



## TRANSNATIONAL ACCESS COORDINATION

### Inter-comparison of airborne atmospheric imagers during the AROMAPEX campaign

The AROMAPEX campaign was carried out in April 2016 in Berlin. The scientific team involved in the project includes researchers from Germany (FUB, University of Bremen, DLR, MPIC), Belgium (BIRA, VITO), Netherlands (KNMI, TNO, TU Delft) and Romania (INCAS, UGAL).

The primary objective of the AROMAPEX experiment was the inter-comparison of APEX and AirMap - two airborne imagers dedicated to tropospheric NO<sub>2</sub> (a major air pollutant in urban areas and a key species in tropospheric chemistry). The airborne imagers were operated from two planes: APEX was on board DLR's Do-228-112 D-CFFU and AirMAP on board FUB's Cessna C-207D-EAFU.



The DLR Dornier (D-CFFU) and the FUB Cessna (D-EAFU) which were used in parallel during the AROMAPEX campaign

Two additional compact imagers were operated from the Cessna: the SWING instrument and the Tropolite. These instruments are respectively designed to be operated from a UAS and a 12-Unit CubeSat. The FUBISS sun photometer and a compact KNMI NO<sub>2</sub> sonde completed the experimental set-up in the Cessna.

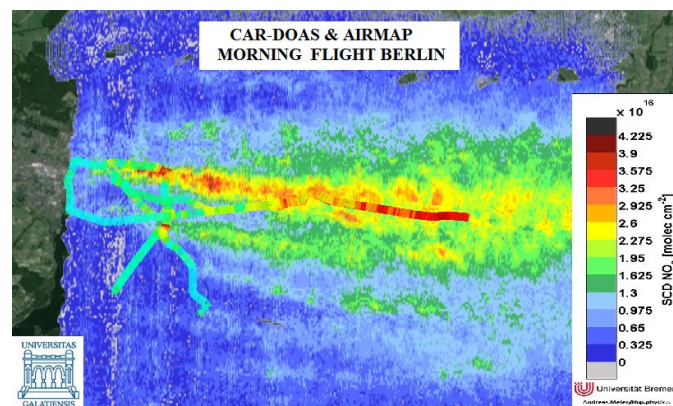
In parallel with the airborne operations, car-based DOAS systems (MPIC, BIRA, UGAL) covered Berlin from North to South and West to East.

During this campaign, a major challenging factor was the spring weather, in particular the cloud cover. Indeed, operating airborne imaging instruments above an extended area such as Berlin requires stringent atmospheric conditions. Starting from the 11th of April (instruments integration on board of Cessna) until the 21th (the "golden day"), the evolution of clouds development was continuously forecasted and the research flights were decided accordingly on a daily basis.



Two car-based DOAS systems operated in synergy with the aircraft (resp. MPIC-left and BIRA-right)

On 21 April, the sky was finally clear and permitted two sets of flights (morning and afternoon) with both aircraft platforms (Cessna ≈3km altitude and Dornier ≈6km altitude), which were synchronised with the ground-based platforms. The preliminary results are promising and show a good concordance between the AirMAP, SWING, and mobile-DOAS retrievals of NO<sub>2</sub> columns, which shows the same NO<sub>2</sub> pattern of a large plume crossing the city in WE direction (Fig. 3), following the wind direction.



Preliminary mobile-DOAS and AirMAP measurement results of the morning flight, 21 April 2016

The AROMAPEX dataset is now being evaluated and will provide useful information, both on the air quality in Berlin and about the performances of the different instruments. The findings will be valuable in particular for space-based validation studies but they also may be of interest to constrain local air quality models.

The AROMAPEX project is supported both by EUFAR through its transnational access scheme which provided 10 fully-funded flight hours on board the Do-228 with the APEX instrument, and by ESA under the framework of the Copernicus programme and the preparation of the Sentinel missions.

Contact [ardelean.magdalena@incas.ro](mailto:ardelean.magdalena@incas.ro) for more information.

