ICESat-2 orbits before/after our flight)

154 / 1L / +8 days

276 / 3L / +5 hours

474 / 3L / -13 days

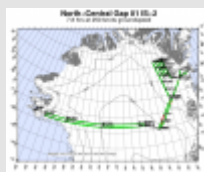
535 / 1L / -17 days

Attached images:

1. Map of today's mission (John Sonntag / NASA)
2. Stack of 22 CAMBOT images of low clouds in northwestern Greenland, from which green reflections from ATM T-7 are visible (Jeremy Harbeck / NASA)
3. CAMBOT mosaic of EGRIP camp (Jeremy Harbeck / NASA)
4. Snow drifts associated that appear to be associated with upwind crevasses snake their way across a small, frozen supraglacial lake on Zachariæ Isstrøm (Joe MacGregor / NASA)
5. Alexey Chibisov inspecting ATM T6 below the cabin in-flight (Jeremy Harbeck / NASA)
6. Snow drifts on a frozen periglacial lake between Zachariæ Isstrøm and 79N glaciers (Jeremy Harbeck / NASA)

Images:

Map of today's mission



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Stack of 22 CAMBOT images of low clouds in northwestern



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CAMBOT mosaic of EGRIP camp



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Snow drifts associated that appear to be associated with upwind



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Alexey Chibisov inspecting ATM T6 below the cabin in-flight



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Snow drifts on a frozen periglacial lake between Zachariæ Isstrøm



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Submitted by: Joseph MacGregor on 04/18/19

OIB - P-3 Orion - WFF 04/17/19 Science Report

Mission: OIB

Mission Summary:

Mission: ICESat-2 North
Priority: Baseline

This mission is designed to overfly planned IceSat-2 ground tracks over a wide range of ice regimes near Thule. We center some of the flightlines on each of three beam pairs (left, nadir and right) in turn, sampling at least one of each beam pair during this mission. The east-west crossing line is designed to capture as many ascending/descending crossovers as possible. We also fly a particular flowline of Petermann Glacier which has been sampled intermittently during the ATM and OIB eras, overflying two GCNet sites in the process. For 2018 we modify the return leg to Thule to overfly a segment of an Ultra-wideband radiometer (UWBRAD) flight line, at the request of Ken Jezek.

Following a quick repair of ATM T-6 yesterday, we got off the ground at the usual time this morning. Relatively few options were available to us today, and no sea ice mission was viable, so we opted for our one remaining baseline land ice mission based out of Thule AB. Because of the dearth of ramp passes that we'd been able to collect over the past week and the T6 repair, we collected a ramp pass at 1,200 ft AGL after take-off. We encountered some haze flying up Humboldt Glacier during which the ground was briefly lost, but Petermann Glacier was clear, which had not been obvious in the morning's imagery, and winds were light. This mission mostly targets weak beams, but we replaced the second planned ICESat-2 ground track with a low latency (<12 hours) RGT a few kilometers away, from which we briefly detoured over Washington Land to observe the Keybird crash. Otherwise, the flight proceeded uneventfully along ICESat-2 RGTs. Headwall froze up again, but otherwise all instruments worked well, including ATM T6 at a slightly slower scan rate than before (13 Hz). ATM estimates 98% altimetry data recovery. We conducted two additional ramp passes at 1,200 and 1,600 ft AGL.

ICESat-2 reference ground track (RGT) / targeted ICESat-2 beam / latency (positive/negative = ICESat-2 orbits before/after our flight)

0484 / 2R / -12 days

0301 / 2L / -10 hours (switched out from RGT 1246)

0621 / 2R / -21 days

0057 / 3R / +15 days

0880 / 2R / -38 days

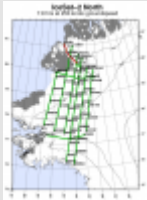
0316 / 1R / -1 day

Attached images:

1. Map of today's mission (John Sonntag / NASA)
2. Window reflection of John Sonntag's flight suit while flying across Tracy Glacier (John Sonntag / NASA)
3. An occasionally narrow canyon in Washington Land (Joe MacGregor / NASA)
4. A tributary glacier flowing into the western flank of Petermann Glacier's ice shelf (Joe MacGregor / NASA)
5. The southern flank of Petermann Glacier (Jeremy Harbeck / NASA)
6. The thin terminus of Petermann Glacier (Jeremy Harbeck / NASA)
7. The Kee Bird crash on a small lake in Washington Land (Jeremy Harbeck / NASA)

Images:

Map of today's mission



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An occasionally narrow canyon in Washington Land



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Window reflection of John Sonntag's flight suit while flying across Tracy Glacier



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A tributary glacier flowing into the western flank of Petermann



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The southern flank of Petermann Glacier



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The thin terminus of Petermann Glacier



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The Kee Bird crash on a small lake in Washington Land



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Submitted by: Joseph MacGregor on 04/18/19

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