*This is your quasi-daily update on the 2022 ABoVE Airborne Campaign*

**Friday 12 August, 2022 (DOY 223)**

Chip Miller is in Yellowknife.

Peter Griffith is in Palmdale, CA.

More information may be found on the summary page for the [ABoVE 2022 Airborne Campaign](https://above.nasa.gov/airborne_2017.html#2022)

Daily reports and updates may be found here:

<https://above.nasa.gov/airborne_2017.html?tab=2022#reports>

**Sensor/Aircraft Summaries**

**AVIRIS-NG (Dynamic Aviation B-200**[**N53W**](https://flightaware.com/live/flight/N53W)**)**

*July 2*: Transit Great Falls MT (GTF) – Bellingham, WA – Juneau, AK – Fairbanks, AK

*July 3*: Crew rest day; Clean AVIRIS window

*July 4*: Hard Down Day; >5000 lightning strikes forecasted for AK

Jackie Hung and a Woodwell research team are in the YK Delta

*July 5*: First flight day.

Excellent cloud-free conditions found in several locations, but ALL LINES had significant low level smoke interference. It was impossible to see the ground in several locations. These are likely the conditions in Alaska until the August rains begin to extinguish the large wildfires.

Cloud front was further east than forecasted, so Beaver AK area box was aborted after 1 line. Moved north along the Dalton Hwy into less cloudy areas. Acquired several lines in the Toolik Lake area before clouds moved in there. Returned to the Fairbanks area where boxes over the Goldstream Valley, Nugget fire scar, and the BNZ LTER/APEX targets were acquired

*July 6*: Flight day #2.

Flew Beaver, AK grid, Coldfoot and Bettles lines, Grouse Creek fire scar grid, Hess Creek fire scar line, and CPCRW/flux towers line. Less smoky conditions in the north, but still far from ideal. Visible wavelengths severely compromised.

*July 7*: Down Day

Resetting crew clocks in advance of extended good weather forecasts

*July 8*: Down Day

Replacement pilot arrival delayed due to cancelled flight

*July 9*: Flight day #3.

Forecast for clear skies and low smoke over eastern North Slope

Flew lines over Dalton Hwy, Anaktuvuk River fire scar, Nuiqsut, and Deadhorse areas. Attempted flights over North Slope coastal boxes, but sea ice still covered more than 50% of the lines – will need to revisit these lines towards the end of July

*July 10*: Flight day #4.

Forecast for clear skies and no smoke over the Kotzebue/Noatak region

Tranist – entire Interior filled with smoke south of the Brooks Range

Sortie #1: flew Noorvik and Kotzebue grids

Sortie #2: flew all Lower and Upper Noatak Valley lines and part of the Selawik grid

Outstanding conditions all day long: clear skies and no smoke

Observed scattered clouds over the Seward Peninsula with increasing high cirrus during the day. Returned to dense smoke advisory in Fairbanks

*July 11*: Down Day

Clouds moving in across Alaska, no combination of clear skies and smoke-free conditions in any priority areas, so called for a down day after 2 long flying days

*July 12*: Down Day (Weather).

Forecasts at 0800 showed areas clear skies over Seward Peninsula and Kotzebue, but with significant uncertainty. Forecasts for Wed 7/13 showed better conditions, so we cancelled for today and are targeting Seward Peninsula (NGEE-Arctic) sites and completion of Kotzebue area lines on Wed 7/13. Mid-day satellite imagery shows that this was a good call with cloud cover remaining across the state, even the Sew Pen/Noatak region – see satellite imagery below

*July 13*: Flight day #5.

Forecasted large area of clear sky conditions over NW Alaska covering Noatak and Seward Peninsula. Smoke forecast shows it all moving into SE Alaska below a Wiseman-Bettles-Galena-Kaltag line. Acquired excellent data over the Huslia grid, then moved to the Seward Peninsula where clouds interfered with the acquisitions over the Council grid, but excellent data were obtained over Kougarok and Teller sites with NGEE-Arctic teams on the ground at those sites. 2nd attempt at acquiring the Council grid after refueling was more successful, although clouds still interfered with one end of the watershed

*July 14*: Down Day (weather).