## Major project to deploy multiple aircraft to assess impact of pollution over West Africa in summer 2016

The **Dynamics-aerosol-chemistry-cloud interactions in West Africa** (DACCIWA) project seeks to investigate the influence of anthropogenic and natural emissions on the atmospheric composition over South West Africa and to assess their impact on human health, the ecosystem, and agricultural productivity. Funded by the European Union, DACCIWA is a large project (~€10M) with partners in Germany, France, UK, Switzerland, Ghana and Nigeria. The research campaign will undertake a range of activities ranging from flying research aircraft over West Africa, to running complex numerical models of the composition of the atmosphere. These activities include:

- Conducting observations of air pollutants at a number of urban sites in the region (e.g. roadside and west burning sites)
- Using a range of satellite products to investigate processes such as cloud-top pressure, SW and LW outgoing fluxes, aerosol & cloud optical depth, and precipitation, etc.
- Running numerical models, including the **UKCA** model aerosol scheme, **COSMO-ART** with modal aerosol scheme, etc.
- Flight campaigns with 3 European research aircraft (SAFIRE's **ATR-42**, DLR's **FA-20** and NERC BAS **Twin Otter**) to sample air
- Rural measurements of the state of the atmosphere from the ground through the boundary layer

As part of its transnational access activity, EUFAR will be funding 10 flight hours and will also support travel and subsistence expenses of three research campaigns that have been clustered with DACCIWA:

- **APSOWA**, with flight hours on board DLR's FA-20 aircraft, aims to characterise gaseous and particulate pollutants emitted by shipping and oil, and gas extraction platforms off the coast of West Africa. Pollution will therefore be sampled west from Nigeria, along the coasts of Benin, Togo and Ghana.
- **MICWA** will investigate the mid-level inversions and genesis/lysis of altocumulus/altostratus fields. Three flights are planned between Cotonou and Niamey, for a total of 10 EUFAR supported flight hours on board SAFIRE's ATR-42.
- **OLACTA-2** aims at obtaining a definitive dataset on the low-level atmospheric circulation (LLAC) in the Gulf of Guinea, based on a suite of state-of-the-art in situ and remote sensing instruments intended to document the dynamics, thermodynamics and composition of the LLAC together with sea surface properties and near surface turbulent fluxes. Two identical meridional flights between coastal SWA and 2°N are planned (once the equatorial cold tongue is established) for a total of 10 hours of flying time on board SAFIRE's ATR-42.

A number of scientists, involved in the EUFAR joint research activity – **Traceability in Gas-Phase Observations (TGOE)**, will be involved in the DACCIWA campaign, with significant efforts being focussed on the cross calibration checks between the different platforms/instruments involved.

Species to be measured during DACCIWA with technique and platform:

Species	SAFIRE ATR-42	DLR FA-20	NERC Twin Otter
CO	MOZART (IR)	QCL (CO) (SPIR-IT)	VUV fluorescence (Aerolaser 5002)
ozone	MOZART (UV abs.)	UV abs.	UV abs (TEI 49i)
CO <sub>2</sub>	CRDS (PICARRO)	CRDS (PICARRO)	CAES (LGR)
CH <sub>4</sub>	CRDS (PICARRO)	CRDS (PICARRO)	CAES (LGR)
SO <sub>2</sub>	UV fluorescence	UV fluorescence (TE)	UV fluorescence (TEI 43i)
NO <sub>x</sub> NO, NO <sub>2</sub>	Chemiluminescence (molybdenum convertor)	QCL (NO <sub>2</sub> ) (SPIRIT)	Chemiluminescence (Blue light convertor)
VOCs	PTRMS	Sorbent tubes	WAS - GC- FID



For more information on DACCIWA, the project team recently published an **overview paper** outlining the motivation for tackling this challenging science mission.

Contact [Agnes.Borbon@lisa.u-pec.fr](mailto:Agnes.Borbon@lisa.u-pec.fr) (CNRS, France) for information on the cross calibration checks during DACCIWA.

### Visit the website & apply for fully-funded flight hours

A new set of Calls for Proposals for Transnational Access to fully-funded flight hours is now open and can be accessed **here**. Calls for the use of small, low-cost aircraft, for earth-observation studies and for applications of airborne in-situ measurements are open until **31 May 2017**.

