

### European Facility for Airborne Research for environmental and Geo-sciences

# NEWSLETTER



SEPTEMBER 2015, ISSUE 14

### Transnational Access Coordination

#### Transnational Access (TA) flight campaigns

Following the second call for TA proposals, one (SAVEX-D) out of three TA applications, seeking to cluster themselves with the ICE-D campaign flown by the FAAM (UK) in August in the Cape Verde Islands, was selected, and two (MICWA and APSOWA) out of three further applications were selected seeking to cluster with the large multi-national campaign DACCIWA (Dynamics Cloud Chemistry Interactions in West Africa) in 2016. In addition, the training course – SWAMP was awarded 10 TA flight hours and took place in July 2015 in Poland (find more information under section on 'Education and Training').

A further set of TA Calls for Proposals are currently being advertised with a closing date of September 2015, targeting specific science priorities such as polar research and continually promoting small, low cost research aircraft in the TA fleet. So far 7 projects have been selected following the third call for proposals, 4 to be flown in 2015 and 3 in 2016. For more information on accepted TA projects, log onto the EUFAR website and in the back office, click on TA projects under Transnational Access.

We anticipate at least two further Calls during 2016 and one in 2017. Potential applicants are reminded that they can also submit a short Expression of Interest for TA via the website at any time. Currently 18 research aircraft and 3 specialised instruments are available for transnational access.

### Advertising of Aircraft and Instruments (TA & non-TA)

All TA operators have been requested to check and, where necessary, update the information on their instruments and aircraft, and also to update their aircraft planning information up to the end of 2016 on the EUFAR website to make it easy to identify key opportunities for clustering of TA proposals.

As EUFAR is a network reuniting all users and providers of airborne research all over Europe, new operators are invited to contact the EUFAR Office if they wish to have their aircraft and instruments published on the new EUFAR website. For more information please contact olivier.henry@meteo.fr.

## Agriculture-Health-SPECTrometry(AHSPECT) Transnational Access Project

The AHSPECT initiative is aimed at collecting hyperspectral airborne measurements over agro-forestry areas of southwestern France for assessing the agricultural health, physiology and satellite products validation. The project is supported by EUFAR's transnational access programme, which facilitates and funds access to the NERC ARSF aircraft - Dornier DO228, mounted with the hyperspectral camera FENIX for visible and infrared range and the hyperspectral camera OWL for thermal infrared. A LIDAR instrument is also set up on board the aircraft. Spatial resolutions for sensors vary between 0.4 and 1.5 m, owing to low altitude flight (~1.2 km).

The first phase of the campaign took place on 23 June during which several ground-based stations maintained by CESBIO, METEO-FRANCE (SMOSMANIA) and INRA, located between Toulouse and Atlantic ocean, were overflown. High temperature and clear sky conditions were encountered during the 4-hour flight around midday. Cover types sampled concern maize and wheat crops, orchard trees, forested areas and various other crops. AHSPECT will serve to measure, at a landscape scale, some pigment pools like xanthophyll and anthocyanin that are central for detecting abiotic stress factors in combining a modelling approach and ground truth. During the flight, ground teams from Météo-France, CESBIO and EOLAB (Spain) worked on characterising the vegetation by measuring chlorophyll, PAR, leaf area index (LAI), clumping and also crop and soil temperature. The georeferenced and radiometric calibrated images from the three instruments should be available after three months. A second campaign will take place around mid-September. It will be focused on forests impacted by climate change and also vineyards. It will also contribute to the cal/val programme of Sentinel-2. For more information, contact the lead scientist jean-louis.roujean@meteo.fr.



Dornier DO228 Flight Path during the AHSPECT campaign







Images captured by FENIX during the AHSPECT campaign

## Sunphotometer Airborne Validation Experiment (SAVEX-D)

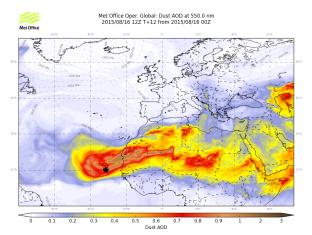
Authors: V. Estellés, F. Marenco, C.L. Ryder

The SAVEX-D experiment was carried out in August 2015 in the Cape Verde archipelago. Clustered with the ICE-D (Ice in Clouds Experiment – Dust) campaign led by the Met Office and the Universities of Leeds and Manchester, SAVEX-D was allocated 10 flight hours on FAAM's BAe146. The SAVEX-D team included researchers from the University of Valencia (Spain), University of Reading (UK), National Research Council (Italy) and MetOffice (UK). AERONET and ESR/SKYNET sunphotometers were deployed in Cape Verde for the duration of the campaign at Praia airport, alongside ground-based in-situ aerosol observations. The location of the campaign was ideal due to its situation in the path of mineral dust aerosols originating from the Sahara and being transported westwards in the Saharan Air Layer.