No storming of the Bastille for the ABoVE AVIRIS team today. Combination of dense low-level clouds and/or high cirrus across the state left no viable flight options.

*July 15*: Down Day (weather).

Clouds across Alaska with no viable flight options. Watching possible flight to the YK Delta on Sunday or Monday

*July 16*: Down Day (weather).

Clouds across Alaska with no viable flight options. Watching possible flight to the YK Delta on Sunday or Monday

*July 17*: Down Day (weather/icing).

The forecasted clear skies over the YK Delta were realized; however, a dense system of clouds and precipitation across the center of the state generated icing conditions up to 30,000 ft, and there was no way over or around them. No Go decision based on lack of viable transit options.

*July 18*: Down Day (weather).

A persistent low over the Bering Sea in sending dense cloud cover and precipitation swirling across Alaska in a series of cyclonic (counterclockwise) waves. The forecasts show these conditions persisting for most of the week. The benefit is that it is significantly suppressing the wildfire smoke. Elevating King Salmon, Kluane/Whitehorse, and Mackenzie Mountain targets in priority since these may open before other Alaska areas.

*July 19*: Down Day (weather).

The Barrow/Atqasuk area had excellent clear sky conditions in the early morning, but the satellite imagery and forecasts all suggested that the clouds would move in rapidly and cover the area by mid-day. Continuing to watch for target opportunities.

*July 20*: Down Day (weather).

Persistent low over the Bering Sea area sending waves of clouds across Alaska and western Canada.

*July 21*: Down Day (weather).

Persistent low over the Bering Sea area continues sending waves of clouds across Alaska and western Canada.

*July 22*: Down Day (weather).

Persistent low over the Bering Sea area continues sending waves of clouds across Alaska and western Canada.

*July 23*: Flight day #6

After 10 days of poor weather, there were areas of clear skies over the Fairbanks area. Multiple lines were flown with partial cloud obscuration in many, but the Goldstream grid lines were acquired under clear conditions. No noticeable smoke!

*July 24*: Flight day #7

Greatly improved conditions over Interior Alaska. Targets at Fairbanks, Delta Junction, Healy acquired. Afternoon clouds precluded a second sortie. Low/no smoke conditions.

*July 25*: Down Day (weather).

Large atmospheric river driving north through the Gulf of Alaska and sending dense cloud cover across our operations area.

*July 26*: Down Day (weather).

Cloud cover across our area of operations.

*July 27*: Flight day #8.

Acquired excellent data over the King Salmon area, including the Contact Creek fire scar, and the Kenai Peninsula. No visible smoke and clear sky conditions. Perhaps the best data acquisition day so far in 2022.

*July 28*: Down Day (weather).

Forecasts for clear skies returning to the Kenai Peninsula and Alaska Range broke down. Scattered clouds covered the area.

*July 29*: Flight day #9.

Initial plans to acquire data over the Mackenzie Mountains in central Yukon were aborted when the pilots could not establish communications with Canadian air traffic control. The team returned to the Fairbanks area to acquire lines that had not been previously captured under totally cloud/smoke-free conditions. Passes made over the flux towers at CPCRW and Delta Junction. Also acquired lines over the Bonanza Creek LTER and the intensively studied fire scar south of the Tanana River.

*July 30*: Down Day (weather).

Satellite data showed dense clouds over most of our operating area in the morning and there were no signs of significant clearing in any of the forecasts.

*July 31*: Hard Down Day/Crew Rest.

Forecasts suggest no clear sky areas in the domain. We will take a crew rest day so that we have unbroken flight readiness through the crew change. Forecasts indicate that there may be opportunities to fly the North Slope and other high priority areas during the week.

*August 1*: Down Day Weather

Forecasts show no openings in our remaining priority areas.

*August 2*: Down Day Weather

Forecasts show no persistent openings in our remaining priority areas.

*August 3*: Flight day #10. North Slope Coastal Areas

Clear skies and no ice fog enabled us to acquire ~30 lines over North Slope coastal regions between the Colville and Sag Deltas. Scattered sea ice still observed, but data collections appear high quality.