Proposals will be reviewed as soon as possible after submission, and accepted subject to their meeting overall standards through peer-review and whilst sufficient funding remains within the available budget.

We encourage applications that are linked to multi-disciplinary research activities supported through the Transnational Access programmes of other environmental research infrastructures such as **ACTRIS** and **ENVRIplus**. Applicants should describe such linkages clearly in their applications. Potential applicants are reminded that they can also submit a short Expression of Interest via the website at any time.



## French Service of Instrumented Aircraft for Environmental Research (SAFIRE)

Created in 2005, **SAFIRE** is a French public research infrastructure providing the scientific community with instrumented research aircraft for altitude environmental measurements, based in Toulouse, France. Jointly managed by **Météo-France**, the **National Centre for Scientific Research (CNRS)** and the **French Space Agency (CNES)**, SAFIRE, one of the 12 operators under the EUFAR's current **transnational access framework**, operates the following three research aircraft:

- the Falcon-20: a jet aircraft used for multidisciplinary high-troposphere and low-stratosphere measurements
- ATR-42: Bi turbo-prop for mid-troposphere measurements (commonly used for chemistry, microphysics, remote-sensing and turbulence, etc.)
- Piper Aztec: Bi-prop used for multidisciplinary, low troposphere research

A wide variety of instruments can be installed on the aircraft, either inside the cabin, on the fuselage or under the wings, according to the physico-chemical parameters of the atmosphere or the Earth's surface to be investigated.

Up to date SAFIRE's aircraft have participated in 11 EUFAR funded research campaigns and three summer schools. Four more campaigns using the SAFIRE fleet are expected this year, in particular, the ATR-42 aircraft, which will be involved in three research campaigns clustered with the multinational **DACCIWA campaign** set to take place in June/July 2016 investigating the impact of pollution over South West Africa.

An article on SAFIRE in the Journal - La Météorologie was recently published (May 2016), presenting a review of the facilities available, a description of the organisation of SAFIRE and the management of experimental campaigns. In addition, there is an introduction to operations, instrumentation and data processing, including two examples of completed research campaigns. To access the article (available only in French), click [here](#).

For more information, visit the SAFIRE website: [www.safire.fr](http://www.safire.fr).

For operators interested in publishing articles about their fleet on the EUFAR website/newsletter, contact [bureau@eufar.net](mailto:bureau@eufar.net).



SAFIRE's fleet of research aircraft: Falcon-20 (far left), Piper Aztec and the ATR-42 (Photo credit, Jean-Marc Destreul (Météo-France))

## Advertise with EUFAR today!

To publish airborne research related publications, job opportunities, events, etc., contact [bureau@eufar.net](mailto:bureau@eufar.net).

## Update member details on website

For existing users, the first-time log-in process on the new EUFAR website will require the resetting of your password. If this is not clear, please visit the **FAQ section**. We also invite you all to check and complete your member profile to make sure the information is correct and up-to-date.

## Summary of AHSPECT field experiment

Under the framework of EUFAR's transnational access programme, the research campaign **AHSPECT** carried out airborne measurements over agro-forestry areas in south western France, along with intercomparisons using ground-based measurements at the landscape scale for the assessment of agricultural health, physiology and satellite products validation.

The AHSPECT field experiment comprises two components:

- an airborne campaign on two different dates (23 June & October 2015) using NERC/ARSF's **Dornier DO228 aircraft** with a hyperspectral optical camera (FENIX), a thermal (OWL) camera plus a lidar mounted on board.
- a ground campaign over anchor stations to characterise the vegetation during the flight overpasses.

Click [here](#) to access the summary report on the AHSPECT research experiment.

For more information, contact [jean-louis.roujean@meteo.fr](mailto:jean-louis.roujean@meteo.fr).



AHSPECT research campaign - projection of orthorectified FENIX scene

## Aircraft and Instruments (TA and non-TA)

All TA operators have been requested to check and, where necessary, update the information on their instruments and aircraft, as well as their aircraft planning information on the EUFAR website to make it easy to identify key opportunities for training and the clustering of TA proposals. Visit the **FAQ section on aircraft and instruments**.

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 EUFAR website.

For more information please contact [olivier.henry@meteo.fr](mailto:olivier.henry@meteo.fr).

