

FP7 EU FAR2 GA no. 312609

Final Publishable Summary Report 01 February 2014 – 31 January 2018

Material illustrating and promoting the work of the project

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N1SEI: Strategy and European Integration

N1SEI: EU FAR stand at annual EGU General Assembly



N1SEI: EU FAR Stand at EGU 2017, Vienna

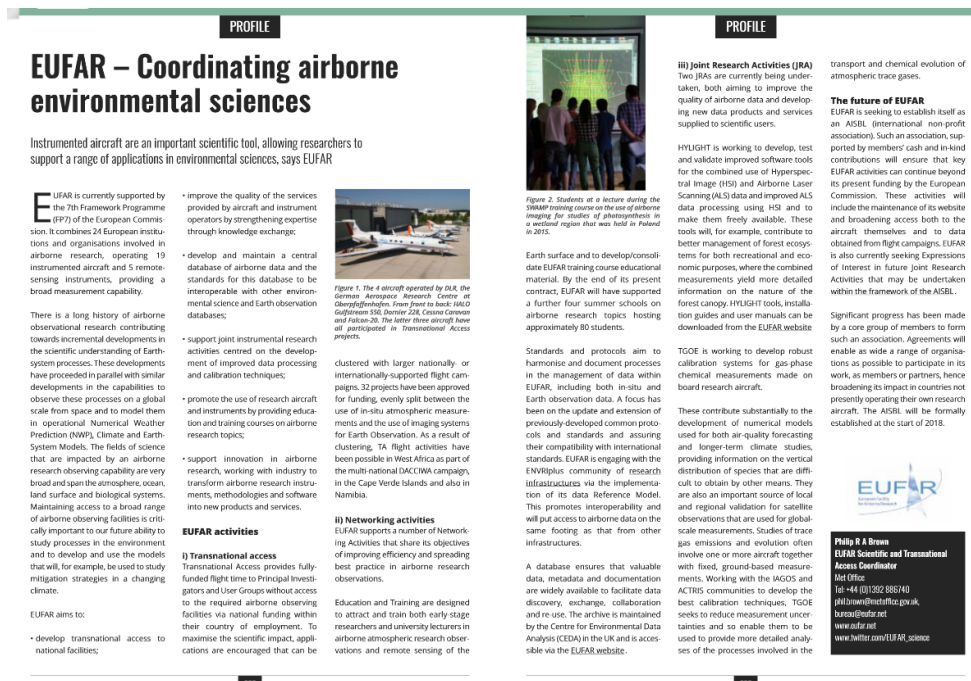


N1SEI: EU FAR Stand at EGU 2016, Vienna

N1SEI: Published articles on EUFAR in various journals



N1SEI: Screenshot of first two pages of EU Research magazine article on EUFAR (2017 Spring edition)



N1SEI: Screenshot of article on EUFAR in the Open Access Government Journal, August 2017 Article on “EUFAR- Coordinating airborne environmental sciences” in the Open Access Government journal: ISSB 2055-7612, August 2017 (pages 282-283). Accessible via the following link: <http://edition.pagesuite-professional.co.uk/html5/reader/production/default.aspx?pubname=&edid=f8abf7ad-bc1b-4a51-b42b-d7b202a02971>

PROFILE

EUFAR – Looking to the future of airborne environmental research in Europe

Philip R.A. Brown from EUFAR AISBL at the UK's Met Office takes us on a journey to explore the exciting future of airborne environmental research in Europe today

Instrumented aircraft are an important scientific tool, allowing researchers to observe the atmosphere and land and ocean surfaces in support of a wide range of applications in the environmental sciences. EUFAR – the European Facility for Airborne Research – promotes collaboration between the operators and scientific users of research aircraft, seeking to broaden access and improve efficiency in the use of these resources.

EUFAR (www.eufar.net) has been supported by the 7th Framework Programme (FP7) of the European Commission. It combines 24 European institutions and organisations involved in airborne research, operating 19 instrumented aircraft and 5 remote-sensing instruments, providing a broad measurement capability.

There is a long history of airborne observational research contributing incremental developments in the scientific understanding of earth system processes. These developments have proceeded in parallel with similar developments in the capabilities to observe these processes on a global scale from space and to model them in operational Numerical Weather Prediction (NWP), climate and Earth-System models.

The fields of science that are impacted by an airborne research observing capability are very broad and span the atmosphere, ocean, land surface and biological systems. Maintaining access

to a broad range of airborne observing facilities is critically important to our future ability to study processes in the environment and to develop and use the models that will, for example, be used to study mitigation strategies in a changing climate.

EUFAR AISBL

A key outcome of the present consortium has been the agreement of several leading partners to constitute EUFAR as an international non-profit association (AISBL). This organisation will provide a framework for European collaboration in airborne science beyond the framework of funding from the European Commission. The objectives of the AISBL are broadly the same as the present consortium, namely to:

- Develop open access to national facilities, broadening the scientific user base and providing users with access to a facility best suited to their scientific requirements;
- Improve the quality of the services provided by aircraft and instrument operators by strengthening expertise through knowledge exchange;
- Develop and maintain a central database of airborne data and the standards for this database to be interoperable with other environmental science and Earth observation databases;
- Support joint instrumental research activities centred on the development of improved data processing and calibration techniques;
- Promote the use of research aircraft and instruments by providing education

and training courses on airborne research topics and:

- Support innovation in airborne research, working with industry to transform airborne research instruments, methodologies and software into new products and services.

Membership of the AISBL is open to any institution with a scientific or technical interest in the development and application of airborne facilities in environmental research. The founding members of the AISBL includes eight different organisations in six European countries:

- VITO, Belgium;
- CzechGlobe, Czech Republic;
- CNRS, France;
- Météo-France, France;
- ONERA, France;
- DLR, Germany;
- University of Warsaw and;
- Met Office, UK.

In addition, INTA (Spain), CNR (Italy), Free University of Berlin (Germany) and Tel Aviv University (Israel) are well-advanced on the formal path to membership, and other organisations in the UK, Romania and Greece have expressed an interest in membership.

The airborne research community is widely spread across national meteorological services, other national public research centres, universities and SMEs. Any interested organisation that is unable to participate in the AISBL as a fee-paying member can do so as a partner. Partners will be able to partici-



Figure 1. The Bee 146 of the Facility for Airborne Atmospheric Research (FAAR) at the UK's Met Office. This aircraft is completely equipped for measurements of atmospheric aerosols, cloud and precipitation particles, trace gases and radioactivity from visible to sub-millimetre wavelengths.



Figure 2. The Falcon 20 of DLR, Germany. This aircraft is equipped for a wide range of atmospheric measurements and has participated in many national and international observing campaigns over a long career. It has recently seen significant renewal through the EUFAR Transnational Access process.



Figure 3. The CASA-212 airborne remote-sensing aircraft of INTA, Spain. This aircraft carries a range of hyperspectral imaging sensors from visible to thermal infrared wavelengths and has also been used for high-altitude research through EUFAR Transnational Access.

ipate in AISBL activities and attend its meetings but without a role in the formal governance of the association.

EUFAR AISBL actively welcomes wider participation in its activities. Any organisation wishing to join EUFAR AISBL in future, either as a member or partner should contact the Executive Board Chair in the first instance.

EUFAR AISBL facilities and capabilities

EUFAR AISBL members will provide access to several leading airborne research facilities (both aircraft and instrumentation). These include:

- BAE-146, Facility for Airborne Atmospheric Measurements (FAAM), UK;
- Falcon-20, HALO and Do-228, Deutsches Zentrum für Luft- und Raumfahrt (DLR), Germany;
- ATR-42 and Falcon-20, Service des Avions Français Instrumentés pour la Recherche en Environnement (SAFIRE), France and;
- CASA-212, Instituto Nacional de Técnica Aeroespacial (INTA), Spain.

Other aircraft and instruments operated both within the AISBL and by other institutions in Europe can be viewed on the EUFAR website (www.eufar.net).

These provide state-of-the-art measurements, both in situ and remotely sensed, that cover a broad range of scientific applications that include but are by no means limited to:

- Atmospheric aerosol physical, chemical and optical properties;
- Cloud microphysics and precipitation development;
- Atmospheric trace gases and their evolution;
- Atmospheric radiative transfer and spectroscopy, from visible to sub-millimetre wavelengths, including the development of measurement capabilities for future space-borne application;
- Vegetation studies including responses to environmental stress factors;
- Soils and mineral characterisation;
- Physical and biological processes in rivers, lakes and inshore waters;
- Energy exchange processes at the land and ocean surfaces;
- Cryospheric processes;
- Calibration and validation of space-borne measurements.

Links to other European environmental research infrastructure activities

It is very common that airborne measurements are combined with those from ground-based or ship-borne platforms as part of joint observing campaigns at both national and international level. Scientific users of airborne data will be assisted in their efficient exploitation of these facilities when common approaches to data and metadata formatting, storage and access are used by the different observing infrastructures.

ENVplus (www.envplus.eu) is a Horizon 2020 project bringing together Environmental and Earth System Research Infrastructures, projects and networks together with technical specialist partners to create a more coherent, interdisciplinary and interoperable cluster of Environmental Research Infrastructures across Europe.

EUFAR is represented in its governing board and will work closely with related infrastructures in the atmospheric, ecosystem and oceanic domains to maximise the benefits of the large investments that are required to provide and maintain world-class airborne observing facilities in Europe.



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NISEI: Screenshot of article on “EUFAR – looking to the future of airborne environmental research in Europe” in the Open Access Government journal: ISSB 2055-7612, February 2018 (pages 294 - 295).

Accessible via the following link: <http://edition.pagesuite-professional.co.uk/html5/reader/production/default.aspx?pubname=&edid=100e4ef2-b7dd-4f7e-91e2-4484fd9457b7>



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N1SEI: Images linked to the 2nd International Conference on Airborne Research for the Environment (ICARE 2017), DLR, Oberpfaffenhofen, 10-13 July 2017



N1SEI: Screenshot of BESL ICARE2017 webpage; a conference management tool used to handle registrations, registration fees, abstract submissions, disseminate information, etc.

REGISTRATION & IMPORTANT DATES

- To register, visit the conference webpage: <http://icare2017.besl-eventservice.de/front/conference.php>
- Deadline for registration: 5 June 2017
- Registration fee: €150
- Deadline for abstract submission: 5 May 2017

ABOUT EUFAR


Created in 2000, EUFAR was born out of the necessity to create a central network for the airborne research community in Europe with the principal aim of supporting scientists, by granting them access to research aircraft and instruments otherwise not accessible in their home countries. In this way, scientists all over Europe can have an equal chance to carry out various atmospheric and in situ measurements on board research aircraft. In essence, EUFAR links scientists with operators of research facilities, and financially supports this collaboration by providing funding for flight hours as well as for travel and subsistence during campaigns.


EUFAR International Conference on Airborne Research for the Environment

ICARE

"DEVELOPING THE INFRASTRUCTURE TO MEET FUTURE SCIENTIFIC CHALLENGES"




DLR GERMAN SPACE CENTER
OBERPFAFFENHOFEN
(NEAR MUNICH)
10-13 JULY 2017

EUFAR 



JOIN THE EUFAR COMMUNITY

To be regularly kept up to date on news related to ICARE 2017 visit the EUFAR website and register as a member today! You are also invited to stay informed by visiting the conference webpage providing you regularly with updates!

-  www.eufar.net
-  bureau@eufar.net
-  [@EUFAR_science](https://twitter.com/EUFAR_science)

With time EUFAR has grown, introducing new activities and objectives to place itself as the unique network and portal of airborne research for the environmental and geosciences in Europe: From organising summer schools, expert workshops, and serving as an interactive and dynamic hub of information, to maintaining a central data archive, and developing tools and standards to collect, process and analysis data, EUFAR continues to improve the operational environment for conducting airborne research. As a follow-up to the ICARE conference held in Toulouse, France, in October 2010, this will be the second edition of the conference bringing together about 150 delegates from both atmospheric science and earth observation disciplines.