The main objective of SAVEX-D is the validation of AERONET and ESR/SKYNET ground-based sunphotometer retrievals of columnar aerosol properties such as volume size-distribution, single scattering albedo, refractive index and phase function, to be achieved with direct comparison with aircraft in-situ measurements (including size-distributions and filter samples) supplemented by radiative closure using the lidar and both short and longwave radiometers onboard the aircraft. Previous comparative studies between the AERONET and ESR/SKYNET networks have shown that important discrepancies in retrieved aerosol properties can arise, that are very important for climatological studies, aerosol model verification and satellite retrieval validations. The data analysis phase of the project will follow the field campaign, and the researchers will evaluate the sunphotometer measurements in light of the aircraft measurements, and try to address any possible differences.

SAVEX-D required stringent atmospheric conditions for a flight to be performed (cloud free sky at the sunphotometer site, simultaneous to an aerosol optical depth higher than 0.4). The research team utilised a range of dust and cloud forecast products, as well as near-real time satellite imagery to identify optimum flying days on 16 and 25 August: both flights were successful and performed in parallel with the ground-based sunphotometer measurements. The average aerosol optical depth during the experiments time was 0.4 - 0.6 in mostly cloud free skies, guaranteeing good conditions for aerosol inversions.

EUFAR funded the airborne segment of SAVEX-D. The ground-based segment is also supported by the Spanish Ministry of Economy and Competitiveness and the Valencia Autonomous Government. The filter sample analysis is funded by a UK Independent Research Fellowship NERC grant. The Spanish Ministry of Economy and Competitiveness and NERC will support the data analysis phase of the project.



Above: Met Office operational global model dust forecast for 16 August, showing a large plume of dust arriving at Cape Verde archipelago (black star in the map)

Left below: FAAM BAe-146 aircraft parked at Praia airport. Photo courtesy of Dr. Lindsay Bennet.

Right below: Cimel (right) sunphotometers deployed at Praia





### **EXPERT WORKING GROUPS**

## EWG on Research Aircraft Operations & Certification 21 Sept. 2015, National Aerospace Laboratory, Schiphol Airport

The reformed EWG dedicated to research aircraft operations and certification will be holding a kick-off meeting in September to discuss and agree on the working group's objectives and work plan, and propose projects related to certification, flight permissions and research flying practices, as well as gauge the group's interest on research pilot training and approvals. The proposed meeting will also include a tour of the NLR facilities. 11 participants representing 7 aircraft operators are expected to attend the meeting. For more information, contact the working group leader guy.gratton@ncas.ac.uk.

#### Call for proposals for expert workshops

Proposals to hold a EWG workshop are strongly encouraged. These workshops involve scientific experts in airborne measurements seeking to exchange knowledge on, identify gaps in and suggest priorities in terms of new developments in the various fields of airborne research. EUFAR provides financial and logistical support for up to 2 workshops a year. Contact the EUFAR Office (bureau@eufar.net) for more information.



### TECHNOLOGY TRANSFER

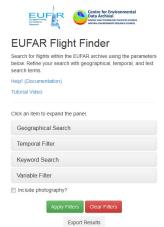
A joint workshop bringing together EUFAR experts in airborne measurements and the EUFAR Technology Transfer Office will be held towards the end of this year. About 10 promising technologies will be identified within EUFAR, and be presented and discussed at the workshop in order to choose the best amongst these to propose to industry partners and SMEs. For this meeting, a guide on technology transfer issues will be shared with EUFAR experts to serve as a guide and provide a framework for effective dialogue and collaboration between scientists and the industrial community. For more information on this workshop, contact bureau@eufar.net.

### DATABASE

### Launch of the EUFAR Flight Finder (EFF)

STFC/CEDA are pleased to announce the launch of the EUFAR Flight Finder tool (EFF) developed as part of the data archive activity. This is a geospatial-temporal search interface to locate EUFAR data within the EUFAR data archive at BADC and can be found at http://flight-finder.ceda.ac.uk and via the data archive tab on www.eufar.net.