## FUTURE OF THE EUFAR FLEET

### EUFAR and the remotely-piloted aircraft community

The [International Society for Atmospheric Research using Remotely-piloted Aircraft](#) (ISARRA) held its 4<sup>th</sup> conference from 23 to 25 May 2016, at the [International Conference Centre at Météo-France](#), in Toulouse, France. The conference served to unite the atmospheric science community, industry representatives and government officials to promote the exchange of ideas, emerging technologies, sampling strategies, and experiences related to the deployment of unmanned aerial systems (UAS) in the field.

The conference provided a unique opportunity for EUFAR to explore potential links between UAS and manned aircraft, and present EUFAR to the UAS community. EUFAR project coordinator – Elisabeth Gérard (Météo-France) and the Future of the Fleet Activity Leader – Francesco Cairo (CNR, Italy) participated in the conference. Francesco Cairo gave an oral presentation entitled “EUFAR: a portal for airborne research in Europe”, introducing EUFAR and highlighting areas for collaboration with the UAS community, especially given the limitations of both aircraft and UAS in carrying out environmental observations.

For instance, the legal framework for UAS is still under development, and UAS have a restricted payload in terms of weight and power, limiting the type of measurements that can be undertaken and the area of coverage. Research aircraft, on the other hand, are more expensive and less adapted particularly for small-scale analyses and Lagrangian experiments, slower and more difficult to deploy, less target-orientated, and unable to reach certain areas. These limitations and comparative advantages on both sides present an argument for complementary cooperation between research aircraft and UAS.

In recognition of these issues, through EUFAR's expert working group dedicated to [Remotely Piloted Aircraft Systems](#) (led by Joachim Reuder - University of Bergen, Norway), EUFAR hopes to develop collaboration with the UAS community and a dedicated workshop is envisaged in 2017.

For more information, contact [f.cairo@isac.cnr.it](mailto:f.cairo@isac.cnr.it) or [joachim.reuder@gfi.uib.no](mailto:joachim.reuder@gfi.uib.no).



Near-ground campaign with small UAV platform during the joint EUFAR/OPTIMISE SWAMP summer school, POLWET site, Obrzycko - Rzecin 6 - 16 July 2015

## TECHNOLOGY TRANSFER

### Transfer of innovative technologies developed within EUFAR

EUFAR's TTO activity seeks to support the transfer of technology between experts in airborne measurements and industry partners. Each year 2 to 3 promising technologies will be selected and studied for presentation to industry representatives, who will thereafter be invited to attend presentations by EUFAR experts on their most innovative research developments. These workshops will be an opportunity for experts and industry representatives to closely interact and develop partnerships for upgrading airborne research instruments, methodologies and software into innovative and useful products.

A technology sheet template was circulated to experts within the EUFAR network allowing them to list any potentially interesting technologies and innovative breakthroughs. Following this step, 10 innovative research developments were identified, and the technology transfer team, together with the expert working group coordinator, organised a one-day workshop in Frankfurt in early February 2016. This meeting brought together the relevant scientists, in their capacity as a member of a EUFAR joint research activity or expert working group.

During this workshop, four technologies were selected for their scientific expertise and innovation. The technology transfer team also shared information on issues related to best practices on knowledge transfer, intellectual property rights management, R&D contracts and different kinds of possible partnership models to facilitate subsequent interaction with industry partners.

Some of the technologies collected so far include the following:

- Airborne Laser Interferometric Drop Size (ALIDS) – JRA3 led by Emmanuel Porcheron, IRSN. Click [here](#) for more information.
- Standardised assembly to measure soil reflection under undistributed conditions in the field (Eyal Ben-Dor, TAU). Click [here](#), to see the technology sheet.
- Field detector for assessing soil contamination with total petrol hydrocarbon (TPH) Eyal Ben-Dor, TAU). Click [here](#), to see the technology sheet.
- Leak detection by water absorption measurements (Martin Zoeger, DLR).

The next workshop is set to take place before the end of the year, to fine tune the offer to industry and take the activity forward. Furthermore a booklet will be developed to serve as a guiding framework for scientists on how to transfer and market innovative technologies, and work with industry partners.

