National Aeronautics and Space Administration

Airborne Science Newsletter

Winter 2009

What's Inside...

SMAPEX08

The Soil Moisture Active Passive EXperiment 08 (SMAPEX08) was flown in September and October 2008 over sites in Iowa and Maryland, supporting the JPL/NASA Passive Active L-band System (PALS). The mission was flown a NASA contracted Twin Otter-deHavilland DHC-6 aircraft

Airborne Science Newsletter

It's your newsletter!

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

Contact:

Steve Wegener
650/604-6278
steven.s.wegener@nasa.gov

or

Matt Fladeland
650/604-3325
matthew.m.fladeland@nasa.gov

Airborne Science Program Reunion '08

Attendees of the Airborne Science Program Reunion '08 gathered at the NASA Ames Conference Center just before the AGU Fall meeting, on a rainy December 14th. The event included a visit and tour of the DC-8, followed by refreshments and appetizers before everyone enjoyed the buffet dinner catered by Mario's.

The organizing committee (Steve Wegener, Jim Weber, Sue Tolley, Patti Bergin and Geary Tiffany) reached into the archives, and tapped Ole Smistad, Barney Nolan, and Marty Knutson, three of the early pioneers of the ASP, to share their perspectives of the early beginning days of the program.

Ole Smistad worked in the Gemini Experiments Office at the manned Spacecraft Center in Houston in the early sixties. From that program, Leo Childs and Harold Toy acquired the Convair 240 that flew its first mission in 1964. Following that mission, Smistad headed the JSC Aircraft Office, which added the C130B and NP3A, as well as the WB -57s, which still fly out of JSC. Smistad stayed with the Airborne Office until the Program moved to Ames and Wallops in 1982. He expressed his marvel at the evolution of the program, its platforms and sensors, and the continued focus on data quality.

Continued on page 3

ATM and P3 conduct successful campaign in Chile

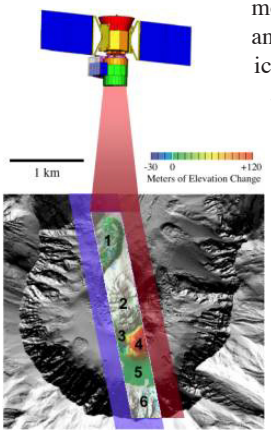
The GSFC/WFF Airborne Topographic Mapper (ATM) team has returned from Chile after a very successful airborne campaign. The project utilized a Chilean Navy P3 aircraft to fly airborne lidar and depth sounding radar flights over sites in the Antarctic Peninsula and the Patagonia Ice Fields. Centro de Estudios Científicos in Valdivia, Chile (CECS) provided aircraft coordination and scientific collaboration. The primary sensors were the GSFC/WFF ATM, along with supporting GPS and INS instrumentation (PI/Bill Krabill, Cryospheric Sciences Branch/GSFC). Also on board was an Instrument Incubator Project from

Continued on page 2

The GSFC/WFF Airborne Topographic Mapper (ATM) team with the Chilian Armada P3 aircraft crew stand for a group photo.

SIMPL Begins Test Flights

An advanced technology, airborne laser altimeter has been developed and test flown under the leadership of David Harding at NASA's Goddard Space Flight Center. The instrument, the Swath Imaging Multi-polarization Photon-counting Lidar (SIMPL), for the first time combines laser depolarization measurements at two wavelengths with single photon ranging to measure the elevation and physical state of ice sheet, sea ice and land surfaces. SIMPL's first engineering flight was successfully completed over Michigan in December, 2008 aboard Glenn ResearchCenter's Lear-25. SIMPL is a pathfinder for future generation spaceflight laser altimeters and was developed with funding from NASA's Earth Science Technology Office Instrument Incubator Program. ▲



Chile Campaign

(continued from page 1)

the Johns Hopkins University Applied Physics Lab known as PARIS (Pathfinder Advanced Radar Ice Sounder). Many of the flight lines have been surveyed by this project in the past, so that change detection measurements will be immediately available following data processing. Typical performance in the past has been at the 10-centimeter level.

The Armada P3 aircraft performed in very efficient and outstanding fashion, with no down time in the field. The Armada de Chile crew was outstanding in their performance and support for these long missions (most were ~10 hours). All of the objectives for the sensors on board were accomplished. The project was sponsored by the Cryospheric Sciences Program at NASA HQ via the 2007 ROSES call. ▲

Note from the Top

Once again, we've had an excellent quarter since the last newsletter. We're moving forward on a lot of fronts. One is a first in our program: the Airborne Science Program Awards given to some of our best people. Many expend 110% or more to make this program successful. Plenty spend their professional life making a big difference in our ability to acquire the observations necessary for us to successfully reach our national science objectives and ultimately give our policymakers the information that will benefit society at large. This year's winners were Mike Fitzgerald, Steve Gaines, Dave VanGilst, the DC-8 Team, and the ESPO Team. I want to extend congratulations to all. Sadly, those congratulations are tempered by the loss of Steve Gaines, one of our dedicated program members who passed away in October. More will be said in the upcoming annual report about Steve and his contribution to ASP for the last 25 years. For now, I repeat my congratulations to this year's recipients and I look forward to handing out more awards at the Annual Review team meeting.