The aim of the EFF is to facilitate the location and identification of EUFAR flights, and to link to the appropriate data files in the archive. Users can search by geographical area on a map interface, by temporal constraints or using key words or parameter names. Results are displayed on the map; clicking on a flight will show further details and links to the data. Help sheets and a tutorial video are provided to get you started. Positive and constructive comments have been received and further improvements are being implemented. Work also continues to include further data types (i.e. additional aircraft) and new flights into the search tool, although there has been a temporary hiatus due to staff changes at CEDA/BADC. We invite you to try out the EFF and send feedback to Wendy Garland - support@ceda.ac.uk.





#### Data from EUFAR funded research campaigns

The HYPPOS data received at the very end of the last quarter have finished being ingested into the archive. These are hyperspectral reflectance data from the APEX instrument. Discussions have be held with the APEX team at VITO regarding the availability, and potential timescales for the transfer of data collected during the SWAMP training course held in July 2015. This data is expected later in the year. The progress of current and future TA projects are being tracked by BADC with the help of the EUFAR Office to anticipate future data streams and support to data providers is an ongoing task throughout the project. In the meantime, the archive has been reviewed and tidied, and the software to produce the archive contents table has been revised and moved to a new server. (http://browse.ceda.ac.uk/browse/badc/eufar/docs/00eufararchivecontents.html)

### EDUCATION & TRAINING

## EUFAR/OPTIMISE SWAMP Training Course Obrzycko-Rzecin, Poland, 6-16 July 2015

The training course on "Spectrometry of a Wetland And Modelling of Photosynthesis with Hyperspectral Airborne Reflectance and Fluorescence" (SWAMP), hosted by the Poznan University of Life Sciences was held from 6-16 July 2015 in Obrzycko-Rzecin near the instrumented POLWET wetland study site, Poland. The SWAMP training course was co-funded and co-organised by EUFAR, COST ACTION ES1309 OPTIMISE and ESA.

20 early-stage researchers (PhD students and post-docs), including university lecturers from 12 different European member states and associated states (selected from 47 applications), participated in the SWAMP training course. The main aim of the SWAMP training course was to teach early-stage researchers and university lecturers how to plan and conduct an airborne research and (near-) ground validation campaign and how to use the collected data.

The 11-day training course included:

- > lectures on field, UAV, and airborne measurements with APEX,
- > Sentinel-2 and FLEX satellite missions, data processing and modelling, demonstration of field equipment and UAVs,
- > tutorials on APEX processing, ARTMO, SPECCHIO, SCOPE, pktools, ...,
- > field measurements, UAV and airborne data acquisition (HYPLANT sensor operated by Forschungszentrum Juelich (DE) in CzechGlobe aircraft on 11 July (funded by ESA) and APEX sensor operated by VITO (BE) in DLR DO228 aircraft on 15 July (funded by EUFAR)),
- > student activities in 5 scientific working groups each guided by a supervisor
- > scientific working group presentations



We acknowledge Dr. Radosław Juszczak and the whole team of the Poznan University of Life Sciences for hosting the SWAMP training course and COST ACTION OPTIMISE and ESA for cofunding and co-organising SWAMP together with EUFAR. A big thank you to all SWAMP trainers, scientific working group supervisors and trainees for their enthusiastic participation!

For more information, and to view the lecture and group presentations, visit the SWAMP information page, accessible from the Education & Training page on the EUFAR website (www.eufar.net/ET).



SWAMP participants' group photo, Obrzycko (Poland) July 2015



UAV aerial group photo, Obrzycko (Poland) July 2015



SWAMP organising committee (EUFAR, OPTIMISE & PULS)



Tutorial lecture during the SWAMP training course

#### SWAMP Testimonial - Joanna's experience

The SWAMP training course that took place in Obrzycko in Poland was a very interesting, challenging and detailed training that consisted of a combination of lectures, equipment demonstrations, modelling and field work, including flight measurements. I really liked the idea of linking both theoretical and practical activities at the same time. Every trainee was assigned to a well-balanced scientific team; this meant that young scientists at the beginning of their PhD studies could work with more experienced colleagues and with the help of supervisors could easily design a successful experiment. I was positively surprised about the amount of advanced equipment that was brought together for trainees to be used for field measurements. The fieldwork was linked to the airborne campaign that allowed us to plan real experiments. Designing different experiments with my team was another fantastic aspect that let me learn and put to practice what I learnt during the lectures and tutorials. In the few very intense days, we prepared, performed and acquired a lot of data (e.g. UAVs spectral and thermal images; airborne images; fluorescence, chlorophyll, spectral and LAI measurements) that we could use for modelling with the ARTMO, SCOPE or SPECCHIO models.