N1SEI: ICARE2017 flyer



N1SEI: Aircraft on exhibition during ICARE2017, Oberpfaffenhofen, Germany, July 2017
Photo credit: DLR(CC-BY 3.0)



*N1SEI: Photo for ICARE 2017 announcement: Aerial shot of DLR premises, Oberpfaffenhofen.
Photo credit: DLR (CC-BY 3.0)*

[2 Excel Aviation](#) Piper Aircraft PA-31 Navajo



[CzechGlobe](#) Cessna Aircraft Company C-208B Grand Caravan



[DLR](#) Cessna Aircraft Company C-208B Grand Caravan



[DLR](#) Dassault Mystere / Falcon 20 E-5



[DLR](#) Dornier Flugzeugwerke Do 228-212



[DLR](#) Gulfstream G550 "HALO"



[FAAM](#) BAE Systems BAe 146-301



[Grob Aircraft](#) Grob Aircraft G520T Egrett



[INTA](#) Construcciones Aeronauticas S.A. C-212-200



[KIT](#) Ultraleichtflug Schmidtler Enduro



[MetAir](#) Diamond Aircraft HK36 TTC ECO Dimona



***N1SEI:** Aircraft on exhibition during ICARE2017, Oberpfaffenhofen, Germany, July 2017*



N1SEI: ICARE conference & aircraft exhibition, DLR, Oberpfaffenhofen, from 10 to 13 July 2017



NISEI: ICARE conference & aircraft exhibition, DLR, Oberpfaffenhofen, from 10 to 13 July 2017



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NISEI: ICARE conference & aircraft exhibition, DLR, Oberpfaffenhofen, from 10 to 13 July 2017

Countries	Organisations	General Assembly representatives (organisation level)	Executive Board members (country level)
Belgium	VITO	Steven Krekels Ils Reusen (deputy)	Steven Krekels
Czech Republic	CzechGlobe	Jan Hanus	Jan Hanus
France	CNRS	G�rard Ancellet Paola Formenti (deputy)	Paola Formenti
	M�t��-France	Philippe Bougeault	
	ONERA	Bernard Rosier	
Germany	DLR	Stefanie Holzwarth Andreas Minikin (deputy)	Andreas Minikin
	FUB	Thomas Ruhtz	
Italy	UNICH	Piero Di Carlo	
Poland	UW	Hanna Pawlowska	Hanna Pawlowska
Romania	INCAS	Andreea Calcan	
UK	Met Office	Phil Brown	Phil Brown Stacey Harvey (Treasurer)

General Assembly	President	Philippe Bougeault
	Vice-President	Stefanie Holzwarth
Executive Board	Chair	Phil Brown
	Vice-Chair	Steven Krekels
Executive Secretariat	Executive Secretary	Elisabeth G�rard

*N1SEI: List of GA representatives appointed by the organisations
and EUFAR AISBL elected members as of 26 January 2018*



***N1SEI:** Participants at the 1st EUFAR AISBL Executive Board and General Assembly meetings, Brussels, Belgium, 10-11 October 2017*



***N1SEI:** Participants at the 2nd EUFAR AISBL Executive Board and General Assembly meetings, Lugo, Spain, 25-26 January 2018*

N2TAC – Transnational and Open Access Coordination

N2TAC: Images from Agriculture-Health-SPECTrometry (AHSPECT) TA campaign (France, July 2015)



N2TAC: DLR's DO228 Dornier flight path during the AHSPECT TA campaign July 2015, France



N2TAC: Image captured using webcam during the AHSPECT TA campaign July 2015, France

SEPTEMBER 2015, ISSUE 14

Agriculture-Health-SPECTrometry(AHSPECT) Transnational Access Project

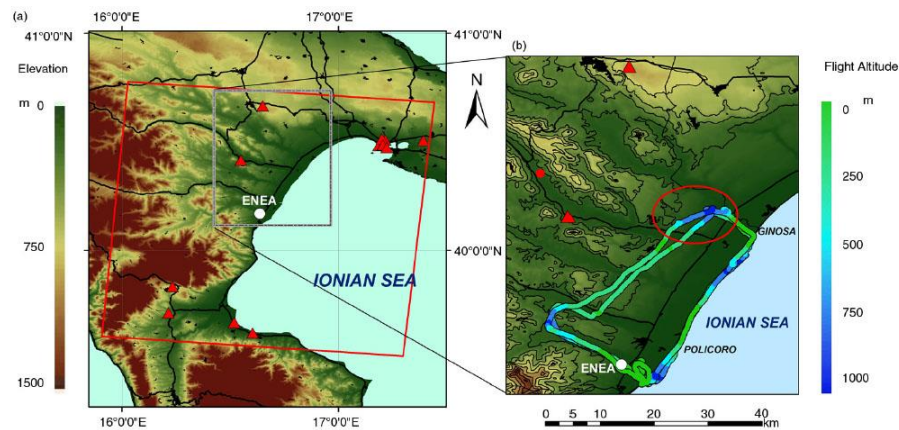
The AHSPECT initiative is aimed at collecting hyperspectral airborne measurements over agro-forestry areas of south-western France for assessing the agricultural health, physiology and satellite products validation. The project is supported by EUFAR's transnational access programme, which facilitates 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.



N2TAC: Article on AHSPECT TA campaign, published in the EUFAR Newsletter no. 14, September 2015

N2TAC: Image captured using the hyperspectral camera – FENIX, during the AHSPECT TA campaign July 2015, France

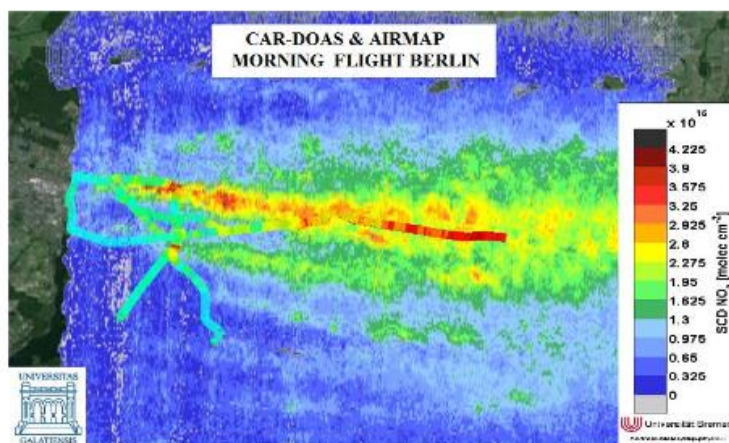


N2TAC: Map of the experiment region. In red, the domain of the meteorological field used to calculate the high-resolution back-trajectories. Red triangles and black spots show, the chimney stacks and the urban areas; the main roads are indicated by black lines. The white circle indicates the ENEA Research Centre of Trisaia. (b) The paths of the 17 June morning and afternoon flights are shown on a detailed map of the study area. The red circle shows the location of the air quality station at Ferrandina. The red oval indicates the inland area sampled in the afternoon flight (AHSPECT TA campaign)



N2TAC: AHSPECT research campaign - Projection of orthorectified FENIX scene, 23 June & October 2015, France

N2TAC: Preliminary mobile-DOAS and AirMAP measurement results of the morning flight, during the AROMAPEX campaign (APEX flights for the AROMAT-2 activity, Berlin, Germany, April 2016)



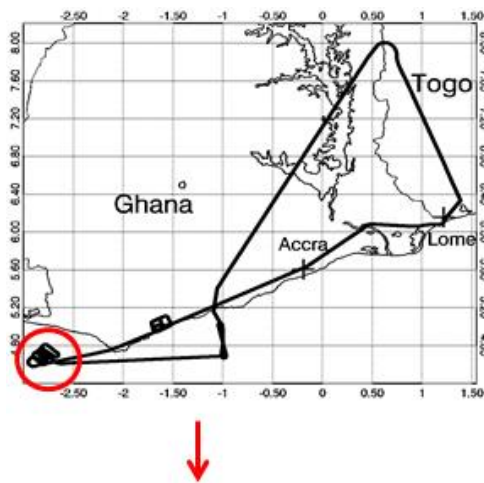
N2TAC: Preliminary mobile-DOAS and AirMAP measurement results of the morning flight, during the AROMAPEX campaign April 2016, Berlin

N2TAC: EUFAR APSOWA Flight Campaign - Atmospheric Pollution from Shipping and Oil platforms of West Africa)

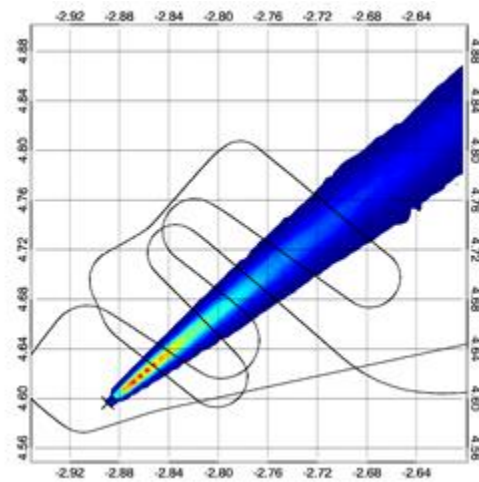
N2TAC: View from inside the DLR Falcon-20 cabin with the instruments in operation, APSOWA flight campaign, Nigeria, July 2016, clustered with multinational campaign DACCWA (Dynamics Aerosol Chemistry Cloud Interactions in West Africa)



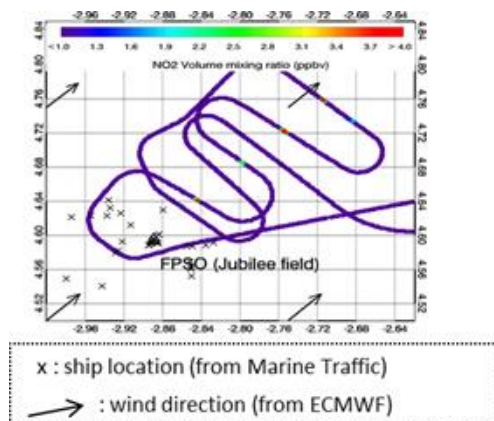
N2TAC: Entire map of the aircraft trajectory on 10 July 2016, from Lomé to Lomé, Togo (EUFAR APSOWA flight campaign)



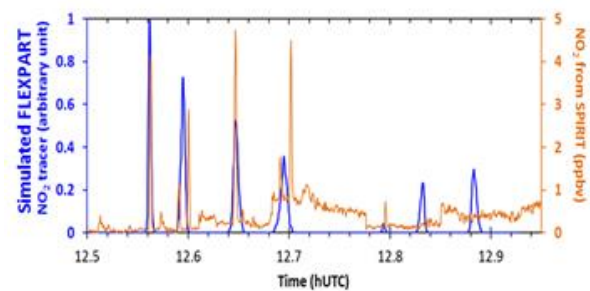
N2TAC: NO₂ plume simulated by FLEXPART, in agreement with the NO₂ aircraft sampling



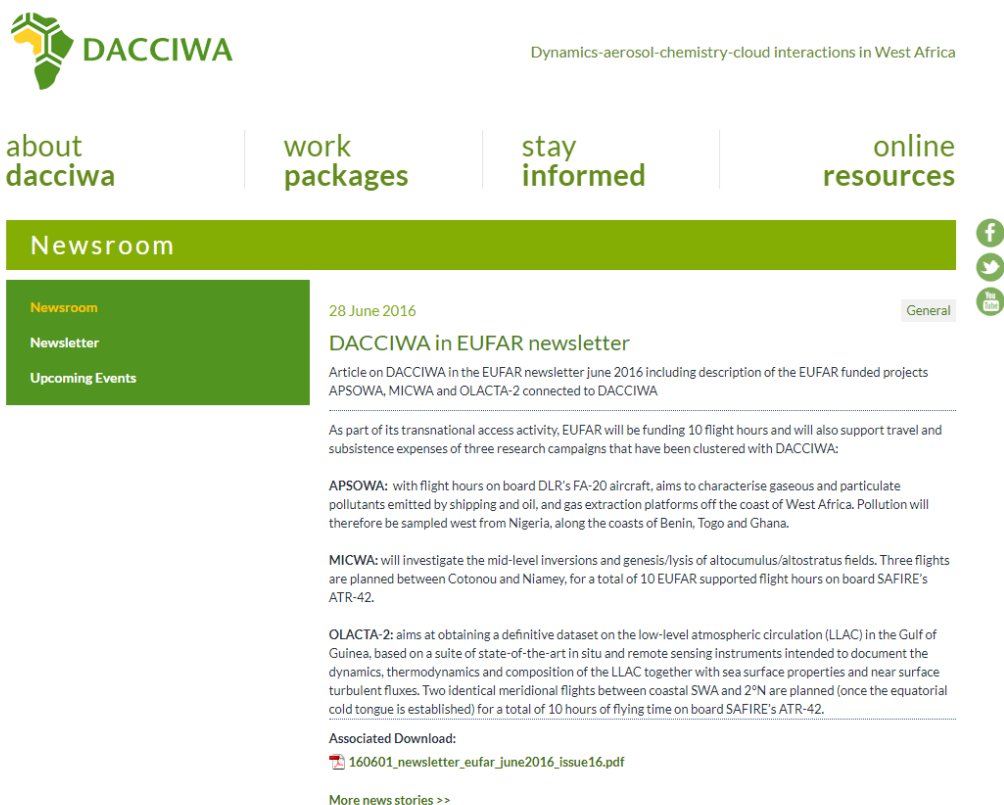
N2TAC: Zoomed map (°E-°N) showing aircraft trajectory around the oil platform (FPSO) and NO₂ mixing ratios peaks downwind, 10 July 2016, Lomé, Togo (APSOWA flight campaign)



N2TAC: NO₂ peaks vs. time measured by aircraft in agreement with simulations by FLEXPART model (APSOWA flight campaign)



N2TAC: Screenshot of EUFAR mention on DACCIIWA website (<https://www.dacciwa.eu/DB/news-2/dacciwa-in-eufar-newsletter>)



DACCIIWA
Dynamics-aerosol-chemistry-cloud interactions in West Africa

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Newsroom

28 June 2016 General

DACCIIWA in EUFAR newsletter

Article on DACCIIWA in the EUFAR newsletter June 2016 including description of the EUFAR funded projects APSOWA, MICWA and OLACTA-2 connected to DACCIIWA

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 DACCIIWA:

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.

