ABoVE Completing First Big Year

Arctic Boreal Vulnerability Experiment (ABoVE) is a NASA Terrestrial Ecology Program field campaign that is being conducted in Alaska and Western Canada. ABoVE is a large-scale study of environmental change, due primarily to warming temperatures and thawing permafrost, and its implications for social-ecological systems. While ABoVE has many components (see http://above.nasa.gov), the major activity since April 2017 has been the ABoVE Aircraft Campaign (AAC) described here. During this summer, two other related Airborne Science missions have been underway in Alaska and Western Canada. These are ASCENDS 2017 and ABoVE AirSWOT. These two other missions are also discussed in this newsletter.

The AAC began in April and will continue through October. Flights gather remote sensing and in situ data over an area of nearly 4 million square kilometers that includes the state of Alaska; the Yukon, Northwest and Nunavut Territories; and the provinces of Alberta and Saskatchewan. Flights extended from the Arctic tundra to the southern edge of the boreal forest and from the Seward Peninsula on the western edge of North America as far east as Cambridge Bay, NU.

The first plane to get into the air was the ArcticC team in a Mooney equipped with CO_2, CO, and methane in-situ sampling gear, which began a series of sorties in April that will end in October. Next was P-band SAR (formerly known as AirMOSS) in May and June, immediately followed by L-band SAR (aka UAVSAR) in June. AVIRIS and LVIS flew in July and August, accomplishing most of their missions, despite struggling with aircraft performance issues. The AirSWOT team likewise was very successful despite some camera and radar performance challenges. Winner of the "Aesop's Fables" prize for slow and steady triumph was the CFIS team on their Twin Otter, which kept knocking down their goals one by one, flying "rosettes" around flux towers as far east as Daring Lake and as far north as Barrow and Atqasuk. The big guy did well too: ASCENDS on the NASA DC-8 showed its long legs by flying all the way to Cambridge Bay and back to Fairbanks in one sortie, testing laser CO_2 sounder candidate instruments for the future space mission.

Flights were coordinated with ground cal/val teams and other critical field measurements. Preliminary products have already

Continued on page 2

DC8 landing in Fairbanks

P-band SAR team with NASA2 during Campaign 2 (Aug 2017) in Fairbanks. Photo credit: Kean Tham

What's Inside...

ABoVE *(continued from page 1)*

The NASA C-20/UAVSAR team hosted a Public Outreach event at Yellowknife Airport after the science flight on June 14, 2017

been delivered from several sensors, and the quality of the data is outstanding. The Airborne Sciences working group (WG) looks forward to delving into all of the data more thoroughly once the campaign has been completed.

The six 2017 ABoVE – sponsored aircraft and their instruments are:

- UAVSAR P-band (AirMOSS) on the JSC G-III
- ATM-C on a Mooney aircraft
- AVIRIS-NG on a Dynamic Aviation B-200
- LVIS on a Dynamic Aviation B-200
- CFIS on a Twin Otter
- UAVSAR L-band on Armstrong C20-A

Contributed by Charles Miller and Peter Griffith

Directors' Corner

Welcome to the Fall edition of the ASP newsletter and we hope as always that you enjoy learning about some of our missions and reading about the program. We've flown 3400 plus flight hours as of mid-September including many in the Arctic and Caribbean/Gulf of Mexico. It's not a record year but we have several major deployments yet to go including Operation IceBridge Antarctica, Oceans Melting Greenland, ATom-3 and ACT-America.

We also want to take a moment to update you on our new budget realities, which are forcing hard decisions about ASP capacity going forward. We choose to think of this as an opportunity to review how we do business and how we effectively and efficiently provide the critical airborne support our customers need. While we will continue to maintain the ASP-supported fleet, we will encouraging and utilizing commercial providers where it makes sense, modernizing and leveraging partnerships with Centers and other NASA programs where we can (GV and GIII), and eliminating support for capacity (Global Hawk) that the Earth Science Division (ESD) will not be utilizing for the foreseeable future. This is in no way a slight against the great people who operate those platforms or the platforms themselves, it truly is about ESD needs balanced against the budget. These changes highlight all the more reasons why you investigators and scientists reading this need to make your voices heard by letting us and the HQ Program Scientists know what you need for airborne capacity. We do this through our regular yearly planning process; however, it's even more critical now that we hear from you. In addition to the capacity changes, there may also be some changes to user fees and the mission peculiar costs. The program remains committed to providing the community with highly capable, efficient and safe airborne capabilities and looks forward to working with all our team members to provide the best science value. Enjoy the newsletter and as always…feedback welcomed and encouraged!

Bruce Tagg and Randy Albertson
Airborne Science Program

Exciting Progress on Earth Venture Suborbital-2 (EVS-2) Missions

All six EVS-2 projects, awarded in 2015, have been out in the field doing amazing things. The table below highlights their recent progress.

Mission	Aircraft	Recent Activity/Status
ATom	DC-8	Completed ATom-2, preparing for ATom-3
ACT-America	B-200, C-130	Completed year 2, preparing for fall campaign
ORACLES	P-3	Just returned from Sao Tome, next year at Ascension Island
NAAMES	C-130	Just completing 2017 campaign in the North Atlantic with RV/Atlantis; one more campaign in 2018
OMG	G-III	OMG completed a major campaign in the spring and data analysis is underway. OMG will fly again in 2018
CORAL	G-IV	Completed Australia, Guam and Hawaii in April, mission complete

In Brief

Update on Earth Science Technology Development

The Earth Science Technology Office (ESTO) manages Instrument Incubator Program (IIP) and Airborne Instrument Technology Transition (AITT) projects that include flight testing. These projects serve to increase technology readiness levels and demonstrate usefulness on additional aircraft. During the previous 9 months, the following instruments have all flown as part of their maturation process.