Another significant program start is participating in the success of NOVICE that, this summer, will include a student campaign on the DC-8 where undergraduate and graduate students will use facility instruments.

We have released the new Flight Request system. I suspect we may have some growing pains in its outset, but it's essential that we support the system and let the ESPO office know what needs tweaking to keep it useful and relevant.

The ISRSE Conference in May is still on and we're working with senior management to obtain approval for ASP folks to attend. The conference promises to be an excellent forum for our program since I recently found out over 600 abstracts were submitted and 47 of them were airborne science based. Obviously, since we submitted only 19 abstracts, many other airborne science organizations will be participating. We've invested in the sponsorship of the conference and have several non-conference, international program activities planned with our international and interagency partners. These include the ICCAGRA-EUFAR joint meeting on the Sunday before the conference, the ICCAGRA business meeting on Monday, and the ISPRS international working group for airborne science standards. We're looking at a potential education program meeting on Thursday of that week. These programmatic meetings are being coordinated with speakers' presentation sessions to minimize schedule conflicts with the conference. More than most, our organization operates in an international environment that requires flying in our science partners' domestic and international airspace, operating our aircraft in concert with theirs. We meet only once every two years; therefore, I view this as the most important conference for our organization as the world's airborne science leader.

With the advent of our success over the last year, we've received requests for the support of additional missions that will demonstrate our relevance to the Decadal Survey and the satellite programs. These new missions range from support as a data gap filler for the finicky ICESAT, to being a major part of the Venture class program. Additionally, we support several ESTO, Flight Programs, R&A and Applied Science new sensor developments, employment, and applications. As usual, we flew many successful missions this last quarter that I will leave to others to discuss. But it behooves me to note that the people of this program, conducting these operations in difficult conditions while performing them safely and with unprecedented results, achieve all of this work.

Andy Roberts
Airborne Science Program Director

Reunion *(continued from page 1)*

Before taking the helm as NASA Airborne Science Manager, Barney Nolan served as an Air Force pilot with experience in aircraft accident investigations, followed by his appointment as chief of program review for the Office of Space Science and Applications (OSSA). It was Vince Johnson, OSSA Chief of Engineering who asked Nolan to be the first manager of the geophysical research aircraft programs at NASA centers. Nolan shared a few stories that highlighted HQ's perspective of the evolving program, including the development of NASA airborne remote sensing that pre-dating dates Landsat, the acquisition of high altitude resources including the C-141, and the U-2s, and reflections on the reimbursable mapping program pursued by Ames.

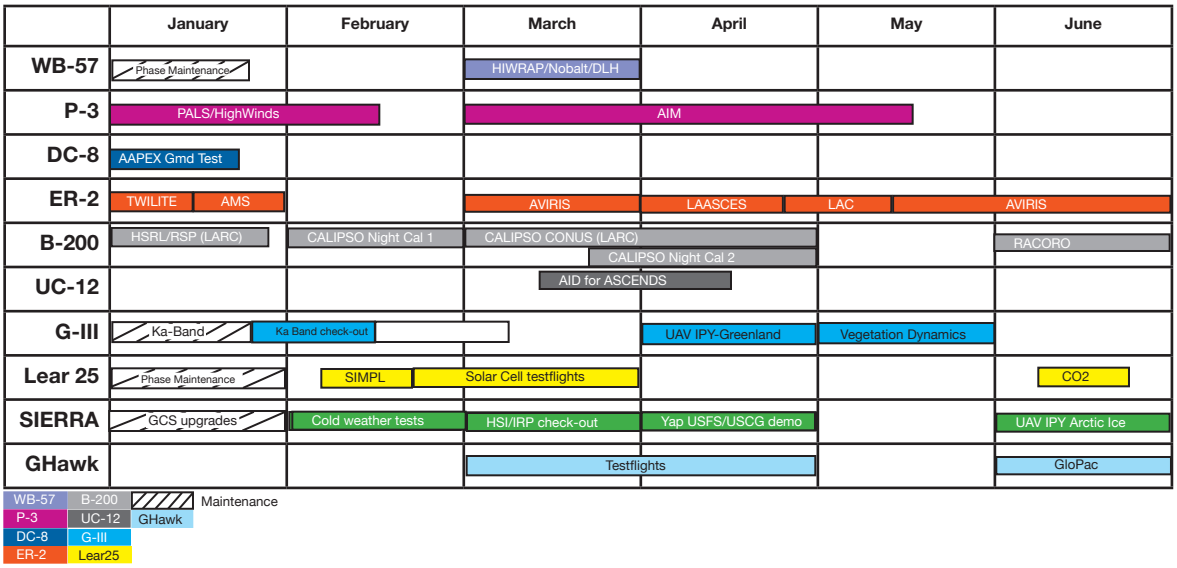
Marty Knutson came to NASA in 1971 from the CIA and was instrumental in bringing the U2 program to Ames, lock, stock and barrel. This included creating a way to ensure continued support through reimbursable mapping agreements with state governments. In 1984, Knutson was appointed Director of Flight Operations at Ames, and the Site Manager of the Ames-Dryden Flight Research Facility, a position he held until 1990. Knutson retired from Ames in 1997.