*August 4*: Flight day #11. Fairbanks Area

Forecasts showed too much uncertainty to return to the North Slope for more offshore acquisitions, so the team capitalized on ideal conditions in Interior Alaska to acquire data over the numerous flux measurement sites (CPCRW, BNZ, 8-Mile Lake, Big Trail Lake) as well as lines that previously showed cloud and/or smoke interference.

*August 5*: Transit to Yellowknife (aborted)

3-5 day forecasts suggested no opportunities from our Fairbanks base of operations, so the decision was made to transit to Yellowknife. However, heavy icing conditions across the Yukon Territory prevented the transit

*August 6*: Transit to Yellowknife

Successful transit to Yellowknife via Whitehorse. The team will assess Great Slave Lake/NWT target opportunities with highest priority given to those sites recently sampled by the Townsend Group.

*August 7*: Hard Down Day/Crew Rest

With the recent crew replacements and the challenges with the transit to Yellowknife, we called for a hard down day to synch up everyone’s duty clocks. This also offers us more flexibility later in the week when the forecasts are more favorable

*August 8*: Down Day Weather

Forecasts were mixed for Norman Wells area. Morning cameras showed cloudy skies. Since it is a 2 hour transit each way, we decided to conserve flight hours for higher probability opportunities. Coordinated with CoMET team for join flights over Fort McMurray on 10 Aug

*August 9*: Hard Down Day/Crew Rest

Forecasts changed dramatically during Aug 8 PM updates, indicating 7-9 days of extreme clear skies across our priority areas. Decided to have a hard down day to prepare for an extended period of data acquisition. Had 4 hours of conversation with CoMET team planning for Fort McMurray flight on 10 Aug and Mackenzie Delta area flight on 12 Aug.

*August 10*: Flight day #12. Fort McMurray, AB

Ideal clear skies/no smoke conditions. Joint flight with CoMET with aligned remote sensing acquisitions over tar sands oil production area.



Figure . A view of the Fort McMurray area showing the boreal forest disturbance and denuded landscape from oil sands processing.

*August 11*: Flight day #13. Scotty Creek – Fort Providence – Hay River.

Clear skies/no smoke conditions from Fort Simpson to Great Slave Lake. Acquired grids at Scotty Creek, Fort Providence, and Hay River (including 1 line over Great Slave Lake)



Figure . Ryan Pavlick (foreground) and Robin Larsen (back) in action during the 11 August flight

*August 12*: Flight day #14. Mackenzie Delta

Forecasts show clear conditions over the Mackenzie Delta. Joint flight with CoMET. Scott Dallimore team (ECCC) in the field making methane emissions measurements. Dallimore team also have a helicopter with in situ sensors flying < 500 ft.

**AVIRIS Operations Extended Look Ahead/Churchill Transit**

*August 13*: Potential flight day – Fort Resolution, Lutselk’e (high probability).

Forecasts show extensive clear skies over Northern Alberta. Targets include peatland flux towers, Fort McMurray. Watch for updates

*August 14*: Transit to Churchill MB/Lutselk’e (high probability)

Opportunity to acquire lines near Lutselk’e and points further east prior to transit. Preferred transit day to set up for sampling along Hudson Bay in coming days

*August 15*: Potential flight day – Churchill (high probability).

Forecasts show clear skies over Churchill – Rankin Inlet area. Have not yet received license to fly any sites in the Nunavut Territory, so may need to restrict all acquisitions to Churchill/Manitoba sites. Watch for updates

*August 16*: Potential down day – weather, crew rest (high probability).

Forecasts deteriorate over Churchill – Rankin Inlet area for the rest of the week. May take this opportunity for a crew rest day after a week of intense operations. Will watch for opportunities to transit to Saskatoon to acquire data over BERMS/East Trout Lake sites and complete ABoVE AVIRIS acquisitions for 2022

*NWT area priorities:*

* Priority 1 = Lutselk’e
* Priority 2 = Norman Wells Area
* Priority 3 = Fort Resolution area

*Hudson Bay area priorities:*

* Priority 1 = Churchill
* Priority 2 = Rankin Inlet
* Priority 3 = MB/Nunavut border area sites

Phil Brodrick & John Chapman continue to post AVIRIS quicklooks for all 2022 ABoVE flights: <https://avng.jpl.nasa.gov/pub/ABoVE/quicklooks/>.