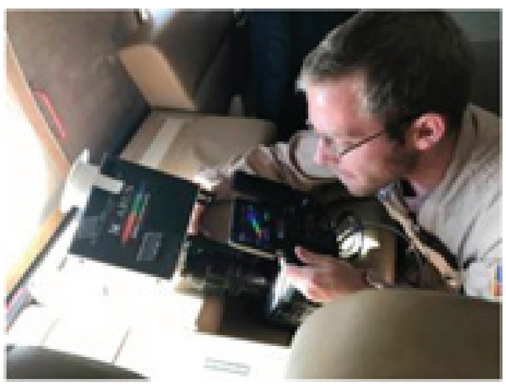
- HyTES on the ER-2
- UWBRAD on a Basler-67
- WISM on the P-3
- Doppler-Scat on a B-200
- MISTIC Winds on the ER-2
- C-HARRIER on the CIRPAS Twin Otter

NASA Aircraft Showcase August Lunar Eclipse

For the first time in 99 years, a total solar eclipse crossed the entire nation Monday, Aug. 21 The lunar shadow entered the United States near Lincoln City, Oregon, at 9:05 a.m. PDT, and NASA was there to watch from NASA Armstrong's C20-A (G-III) aircraft. NASA TV provided the first live coverage to a worldwide audience and for citizen science engagement. Randy Albertson of NASA AFRC facilitated the arrangements for use of the aircraft, NASA TV, and NASA personnel onboard. In order to capture images of the event, the standard windows of the G-III were replaced with optical glass providing a clear view of the eclipse. This special glass limits glare and distortion of common acrylic aircraft windows. Capturing video and photos wasn't as easy as pointing and shooting. In fact, the cameras needed to be angled about 40 degrees to capture imagery of the sun. The pilot used an autopilot system to keep the aircraft at a five-degree angle to help position the videographer and photographer for successful capture of the eclipse. During the eclipse, onboard the G-III aircraft, Thomas Zurbuchen, NASA's associate administrator for the science mission directorate, used a handheld Icarus spectrograph used to separate and measure wavelengths present in electromagnetic radiation from the sun to analyze its chromosphere and corona visible only during a total eclipse.

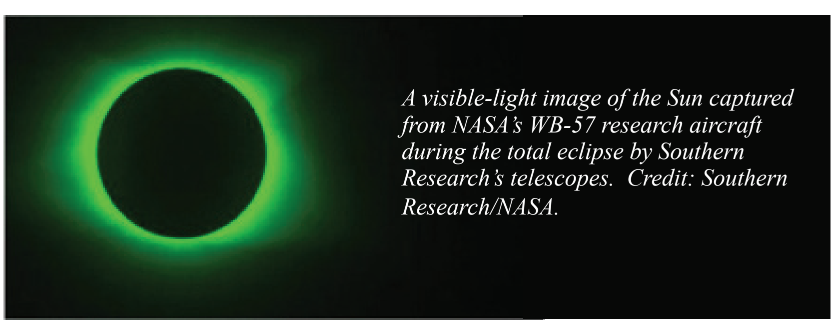
In addition to the G-III, two of NASA Johnson's WB-57 aircraft flew during the eclipse to obtain additional science data. Following the shadow of the moon, a team from the Southwest Research Institute in Boulder, Colorado, used the two research jets to chase the darkness across America on Aug. 21. Taking observations from twin telescopes mounted on the noses of the planes, they captured the clearest images of the Sun's outer atmosphere -- the corona -- to date and the first-ever thermal images of Mercury.

(Thanks to NASA Armstrong Flight Research Center and Jet Propulsion Center websites for content.)



Armstrong videographer Mike Agnew tests spectrograph analyzing the sun's wavelengths for use on flight during the total eclipse. Credits: NASA Photo / Kevin Rohrer

ASA's Thomas Zurbuchen, AA for science mission directorate explains to Lesa Roe, acting deputy administrator, how the spectrograph showing different colors correlate to different elements, such as helium, in the Sun's atmosphere. Credit: (NASA/Carla Thomas)

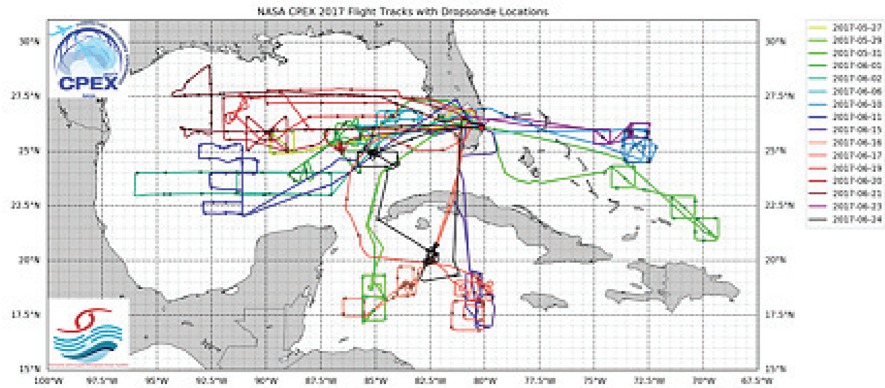


A visible-light image of the Sun captured from NASA's WB-57 research aircraft during the total eclipse by Southern Research's telescopes. Credit: Southern Research/NASA.