Warren Hall shared some of the early Ames Airborne Science activities that included a 1964 astronomy mission to study an eclipse near the equator. George Postell was not able to make the reunion; however, Shane Dover, lead P-3 pilot from Wallops, admirably stood in his stead. Dover shared some of Wallops' history, then surprised, and entertained us with his rock video of the aircrew's perspective of P-3 missions over Arctic ice.

Reunions give a sense of heritage, a sense of belonging, and a sense of pride. Attendees at this year's event left with an appreciation that the roots of the Airborne Science Program provided a foundation to build a stronger, more responsive capability to serve the needs of the airborne science community, now and in the future. ▲

Barney Noland, Marty Knutson, and Ole Smistad swap stories at the Airborne Science Program Reunion '08. Photo by Sue Tolley

NASA SMD ESD Airborne Science Program 6-Month Schedule



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
Core Aircraft	ER-2	NASA-DFRC	12	2,900	40,000	>70,000	410	>5,000	http://www.nasa.gov/centers/dryden/research/AirSci/ER-2/
	WB-57	NASA-JSC	6	6,000	63,000	65,000	410	2,172	http://jsc-aircraft-ops.jsc.nasa.gov/wb57/
	DC-8	NASA-DFRC	12	30,000	340,000	41,000	450	5,400	http:///.nasa.gov/centers/dryden/research/AirSci/DC-8/
	P-3B	NASA-WFF	12	16,000	135,000	30,000	330	3,800	http://wacop/wff.nasa.gov
NASA Catalog Aircraft	DHC-6 Twin Otter	NASA-GSFS-WFF	7	5,000	12,000	25,000	160	500	http://www.twinotter.com
	Gulfstream III (G-III) (mil: C-20A)	NASA-DFRC	7	2,610	45,000	45,000	459	3,400	http://airbornescience.nasa.gov/platforms/aircraft/g3.html
	King Air B-200 AND UC-12B	NASA-LARC	6.2	4,100	12,500	35,000	260	1250	http://airbornescience.nasa.gov/platforms/aircraft/b-200.html
	DHC-6 Twin Otter	NASA-GRC	3.5	3,600	11,000	25,000	140	450	http://www.grc.nasa.gov/WWW/AircraftOps/
	Learjet 25	NASA-GRC	3	3,200	15,000	45,000	350/.81 Mach	1,200	http://www.grc.nasa.gov/WWW/AircraftOps/
	S-3B Viking	NASA/GRC	>6	12,000	52,500	40,000	450	2,300	http://www.grc.nasa.gov/WWW/AircraftOps/
UAS	Global Hawk	NASA-DFRC	31	1500	25,600	65,000	335	11,000	http://airbornescience.nasa.gov/platforms/aircraft/globalhawk.html
	Ikhana (Predator-B)	NASA-DFRC	30	3,000	10,000	52,000	171	3,500	http://airbornescience.nasa.gov/platforms/aircraft/predator-b.html
	SIERRA	NASA-ARC	11	100	445	12,000	60	550	http://airbornescience.nasa.gov/platforms/aircraft/sierra.html

ASP Upcoming Events

******REMINDER******
Submit your abstracts for ISRSE

* AUVSI Program Review
  Mandarin Hotel, Washington, D.C.
  Feb. 3-5, 2009
  http://www.auvsi.org/events/

* AIAA Unmanned Unlimited & Infotech@Aerospace
  April 6-9, 2009; Seattle, WA
  http://aiaa.org/content.cfm?pageid=230&lumeetingid=2070

Meetings accepting abstracts:

* American Society for Photogrammetry and Remote Sensing (ASPRS) 2009 Annual Conference -75th Anniversary
  March 9-13, 2009
  Marriott Waterfront Hotel
  Baltimore, MD
  http://www.asprs.org/baltimore09/index.html

* Geospatial 09
  Forest Service GIS Conference
  Snowbird Conference Ctr., UI
  April 27-May 1, 2009
  Abstracts accepted until Jan. 30, 2009
  http://fsgeodata.fs.fed.us/geoconference/

* 33rd International Symposium on Remote Sensing of Environment (ISRSE)
  Stresa, Italy
  May 4-9, 2009;
  http://www.symposia.org/
  Hotel booking: http://www.stresacongressi.it/it/download_registrati.php

* UAS 2009
  11th Intl. Conference & Exhibition
  Paris, France
  June 9-11, 2009
  www.uas2009.org
  Abstracts accepted until Jan. 31, 2009

* AUVSI North America
  Washington Convention Center
  Washington, D.C.
  Aug. 10-13, 2009
  Abstracts accepted through Jan. 9, 2009
  http://symposium.auvsi.org/show/callforpapers.php