



## TRANSNATIONAL ACCESS COORDINATION

Following the User Group Selection Panel (UGSP) meeting held on 23 September 2014, five research campaigns were selected for transnational access funding, out of the seven projects under consideration, all relating to hyperspectral imaging of the Earth's surface. The flight campaigns have been provisionally approved subject to agreement with the selected aircraft operator and will be carried out in the course of 2015, with the exception of HYPPOS which has already been flown by DLR with the APEX instrument operated by VITO on board.

The second set of TA Calls for Proposals closed at the end of September, with a total of 10 proposals submitted. Several of these are seeking to cluster their activities with two large field campaigns planned to take place in the summer of 2015. If approved, this will allow one or more user groups to take advantage of the campaign locations in the Cape Verde Islands and West Africa. A UGSP meeting for this set of proposals is anticipated in January 2015.

A third set of Calls for Proposals has been advertised on the EUFAR website, with a closing date of January 2015. It is anticipated that the review and approval process for these will be completed in May 2015, allowing for the possibility of approved flights to take place during the summer months – which is desirable for many hyperspectral imaging activities. Subsequent Calls are expected to be timed for January and September in each year, with the final Call in January 2017.

## FUTURE OF THE FLEET

### EUFAR Online Survey on establishing user needs

At the end of November, the N3FF activity leader, Francesco Cairo (CNR) launched an online survey to evaluate the user needs of the airborne research community. The questionnaire consists of 35 questions and will seek to identify present and future gaps in airborne research facilities in order to outline strategies for the long-term development of the fleet. All the information provided will be treated in the strictest confidence, used in aggregated statistical format only, and no personal data will be divulged. A summary of the responses collected will be made accessible through the EUFAR website in the course of 2015. We invite you to participate in the survey, which will remain open until midnight on Tuesday, 20 January 2015. To access the survey, click on the following link: <http://www.surveygizmo.com/s3/1888533/Test>

## EXPERT WORKING GROUPS

### Workshop on Airborne Laser Scanning (ALS) Software 20-21 Nov 2014, Vienna

18 participants took part in the 2-day expert workshop on ALS software, hosted by Prof Norbert Pfeifer and Dr Christian Briese (TU Vienna) at the premises of Vienna University of Technology in November, in collaboration with VITO - the JRA1 HYLIGHT activity leader. The main purpose of this meeting was to bring together developers of software tools for ALS data and experts in processing airborne hyperspectral images, present state-of-the-art in full-waveform ALS processing, and introduce and provide training in ALS software tools.



Group Photo ALS workshop, Vienna, 20-21 November 2014.



## EDUCATION & TRAINING

EUFAR is currently accepting, until the end of January 2015, TA-training course proposals to host a 1-week to 10-day EUFAR training course (theory and practice) in airborne research including TA flight hours in 2016 (or late summer 2015). Once the proposal to host a EUFAR training course has been approved by the UGSP (in early 2015), it will be announced on the EUFAR website and opened for online applications, targeting both early-stage researchers and university lecturers.

Other EUFAR training opportunities (Join an Existing Campaign, Participate in the Design of a New Flight Campaign and Visit an Aircraft/Instrument Operator) are continuously open for online application on the EUFAR website ([www.eufar.net](http://www.eufar.net)).

## STANDARDS & PROTOCOLS

### N7SP meeting, 20 - 21 Nov 2014, Munich, Germany

A meeting was organised in Munich between Stefanie Holzwarth (S&P activity leader) and Olivier Henry (S&P engineer), to officially meet one another and to discuss the Standards and Protocols work package. The meeting took place on the DLR premises, and two full days were dedicated to discussions on the ongoing tasks and deliverables, and the next versions of current toolboxes. The meeting also involved a discussion over the telephone with the N8DB activity leader, Wendy Garland, on metadata. The fruitful meeting ended with a visit to the DLR maintenance hangars, which shelter the Gulfstream G550 (HALO), the Dassault Falcon 20 and the Cessna 208 Caravan.