CPEX 2017

The science objectives of the NASA Convective Processes Experiment (CPEX) were:

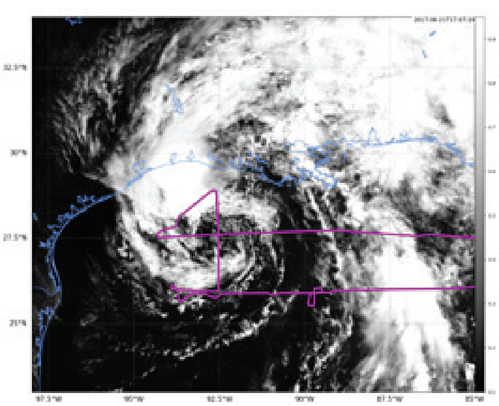
- Improve understanding of convective processes including cloud dynamics, downdrafts, cold pools and thermodynamics during initiation, growth, and dissipation.
- Obtain a comprehensive set of simultaneous wind, temperature, and moisture profiles, using Doppler wind lidar (DAWN), microwave radiometer and sounder (HAMSR/MASC), and GPS dropsondes, conduct a quantitative evaluation of those profiles in the vicinity of scattered and organized deep convection measured by airborne precipitation radar (APR2), in all phases of convective life cycle.
- Improve model representation of convective and boundary layer processes over the tropical oceans using a cloud-resolving, fully coupled atmosphere-ocean model, and assimilate the wind, temperature and humidity profiles into the model.



Flight tracks of CPEX science missions (colored by date) with dropsonde locations (dots).

CPEX 2017 took place in the North Atlantic-Gulf of Mexico-Caribbean Sea region from 25 May-25 June 2017. NASA's DC-8 aircraft was based at the Fort Lauderdale, Florida. It logged 106 hours flight time with a total of 16 science missions (91 hours). One important part of the mission was the contribution of meteorology students / weather forecast team to flight planning based on weather conditions.

Contributed by Shuyi Chen and Ed Zipster



DC-8 flight track in TS Cindy

CPEX science team on May 27, 2017, Fort Lauderdale, FL.

(Right) The CPEX graduate students weather forecast team (from right to left): Edoardo Mazza (University of Washington), Ajda Savarin (University of Washington), Crystal Painter (University of Utah), McKenna Stanford (University of Utah), Sweta Das (Florida State University), and Jose Martinez Claros (New Mexico Tech University).

Successful ASCENDS 2017 Campaign Joins ABoVE in the Arctic

The ASCENDS measurement team conducted a successful science campaign on the NASA DC-8 from Palmdale during July and August 2017. The objectives for the 2017 ASCENDS airborne campaign were to carefully assess the accuracy of airborne Integrated Path Differential Absorption lidar measurements of CO_2 column concentrations, and to extend these lidar measurements for the first time to the Arctic region. The transit flights from California to the Arctic, and the return to California will also be used to assess the airborne lidar's capability to measure the north-south gradient in the concentration of CO_2. The mission science and campaign planning were led by Jim Abshire (GSFC), Bing Lin (LaRC) and Ed Browell (LaRC).

The participating instruments and teams for this campaign were:

- The CO_2 Sounder Lidar from NASA GSFC, led by Haris Riris and Graham Allan, measures column CO_2;
- ACES Lidar from NASA LaRC, led by Mike Obland, Jonathan Hicks and Byron Meadows, also measures column CO_2;
- AVOCET from NASA LaRC, led by Josh DiGangi and Yonghoon Choi, measures CO_2 in the outside air at the aircraft altitude, providing an in situ reference;
- Picarro from NASA GSFC, led by Randy Kawa, is an in situ gas sensor that accurately measures CO_2, CH_4 and water vapor; and
- DACOM and DLH from NASA LaRC, led by Glenn Diskin, are also in situ sensors that accurately measure CO, CH_4, N_2O and water vapor in the outside air at the aircraft altitude.

One engineering flight and 7 science flights were conducted during the campaign. Six flights were based out of the international airport at Fairbanks AK. A total of 47 spiral-down maneuvers from cruise altitude to near the surface were accomplished throughout the campaign. These allowed measuring the vertical distribution of CO_2, as well as cross-comparing lidar measured CO_2 columns against "truth" from the in-situ sensors.

The DC-8 aircraft and all instruments science instruments worked well. The campaign made IPDA lidar measurements of CO_2 in Arctic for the first time. The team had good conditions in almost all planned target areas and was able to overfly many-to-most areas of interest for the ABoVE investigation. The large number spiral manuevers will allow comparisons of lidar vs in-situ CO_2 for a wide variety of locations and atmospheric conditions. Data analysis from the campaign has begun.

Contributed by Jim Abshire

ASCENDS 2017 Team

East Pacific Origins and Characteristics of Hurricanes (EPOCH)

The EPOCH project recently concluded its month-long airborne science campaign at the end of August. The primary science goal of the project is to advance understanding of hurricane genesis and rapid intensification by analyzing observational data obtained by overflying developing storms. The project used the Global Hawk aircraft due to its ability to fly 24+ hour continuous missions, as well as its capability to reach storms in all 3 regions: the East Pacific, the Gulf of Mexico, and the Atlantic. This project was led by NASA, but received substantial contributions from NOAA.

The Global Hawk aircraft carried three primary instruments: the ER-2 X-band radar (EXRAD), the High Altitude Monolithic Microwave Integrated Circuit Sounding Radiometer (HAMSR), and the Advanced Vertical Atmospheric Profiling System (AVAPS). EXRAD is a high-power airborne Doppler radar developed by the Goddard Space Flight Center. It has flown in three prior field campaigns in the nose of an ER-2, but had never been integrated or flown on the Global Hawk before. HAMSR is a microwave atmospheric sounder designed and built by the Jet Propulsion Laboratory. AVAPS, developed by the National Center for Atmospheric Research (NCAR), is a dropsonde delivery system designed for the Global Hawk aircraft. It can hold up to 90 dropsondes per flight. These sondes provide high vertical resolution measurements of temperature, pressure, relative humidity, wind speed and direction in real-time.