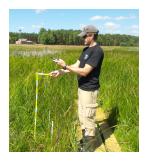
Lastly, the SWAMP course was focused on the wetland ecosystem at the POLWET (Rzecin) site. Such ecosystems are part of my PhD research, therefore every performed experiment during the course is applicable to my work, and this training has inspired me with many new ideas!

Joanna Suliga, PhD student at the Vrije Universiteit Brussel (VUB), Belgium

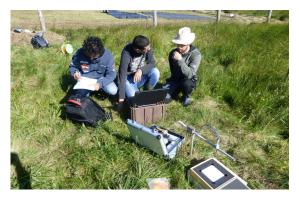




Field work & practical tutorials











UAV and airborne (HYPLANT sensor operated by Forschungszentrum Juelich (DE) in Czech-Globe aircraft on 11 July (funded by ESA)



Field work & practical tutorials



### **EUFAR** training opportunities

EUFAR is currently accepting TA-training course proposals to host a 10 to 12-day EUFAR training course (theory and practice) in airborne research with TA flight hours in 2016. If you are interested in hosting such a training course in 2016, you are requested to apply online for TA-training course and to contact the EUFAR E&T activity coordinator, ils.reusen@vito.be before the end of September 2015.

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 via <a href="https://www.eufar.net">www.eufar.net</a>.

### STANDARDS & PROTOCOLS

### EUFAR Airborne Science Mission Metadata (ASMM) Creator online version

The EUFAR S&P team is proud to announce the release of the Airborne Science Mission Metadata (ASMM) Creator online version. A successful beta test of the ASMM was conducted by Phil Brown during the ICE-D campaign flown by the FAAM (UK) in August in the Cape Verde Islands, identifying a few minor bugs which have since been resolved. We therefore invite all interested EUFAR members to test the ASMM, currently available on a dedicated server - http://176.31.165.18:8080/asmm-eufar/.

Within airborne atmospheric science, mission reports provide valuable details about research flights that are not evident from the instrument data itself. These reports can include environmental details such as types of clouds encountered, surfaces overflown and synoptic features, or mission details such as overall scientific aims, flight manoeuvres undertaken and supporting surface-based observations, among many other things. Currently, mission reports take the form of handwritten or electronic notes, thus the quality and content varies greatly between authors, making the reports less useful for filtering of or searching for specific flight details in the following months and years after the flight.

The ASMM project was motivated by the need to create a standard set of mission reports, aiding in classification and searches of data sets based on flight phenomena, mission parameters or other criteria. To meet this goal, an XML format has been developed to store the mission report data in a standard manner,. In addition, an online easy-to-use graphical user interface has been developed with the Google Web Toolkit and Java to facilitate the creation and display of the standard XML files, and allowing for the possibility to print a PDF report. For more information, contact the S&P engineer – olivier.henry@meteo.fr.



## EUFAR's Compatibility Check with International Standards

During the previous funding period of the EUFAR project (2008-2013), several efforts were made to harmonise different processes within the research infrastructure. Common protocols conforming to existing European and American airborne science best practices were developed and disseminated to the EUFAR community. These protocols served only as guidelines for the EUFAR partners and implementation was not mandatory. Since the implementation process is rather a work and time intensive step, we also want to ensure conformance with the broader geo-science community. Thus the compatibility between guidelines of international initiatives working on standards and protocols and the current N7SP products has been assessed and a detailed report of the current situation of existing standard and protocol initiatives on data acquisition and measurements has been completed. The document focuses on the suitability and relevance for EUFAR, and also takes into account initiatives EUFAR is already involved in. Adaptations and modifications to this document will be ongoing as required. To download the document, click here.



### E-COMMUNICATION

### Progress on the new EUFAR website

Work on the new EUFAR website is advancing well and migration of data to the final production site is in progress. Most of the website functionalities have been tested with the joint efforts of the website development team at UWAR, the EUFAR Office, and the TA and ET activity leaders. The new website should be fully operational and launched towards the end of September.