## DATABASE

The development of a new tool to search for data in the EUFAR archive is progressing well. Geospatial, temporal data have been extracted from all EUFAR flights with NetCDF and ENVI-format data files, along with parameter names and other key metadata. A first demonstration version of the search tool has been shown to the N8DB team. This version displays available location bounding boxes or flight tracks on a map which can be narrowed down further by entering additional search terms. Clicking on the map gives a pop-up box showing the flight information, date, etc., and links to the data in the archive, and to the CEDA web-processing tool which enables the user to produce preliminary plots or subsetting of the data before downloading (NetCDF format files at present). Feedback has been given, and the developers are currently working on incorporating these improvements.

The searchable data include the core data files themselves and, in future, additional Airborne Science Mission Metadata (ASMM). These are an important source of input for the EUFAR search tool. Information on some common usage cases has been gathered from both the in-situ and hyperspectral viewpoints to improve the layout of the tool. An updated version of the ASMM metadata creator tool has recently been produced and will be trialled on forthcoming flight campaigns by the FAAM aircraft.

## E-COMMUNICATION

Development of the new EUFAR website is well underway and the new graphic design should be finalised by the end of the year. The University of Warsaw, tasked with the development of the new website, is working hard at this task and it is hoped that the new website will be operational in spring 2015. In the meantime, we kindly ask all members to ensure that their membership details (e-mail, affiliation, etc.) are up-to-date on the current EUFAR website to facilitate a smooth transfer.

## JOINT RESEARCH ACTIVITY 1

### HYLIGHT - Integration of airborne hyperspectral imagery and laser scanning data to improve image processing and interpretation

An outline for the task one of the JRA – “Algorithm Theoretical Baseline Document (ATBD) and Detailed Processing Model (DPM) for improved Hyperspectral Imaging (HSI) processing using Airborne Laser Scanners (ALS) and improved ALS processing using HSI” has been prepared by ONERA and VITO. Topics for improved HSI processing using ALS and improved ALS processing using HSI were listed by ONERA for completion by the HYLIGHT partners.

The list of common data sets available for HYLIGHT was completed by CVGZ with contributions from VITO, UZH, PML and TAU. The list of the common data sets is available with details on the hyperspectral and ALS sensor used. The data is archived in the CVGZ FTP server together with a more detailed data description. All HYLIGHT partners have been granted access to this server.

Location	Partner	Hyperspectral Sensor	Laser Scanner
Bily Kriz	CVGZ-CzechGlobe	HyMap	Leica ALS-50
Hyperforest (wijnendale)	VITO	APEX	TopoSys Harrier 56
Laegeren	UZH	APEX	Riegl LMSQ-680
New Forest	PML	Aisa Eagle, Hawk	Leica ALS-50-II
Stitna	CVGZ-CzechGlobe	Aisa Eagle	Riegl LMS-680
TLV	UZH, TAU	Aisa Owl	ALS
ValCalHyp	PML	Aisa Eagle, Hawk	Leica ALS-50-II

## JOINT RESEARCH ACTIVITY 2

### TGOE - Traceability in Gas-phase Observations in EUFAR

An in-flight intercomparison of chemical measurements has been performed by DLR in the frame of the ACRIDICON / GO AMAZON campaigns in Manaus, Brazil. For this, two loose formation flights of HALO and a Gulfstream-1 of the US ARM Mobile Facility were conducted. Measurements of ozone, CO, NO, and NO<sub>y</sub> could be compared at two flight levels (3000 ft and 6000 ft).

The University of York, a EUFAR partner, contributed to recent "Volatile Organic Compounds (VOC) measurement guidelines" as part of EU ACTRIS project (Aerosols, Clouds, and Trace gases Research InfraStructure Network). This includes a section specifically targeting measurements based around canister samples. It focuses on best practices for instrumentation used for surface based long-term observations but a great deal of this is highly relevant and transferrable to TGOE users. The document provides detailed descriptions of typical instrumentation used for atmospheric analysis and of calibration regimes.

University of York is also running a series of stability tests on ambient air-filled cylinders, currently generating an invaluable understanding of long-term stability of VOCs in cylinders; this data was recently presented to GAW-VOC (Korea). This demonstrates the potential for a facility which may be capable of producing cylinders containing 'known' ambient air. Such cylinders would be linked to the NPL used in the University of York and as working standards by user groups.