The flight campaign began August 1 and conducted three science flights. The first occurred on August 8-9 and was able to capture intensification of Tropical Storm Franklin in the Gulf of Mexico. For the first time, dropsonde data were transmitted and

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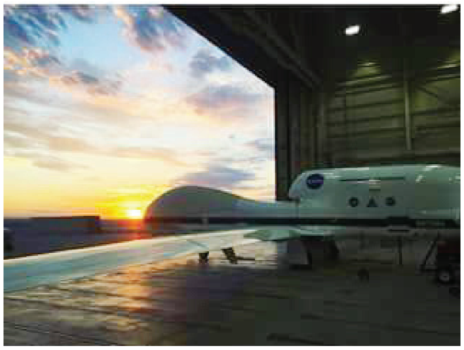
EPOCH *(continued from page 5)*



Global Hawk awoke to the desert morning sunrise as it began tests on the satellite system, which will be used on the upcoming EPOCH Mission.

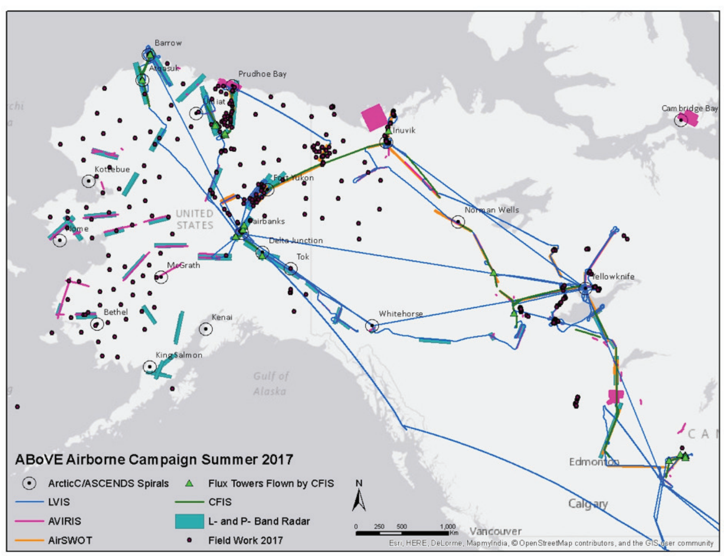
assimilated in real-time into NOAA's Global Forecast System. The second flight occurred on August 23-24 and captured intensification of Tropical Storm Harvey to a hurricane. This storm had record-breaking impacts to coastal Texas and Louisiana due to the extensive flooding. The final flight occurred on August 30-31 and captured the genesis of Tropical Storm Lidia in the Pacific. Each of the three science flights had duration greater than 20 hours. Total mission flight time was 86 hours.

Contributed by Amber Emory

Measuring the dynamics of Northern Lakes with AirSWOT

In supporting this summer's NASA Arctic Boreal Vulnerability Experiment (ABoVE), the AirSWOT instrument collected thousands of square kilometers of measurements that will help scientists understand the links between water on the surface, especially lakes, and processes happening in the soil. AirSWOT provides simultaneous, radar-derived measurements of water surface elevation in a ~4 km wide swath, along with optical imaging capabilities that provide more reliable measurements of inundation extent. In combination, these sensors allow researchers to examine how storage and flow of water in lakes, rivers, and some wetlands varies over time. The goal of this summer's AirSWOT campaign was to examine how the presence or absence of permafrost, or permanently frozen soil, affects water storage in lakes. The lead scientists on the project, Larry Smith and Dennis Lettenmaier of UCLA and Tamlin Pavelsky of the University of North Carolina, hypothesized that lakes in permafrost environments vary independently, while those in areas not dominated by permafrost all vary together. AirSWOT visited cities including Saskatoon, Fort McMurray, Yellowknife, and Inuvik in Canada and Fairbanks, Alaska, conducting intensive sampling over sites where the science team was measuring key hydrologic quantities on the ground. AirSWOT also collected long swaths of data in between cities, which will help provide context regarding the region as a whole. Nearly all AirSWOT measurement lines were flown twice, once in July and once in August, in order to observe changing lake and wetland conditions. Radar operators from JPL, pilots and ground crew from Armstrong Flight Research Center, and scientists from UCLA, the University of North Carolina, University of Colorado, University of Massachusetts, Water Survey of Canada, US Geological Survey, and Centre National d'Etudes Spatiales (CNES), the French space agency, all supported the experiment. CNES is a partner in the development of the Surface Water and Ocean Topography (SWOT) satellite.

Contributed by Tamlin Pavelsy and Larry Smith



Airborne Campaign map includes ABoVE, ASCENDS and AirSWOT missions

2017 NASA Student Airborne Research Program

The ninth annual NASA Student Airborne Research Program (SARP) took place June 18-August 11 at the NASA Armstrong Flight Research Center and the University of California, Irvine. SARP provides a unique opportunity for undergraduate students majoring in science, mathematics or engineering fields to participate in a NASA airborne science research campaign. The 32 SARP 2017 participants came from 31 different colleges and universities in 21 states. They were competitively selected based on their outstanding academic performance, future career plans, and interest in Earth system science.

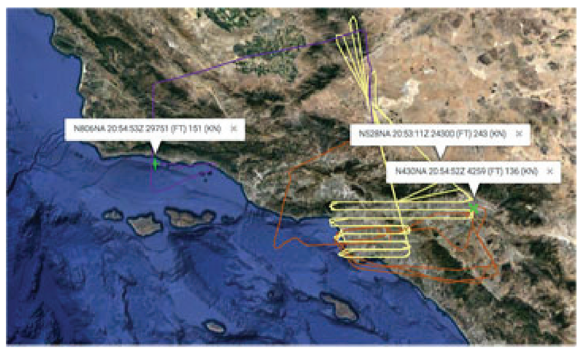
All students flew onboard the NASA C-23 Sherpa where they assisted in the operation of instruments that sampled and measured atmospheric gases and assessed air quality in the Los Angeles Basin and in California's Central Valley. The Sherpa aircraft overflew dairies, oil fields and crops in the San Joaquin Valley in addition to parts of Los Angeles at altitudes as low as 1,000 feet to collect data.