**NEON Airborne Observation Platform #1 (**[**Daily Flight Reports**](https://www.neonscience.org/data-collection/daily-flight-reports)**)**

July 17 – Transit through Fairbanks

July 18 – NEON AOP arrives in Deadhorse

July 19 – No flight – Weather - [20220719\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220719_P1C1_Daily.pdf)

July 20 – No flight – Weather - [20220720\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220720_P1C1_Daily.pdf)

July 21 – No flight – Weather - [20220721\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220721_P1C1_Daily.pdf)

July 22 – No flight – Weather - [20220722\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220722_P1C1_Daily.pdf)

July 23 – No flight – Weather - [20220723\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220723_P1C1_Daily.pdf)

July 24 – No flight – Weather - [20220724\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220724_P1C1_Daily.pdf)

July 25 – No flight – Weather - [20220725\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220725_P1C1_Daily.pdf)

July 26 – No flight – Weather - [20220726\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220726_P1C1_Daily.pdf)

July 27 – No flight – Weather - [20220727\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220727_P1C1_Daily.pdf)

July 28 – No flight – Weather (wintry mix of rain and snow) - [20220728\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220728_P1C1_Daily.pdf)

July 29 – No flight – Weather - [20220729\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220729_P1C1_Daily.pdf)

July 30 – No flight – Weather - [20220730\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220730_P1C1_Daily.pdf)

July 31 – No flight – Weather - [20220731\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220731_P1C1_Daily.pdf)

August 1 – No flight – Weather - [20220801\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220801_P1C1_Daily.pdf)

August 2 – No flight – Weather - [20220802\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220802_P1C1_Daily.pdf)

August 3 – Toolik Lake - [20220803\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220803_P1C1_Daily.pdf)

August 4 – Toolik Lake - [20220804\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220804_P1C1_Daily.pdf)

August 5 – No flight – Weather - [20220805\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220805_P1C1_Daily.pdf)

August 6 – No flight – Weather – [20220806\_P3C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220806_P3C1_Daily.pdf)

August 7 – No flight – Weather – [20220807\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220807_P1C1_Daily.pdf)

August 8 – No flight – Weather – [20220808\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220808_P1C1_Daily.pdf)

August 9 – No flight – Weather – [20220809\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220809_P1C1_Daily.pdf)

August 10 – No flight – Weather – [20220810\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220810_P1C1_Daily.pdf)

August 11 – Toolik Lake – [20220811\_P1C1](https://www.neonscience.org/sites/default/files/flight-report-files/20220811_P1C1_Daily.pdf)

**UPDATED – PLANE CHANGE: L-band SAR (NASA C-20A** [**N802NA**](https://airbornescience.nasa.gov/tracker/#status/N802NA)**)**

Aug 12: Transit Houston – Saskatoon (TBC)

Aug 13: BERMS area TomoSAR

Aug 14: Transit to Yellowknife

Aug 18: Transit to Fairbanks

**UPDATED – PLANE CHANGE: P-band SAR (JSC G-III**[**NASA2**](https://flightaware.com/live/flight/N992NA)**)**

Aug 18: Transit Palmdale to Fairbanks

Aug 19-22: Same day science flights with L-band SAR

Aug 23: Transit Fairbanks to Palmdale

**CoMet 2.0 Arctic (HALO G-550**[**D-ADLR**](https://flightaware.com/live/flight/DADLR)**)**

Aug 3: Munich area test flight

Aug 4: Madrid test flight

Aug 6: Transit to Edmonton complete

Aug 9: Lloydminster area AB/SK border

Aug 10: Joint flight with ABoVE/AVIRIS over Fort McMurray

Aug 12: Joint flight with ABoVE/AVIRIS over the Mackenzie Delta

Aug 16: Join ABOVE team in Yellowknife for a public outreach event

**G-LiHT (Dynamic Aviation Beechcraft King Air** [**N80Y**](https://flightaware.com/live/flight/N80Y)**) – Mission Complete 31 July**