Interested in transferring your technology? Download the technology sheet template by clicking [here](#) and send it to [bureau@eufar.net](mailto:bureau@eufar.net) or the TTO coordinator - [florin.paun@onera.fr](mailto:florin.paun@onera.fr) today!

For more information, contact [m.wendisch@uni-leipzig.de](mailto:m.wendisch@uni-leipzig.de) and/or [florin.paun@onera.fr](mailto:florin.paun@onera.fr).

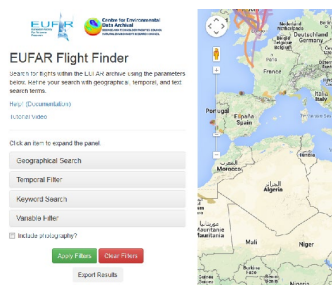


## DATA ARCHIVE

Flight data from EUFAR supported research campaigns continue to arrive and be ingested into the [EUFAR archive](#). So far 25 EUFAR funded research campaigns have been added to the data archive for 11 projects from 4 aircraft operators plus additional data from flights from the previous EUFAR project (2008-2013). The archive currently provides links to 160 flights (including auxiliary data) for 54 EUFAR funded research projects (~1.9TB) plus links to further 9.3TB of ARSF and FAAM flights.

### The EUFAR Flight Finder (EFF)

The EUFAR Flight Finder tool (EFF) is a geospatial-temporal search interface to locate flight data within the EUFAR data archive at BADC and can be found at <http://flight-finder.ceda.ac.uk/> and via the [EUFAR tools page](#). The EFF currently includes NetCDF (FAAM & SAFIRE) and ENVI (ARSF) data, and will be continuously integrating remaining flights from other operators, as the data become available. All comments and feedback are welcome - email: [support@ceda.ac.uk](mailto:support@ceda.ac.uk).



Screenshot of the EUFAR Flight Finder tool

### EUFAR Data and Standard & Protocols Team Meeting 6 - 7 June 2016, Toulouse, France

Stefanie Holzwarth (DLR, Germany) and Wendy Garland (STFC, UK), the activity leaders responsible for the development of Standards & Protocols and the Data Archive respectively within EUFAR, and Olivier Henry (Météo-France, the EUFAR S&P engineer), had a two-day meeting at Météo-France in Toulouse in early June. This meeting served to discuss transverse issues related to both activities, in particular, the integration of the [EUFAR Metadata Creator](#) and the [Airborne Science Mission Metadata](#) creator tools on the EUFAR website, as well as the implementation case of the ENVRIplus reference model for EUFAR. The two applications are currently being tested and are available on a dedicated server open for testing by interested users. For more information, contact [olivier.henry@meteo.fr](mailto:olivier.henry@meteo.fr).

Wendy Garland also had the opportunity to meet Damien Boulanger, who is in charge of the IAGOS database, to discuss the viability of exporting EUFAR metadata to the IAGOS data portal and vice versa, in order to increase visibility and strengthen the collaboration between the two infrastructures. Similar to EUFAR, [IAGOS](#) is a research infrastructure that conducts long-term observations of atmospheric composition, aerosol and cloud particles on a global scale. However unlike EUFAR, IAGOS uses commercial aircraft of internationally operating airlines to carry out such measurements.

Photo (from left to right): Wendy Garland (Data Archive leader - STFC), Damien Boulanger (IAGOS), Olivier Henry (S&P engineer - Météo-France) and Stefanie Holzwarth (S&P activity leader - DLR), Meeting in Toulouse, 6 - 7 June 2016



## JOINT RESEARCH ACTIVITY - HYLIGHT

Under EUFAR's [joint research activity - HYLIGHT](#) dedicated to the integration of airborne hyperspectral imagery and laser scanning data to improve image processing and interpretation, 14 tools will be prototyped, tested and developed by the HYLIGHT working group.

In early April, a 3<sup>rd</sup> working group meeting was held at the Academy of Sciences of the Czech Republic in Prague to discuss the progress of the HYLIGHT tools. Currently eight HYLIGHT tools are available together with their installation guide and user manual. The remaining six HYLIGHT tools are at different levels of development. All the tools are expected to be completed and made available via the EUFAR website by the end of July 2016.