Twelve students also flew on the NASA Langley UC-12B King-Air. The King-Air flew much higher at 28,000 feet to remotely sense atmospheric gases. In addition, students used ocean and land remote sensing data collected for them over Santa Barbara by the NASA ER-2. 2017 was the first time that three aircraft were airborne simultaneously collecting data for SARP as well as the first time that the Sherpa and King Air flew as part of the program. In addition to airborne data collection, students also took measurements at field sites near Santa Barbara and at Joshua Tree and Sequoia National parks.

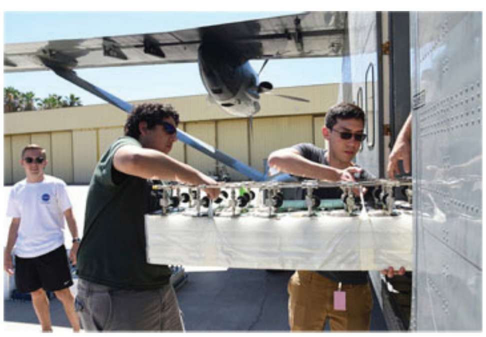
The final six weeks of the program took place at the University of California Irvine where students analyzed and interpreted data collected aboard the aircraft and in the field. From this data analysis, each student developed a research project based on his or her individual area of interest. In addition to the new data collected during the program, students had the opportunity to use data gathered by SARP participants in previous years as well as data from other aircraft and satellite missions. Nine students submitted first-author conference abstracts to present the results of their SARP research at the American Geophysical Union Fall Meeting in New Orleans in December.

Contributed by Emily Schaller

The SARP 2017 student participants, graduate student mentors, faculty advisors and pilots posed for a photo in front of the NASA Armstrong Hangar on Thursday, June 22, 2017, in Palmdale, CA. Image Credit: Megan Schill.



On June 26, 2017, the NASA ER-2, UC-12B King Air, and C-23 Sherpa were all airborne at the same time collecting data for SARP in Southern California. Students were onboard the King Air and Sherpa. In total, 13 science flights were flown for SARP 2017.



Sean Leister (right), an Earth science and applied mathematics double major at the University of New Mexico, and Mario Autore, a chemistry and physics double major at George Mason University, loaded air canisters onto the C-23 Sherpa between research flights in Bakersfield, CA, on Tuesday, June 27, 2017. Image Credit: Megan Schill

CARAFE

The CARbon Airborne Flux Experiment (CARAFE) completed its second set of flight measurements in May 2017. CARAFE flies on the NASA Wallops C-23 Sherpa aircraft, and flights have been made across a variety of biomes in the US mid-Atlantic region based from WFF. Nine science and one test flights were successfully completed and a great cache of data has been acquired.

The objective of CARAFE is to demonstrate and exercise a versatile system for direct measurement of vertical fluxes to/from the Earth surface via the airborne eddy covariance technique. The scientific aim is to quantify greenhouse gas (GHG) sources and sinks over diverse ecosystem states and land-use regions in order to improve top-down and bottom-up source/sink estimation, evaluate biophysical process models, and validate top-level flux products from OCO-2 and other space borne missions. CARAFE 2017 flights were funded by the NASA Carbon Monitoring System Program.

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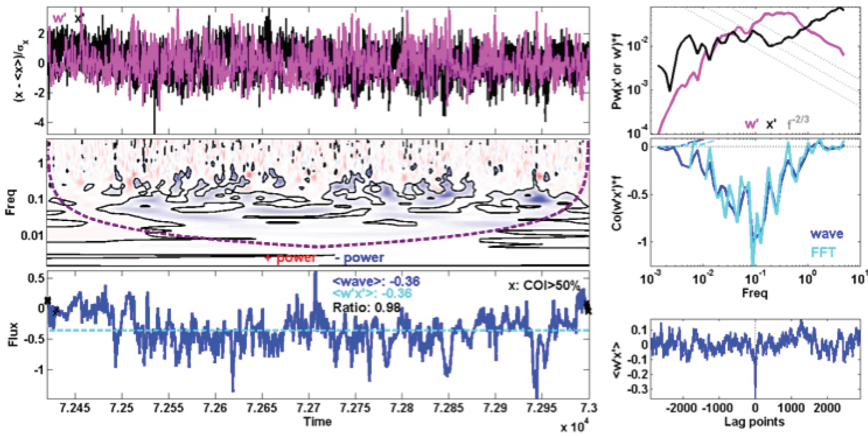
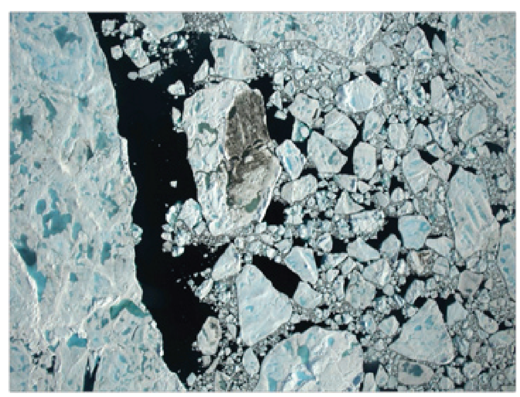


Example CO_2 flux data including wavelet analysis for one 10-min (25 km) leg at 500' largely over dense forest. Diagnostics confirm the frequency response and sensitivity of the instrumentation and quantify uncertainties. Much of the variability in the flux time series is repeatable and associated with conditions on the ground, which will be analyzed in more detail.