Integration & Testing (Bridgewater, VA):  28-30 June 2022

Transit to AK: 1-6 July 2022

Base of Operation and Dates :

Kodiak, AK -- 6-16 July 2022

Aniak, AK -- 16-26 July 2022

Kodiak, AK -- 26-30 July 2022

[Description of science flights and motivation](https://above.nasa.gov/airborne_2017.html#2022)

*July 2*: G-LiHT transits from Bridgewater VA – Perry, IA

*July 3*: G-LiHT transits from Perry IA – Sheridan County, WY

*July 4*: G-LiHT transits Sheridan County, WY – Wenatchee, WA

*July 4*: G-LiHT transits Sheridan County, WY – Wenatchee, WA – Juneau, AK

*July 5*: G-LiHT transits Juneau, AK – Kodiak AK; in position to begin operations

*July 6*: G-LiHT in Kodiak AK; no flights on tracker

*July 9*: G-LiHT in Kodiak AK; 2 sorties near King Salmon, AK

*July 10*: G-LiHT in Kodiak AK; 2 sorties near King Salmon, AK

*July 11*: G-LiHT in Kodiak AK; flying near Dillingham, AK

*July 12*: G-LiHT in Kodiak AK; no activity

*July 13*: G-LiHT in Kodiak AK; Kodiak Island flight

*July 14*: G-LiHT in Kodiak AK; local Kodiak flight

*July 15*: G-LiHT in Kodiak AK; local Kodiak flight

*July 16*: G-LiHT in Kodiak AK; no activity

*July 17*: G-LiHT in Kodiak AK; no activity

*July 18*: G-LiHT in Kodiak AK; local Kodiak flight

*July 20*: G-LiHT in Kodiak AK; local Kodiak flight

*July 21*: G-LiHT in Kodiak AK; Dillingham area flight

*July 22*: G-LiHT in Kodiak AK; King Salmon area flight

*July 23*: G-LiHT in Fairbanks AK; Fairbanks area flight

*July 24*: G-LiHT in Fairbanks AK; Fairbanks area flight – CPCRW and BNZ/APEX

*July 26*: G-LiHT in Anchorage AK; Anchorage area flight

*July 27*: G-LiHT in Anchorage AK; Seward - Valdez area flight

*July 28*: G-LiHT in Kodiak AK; Iliamna area flight

*July 29*: G-LiHT in Kodiak AK; No flight

*July 30*: G-LiHT in Kodiak AK; No flight

*July 31*: G-LiHT departs Alaska

**Weather Forecast: ABoVE Domain**

GEOS-FP for ABoVE: <https://fluid.nccs.nasa.gov/missions/mission_ABOVE/>

HRRR for Alaska: <https://rapidrefresh.noaa.gov/alaska/>

Windy weather visualization: [https://www.windy.com/](https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.windy.com%2F&data=05%7C01%7Cpeter.c.griffith%40nasa.gov%7Cad658dc1e59a4d3cac4008da57aa3f21%7C7005d45845be48ae8140d43da96dd17b%7C0%7C0%7C637918685965419609%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=9VKGntYPS4KZXym6nEFk%2FRvIog08d5is%2FkyO0qX2RoE%3D&reserved=0)

FAA Weather Cameras – Interactive map with Alaska and Canadian cameras: <https://weathercams.faa.gov/>

Canada Wildfire smoke maps (+ Alaska): <http://firesmoke.ca/forecasts/current/>

NWT Active Fires: <https://www.enr.gov.nt.ca/en/services/wildland-fire-update/nwt-live-fire-map>

Solar Elevation Calculator: <https://aa.usno.navy.mil/data/AltAz>

Lightning strike map

<https://www.arcgis.com/apps/webappviewer/index.html?id=f5c311fa930d4831916c3f27984e97fd&extent=-21498469.1666%2C7047820.6016%2C-12281998.0441%2C11636488.2836%2C102100>

Alaska Fires and Smoke Predictions: <http://smoke.alaska.edu/current_fires.html>

Sea ice extent: <https://www.weather.gov/afc/ice>

\*\*\* Ground truth providers seeking information on timing of potential overflights should text or email Chip Miller and Peter Griffith \*\*\*

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