Associated Download:
160601_newsletter_eufar_june2016_issue16.pdf

More news stories >>



N2TAC: French team group photo in front of SAFIRE's ATR-42, during the DACCIIWA campaign, July 2016, Lomé, Togo

Species	Description	SAFIRE ATR-42	NERC BAS Twin Otter	DLR Falcon
		TEI 42 CTL/ BLC NO₂	Chemiluminescence /BLC NO₂	QCL NO₂ (SPIRIT)
NO/NO ₂	110ppb NO in nitrogen (spectra seal) cylinder (YoU)	X	X	X
	100ppb NO ₂ in nitrogen (spectra seal) cylinder (YoU)	X	X	X
		API-T100U/fluor	TEI 43i (Fluo)	TEI 43i (Fluo)
SO ₂	100 ppbv (Messer) (SAFIRE)	X	X	X
	BOC 5ppm, 1ppm (DLR?)		X	X
		CRDS Picarro	CEAS (LGR)	QCL (CO/CH₄) SPIRIT
CO/CO ₂ /CH ₄	ambient air ICOS standards - NOAA scale (SAFIRE)	X	X	X
		PTR-MS	WAS-GC-FID	Sorbent tubes
VOCS	NPL-UK NMHC ozone precursors (4ppb)(YoU)	X	X	X

N2TAC: Table of intercalibration exercises made during the DACCIWA campaign, by EUFAR Traceability in Gas-phase Observations (TGOE) joint research activity, Togo, July 2016



N2TAC: SAFIRE's ATR 42 during DACCIWA campaign, July 2016, Lomé, Togo (c) ULISSE



N2TAC: DLR Falcon aircraft as seen from the FAAM aircraft during a previous experiment during DACCIWA



N2TAC: SAFIRE's fleet of research aircraft: Falcon-20 (far left), Piper Aztec and the ATR-42

N2TAC: EUFAR TA projects HIDHAZ_N_ICELAND (hidden hazard of melting ground-ice in Northern Iceland) and HOLUHRAUN_HAZ (Assessing the hazard and testing our understanding of environmental and geophysical responses from emplacement of a large volume lava flow field)

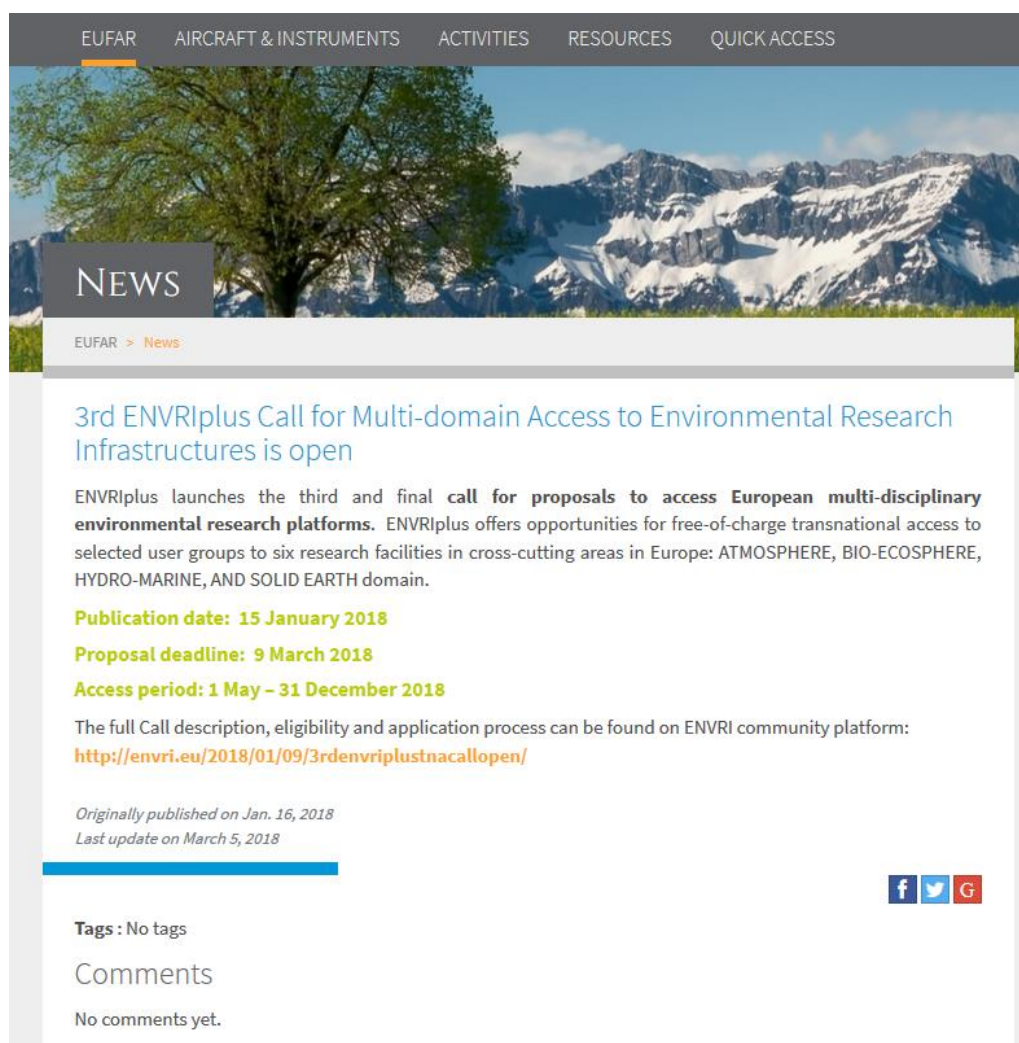


N2TAC: Costanza Morino (team member of HIDHAZ_N_ICELAND) GPS surveying at Móafellshyrna landslide, August 2015, Iceland.



N2TAC: Site overflown by NERC ARSF Dornier DO228 aircraft in Iceland (HIDHAZ_N_ICELAND & HOLUHRAUN_HAZ) (Assessing the hazard and testing our understanding of environmental and geophysical responses from emplacement of a large volume lava flow field) TA campaigns. Photo credit - Gro Pedersen

N2TAC: Screenshot of publication of ENVRIplus Calls for Proposals on EUFAR website



EUFAR > News

3rd ENVRIplus Call for Multi-domain Access to Environmental Research Infrastructures is open

ENVRIplus launches the third and final **call for proposals to access European multi-disciplinary environmental research platforms**. ENVRIplus offers opportunities for free-of-charge transnational access to selected user groups to six research facilities in cross-cutting areas in Europe: ATMOSPHERE, BIO-ECOSPHERE, HYDRO-MARINE, AND SOLID EARTH domain.

Publication date: 15 January 2018

Proposal deadline: 9 March 2018

Access period: 1 May – 31 December 2018

The full Call description, eligibility and application process can be found on ENVRI community platform:
<http://envri.eu/2018/01/09/3rdenvriplustnocallopen/>

Originally published on Jan. 16, 2018
Last update on March 5, 2018

Tags : No tags

Comments

No comments yet.

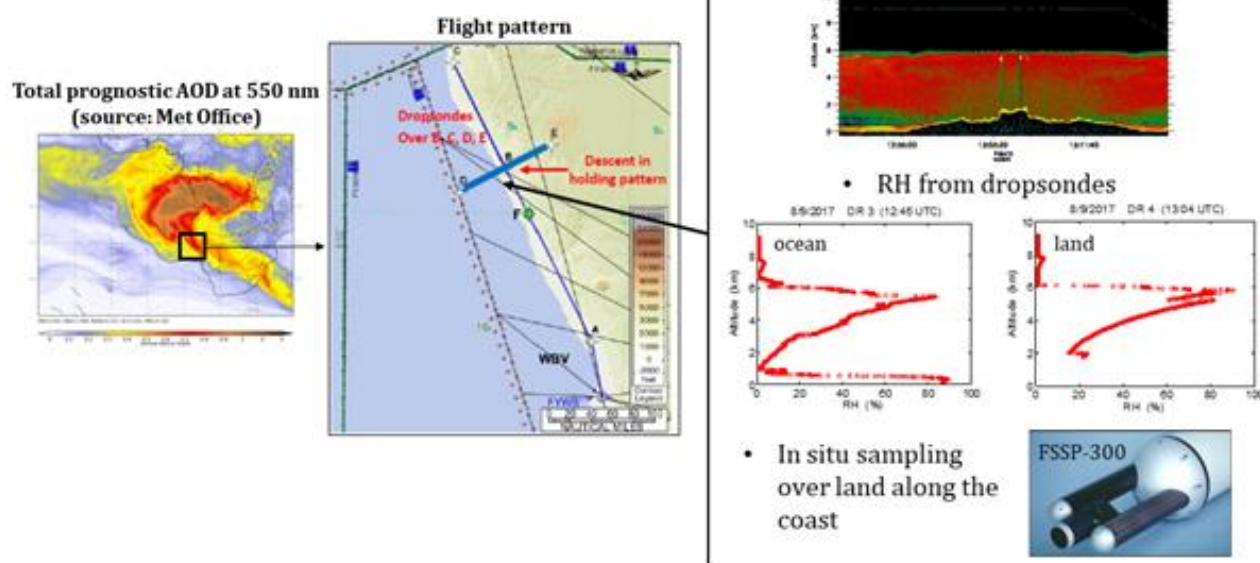
N2TAC: EUFAR TA campaigns: EriSMA (Investigating the Effects of Satellite assimilation of dust in NMM-DREAM Model over SW Africa) and ALLDUST-SA (The Etosha Pan as an Alluvial Dust Source – A Sub-basin Analysis), Namibia, Aug/Sept 2017



N2TAC: ALLDUST-SA & EriSMA TA campaigns (Aug & Sept 2017), photo of area under study - Namibia from above: a glance out of the Falcon's window reveals the aridity of the country (image courtesy Dominique Duchanoy)



N2TAC: ALLDUST-SA & EriSMA TA campaigns (Aug & Sept 2017): Scientist team in front of SAFIRE's F20 aircraft for the airborne campaign at Walvis Bay airport, Namibia (Image courtesy Laurent Labbouz)

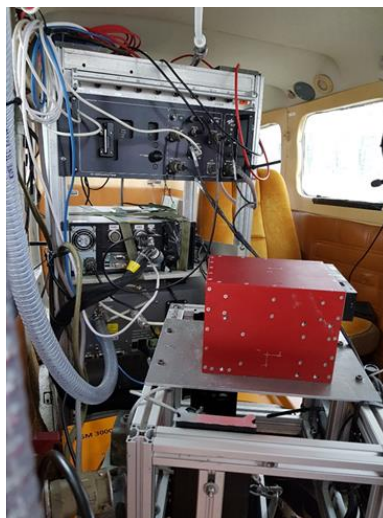


N2TAC: EriSMA TA campaign (Aug & Sept 2017): Flight overview on 8 September 2017, at 11 UTC. Data shown are from the ocean-land transect part of the flight, during which we acquired possible interesting smoke particle hydration profiles for EriSMA project

N2TAC: EUFAR TA campaign FOAM - Silesia (Flight Operated Atmospheric Measurements at Silesia upper coal district), Poland, 28 Sep. - 4 Oct 2017)



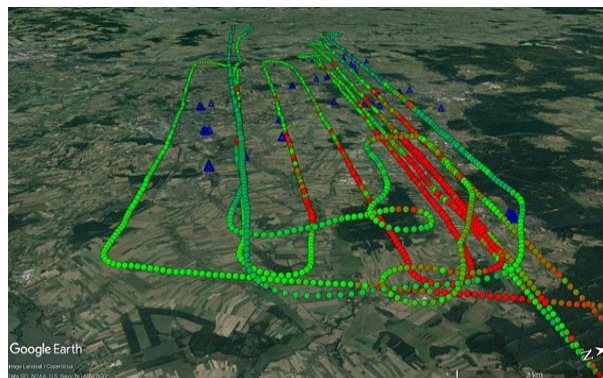
N2TAC: [FOAM](#) airborne campaign (Katowice Pyrzowice, Poland, 28 Sep. - 4 Oct 2017) - Aircraft Crew and ground based team meeting at Katowice-Pyrzowice airport



N2TAC: [FOAM](#) airborne campaign (Katowice Pyrzowice, Poland, 28 Sep. - 4 Oct 2017) - Equipment in FUB Cessna (red and black box in front – Attitude and Heading reference System over hyper-spectral HYSPEX camera; back rack contains Picarro CRDS G2311-f analyser and the HYSPEX data acquisition system).



N2TAC: [FOAM](#) airborne campaign (Katowice Pyrzowice, Poland, 28 Sep. - 4 Oct 2017) - Map of planned flight on 2 October with important waypoints, also showing the different TRAs and CTAs inside the measurement area



N2TAC: [FOAM](#) airborne campaign (Katowice Pyrzowice, Poland, 28 Sep. - 4 Oct 2017) - Preliminary results obtained from the Picarro CRDS analyser installed on board of the FUB Cessna from 29.09.2017 (red colour indicates elevated methane concentration). Flown was a search pattern at lowest altitude downwind of the Pniowek mine for searching of plume positions inside the Rybnik TRA. In addition also two “walls” in downwind direction from Pniowek were flown for flux inversion.