For a full list of the tools, click [here](#) or contact the activity leader - [ils.reusen@vito.be](mailto:ils.reusen@vito.be), for more information.



EUFAR HYLIGHT working group, Prague, April 2016

### EUFAR Training Opportunities

Training opportunities (participate in the design of a new research campaign, join an existing campaign, and visit an aircraft/instrument operator) are continuously open for online application via <http://www.eufar.net/projects/education-and-training/>.

## MANAGEMENT

### EUFAR2 3rd General Assembly & Mid-term Review

The EUFAR2 project mid-term review and 3<sup>rd</sup> General Assembly took place from 5 to 8 April 2016 in Prague. Side meetings on EUFAR's two [joint research activities](#) (HYLIGHT and TGOE), a progress meeting dedicated to the implementation of EUFAR standards and tools, and a meeting dedicated to the expert working groups/technology transfer activity also took place in this period, taking advantage of the large gathering of partners. In addition, there was a special session dedicated to examining the potential collaboration between EUFAR and [ENVIplus](#) (see next article "EUFAR collaboration with ENVIplus").

Hosted by EUFAR partner, [CzechGlobe](#), the meetings took place in the beautiful Vila Lanna, in the Northern hilly part of Prague. 37 participants attended the various meeting sessions, representing 20 out of the 24 EUFAR partners, GRNET, Environmental Agency Austria, and the European Commission.

The mid-term review, involved a one-day meeting with the EC Project Officer, an external reviewer, scientific and project coordinators, activity leaders and the EUFAR Office. After presentation of all the activities, the reviewer gave informal remarks on his impressions of EUFAR, and sent a full evaluation report on 12 May. The review aims to demonstrate progress (targets versus deliverables), highlighting areas where more effort needs to be made, in order to achieve the project's set out objectives within the lifetime of the current contract (Feb 2014 to Jan 2018).

During the 2-day General Assembly, each activity leader made a presentation on his/her activity's progress and future plans, votes were cast on specific issues, management issues were presented, and discussions were held on establishing the EUFAR AISBL - a legal sustainable structure, which is currently underway. The General Assembly report and presentations are available on the website, accessible to registered EUFAR members. A big thanks goes out to the local host, the CzechGlobe for its outstanding organisation.



Group photo, EUFAR2 General Assembly, Prague, April 2016

## STRATEGY & EUROPEAN INTEGRATION

### EUFAR collaboration with ENVIplus

[ENVIplus](#) is a Horizon 2020 project bringing together Environmental and Earth System Research Infrastructures (RIs), projects and networks with technical specialist partners to create a more coherent, interdisciplinary and interoperable cluster of environmental RIs across Europe.

Collaboration within the ENVIplus will promote a multidisciplinary approach in Earth system science, which is so important in order to address today's global challenges, and such cooperation will avoid the fragmentation and duplication of efforts, making the RIs' products and solutions easier to interchange, improving their innovation potential and cost/benefit ratio of operations.

Given the opportunity to closely collaborate with other European environmental RIs, EUFAR plans to be involved in the [ENVI community](#), and potentially complete its multi-domain and atmosphere groups. Of particular interest for EUFAR, are ENVIplus' harmonised solutions and guidelines for the common needs of environmental RIs, with a special focus on architectures, metadata frameworks, data discovery in scattered repositories, visualisation and data curation.

A meeting between EUFAR and ENVIplus was held in April 2016, to kick-off and discuss the implementation case of the ENVI reference model for EUFAR. The Reference Model provides a common language which promotes structural thinking in constructions of system architectures, and can be used as a research tool for comparison and analysis of different technologies and solutions to guide design and implementation activities, and to drive the development of common services, in order to achieve seamless interoperability between the heterogeneous resources of different infrastructures.

Essentially, EUFAR, through its Standards & Protocols and Data Archive activities, can participate in the testing and improving of the model prior to its implementation across the ENVI community.

The EUFAR Project coordinator, Elisabeth Gerard, recently attended the [ENVI Community meeting](#) in Zandvoort in May, where she presented EUFAR, its links to environmental RIs, and in particular, opportunities to share information and coordinate transnational access calls for proposals.