Snapshots of the new EUFAR website

### JRA 1: HYLIGHT

Integration of airborne hyperspectral imagery and laser scanning data to improve image processing and interpretation (HYLIGHT)

After the discussions on the HYLIGHT tools at the 2nd JRA1 HIGHLIGHT progress meeting in March 2015, each HYLIGHT partner provided further details on the HYLIGHT tools they will prototype, develop and test which will be included in the deliverable Hyperspectral Imagery and Airborne Laser Scanning tools for the EUFAR tool box. In addition, for each tool an installation guide and user manual will be prepared in the next 18 months. A list of tools to be developed is provided below:

Topic	Partner	Tool Description
Combined analyses of ALS and HSI		
Matching up ALS/HSI data	PML	HYLIGHT Tool: ALS/HSI target matching tool
		Purpose: Match near neighbours of ALS to HSI points and vice-versa.
ALS/HSI comparison toward calibration T improvement	TU Vienna	HYLIGHT tool: opalsRadioCal
		Purpose: Use Full Waveform information to compute reflectance for
		laser scanning points of extended targets
ALS/HSI comparison toward calibration TA improvement	TAU	HYLIGHT tool: LWIR radiance Planck fit +
		Approximate emissivity
		Purpose: Planck curve fit + emissivity extraction
		HSI to improve ALS
ALS filtering using HSI	PML, ONERA	HYLIGHT tool: ALS classification tool
		Purpose: Improve classification of ALS using the HSI classifications. If
		data collected at same time then also classify cloud & haze.
Biomass estimation	CVGZ	HYLIGHT tool: BiomassMapper
		Purpose: Estimate tree biomass
ALS to improve HSI		
Advanced slope and	INTA	HYLIGHT tool: SLP_ASP_calculator
		Purpose: Improving the calculation of slope and aspect maps using ALS
processing		data and actual characteristics of HSI imagery
DSM for improved	VITO	HYLIGHT tool: DSM creator
geometric correction		Purpose: create DSM
3D atmospheric correction	ONERA	HYLIGHT tool: ICARE
		Purpose: Atmospheric correction of urban HSI images using ALS-derived
		DSM to account for 3D radiometric effects
3D atmospheric correction	UZH	HYLIGHT tool: AtmoCorr3D
		Purpose: Shadow correction for HSI images using 3D canopy structure
		parameters derived from ALS and a radiative transfer model.
Processing of ALS- derived DSM/DTM for HSI processing	DLR	HYLIGHT tool: LAVA – LAS Variability tool
		Purpose: Calculation of error margins of the DSM/DTM;
		general DSM/DTM pre-processing tools (filtering & re-sampling)
Generation of shadow fraction	UZH	HYLIGHT tool: Irradiance fraction tool
		Purpose: Estimation of direct and diffuse irradiance fraction for each
		HSI pixel using a radiative transfer modeling approach
Generation of shadow fraction	VITO	HYLIGHT tool: Shadow fraction tool
		Purpose: Shadow fraction with LAS processing and put in same grid
		cell
Biophysical parameter retrieval	UZH	HYLIGHT tool: PAI estimation tool
		Purpose: Estimate voxel based plant area index (PAI) for the
		parameterization of the radiative transfer model DART
	VITO	HYLIGHT tool: Tree species classification tool
Tree classification		Purpose: Classify tree species using ALS-derived vegetation percentage
		height values (PHV) as additional layer



### Strategy & European Integration

### Establishing a sustainable legal form for EUFAR

In order to ensure a future for EUFAR, consolidate the network of airborne research facilities and pursue European integration by introducing new stakeholders, part of EUFAR's strategy consists of establishing a legal sustainable structure that will support core activities of the network and develop the open access scheme. After careful examination of different relevant legal models, EUFAR is working towards establishing itself as an international non-profit association under Belgian law (AISBL). Up to date, 8 partner institutions have signed the MoU (Météo-France, Met Office, CNR, DLR, VITO, the Polish Ministry of Science & Higher Education, ONERA and CVGZ). A number of meetings (via web-conference and one physical meeting in Toulouse in May) have taken place involving legal and scientific representatives, to discuss the proposed governance structure, financial plan, draft AISBL Statutes, and Internal Regulations. The next AISBL working group meeting is set to take place on 15 October at DLR (Oberfaffenhofen).