N2TAC: EUFAR TA campaign MASOMED (MApping SOil variability within rainfed MEDiterranean agroecosystems using hyperspectral data), Camarena, Madrid, Spain, 03-19 May 2017



N2TAC: MASOMED field teams by the dark calibration target, for the day and night overflight passes. MASOMED field and airborne campaign (Camarena, Madrid, Spain, 03-19 May 2017)



N2TAC: Measurements during the MASOMED field and airborne campaign (Camarena, Madrid, Spain, 03-19 May 2017)

N3FF – Future of the Fleet

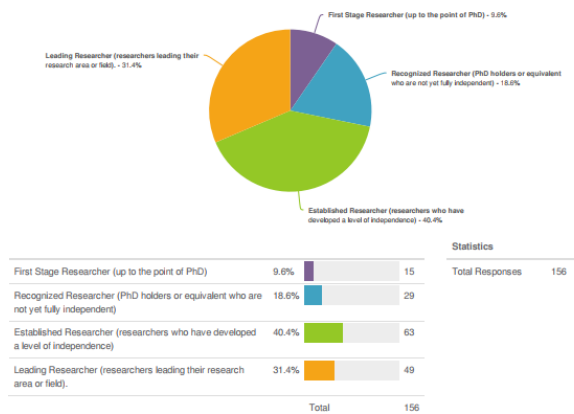
N3FF: EUFAR Online Survey to establish User Needs, 2015

N3FF: Screenshot of summary report presenting the results of the user needs survey

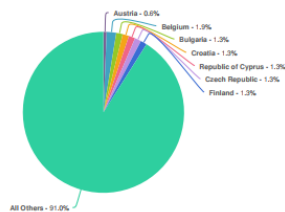
N3FF: Article on the EUFAR online survey to establish user needs, published in the EUFAR Newsletter no. 13, April 2015

New Summary Report - 17 March 2015

1. Please indicate your career level



2. In which country do you work?



APRIL 2015, ISSUE 13

FUTURE OF THE FLEET

EUFAR Online Survey to establish user needs

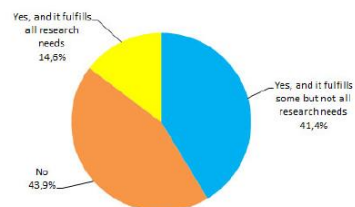
At the end of November, the Future of the Fleet activity leader, Francesco Cairo (CNR) launched an online survey to evaluate the user needs of the airborne research community. The questionnaire consisted of 35 questions that aimed to identify present and future gaps in airborne research facilities in order to outline strategies for the long-term development of the fleet.

A summary of the responses collected was presented at the General Assembly in March 2015. In total 156 people participated in the survey, most of whom were leading/ established researchers with a high level of experience in airborne research.

Overall, the remarks collected were generally positive towards EUFAR. Some interesting responses highlighted the continued absence of stratospheric aircraft in the EUFAR fleet and lack of EUFAR involvement with remotely operated aircraft (UAVs), and included recommendations for a common scientific European aircraft and suggestions to focus on a smaller number of high capability aircraft than a large number of less capable ones.

The summary report of the survey results is available on the EUFAR website for registered members. To access this report, click [here](#).

10. Do you have access to national research aircraft in your country?



Summary Response to Question 10 in the User Needs Survey.

N3FF: Conference of the International Society for Atmospheric Research using Remotely-piloted Aircraft (ISARRA), May 2016, Meteo-France, Toulouse, France



N3FF: Photos from the ISARRA 2016 conference's RPAS exhibition and plenary session

N3FF: Advertising of stratospheric aircraft available to European science community on the EUFAR website



N3FF: Advertising of G520T EGRETT aircraft operated by Grob Aircraft (previously called Grob Aerospace)



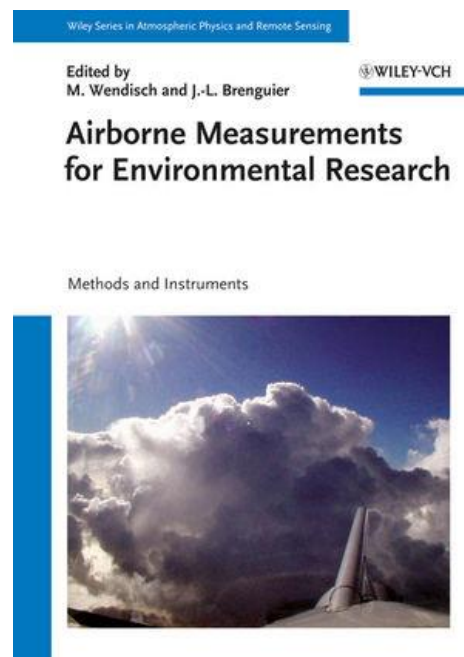
N3FF: Advertising of M55 - Geophysica aircraft operated by Myasishchev Design Bureau



N3FF: Advertising of WB-57F operated by NASA - Johnson Space Centre

N4EWG: Expert Working Groups

N4EWG: *EUFAR handbook on Airborne Measurements: Wendisch & 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, 655 pp*



N4EWG: Photos from expert workshops



N4EWG: *Airborne Laser Scanning EWG Workshop, 20-21 November 2014, Vienna*





(Left) N4EWG: Group photo from workshop on Data Processing, Analysis and Presentation Software of Cloud Probe, University of Manchester, UK, 23-24 July 2016



(Above) N4EWG: Group photo from workshop on Hyperspectral Remote Sensing for Soil Applications, GFZ, Potsdam, Germany, 28-29 September 2016



N4EWG: Group photo from workshop on Hyperspectral Imaging from UAVs - Applications in Precision Farming, University of Milano-Bicocca (UNIMIB), Milan, 14 December 2016



N4EWG: Group photo from expert workshop on Atmospheric Correction of Remote Sensing Data, Freie Universität Berlin (FUB), Berlin, Germany, 26-28 October 2016



01 Regis DUPUY, Fr	07 Mengistu WOLDE, CA	13 Sorin VAJAIAC, RO	19 Max MAHN, US	25 Yvonne BOOSE, DE	30 Jonny Croisier, UK
02 Aaron BANSEMER, US	08 Stavros KEPPAS, UK	14 Victor PETROV, RU	20 Alexei KOROLEV, CA	26 Matt FREER, US	31 David Plummer, US
03 A. KIRCHGAESSER, UK	09 David DELENE, US	15 Valerian HAHN, DE	21 Pierre COUTRIS, FR	27 Jeff FRENCH, US	32 Greg McFARQUHAR, US
04 Graeme NOTT, UK	10 Thomas LACHLAN-COPE, UK	16 Larry OOLMAN, US	22 Mizanur RAHMAN, BD	28 Jea Min YEOM, KOR	33 Elisabeth OSTROM, GB
05 Tina JURKAT, DE	11 Marina SCHIMPF, UK	17 Max PORT, DE	23 C.G. DESHPANDE, IN	29 Joe FINLON, US	34 Darrel BAUMGARDNER, US
06 Nicolas GAPP, US	12 Junghwa LEE, DE	18 Christiane VOIGT, DE	24 Keshaw RAJHANS, IN		

Legend: **id number**, First name FAMILY NAME, Country code (of work, not necessarily nationality)

Not shown: Colin GURGANUS, US, Alisia SADYKOVA, RU, Stefan KAUFMANN, DE, Jonas KLEINE, DE, Adam MAJEWSKI, US.

Photo: Voigt

Arrangement: Hans Volkert

N4EWG: EUFAR/ IAMAS/ IUGG/ ICCP expert working group workshop on [Processing of Cloud Particle Measurements](#), DLR, Oberpfaffenhofen, Germany, 8 July 2017

N5TTO: Technology Transfer Office

N5TTO: Screenshots of articles on TTO published on the EUFAR website

Transfer of innovative technologies developed within EUFAR

By **DIARRA Lilian**

EUFAR's TTO activity seeks to support the transfer of technology between experts in airborne measurements and industry partners, including small to medium enterprises. Each year 2/3 promising technologies will be selected and studied for presentation to industry partners, 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 partners 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, 4 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.

The technologies collected up to date include the following:

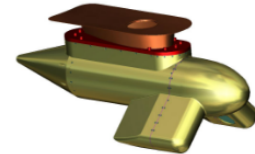
- Airborne laser interferometric Drop Size (ALIDS) – JRA3 led by Emmanuel Porcheron, IRSN. Click [here](#) for more information.
- Standardised assembly to measure soil reflection under undistributed conditions in the field (Eyal Ben-Dor, TAU). Click [here](#), to see the technology sheet.
- Field detector 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)
- Monitoring CO₂ and CH₄ fluxes, perceiving leaks and monitoring authorised CO₂ and/or CH₄ emission (Jim McQuaid, University of Leeds)

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 the [EUFAR Office](#) or TTO coordinator [Cecile Gaillard](#) today!

For more detailed information, contact [Manfred Wendisch](#) and/or [Cecile Gaillard](#).

Entry gallery



External envelope of the ALIDS probe

Related entries

- [Guide on Technology Transfer Issues for R&D partnership](#)

Recent entries

- [New publication from the EUFAR DelnVader flight campaign](#)
- [6th ENVRI week, Zandvoort, Netherlands, 14-18 May 2018.](#)
- [ENVRI community booth](#)
- [RS4forestEBV Training Course and Flight Campaign: Scientific Report](#)
- [EUFAR AISBL holds its 2nd Executive Board and General Assembly and meetings](#)

Recent comments

- No comments yet.

Archives

Guide on Technology Transfer Issues for R&D partnership

By **DIARRA Lilian**

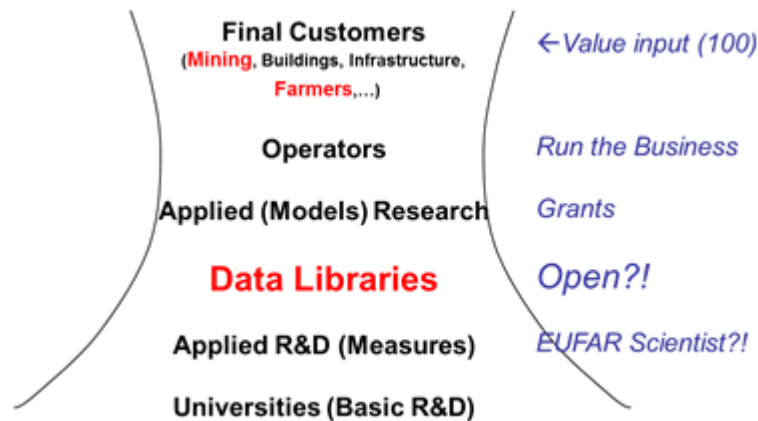
EUFAR's TTO activity seeks to support the transfer of technology between experts in airborne measurements and industry partners. Each year 2 to 3 promising technologies will be selected and studied for presentation to industry representatives, who will thereafter be invited to attend presentations by 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 guide on technology transfer prepared by Florin Paun - the former TTO activity leader (ONERA) and has been made available on the EUFAR website. The guide specifically addresses the EUFAR scientist community, and showcases the operating existing markets and the long time to market (10 years+) specificity to successfully implement a new technology. Click [here](#), to access the guide (open to all EUFAR members).

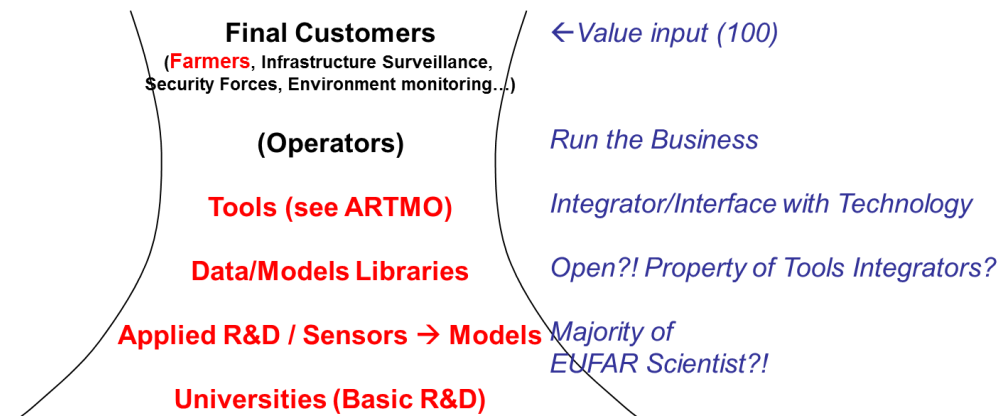
Are you part of EUFAR's community of scientists and interested in transferring your technology? Download the technology sheet template by clicking [here](#) and send it to bureau@eufar.net or Cecile Gaillard, the TTO coordinator - cecile.gaillard@onera.fr today!



N5TTO: Exhibition of the ALIDS probe at the 2nd edition of “Gold Nuggets of Research, Technology and Innovation” event during the Normandie AeroEspace Tech Day, 24 November 2015. From left to right - Pascal Lemaître (IRSN), Marc Brunel (CORIA), EUFR Project Coordinator Elisabeth Gérard (Météo-France) and ALIDS lead scientist Emmanuel Porcheron (IRSN).