## STRATEGY & EUROPEAN INTEGRATION

### Constitution of Legal Sustainable Structure for EUFAR

The Scientific Coordinator and the EUFAR Office have prepared a position paper describing the case for constituting EUFAR as an AISBL, "Association Internationale Sans But Lucratif", an International non-profit association under the Belgian law. This paper was presented to the steering committee of the French TA operator SAFIRE, jointly operated by Météo-France, CNRS and CNES, on 18 September 2014. Following the meeting, the document was refined and this initial document was distributed to all EUFAR partners and other potential members in early December. Each partner has also been asked to sign a memorandum of understanding by mid-January 2015, indicating their implicit support of the steps forward laid out in the document and assigning a representative to take part in the process.

### European Strategy Forum for Research Infrastructures (ESFRI) Roadmap

The Scientific and Project Coordinators prepared and sent a letter in October 2014 to the EUFAR partners (EUFAR2 beneficiaries and other active members within the EUFAR community), inviting them to approach their ESFRI national representatives to seek their support towards including EUFAR in the 2016 ESFRI roadmap.

## MANAGEMENT

### EUFAR2 Consortium Agreement

The EUFAR2 Consortium Agreement was finally agreed on by each of the 24 partners on the 21st of October. All the partners have sent in signed originals of the agreement and a copy of the complete document has recently been distributed to all partners.

### EUFAR2 General Assembly 2015

The second EUFAR General Assembly is set to take place in March 2015 and will be hosted by DLR in Oberpfaffenhofen, Germany. A special session of the meeting will be dedicated to discussing the progress so far and the steps forward in establishing EUFAR as a legal sustainable structure before the end of the current EUFAR contract. It is currently expected that this will be some time in 2016. A position paper describing the process has been circulated to all EUFAR partners.



European Researchers' Night at the Cité de l'Espace in Toulouse, with the participation of EUFAR and SAFIRE, 26 Sept. 2014



# EVENTS

## PAST EVENTS

### Contribution of EUFAR and SAFIRE to the European Researchers' Night

26 Sept 2014, Toulouse, France

The 9th edition of the European Researchers' Night took place on the 26 Sept at the Space Museum in Toulouse. With the theme of 'experiments', the event welcomed a curious and passionate public, eager to discover and take part in a number of experiments with more than 100 scientists on site. The EUFAR Office together with SAFIRE (a French aircraft operator offering TA in the current EUFAR framework), held a joint stand at the event with the sub-theme "environmental measurements on board research aircraft". Three instruments were displayed on the stand – particle and temperature sensors and a pitot tube, illustrating how scientific measurements are conducted on a plane and how data is collected. SAFIRE also projected a short film on airborne research. The EUFAR Office used this opportunity to distribute a number of flyers on EUFAR and its various activities, and share with the public more about EUFAR's vision and current undertakings.



*EUFAR & SAFIRE stand at the European Researchers' Night, 26 Sept 2014*

### Final ENVRI conference

7-8 Oct 2014, Amsterdam, The Netherlands

Stefanie Holzwarth (N7SP activity leader) participated in the Common Operations of Environmental Research Infrastructures final conference. Former and current ESFRI delegates presented ESFRI achievements to date and a preview on the follow-up proposal – ENVRIPLUS was shared, followed by group discussions. A number of initiatives towards data sharing and interoperability across different scientific disciplines under ENVRI have guided the current and future cooperation of the different research infrastructures in Europe. As a result, the possibility of applying the ENVRI reference model to EUFAR, with the support of ENVRI developers, is currently being considered.

### COST Action OPTIMISE Meeting

8-10 October 2014, Milan, Italy

EUFAR Education and Training opportunities were presented by IIs Reusen (N6ET activity leader) at the COST Action OPTIMISE core group meeting in October to inform the participants and discuss potential EUFAR-OPTIMISE collaboration in the framework of EUFAR training courses.