IceBridge Melt Season Mission

The Operation IceBridge (OIB) Melt Season 2017 deployment to Thule Air Base, Greenland with the NASA Langley Dassault HU-25A Guardian concluded on July 27, 2017. The main purpose of the mission was to survey sea ice under melting conditions to track thickness changes from the spring time period as well as collect data to determine the capability of a green laser to measure melt pond depth. The research payload consisted of the NASA Wallops Airborne Topographic Mapper (ATM), and the NASA Ames Digital Mapping System (DMS). The deployment achieved all five of the planned flight profiles, including sea ice in the vicinity of Greenland and north of Ellesmere Island, and a land ice flight over supraglacial lakes near Hiawatha Glacier. A total of 12 sorties were flown using 39.5 flight hours of the 44.2 planned/approved hours between July 10 and July 27, 2017. The maintenance team from the Research Systems Integration Branch, Research Services Directorate (RSD) at LaRC proved their worth by not only generating the required number of sorties, but also completing two repairs in the field, thus preventing interruption in the science. A total of six science flights were conducted (21.3 flight hours); all research flights were conducted from Thule Air Base. This mission was funded by OIB, Science Mission Directorate, NASA Headquarters. The OIB Mission Scientist was John G. Sonntag, SSAI, NASA Goddard; the OIB Project Scientist was Nathan T. Kurtz, NASA Goddard. The Research Pilots were Gregory L. Slover, ASQAO/RSD, and Matthew G. Elder, AOEB/RSD. The on-site Mission Manager was Lucille H. Crittenden, AOEB/RSD.

Contributed by Nathan Kurtz



A DMS image of broken sea ice floes with blue melt ponds scattered throughout much of the surface. (NASA/Eric Fraim)

CARAFE *(continued from page 8)*

Sherpa-eye view during flux measurements over forest and agricultural fields in the DelMarVa peninsula, May 18, 2017.

The results from CARAFE 2017 in May will be compared to corresponding data and models taken in September 2016 over many of the same surfaces to examine how the uptake of CO_2 and emissions of CH_4 by vegetation vary with phenology (seasonal cycles with respect to climate conditions) for crops and different forest types. CARAFE also added a N_2O/CO sensor to the payload for 2017.

CARAFE investigators are: PI S. R. Kawa and co-Is P. A. Newman, G. Wolfe, T. Hanisco (GSFC), G. Diskin, K. L. Thornhill, J. Barrick (LaRC), G. Hurtt (UMD), G. Bland (GSFC/WFF), and S. Pusede (UVA).

For more see:
https://climate.nasa.gov/news/2581/nasa-to-measure-greenhouse-gases-over-the-mid-atlantic-region-in-may/

https://airbornescience.nasa.gov/sites/default/files/documents/ASP_2016_Annual_Report.pdf

Contributed by Stephan Kawa

Lake Michigan Ozone Study and OWLETS

The Geostationary Trace Gas and Aerosol Sensor Optimization (GeoTASO) team was involved in three consecutive studies exploring poor air quality associated with ozone in three different coastal areas of the U.S. First, was the Lake Michigan Ozone Study (LMOS) during 22 May – 22 June, 2017. The team was based in Madison WI, and conducted flights throughout the western Lake Michigan coastal region from Chicago to Sheboygan. During the five-week campaign, the NASA team conducted 21 flights, totaling 92 flight hours, of the GEOstationary Coastal and Air Pollution Events (GEO-CAPE)/Tropospheric Emissions: Monitoring of Pollution (TEMPO) airborne simulator, known as GeoTASO, on NASA Langley Research Center's (LaRC) UC-12B aircraft. The flights were coordinated with airborne in-situ vertical profile measurements made by the EPRI-funded aircraft. The campaign also included the first deployment of the new AirHARP airborne hyperspectral polarimeter, which is a candidate for the ACE mission. The flights accomplished the campaign measurement priorities by mapping the changing emissions of ozone precursors at different times of day and under different meteorological conditions across the coastal Lake Michigan region, including the Chicago and Milwaukee metropolitan areas, local power plants, and the coastal towns in the region that experience episodic high ozone values. The team also spent a week supporting SARP in California. (See related story.) After returning to LaRC, the team supported the Ozone Water-Land Environmental Transition Study (OWLETS) campaign by conducting three flights totaling 12 hours to map diurnal and weekday/weekend changes across the Tidewater region, including all of the OWLETS measurement locations. These campaigns will provide valuable datasets for training future users of TEMPO data.

NASA's Kurt Blankenship, Matt Kowaleski, Laura Judd and Taylor Thorson are conducting science flights on NASA Langley's UC-12 aircraft as part of the Lake Michigan Ozone Study.

NASA remote sensing measurements from the UC-12 aircraft are combined with partner measurements from other aircraft, ground sites, mobile labs and a research vessel to provide a comprehensive look at high-ozone events along the Wisconsin-Illinois Lake Michigan shoreline. Credits: NASA/Tim Marvel

Contributed by Bruce Fisher and Jay Al-Saadi

Airborne Science Program and Center 2017 Awards

WFF, Outstanding Achievement
David Stiles

For excellence in maintenance management during the busiest period on record for the GSFC WFF Airborne Science Program.

ARC/NSRC, Sustained Excllence
David Van Gilst

For sustained excellence supporting telemetry and networks across the Airborne Science fleet, ensuring that all the data systems for the various platforms were integrated and operating even in times of staff shortfalls and heavy mission tempo.

AFRC, Project/Mission Management
Brian Hobbs

For exemplary service to the Center and the Agency while leading successful completion of a highly challenging ER-2 science deployment to Namibia, Africa

ARC/NSRC, Outstanding Achievement
Eric Stith

For exceptional performance in network, data display, and communications engineering and customer service for 2016 EV missions.

AFRC, Career Sustained Excellence
Jay Nystrom

For 20+ years of dedicated support of the Airborne Science Program in several key roles. A true professional who always puts the mission first.

WFF, Team Achievement
P-3 ORACLES Maintenance Team

For excellent maintenance technician teamwork while deployed to Africa executing the 2016 ORACLES EV mission aboard the NASA P3 research aircraft.