N5TTO: Diagram for the specific value chain specific to the soil spectroscopy case



N5TTO: Diagram for the specific value chain specific to the precision farming case



N5TTO: Cécile Gaillard (ONERA) – EUFAR N5TTO activity leader - presenting EUFAR, the TTO networking activity and the 11 technology sheet booklet at the RPAS CivOps conference, Paris, 16-17 January 2018

- | | |
|---------------|--|
| Tech Sheet 1 | - Standardised assembly to measure soil reflection under undisturbed conditions in the field |
| Tech Sheet 2 | - Field detector for assessing soil contamination with total petrol hydrocarbon |
| Tech Sheet 3 | - Airborne Laser Interferometric Drop Sizer |
| Tech Sheet 4 | - Optical Parametric Oscillator - Affordable laser source with continuous variable frequency |
| Tech Sheet 5 | - Surveillance and Observation Radar |
| Tech Sheet 6 | - Analysis of Atmospheric Icing |
| Tech Sheet 7 | - Analysis and prevention of the risks of lightning |
| Tech Sheet 8 | - Diagnosis of electromagnetic compatibility |
| Tech Sheet 9 | - Cryogenic Technology |
| Tech Sheet 10 | - Sethi: The new-generation airborne imaging system with radar and optronic sensors |
| Tech Sheet 11 | - The COSI camera system, high ground resolution hyperspectral mapper |

N5TTO: EUFAR innovative technology sheets presented at the RPAS CivOps conference, Paris, 16-17 January 2018

Addouche, Sid-Ali University Paris 8 / IUT de Montreuil, France	Delaye, Jean-Luc Gendarmerie des Transport Aériens, France	Hvalso-Dybdahl, Morten Defence Acquisition & Logistics, Denmark
Alty, Peter EUROCONTROL, International	Demeyer, Hans Belgian Defence, Belgium	Ibalot, Julie SESAR JU, EU
Asveld, Wouter Gemeente Enschede, Netherlands	Donzel, Carine DGAC, France	Indra, Thorsten Thorsten Indra Photography, Germany
Babiarz, Sebastian AirMap, Germany	Drapier, Jean-Luc DGA /DSNA DTI, France	Inisan, Pierre SBG Systems, France
Barbot, Gwénaél Ministry of Interior - DGSCGC, France	Drouet, Xavier Thales Communications & Security, France	Jonker, Robert Clear Flight Solutions, Netherlands
Baskaya, Elgis ENAC, France	Drüner, Bernhard Swiss Federation of Civil Drones, Switzerland	Jouve, Col Philippe Etat-Major de l'Armée de Terre, France
Bertrand, Sylvain ONERA, France	Eliau, Haris Elbit Systems, Israel	Jupp, Louise Terreco Aviation, South Africa
Besada, Juan Universidad Politécnica de Madrid, Spain	Fabre, Renaud ESSP, France	Kamp, Raimund Min. of Transport & Digital Infrastructure, Germany
Biasci, Alain Ministry of Interior - UIISC7, France	Fibingier, Ireneusz Polish Air Force Academy, Poland	Karoly, Bianca HungaroControl, Hungary
Bonnassie, Fabien UN World Food Programme, International	Figuier, Flavien Altametriz, France	Kegelaers, Marc UniFly, Belgium
Borja, Col Jean Patrick DSAE - BFEA, France	Fortner, Raoul AAI, Austria	Koenig, Alain Gendarmerie des Transport Aériens, France
Bottke, Alain Airbus DS Airborne Solutions, Germany	Gaillard, Cécile ONERA, France	Kruiswijk, Gert CAA, Netherlands
Botton, Frédéric BKPresse, France	Galabert, Col Alain DSAE / Drones, France	Krumm, Malte European Parliament Research Service, EU
Boutet, Emilie DGAC DTA, France	Gandara, Marc Thales Alenia Space, France	Kruse Brandao, Jacques NXP Semiconductors, Germany
Burgun, LtCdr Raphael French Navy / Aeronautic P, France	Gandil, Patrick DGAC, France	Kwiecien, Katarzyna Polish Armaments Group, Poland
Bütter, Reto Swiss Federation of Civil Drones, Switzerland	Garcia Rivero, Manuel FADA CATEC, Spain	Lafaye, Maj Laurent French Air Force / SIMMAD, France
Butterworth-Hayes, Philip PMI Media, UK	George, Erwin ENGIE, France	Laing, Mungo Survey Sense, UK

N5TTO: Contact list of all the RPAS CivOps conference (Paris, 16-17 January 2018) participants with focus on potential interesting contacts

N6ET: Education & Training

N6ET: New EUFAR Education and Training flyer

EDUCATION & TRAINING
EUFAR Networking Activity

Education and training (theoretical and practical) is airborne atmospheric research and remote sensing of the Earth's surface.

EUFAR supports travel and subsistence for researchers at EU member states or associated states to participate in types of training opportunities:

- Participate in Training Courses on airborne research
- Join an Existing Campaign
- Participate in the design of a new field campaign under Transnational Access
- Visit an aircraft/instrument operator

APPLY NOW!
FOR A TRAINING OPPORTUNITY
<http://www.eufar.net/education-and-training>

TRAINING OPPORTUNITIES 2014-2018

Participate in a EUFAR Training Course, with TA Right time (ET-TC)

Once a EUFAR training course is approved by the EUSP, it is announced on the EUFAR website and opened for online applications.

Join an Existing Campaign (ET-EC)

Potential applicants can view the planning information for each aircraft on the EUFAR website to identify opportunities to join an existing campaign. To apply, send an existing campaign and submit your application.

Participate in the Design of a New Flight Campaign (ET-TA)

EUFAR offers the opportunity for early stage researchers and university lecturers to join a host research group to design a field campaign under Transnational Access. The selected applicants will be able to actively participate in the research flights, data analysis and publications and be supervised by experienced scientists. The field campaign coordinator is directly responsible for the selection of the participants.

Visit an Aircraft/Instrument Operator (ET-VO)

To exchange knowledge and know-how between aircraft/instrument operators, applications may be submitted online via the EUFAR website at any time.

All ET-TC, ET-EC and ET-VO applications are evaluated by the EUFAR Education and Training Evaluation Committee.

Host a EUFAR Training Course

Applications to host a EUFAR training course using EUFAR Transnational Access (TA) flight hours (approx. 10 flight hours) may be submitted on the EUFAR website (www.eufar.net) in response to the various 'Calls for Proposals' under Transnational Access. Once submitted the projects are reviewed by independent peer reviewers, and are thereafter selected by a User-Group Selection Panel (UGSP).

EDUCATION & TRAINING ACHIEVEMENTS 2008 TO PRESENT

- 5 EUFAR Training Courses (ET-TC):
 - Abroad Digital Remote sensing in Ecology and earth Sciences Summer School (AODRESS), August 2010, Hungary
 - Training & Education for Turbulence Research via Airborne Data (TETRAD), September 2010, France
 - Quality of Airborne Data (QAD) with various aircraft of the EUMC fleet during the EUMC 2010 conference, October - November 2010, France
 - School on Aircraft Techniques for the studies of Atmospheric chemistry (SOMATA), August 2011, Italy
- Regional Experiments for Land-atmosphere Exchange (REFLEX) in collaboration with EUMC and ESA, July 2012, Spain
- Supported 140 ET-EC participants (including 12 university lecturers) out of 281 applications, originating from 18 EU member states or associated states
- Supported 13 ET-EC proposals (out of 21 applications)
- Supported 1 ET-VO proposal (out of 6 applications)

N6ET: SWAMP Training Course “Spectrometry of a Wetland and Modelling of Photosynthesis with Hyperspectral Airborne Reflectance and Fluorescence”, Obrzycko-Rzecin, Poland, 6-16 July 2015

TRAINING COURSE
SPECTROMETRY OF A WETLAND AND MODELLING OF PHOTOSYNTHESIS WITH HYPERSPECTRAL AIRBORNE REFLECTANCE AND FLUORESCENCE (SWAMP)

OBRYCKO-RZECIN, POLAND, 6 – 16 JULY 2015

Hosted by the Poznan University of Life Sciences, and co-funded by the FP7 European Facility for Airborne Research (EUFAR) & the European Cooperation in Science and Technology (COST) Action OPTIMISE (ES1309)

The main aim of this training course is to teach early stage researchers (PhD students and post-docs) and a limited number of university lecturers how to plan and conduct an airborne research and (near-)ground validation campaign and how to use the collected data. The training course will include an airborne campaign with the APEX imaging spectroradiometer mounted in the DLR Dornier DO228 aircraft combined with a concurrent ground campaign and near-ground campaign with small UAV platforms and satellite data acquisitions at the instrumented POLWET wetland study site. All these platforms and sensors will be used to determine Earth surface reflectance and fluorescence, which play a role in supporting satellite mission design and use (e.g. FLEX) and which support multi-scale ("leaf to ecosystem") land-atmosphere exchange modelling studies. Through this training the students will gain a better understanding of the complexities and uncertainties in optical Earth observations from near-ground, airborne and satellite platforms. This in turn will grant them insight into the potential and limitations of current and future satellite Earth observations and enable them to generate a greater scientific impact through their future campaigns.

Through the training course, participants will learn how to:

- > develop a measurement strategy and design a flight plan for an airborne campaign;
- > develop a sampling strategy and carry out (near-)ground measurements to support an airborne campaign & measurements from small UAV platforms;
- > recognise what laboratory and field calibration, and validation measurements are necessary to support airborne and near-ground optical remote sensing;
- > post process airborne and near-ground optical measurements;
- > analyse these data through statistical methods and how to integrate them into radiative transfer models.

Participants will have the opportunity to visit the Dornier DO228 aircraft operated by DLR and ESA's airborne imaging spectroradiometer APEX. During and after the training course acquired or archived data will then be processed and analysed with the support of experienced users of airborne facilities and form the basis for the final report.

Applicants: PhD students, post-docs and university lecturers (number of participants is limited to 20)

Fees: free of charge – travel & subsistence funded by EUFAR & OPTIMISE

Information & Registration: register and apply online on the EUFAR website: www.eufar.net/ET

Deadlines: 15 May 2015
(Selected participants will be notified by 26 May 2015)

Contact: EUFAR Office - bureau@eufar.net

EUFAR integrates operators of instrumented aircraft and remote-sensing instruments, and experts in airborne measurements in the field of environmental in the atmospheric, marine, terrestrial and Earth Sciences. For more information, visit www.eufar.net

APEX instrument operated by VITO & UZH (right), DLR's Dornier DO228 (below)

SCIENTIFIC COMMITTEE

R. Juszcak (SWAMP PI, PULS, PL)
A. MacArthur (OPTIMISE Chair, UEDIN, UK)
E. Tomelleri (EURAC, IT)
I. Reusen (EUFAR ET coordin., VITO, BE)

ORGANISING COMMITTEE

R. Juszcak, J. Olejnik & B. Chojnicki (PULS, PL)
A. MacArthur (OPTIMISE Chair, UEDIN, UK)
M. Rossini (UNIMIB, IT)
E. Tomelleri (EURAC, IT)
A. Hueni (RSL, UZH, CH)
C. van der Tol (University of Twente, NL)
EUFAR Office (Météo-France, FR)

The Cost Action OPTIMISE (innovative optical tools for proximal sensing of eco-physiological processes) brings together scientists working in the 3 areas: Spectral Information Systems, UAVs Hyper-Spectroscopy, and Reflectance & Fluorescence. For more information, click here.

N6ET: EUFAR/OPTIMISE SWAMP training course flyer

N6ET: Different activities at the SWAMP training course, Poland, 6-16 July 2015



N6ET: GEO Week 2017 from 23-27 October 2017 in Washington DC, USA



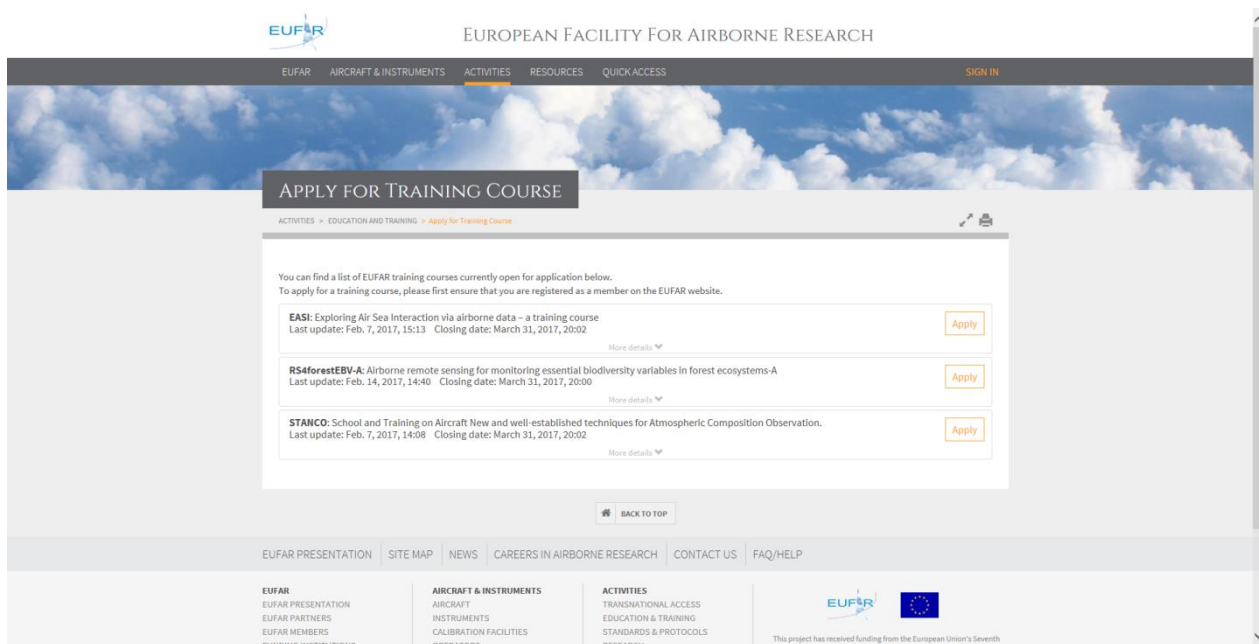
Above left: VITO represented EUFAR at the ENVRI booth at the GEO Week 2017

Above right: IIs Reusen (VITO) – EUFAR N6ET and JRA1-HYLIGHT activity leader - presenting examples of EUFAR contribution as in situ contribution to GEOBON and the GEO Aquawatch Initiative (tweet from @asmi_ari)

Left: From left to right: representatives of the LifeWatch, eILTER, EUFAR and ICOS research infrastructures at the ENVRI booth.