### Royal Aeronautical Society conference on Research Aircraft Operations

3-5 Nov 2014, London, UK

N2TAC Coordinator Phil Brown assisted the first ever conference on Research Aircraft Operations, hosted by the Royal Aeronautical Society. The conference brought together some representatives of the atmospheric and environmental research community who use aircraft to make their observations, and a somewhat larger group from the aerospace development and test community. During discussions it was apparent that these two communities share some common issues, in particular their relationships with national air traffic authorities, access to airspace and the certification of aircraft modifications and instrumentation installations. It is clear that there is scope for further collaboration in the future. Dennis Hines, from NASA, gave a good run-down of some of the operational issues that impact their fleet (DC-8, two ER-2 and two Global Hawk UAV amongst others), and was awarded the EUFAR handbook as a prize.

For more information on the conference, click [here](#).

### ISPRS Technical Commission I Symposium & ICCAGRA Conference

17–20 Nov 2014, Denver, Colorado, USA

EUFAR Scientific Coordinator, Phil Brown, attended a meeting of the ISPRS Technical Commission 1 in Denver, 19th Nov. EUFAR has participated in WGI/1 (Standardisation of the Airborne Platform Interface) of this commission since it was established in 2009. This WG has achieved some progress in linking the international airborne research community and promoting the adoption of standards, particularly in the areas of data, metadata and software. However, it was felt that it was not necessary to maintain itself within the ISPRS structure in order to continue to make such progress. Other opportunities for the WG to meet were likely to be available at large scientific conferences such as the EGU General Assembly and future International Conferences on Airborne Research for the Environment (ICARE) that will jointly be organised by EUFAR and ICCAGRA (the Inter-Agency Coordinating Committee for Airborne Geophysical Research and Applications in the USA).

This was further discussed and agreed at a meeting of ICCAGRA the following day. The next ICARE will be planned to take place on similar lines to that held in Toulouse in 2010 with a programme including plenary sessions, horizon-scanning

activities, Expert WG meetings and summer schools. There is interest in seeking to host future events at 2-year intervals. In order to promote continuing dialog between EUFAR and ICCAGRA, it is planned that representatives will attend each other's meetings on at least an annual basis.

### Interview Phil Brown for the EU Directorate of Research and Innovation

In early September, Phil Brown was interviewed by a contractor working for DG Research and Innovation, in order to prepare a factsheet on EUFAR that will be available online via the EC website.

## UPCOMING EVENTS

European Geosciences Union (EGU)  
General Assembly 2015  
12-17 April 2015, Vienna, Austria

The EUFAR Office will be holding a stand at the annual EGU next year, the largest and most prominent European geosciences event to disseminate information on EUFAR and draw interest to EUFAR's activities.

Observations in Atmospheric Research Workshop:  
Conducting Field Operations in a Changing World  
New Orleans, Louisiana, USA 21-23 April 2015

The workshop will focus on sharing information on best practices, lessons-learned and country-specific experiences by different groups for the planning and conduct of scientific research campaigns around the globe. The agenda will consist of a mix of short, focused presentations, plenary and small breakout sessions, as well as invited keynote speakers, and will be agile to accommodate specific discussion items that different groups may bring to the table. We strive to get broad participation from groups around the world who operate and deploy airborne and ground-based assets in support of field campaigns in the geosciences. This unique gathering of facility support experts will not only allow for dissemination and sharing of knowledge but also promote collaboration and networking among peers.

The workshop is organised by NCAR's Earth Observing Laboratory (EOL), which is responsible for managing and operating the US National Science Foundation's Lower Atmosphere Observing Facilities. Read more [here](#).

EUFAR will provide limited support for travel to this workshop, as part of the activity of its Expert Working group on Operations. If you wish to apply for this support, please submit an application by email to [bureau@eufar.net](mailto:bureau@eufar.net). Your application should include your name, current occupation, location and why you would like to attend this workshop.



BAE 146 OPERATED BY THE FACILITY FOR AIRBORNE ATMOSPHERIC MEASUREMENTS (FAAM) AVAILABLE FOR TRANSNATIONAL ACCESS UNDER THE FRAMEWORK OF EUFAR2.



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