GSFC, Certificate of Recognition
Eugenia DeMarco

As the SnowEx Instrument Integration lead, she led the effort for a first-time integration onto the NRL P-3, a new platform for a NASA mission

Continued on page 11

ASP Awards *(continued from page 10)*

ARC Sustained Excellence
Sandra Johan

For prolonged excellence and commitment to the advancement of the Airborne Science Program's mission and technical capabilities as the Missions Tools Suite's Senior Software Developer

GSFC WFF,Sustained Excellence
Sylvia Bell

For extraordinary accomplishment as Aircraft Office Business Manager during the busiest period on record for the GSFC WFF Airborne Science Program

AFRC, Engineering
Matt Berry

For engineering excellence keeping the DC-8 flying safe and achieving science expectations

AFRC, Mechanic
Lorenzo Sanchez

Excellence in maintaining the NASA DC-8 Airborne Science aircraft and stepping up as the acting crew chief for the ATom-2 deployment

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Upcoming Events

* 2017 HyspIRI Science Team Meeting
  October 17-18, 2017; CalTech
  https://hyspiri.jpl.nasa.gov/events/2017-hyspiri-science-team-meeting

* 2017 PMM Science Team Meeting
  October 16-20, 2017; San Diego, CA
  https://pmm.nasa.gov/meetings/all/2017-pmm-science-team-meeting

* UAS 2017
  October 24-26, 2017; Las Vegas, NV
  http://conferences.asprs.org/uas-2017/

* TFRSAC Fall meeting
  November 2, 2017; Boise, ID
  Contact Hinkley, Everett A -FS
  [ehinkley@fs.fed.us]

* PECARO 20
  November 14-16, 2017; Sioux Falls, South Dakota
  http://pecora.asprs.org/

* UAS TAAC 2017
  December 4-7, 2017; Santa Fe, NM
  https://taac.nmsu.edu/

* AGU Fall meeting
  December 11-15, 2017; New Orleans, LA
  https://fallmeeting.agu.org/2017/

* 98th American Meteorological Society Annual meeting
  January 7-11, 2018; Austin, TX
  https://annual.ametsoc.org/2018/

* AIAA Aerospace Sciences Meeting
  January 8-12, 2018; Kissimmee, FL
  http://scitech.aiaa.org/asm/

* ABoVE Science Team meeting
  January 23-26, 2018; Seattle, WA
  https://above.nasa.gov

* ASPRS Annual Conference and International LiDAR Mapping Forum
  February 5-7, 2018; Denver, CO
  http://conferences.asprs.org/denver-2018/

* 2018 Ocean Sciences meeting
  February 11-16, 2018; Portland, OR
  https://osm.agu.org/2018/

* IEEE Aerospace meeting
  March 3-10, 2018; Big Sky, MT
  https://www.aeroconf.org/

* AIAA Aviation
  June 25-29, 2018; Atlanta, GA
  Aviation.aiaa.org

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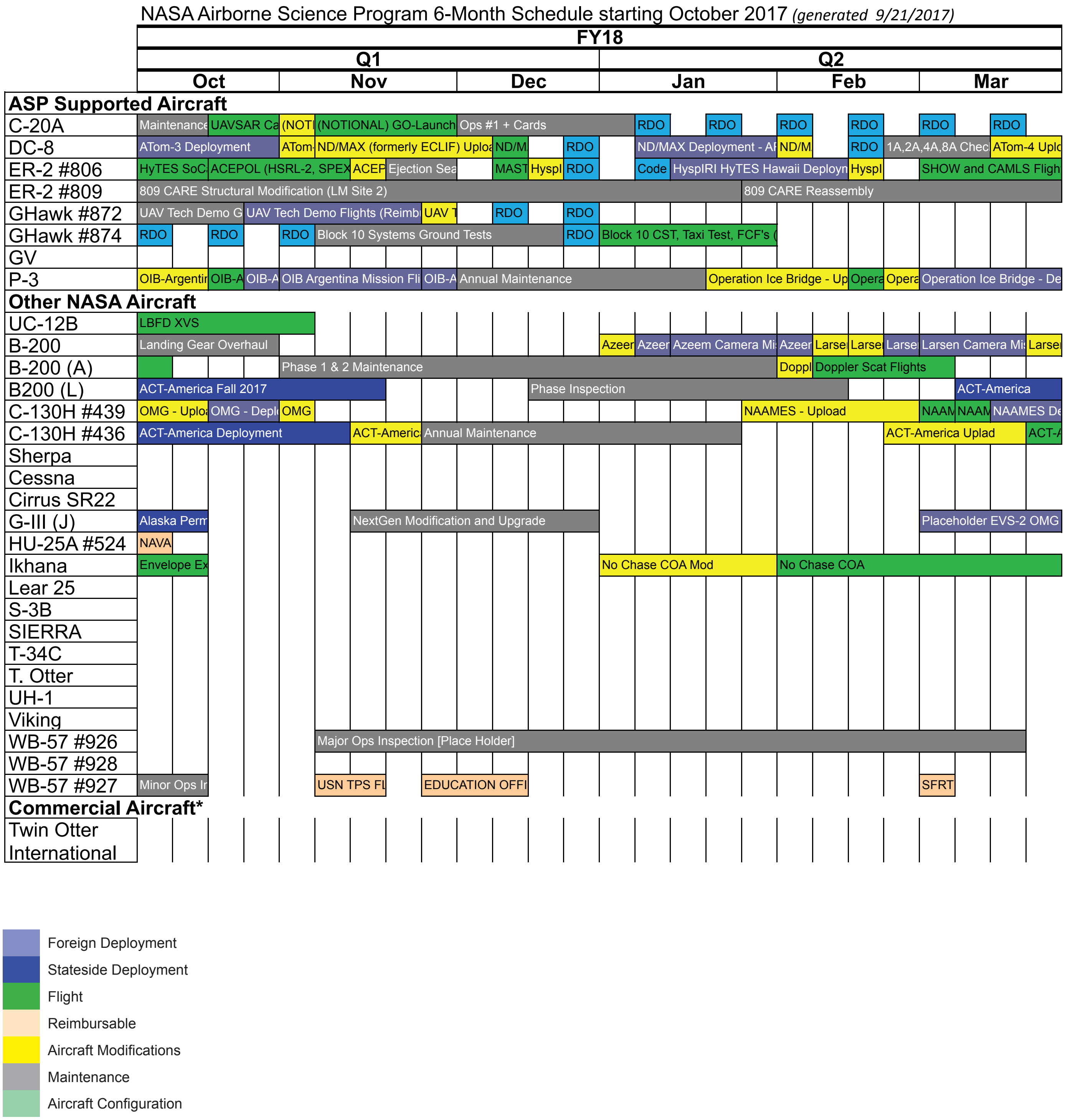
Call for Content