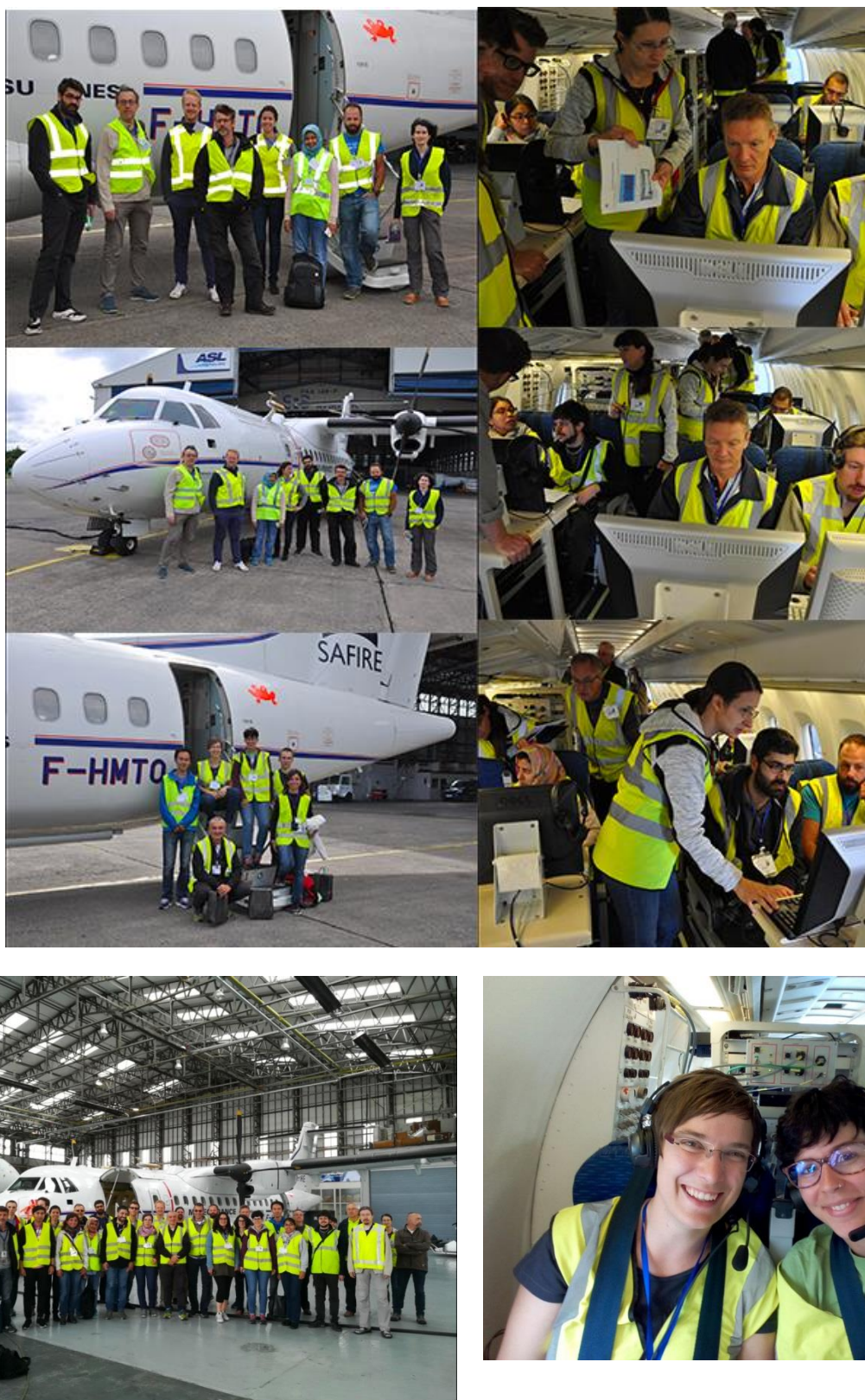


N6ET: MSCA Trustee course on drone operations, University of Exeter, UK, 30 October to 3 November 2017



N6ET: Screenshot of ET-TC (Training Courses) calls for proposals on EUFAR website

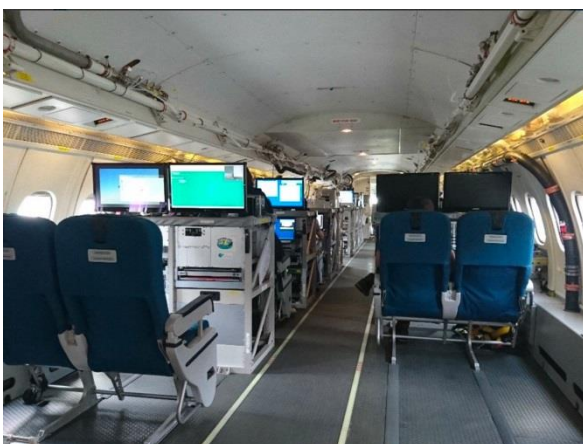
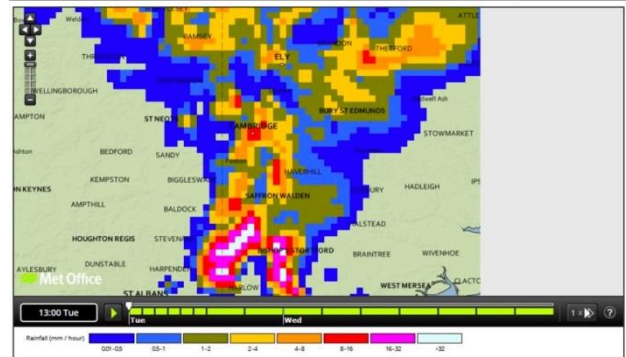
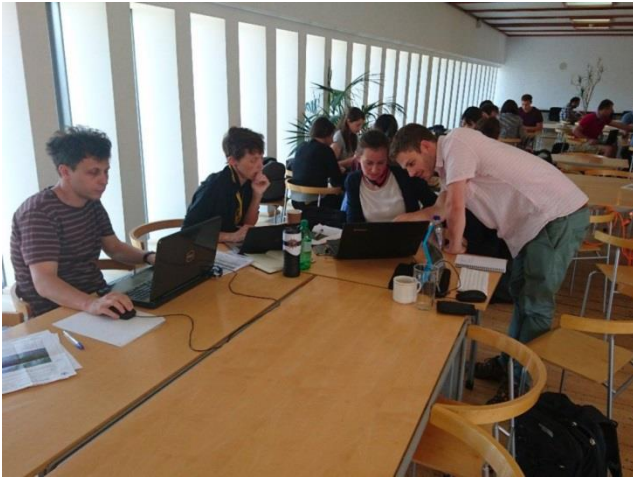
N6ET: Participants of the EUFAR EASI training course” Exploring Air-Sea Interaction via Airborne Measurements” (25 June – 4 July 2017), Shannon, Ireland, training with SAFIRE’s ATR42 aircraft



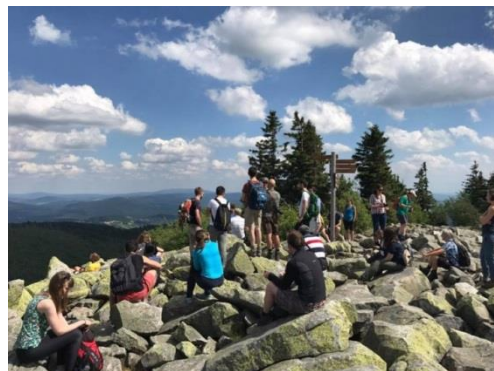


***N6ET:** Participants of the EUFAR EASI training course (26 June – 4 July 2017), Shannon, Ireland, training with SAFIRE's ATR42 aircraft*

N6ET: Participants during the EUFAR STANCO training course, “School and Training on Aircraft New techniques for Atmospheric Composition Observation”, Cambridge, UK, 26 June to 6 July 2017, flight campaign with EUFAR funded flight hours on board FAAM’s Bae-146 aircraft



N6ET: EUFAR RS4forestEBV training course “RS4ForestEBV - Airborne remote sensing for monitoring essential biodiversity variables in forest ecosystems”, held in the Bavarian Forest National Park and the German Aerospace Center - DLR in Oberpfaffenhofen from 3 to 14 July 2017, with flight campaign carried out on board NERC’s Twin Otter aircraft



N6ET: EUFAR Training Course Posters – EASI, STANCO & RS4forestEBV training courses, summer 2017



TRAINING COURSE

EASI - Exploring Air-Sea Interaction via Airborne Measurements

SHANNON, IRELAND, 25 JUNE - 4 JULY 2017

ORGANISED BY CNR-ISAC AND EUFAR, WITH FUNDING FROM EUFAR

The primary goal of the EASI training course is to teach and train early stage researchers (PhD and Post doc) and university lecturers on the use of a research aircraft, and on the experimental possibilities it offers for atmospheric physics and chemistry research. This implies providing them with an overview of airborne and remote sensing experimental techniques, and of specific features of collecting and analysing airborne measurements. In addition, EASI aims to transfer consolidated knowledge on and recent advancements in specific topics related to air-sea interaction, and near coastal boundary layer structure and dynamics. Specifically, flight experiments performed with the French SAIR aircraft, and lectures during the course will address the problem of air-sea interaction, focusing on turbulence fluctuations in the near coastal boundary layer, cloud microphysics, atmospheric composition, marine aerosols and the impacts on climate, momentum and heat exchanges at the air-sea interface. Lectures will be alternated with working group sessions on instrument calibration, safety issues and data analysis. Participants will also have the opportunity to visit the Mace Head Atmospheric Research Station.

Subject to operational constraints, all participants will have the opportunity to participate in a research flight with the AIR2. The flight experiments will include data collection of physical quantities related to turbulent fluctuations, radiative properties and microphysical properties in the near coastal boundary layer and in marine clouds.

Data acquired during the training course or archived data will be processed and analysed with the support of experienced users of airborne facilities and form the basis for the final scientific report. Archived data will also be made available after the course via the EUFAR website.

THROUGH EASI, PARTICIPANTS WILL LEARN HOW TO:

- design and develop a flight plan for a flight experiment;
- develop a sampling strategy for the specific goals of the flight experiment given the available instruments;
- post-process flight experiment data;
- analyse the acquired and archived data through statistical methods for a better understanding of air-sea interaction related phenomena.

Participants are expected to gain a better understanding of the complexities and uncertainties associated with atmospheric observations via airborne platforms. This should provide a greater scientific impact to their future airborne campaigns, in terms of the sampling strategies and of the statistical use of airborne observational data.

SCIENTIFIC COMMITTEE

A. S. Lavender (CNR-ISAC & NUI, IT)
T. Cassa (EUMC, IT)
J. Bressan (EUMC & CNR-ISAC, IT)
M. Scudlark (CNR-ISAC, IT)
S. Lavender & J. Cassa (EUMC, IT)
J. Bressan (EUMC & CNR-ISAC, IT)
S. Lavender (CNR-ISAC, IT)
J. Bressan (EUMC & CNR-ISAC, IT)
S. Lavender (CNR-ISAC, IT)
J. Bressan (EUMC & CNR-ISAC, IT)

ORGANISING COMMITTEE

A. S. Lavender & J. Cassa (EUMC, IT)
J. Bressan (EUMC & CNR-ISAC, IT)
S. Lavender (CNR-ISAC, IT)
J. Bressan (EUMC & CNR-ISAC, IT)
S. Lavender (CNR-ISAC, IT)
J. Bressan (EUMC & CNR-ISAC, IT)

For more information, contact: EUMC Office, viale, viale, viale

Applicants: PhD students, post-docs and university lecturers (number of participants is limited to 20).

Fee: no registration fee.

Travel & subsistence: 100% funded by EUFAR for selected participants working in an institution established in a European Member State or Associated State.

Information & Registration: www.eufar.net/projects/

Deadline: 31 March 2017

Selected participants will be notified by 30 April 2017.

For information, contact: EUFAR Office - info@eufar.net






TRAINING COURSE

School and Training on Aircraft New Techniques for Atmospheric Composition Observation (STANCO)

TO BE HELD IN CAMBRIDGE, UK, 26 JUNE - 6 JULY 2017

ORGANISED BY DISPUTER OF THE UNIVERSITY G. D'ANNUNZIO DI CHIETI-PESCARA AND EUFAR, WITH FUNDING FROM EUFAR - A PROJECT FINANCED BY THE EU'S 7TH FRAMEWORK PROGRAMME (2014-2018)

The main objective is to provide an overview on measurement techniques, data analysis and specifics of the airborne measurements of species relevant in the atmosphere. Emphasis will be on new instruments and emerging techniques for aircraft observations.

Air pollution and climate change are global problems and the species responsible for these environmental issues are emitted essentially by the same process: fossil fuel burning. The observations of these compounds using aircraft platforms are needed because usually most of these measurements are highly dependent on altitude and exhibit large horizontal variability. Aircraft allow in situ measurements that can be used to identify and track emission plume of atmospheric trace gases.

The lectures will include an introduction on atmospheric composition focusing on pollution transport, vertical distribution of atmospheric compounds and links between air pollution and climate change. They will also cover the technical, engineering and safety aspects of airborne measurements. Subject to operational constraints, all students will have the opportunity to participate in a research flight on the FAAM instrumented B747 aircraft. Data will then be processed and analysed with the support of experienced users of airborne facilities.

THROUGH THE STANCO TRAINING COURSE, PARTICIPANTS WILL LEARN HOW TO:

- develop a measurement strategy and design a flight plan for an airborne campaign;
- use experimental techniques to study the atmospheric composition on-board aircraft;
- develop sampling strategies to measure trace gases and aerosols in the atmosphere;
- calibrate aircraft instruments and validate airborne measurements;
- use post-process techniques of airborne data.