This meeting served to bring together all the environmental RIs and EC funded infrastructure initiatives, as well as relevant scientists/science communities (from Europe and beyond), in order to present ENVIplus' goals, vision, and products it intends to deliver, and discuss the current RI landscape and how ENVIplus can involve and serve the entire community.

Contact [bureau@eufar.net](mailto:bureau@eufar.net) for general information on the EUFAR/ENVIplus collaboration or [stefanie.holzwarth@dlr.de](mailto:stefanie.holzwarth@dlr.de) for information on the ENVIplus reference model.

## UPCOMING EVENTS

### SAIL35 Symposium 'Eye on Foliage'

Enschede, The Netherlands, 27- 28 Sept. 2016

The SAIL 35 symposium will be celebrating the 35<sup>th</sup> anniversary of the widely used SAIL model. SAIL is a computer model used to calculate the bidirectional reflectance of vegetation canopies. In this symposium recent theories and applications of radiative transfer in vegetation remote sensing will be presented. For more information, visit <http://sail35.org> or e-mail [SAIL35-ITC@utwente.nl](mailto:SAIL35-ITC@utwente.nl).

### EUFAR Expert Workshop on Soil Spectral Library

Potsdam (GFZ), Germany, 28 - 29 Sept. 2016

The workshop is organised by the [remote sensing Lab](#) of the [University of Tel Aviv](#) and [Section 1.4 Remote Sensing](#) at GFZ under the framework of EUFAR's [Expert Working Group](#) activity.

This workshop seeks to gather both experts and young scientists in hyperspectral remote sensing of soil in order to present, discuss and find the ways on how to exploit the technology to support, in a credible manner, digital mapping and monitoring of soils. The emphasis will be placed on current hot topics related to the development of soil spectral libraries and standardisation of protocols, commercial applications, and space applications and tools for prediction of soil properties. EUFAR's [technology transfer office](#) will participate in the workshop to support the commercialisation and transfer of innovative products to industry.

Application letter with CV must be emailed to [bendor@post.tau.ac.il](mailto:bendor@post.tau.ac.il) or [chabri@gfz-potsdam.de](mailto:chabri@gfz-potsdam.de) before **30 July**.

For more information on the workshop and the registration modalities, click [here](#).

### EUFAR Expert Workshop on Atmospheric Correction of Remote Sensing Data

Berlin, Germany, 26 - 28 Oct. 2016

An expert workshop on atmospheric correction of remote sensing data will be held in October at the [Harnack Haus](#) of the [Max Planck Society](#), in Berlin. Funded by EUFAR and [ESA](#), this workshop is organised by the [Institute for Space Sciences of the Freie Universität Berlin](#). The workshop aims to bring together both experts and young scientists working with remote sensing data in order to present, discuss and examine current methods of atmospheric corrections procedures.

The emphasis will be placed on atmospheric correction procedures of atmospheric, land parameters and water constituents retrievals, RTM's and comparison of different atmospheric correction schemes, and Influences of inaccurate assumptions and/or neglecting important atmospheric parameters.

Application with abstract and CV must be emailed to [thomas.ruhtz@fu-berlin.de](mailto:thomas.ruhtz@fu-berlin.de) or [bureau@eufar.net](mailto:bureau@eufar.net) before **12 August**.



THE ATR-42, A BI TURBO-PROP FOR MID-TROPOSPHERE MEASUREMENTS, OPERATED BY **SAFIRE**, AVAILABLE FOR TRANSNATIONAL ACCESS TO FULLY FUNDED FLIGHT HOURS UNDER THE EUFAR2 FRAMEWORK.



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#### **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, 2013  
ISBN: 978-3-527-40996-9, 655pp.

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#### **Contact us:**

**EUFAR Project Coordinator**

**[bureau@eufar.net](mailto:bureau@eufar.net)**

**+33 (0)5 61 07 98 37/8**

**EUFAR Scientific Coordinator**

**[phil.brown@metoffice.gov.uk](mailto:phil.brown@metoffice.gov.uk)**

**+44 (0)1392 88 6740**