### Management

#### End of 1st Reporting Period

The 31st of July 2015 marked the end of the first EUFAR2 reporting period – an 18-month period, which kicked off with the start of the present contract on 1 February 2014. The EUFAR Office together with project partners and activity leaders are currently working on the RP1 technical and financial reports, which need to be submitted to the European Commission within 2 months in order to receive the second payment from the EC. Some delay is expected due to the closure of RP1 incidentally falling in mid-summer.

### 3rd General Assembly 2016 & Mid-Term Review

The 3rd EUFAR2 General Assembly will take place in Prague, from 4 – 8 April 2016 bringing together EUFAR2's 24 partner consortium and activity leaders. The Mid-Term Review is also set to take place during this week to take advantage of the presence of all the EUFAR2 activity leaders. An independent reviewer together with the EC Project Officer will be invited to conduct the review, which consists of a one-day meeting during which each EUFAR2 activity will be presented and assessed. A big thanks to EUFAR partner the Czech Globe for volunteering to host the meetings.

# **EVENTS**

### PAST EVENTS

### IGARSS 2015 Milan, Italy, 26-31 July 2015

Hosted by the IEEE Geoscience and Remote Sensing Society, the International Geoscience and Remote Sensing Symposium 2015 (IGARSS) was held in the last week of July at the Convention Centre in Milan. The conference main theme 'feeding the planet: energy for life' aimed to highlight the role of remote sensing for assessing, monitoring and managing risks related to natural disasters.

EUFAR represented by DLR (leader of the Standards and Protocols activity) participated in the session on "International Spaceborne Imaging Spectroscopy Missions: Updates and News". Martin Bachmann (DLR) gave a presentation on the EUFAR's activity dedicated to standards and protocols. With positive feedback from the spaceborne community, there will be follow-on cooperation between EUFAR and the International Spaceborne Imaging Spectroscopy Technical Committee (ISIS TC).

Wiley Series in Atmospheric Physics and Remote Sensin

Edited by M. Wendisch and J.-L. Brenguier WILEY-VCH

#### Airborne Measurements for Environmental Research

Methods and Instruments



#### **EUFAR Handbook**

Reference: Manfred Wendisch & Jean-Louis. Brenguier (Eds.), Airborne Measurements for Environmental Research: Methods and Instruments, Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany, 655pp, 2013

ISBN: 978-3-527-40996-9



### Upcoming Events

### EUMETSAT Meteorological Satellite Conference Toulouse, 21-25 Sept. 2015

The EMSC2015 will take place in the historic city of Toulouse towards the end of September. This is a form that brings together meteorologists, scientists and researchers from around the world to share their experience and knowledge during plenary, poster and workshop session. This year, the conference will focus on advances in now-casting and short-range numerical weather prediction ("limited area modelling") and preparation for new geostationary satellites. The EUFAR2 Project Coordinator Elisabeth Gérard will give a presentation on open access to research aircraft in the EUFAR fleet. For more information click here.

### Research Data Alliance Plenary Meeting Paris, 23 - 25 Sept. 2015

The next Research Data Alliance (RDA) Plenary Meeting will be held in Paris towards the end of September, with a special focus on "Research Data for Climate Change". Click here, for more information.

### International Society for Photogrammetry and Remote Sensing (ISPRS) Week Montpellier, 28 Sept. – 3 Oct. 2015

The ISPRS Geospatial Week 2015 will be held in Montpellier, France from 28 Sept. to 3 Oct. 2015. The action packed week offers a rich scientific programme centred on geo-information (from data collection and information extraction, to data quality control and dissemination) with a mix of methodology-oriented and thematic-oriented events that will enable communities to meet and exchange expertise. Scientific communities may submit proposals for additional workshops before the 3rd of December 2015. For more information, click here.

### International Spaceborne Imaging Spectroscopy Technical Committee (ISIS TC) Calibration and Validation Workshop Edinburgh, 7-9 Oct. 2015

The ISIS TC Calibration and Validation Workshop will take place from in the second week of October at the Field Spectroscopy Facility at the University of Edinburgh. The objectives of the workshop are to establish a best/good practice framework for radiometric and spectral calibration and validation in support of spaceborne imaging spectroscopy missions. A member from EUFAR's Standards and Protocols activity will participate in the workshop and the EUFAR review on existing standards and protocols will serve as basis for the workshop.



Falcon 20 operated by German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) available for transnational access under the framework of EU-FAR2.



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