DIRECTORS OF THE COURSE

Prof. Dr. Carlo Bielli (Chieti-Pescara, IT)
Prof. Dr. Carlo Bielli (Chieti-Pescara, IT)

ORGANISING COMMITTEE

Prof. Dr. Carlo Bielli (Chieti-Pescara, IT)
Prof. Dr. Carlo Bielli (Chieti-Pescara, IT)
Prof. Dr. Carlo Bielli (Chieti-Pescara, IT)
Prof. Dr. Carlo Bielli (Chieti-Pescara, IT)

For more information, contact: EUMC Office, viale, viale, viale

Applicants: PhD students, post-docs and university lecturers (number of participants is limited to 20).

Fee: no registration fee.

Travel & subsistence: 100% funded by EUFAR for selected participants working in an institution established in a European Member State or Associated State.

Information & Registration: www.eufar.net/projects/education-and-training/

Deadline: 31 March 2017

Selected participants will be notified by 30 April 2017.

For information, contact: EUFAR Office - info@eufar.net






TRAINING COURSE

Airborne remote sensing for monitoring essential biodiversity variables in forest ecosystems (RS4forestEBV)

TO BE HELD IN THE BAVARIAN FOREST NATIONAL PARK & THE GERMAN AEROSPACE AGENCY (DLR) IN OBERPFAFFENHOFFEN, 3 - 14 JULY 2017

ORGANISED BY THE UNIVERSITY OF TWENTE AND EUFAR, WITH FUNDING FROM EUFAR - A PROJECT FINANCED BY THE EU'S 7TH FRAMEWORK PROGRAMME (2014-2018)

Forest management requires the use of comprehensive remote sensing data which enable monitoring biodiversity changes. Biological and biochemical vegetation parameters can characterise changes in biodiversity through changes in vegetation structure and function.

In this training course, the special difficulties required for the processing of airborne hyperspectral, thermal, and LiDAR data for monitoring essential biodiversity variables in forest ecosystems will be presented.

The ground data collection that will be performed during the first week of the training course at the Bavarian Forest National Park aims to provide the participants (PhD students, post-docs and university lecturers) with knowledge on both field spectroscopy, thermal spectroscopy and (passive) LiDAR and measurement techniques to collect different vegetation variables. In addition, an airborne campaign with a NITE Twin Otter for the concurrent acquisition of hyperspectral imaging data in visible, near infrared, shortwave infrared and longwave-infrared thermal wavelengths as well as LiDAR data will be a new feature component will be organised during the training course if the weather conditions allow.

Data acquired during the training course as well as archived data will be processed and analysed in the hands-on sessions with the support of experienced users of airborne facilities and form the basis for the final scientific report. RS4forestEBV data will also be made available after the training course via the EUFAR website, accessible to all EUFAR registered members.

Furthermore, during the second week, participants will be able to attend certain sessions of the 2nd International Conference on Airborne Research for the Environment (ICARE) that will be held simultaneously on the DLR premises from 10-13 July 2017.

THROUGH THE RS4forestEBV TRAINING COURSE, PARTICIPANTS WILL SPECIFICALLY:

- learn how to set up field and airborne campaigns;
- become familiarised with different field instruments;
- learn how to map different vegetation parameters using hyperspectral visible/NIR/SWIR/thermal and LiDAR data;
- understand the advantage of each data source and the best combinations of them for retrieving vegetation parameters;
- understand data processing chains;
- understand the challenge of collecting and integrating field data with remote sensing imagery.

SCIENTIFIC COMMITTEE

A. S. Lavender (CNR-ISAC & NUI, IT)
T. Cassa (EUMC, IT)
J. Bressan (EUMC & CNR-ISAC, IT)
M. Scudlark (CNR-ISAC, IT)
S. Lavender & J. Cassa (EUMC, IT)
J. Bressan (EUMC & CNR-ISAC, IT)
S. Lavender (CNR-ISAC, IT)
J. Bressan (EUMC & CNR-ISAC, IT)
S. Lavender (CNR-ISAC, IT)
J. Bressan (EUMC & CNR-ISAC, IT)

ORGANISING COMMITTEE

A. S. Lavender & J. Cassa (EUMC, IT)
J. Bressan (EUMC & CNR-ISAC, IT)
S. Lavender (CNR-ISAC, IT)
J. Bressan (EUMC & CNR-ISAC, IT)
S. Lavender (CNR-ISAC, IT)
J. Bressan (EUMC & CNR-ISAC, IT)

For more information, contact: EUMC Office, viale, viale, viale

Applicants: PhD students, post-docs and university lecturers (number of participants is limited to 20).

Fee: no registration fee.

Travel & subsistence: 100% funded by EUFAR for selected participants working in an institution established in a European Member State or Associated State.

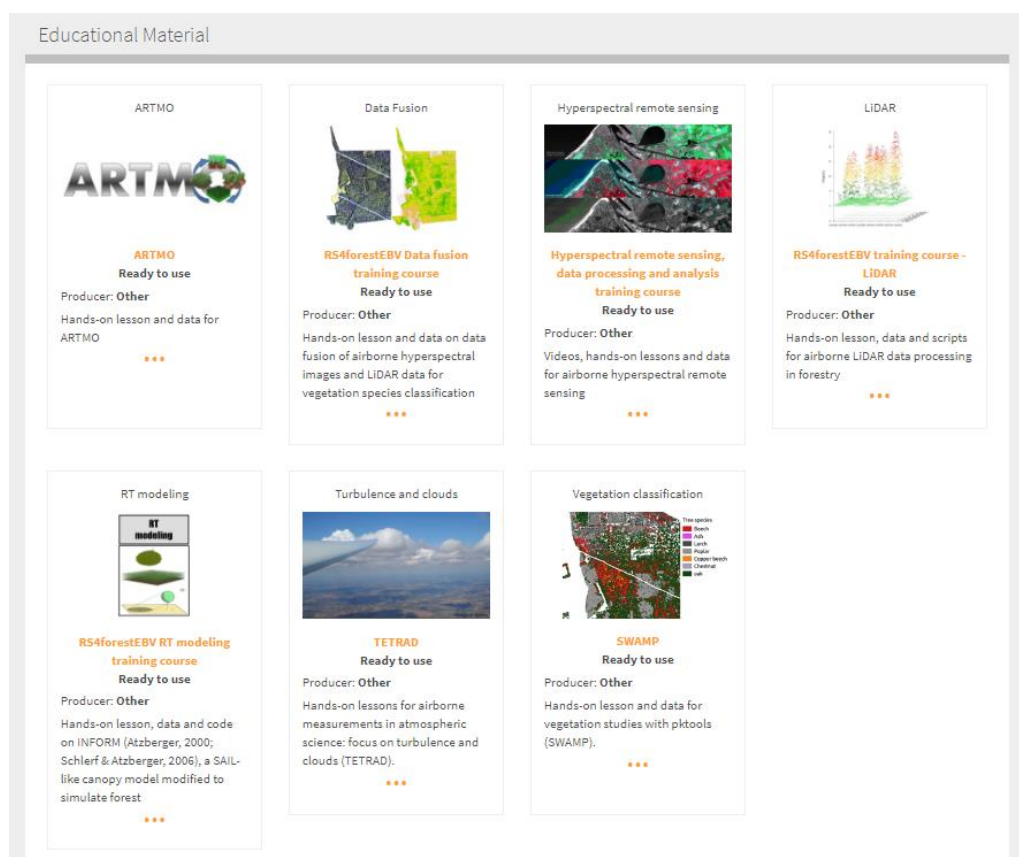
Information & Registration: www.eufar.net/projects/education-and-training/

Deadline: 31 March 2017

Selected participants will be notified by 30 April 2017.

For information, contact: EUFAR Office - info@eufar.net



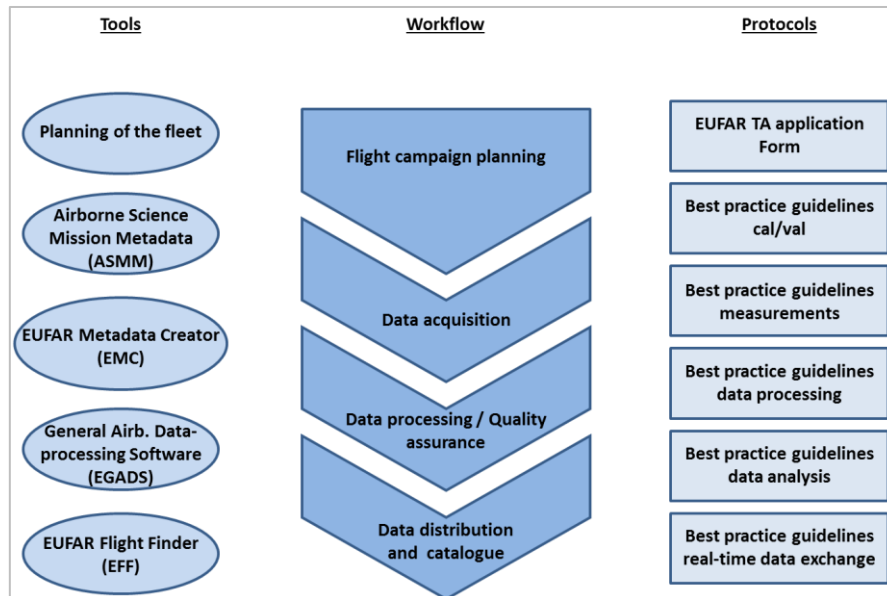



N6ET: Screenshot of educational material and tools available on the EUFAR website

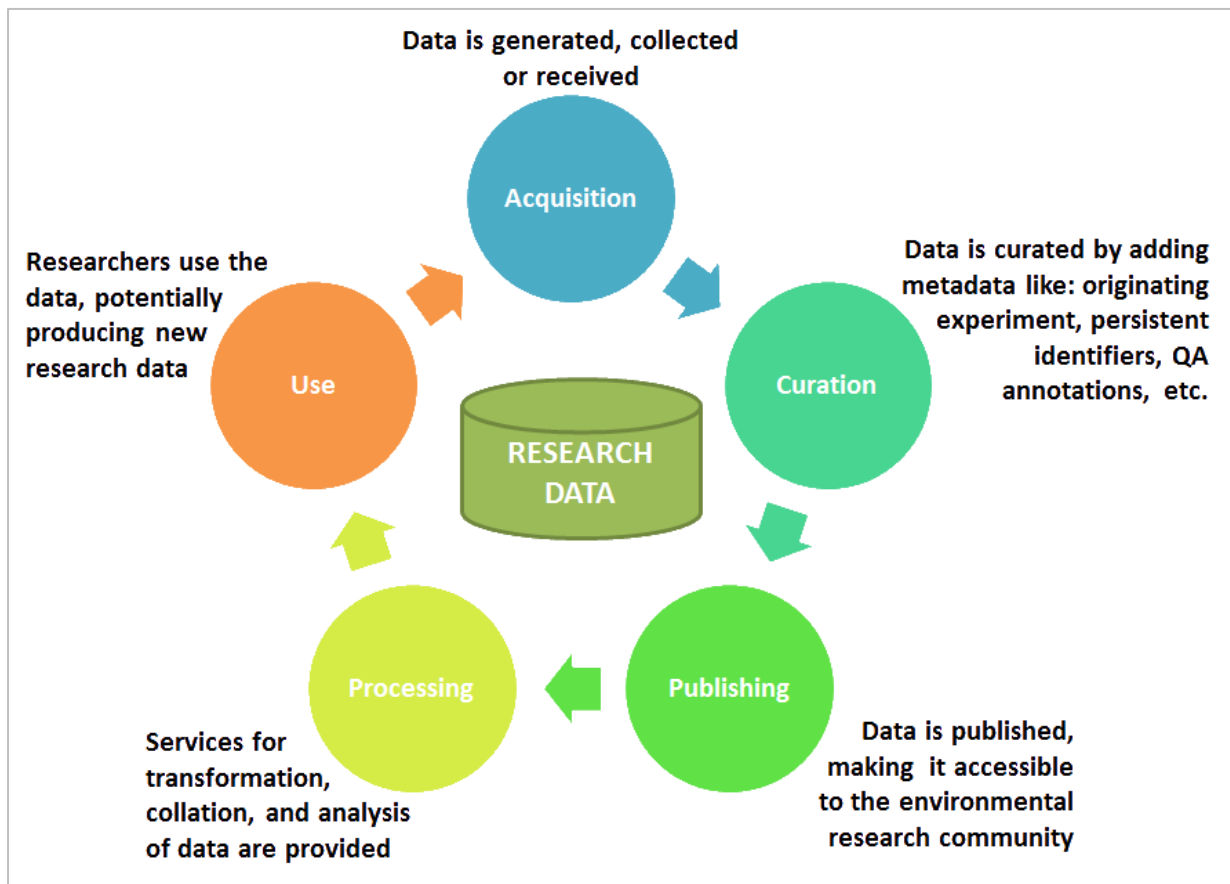
Short name	Expanded name	Location	Period	Organiser	Operator	Aircraft/instrument	No. of trainers & organisers	No. of candidates	No. of trainees selected (PhD students and post-docs)
SWAMP	Spectrometry of a Wetland And Modelling of Photosynthesis with Hyperspectral Airborne Reflectance and Fluorescence	Obrzycko-Rzeczyn near the instrumented POLWET wetland study site (Poland)	6 – 16 June 2015	Poznan University of Life Sciences	DLR (Germany) and VITO (Belgium)	Dornier 228 aircraft and VITO APEX sensor	21	47	20 trainees from 12 EU member states and associated countries
EASI	Exploring Air-Sea Interaction via Airborne Measurements	Shannon (Ireland)	25 June - 4 July 2017	CNR-ISAC (Italy) and VITO (Belgium)	SAFIRE (France)	ATR42	9	29	20 trainees of 12 nationalities working in 11 EU member states and associated countries
STANCO	School and Training on Aircraft New techniques for Atmospheric Composition Observation	Univ. of Cambridge and FAAM, Cranfield (UK)	26 June - 6 July 2017	Univ. "G. d'Annunzio" of Chieti-Pescara (Italy)	FAAM (UK)	Bae-146	15	35	19 trainees of 10 nationalities working in 9 EU member states
RS4forestEBV	Airborne Remote Sensing for Monitoring Essential Biodiversity Variables in Forest Ecosystems	Bavarian Forest National Park and DLR Oberpfaffenhofen (Germany)	3 - 14 July 2017	Univ. of Twente - Faculty ITC (The Netherlands) and DLR (Germany)	NERC (UK)	Twin Otter	22	92	19 trainees of 15 nationalities working in 10 EU member states