Working on something interesting, or have an idea for a story? Please let us know, we'd love to put it into print.

Contact Susan Schoenung (650/329-0845, susan.m.schoenung@nasa.gov) or Matt Fladeland (650/604-3325, matthew.m.fladeland@nasa.gov).

NASA SMD ESD Airborne Science Program 6-Month Schedule



Source: ASP website calendar at https://airbornescience.nasa.gov/aircraft_overview_cal

For an up-to-date schedule, see
http://airbornescience.nasa.gov/aircraft_detailed_cal

Airborne Science Program

Platform Capabilities

Available aircraft and specs

Airborne Science Program Resources	Platform Name	Center	Duration (Hours)	Useful Payload (lbs.)	GTOW (lbs.)	Max Altitude (ft.)	Airspeed (knots)	Range (Nmi)	Internet and Document References
ASP Supported Aircraft*	DC-8	NASA-AFRC	12	30,000	340,000	41,000	450	5,400	http://airbornescience.nasa.gov/aircraft/DC-8
	ER-2 (2)	NASA-AFRC	12	2,900	40,000	>70,000	410	>5,000	http://airbornescience.nasa.gov/aircraft/ER-2
	Gulfstream III (G-III) (C-20A)	NASA-AFRC	7	2,610	69,700	45,000	460	3,400	http://airbornescience.nasa.gov/aircraft/G-III_C-20A_-_Armstrong
	Gulfstream V (G-V)	NASA-JSC	10	8,000	91,000	51,000	500	>5,000nm	https://airbornescience.nasa.gov/aircraft/Gulfstream_V
	Global Hawk (2)	NASA-AFRC	30	1900	25,600	65,000	345	11,000	http://airbornescience.nasa.gov/aircraft/Global_Hawk
	P-3	NASA-WFF	14	14,700	135,000	32,000	400	3,800	http://airbornescience.nasa.gov/aircraft/P-3_Orion
Other NASA Aircraft	B-200 (UC-12B)	NASA-LARC	6.2	4,100	13,500	31,000	260	1,250	http://airbornescience.nasa.gov/aircraft/B-200_UC-12B_-_LARC
	B-200	NASA-AFRC	6	1,850	12,500	30,000	272	1,490	http://airbornescience.nasa.gov/aircraft/B-200_-_AFRC
	B-200	NASA-LARC	6.2	4,100	13,500	35,000	260	1,250	http://airbornescience.nasa.gov/aircraft/B-200_-_LARC
	B-200 King Air	NASA-WFF	6.0	1,800	12,500	32,000	275	1,800	https://airbornescience.nasa.gov/aircraft/B-200_King_Air_-_WFF
	C-130 (2)	NASA-WFF	12	36,500	155,000	33,000	290	3,000	https://airbornescience.nasa.gov/aircraft/C-130_Hercules
	C-23 Sherpa	NASA-WFF	6	7,000	27,100	20,000	190	1,000	http://airbornescience.nasa.gov/aircraft/C-23_Sherpa
	Cessna 206H	NASA-LARC	5.7	1,175	3,600	15,700	150	700	http://airbornescience.nasa.gov/aircraft/Cessna_206H
	Cirrus SR22	NASA-LARC	6.1	932	3,400	10,000	150	700	http://airbornescience.nasa.gov/aircraft/Cirrus_Design_SR22
	Dragon Eye	NASA-ARC	1	1	6	500+	34	3	http://airbornescience.nasa.gov/aircraft/B-200_-_LARC
	Gulfstream III (G-III)	NASA-JSC	7	2,610	69,700	45,000	460	3,400	http://airbornescience.nasa.gov/aircraft/G-III_-_JSC
	HU-25A Falcon	NASA-LARC	5	3,000	32,000	42,000	430	1,900	http://airbornescience.nasa.gov/aircraft/HU-25A_Falcon
	Ikhana	NASA-AFRC	24	2,000	10,000	40,000	171	3,500	http://airbornescience.nasa.gov/aircraft/Ikhana
	S-3B Viking	NASA/GRC	6	12,000	52,500	40,000	350	2,300	http://airbornescience.nasa.gov/aircraft/S-3B
	SIERRA	NASA-ARC	10	100	400	12,000	60	600	http://airbornescience.nasa.gov/platforms/aircraft/sierra.html
	T-34C	NASA-GRC	3	100	4,400	25,000	150	700	http://airbornescience.nasa.gov/aircraft/T-34C
	Twin Otter	NASA-GRC	3	3,600	11,000	25,000	140	450	http://airbornescience.nasa.gov/aircraft/Twin_Otter_-_GRC
	UH-1	NASA-GSFC	2	3,880	9,040	12,000	108	275	https://airbornescience.nasa.gov/aircraft/UH-1_Huey
	Viking-400 (4)	NASA-ARC	11	100	520	15,000	60	600	https://airbornescience.nasa.gov/aircraft/Viking-400
	WB-57 (3)	NASA-JSC	6.5	8,800	72,000	60,000+	410	2,500	http://airbornescience.nasa.gov/aircraft/WB-57