N6ET: Summary of the EUFAR training courses held in 2015 and 2017

N7SP: Standards & Protocols

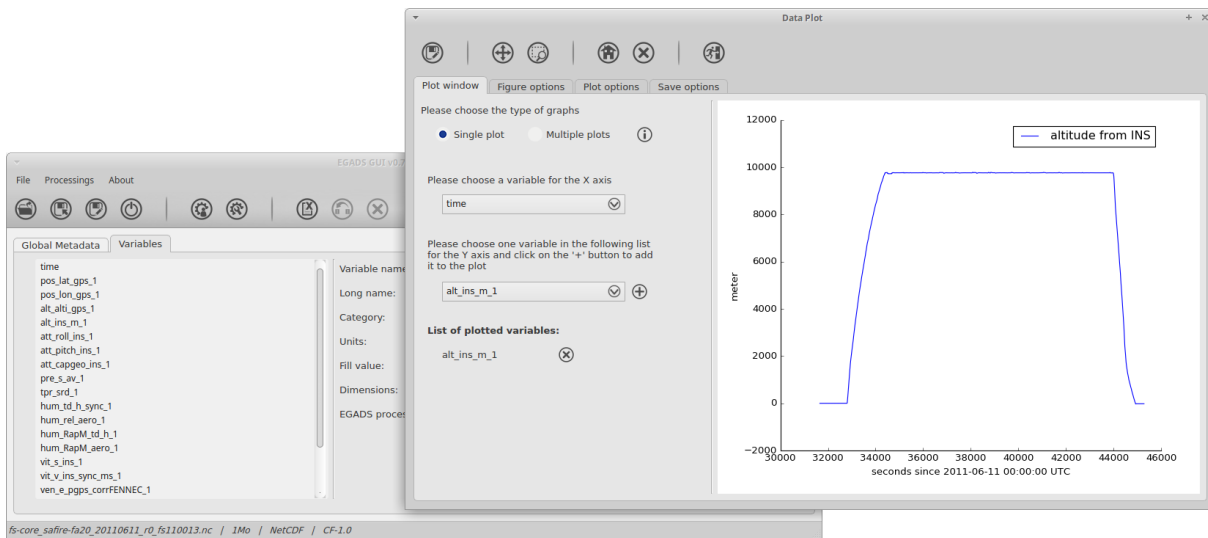
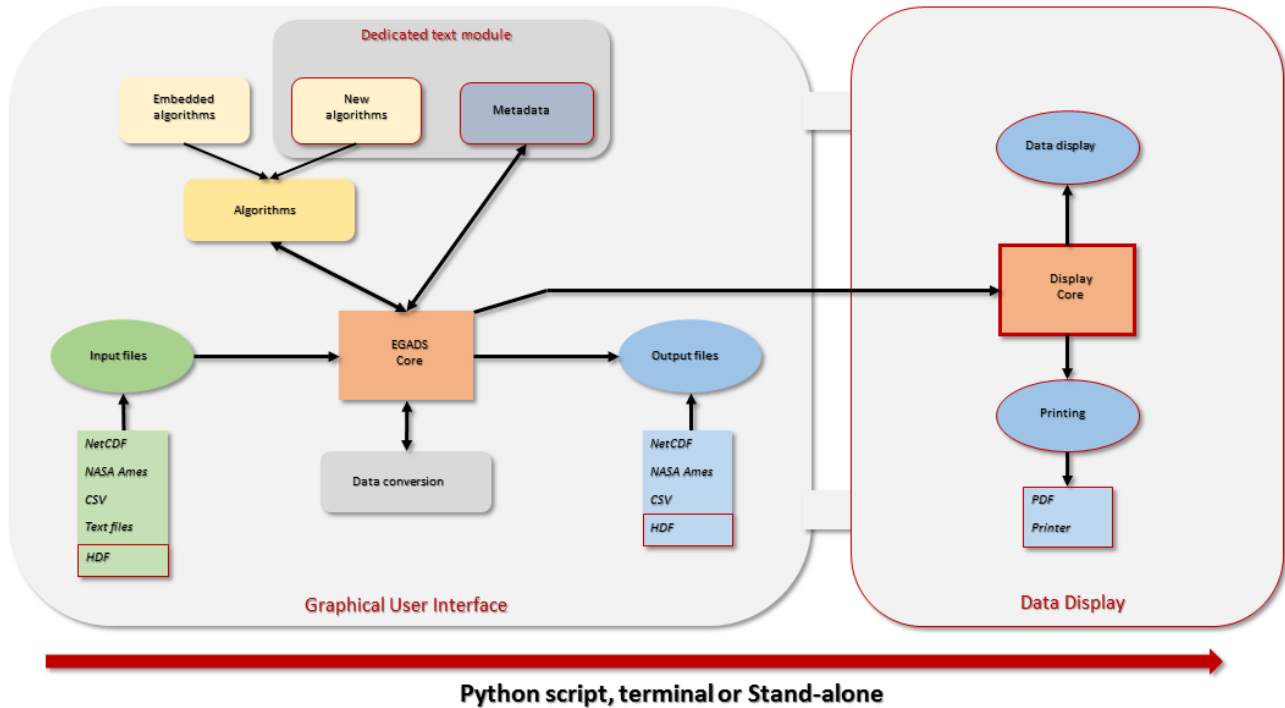


N7SP: Workflow of a survey realisation within EUFAR including the related tools and protocols



N7SP: Data Life Cycle

Future EGADS, GUI and API



N7SP: Future EGADS, GUI and API

N7SP: Snapshots of N7SP related webpages and toolboxes, EUFAR glossary and recommendations on best practice for data pre-processing and data analysis available on the EUFAR website

GOOD PRACTICES

EUFAR > Good Practices

Contents

Good Practices

- Campaign Planning
- Data Acquisition / Measurements
- Data Format
- Data Processing and Quality Measures
 - Data Pre-Processing of Imaging Spectrometer Data
 - Data Pre-Processing of LiDAR Data
 - Data Pre-Processing of Radar Data
 - Data Pre-Processing of In-Situ Data
 - Quality Measures
- Metadata Standards
- Cal/Val
- Field Campaign / Ground-based measurements
- Real-time Data Applications
- Data Analysis

Tools

Protocols

Guidelines

Standards

DATA FORMAT

EUFAR > GOOD PRACTICES > Data Format

Contents

Good Practices

- Campaign Planning
- Data Acquisition / Measurements
- Data Format
- Data Processing and Quality Measures
 - Data Pre-Processing of Imaging Spectrometer Data
 - Data Pre-Processing of LiDAR Data
 - Data Pre-Processing of Radar Data
 - Data Pre-Processing of In-Situ Data
 - Quality Measures
- Metadata Standards
- Cal/Val
- Field Campaign / Ground-based measurements
- Real-time Data Applications
- Data Analysis

Tools

- NetCDF format checker
- NASA-Ames format checker

Protocols

Guidelines

- Centre for Environmental Data Analysis (CEDA) File Formats

The documentation covers the main formats within the CEDA archives with links to tools supporting it

Standards

- ASPRS: LAS Specification (LASer (LAS) File Format Specification)

The LAS file is intended to contain LiDAR (or other) point cloud data records. The data will general hardware vendors) which combines GPS, IMU, and laser pulse range data to produce X, Y, and Z pc format that allows different LiDAR hardware and software tools to output data in a common format.

- NetCDF Climate and Forecast (CF) Metadata Conventions, Version 1.7.2 DRAFT, 28 March, 2014

This document describes the CF conventions for climate and forecast metadata designed to promote Application Programmer Interface.

See also: OGC 11-168/2 CF-netCDF Data Model Extension standard

- INSPIRE: Data Specifications

General rules by the EC concerning the interoperability of spatial data sets and services.

- Standards and Practices approved for use in NASA Earth Science Data Systems

Data format standards:

- HDF 5
- HDF EOS 5
- NetCDF Classic
- NetCDF-4/HDF5 File Format
- OGC KML
- International Consortium for Atmospheric Research on Transport and Transformation (ICARTT) F

HYPERSPECTRAL IMAGERY

EUFAR > FREE TOOLBOXES > Hyperspectral Imagery

Contents

Free Toolboxes

- Hyperspectral Imagery
- LiDAR
- Radar
- Remote Sensing Analysis in General
- GIS
- Field Spectroscopy
- Further Useful Tools
- Other Collection of Software Tools

ENMAP-BOX

Publisher: Humboldt-Universität zu Berlin
Platform: Platform-independent
Software / Code: IDL
Requirements: IDL 8.4 runtime environment

Features:

- easy-to-use GUI, with drop-down menus, expandable tree-based file explorer and drag-and-drop capabilities
- visualization and processing of hyperspectral image data and field/laboratory spectra
- import and export from and to different data formats
- in-built applications aimed at the processing of hyperspectral data, such as Support Vector Machines and Random Forests for classification or regression analysis of image data
- externally developed applications for EnMAP data processing, e.g. Partial Least Squares Regression or the calculation of different agricultural indices

See Applications for an overview of all applications.

- a rich application programming interface (hubAPI) that allows to develop new EnMAP-Box applications easily

Webpage: <http://www.enmap.org/?q=enmapbox>

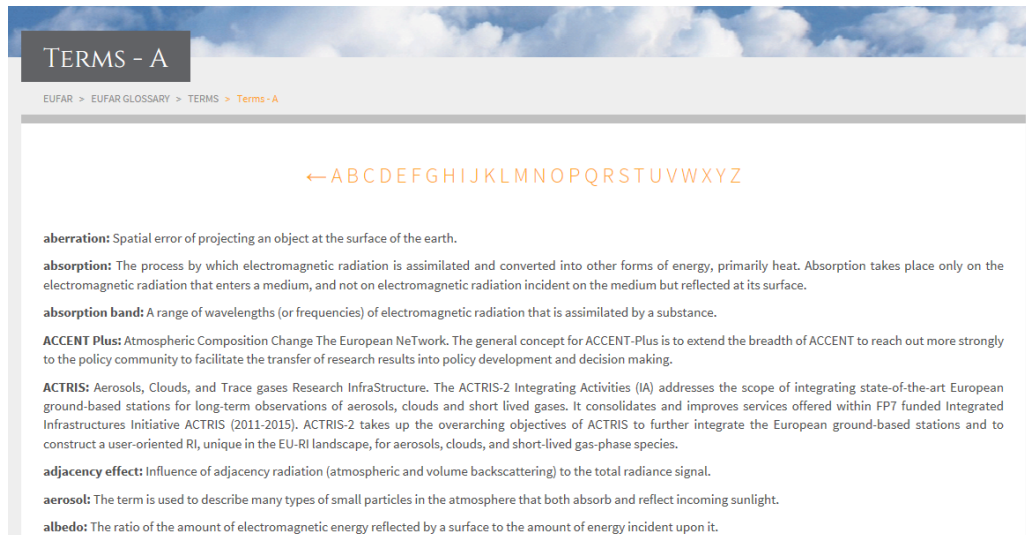
FREE TOOLBOXES

EUFAR > Free Toolboxes

Contents

Free Toolboxes

- Hyperspectral Imagery
- LiDAR
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- Remote Sensing Analysis in General
- GIS
- Field Spectroscopy
- Further Useful Tools
- Other Collection of Software Tools



N7SP: Screenshot of the EUFAR Glossary on the website



N7SP: Screenshot of EUFAR Metadata Creator (EMC) on the website



EUROPEAN FACILITY FOR AIRBORNE RESEARCH

AIRBORNE SCIENCE MISSION METADATA

AIRBORNE SCIENCE MISSION METADATA > Flight and Contact Information

Flight Information

Project acronym *

Date * 2018-03-27

Flight identifier *

Mission scientist *

Flight manager *

Operator *

Platform/Aircraft *

Location *

Contact Information

Name *

Role *

Email *

N7SP: Screen shot of Airborne Science Mission Metadata (ASMM) tool on the website

Data Processing

<p>EGADS - CORE</p> <p>EUFR General Airborne Data-processing Software - CORE</p> <p>Ready to use</p> <p>Product: EUFR</p> <p>The EUFR General Airborne Data-processing Software is a toolbox for processing airborne atmospheric data.</p>	<p>EGADS - GUI</p> <p>EUFR General Airborne Data-processing Software - GUI</p> <p>Under development</p> <p>Product: EUFR</p> <p>The EGADS GUI is a graphical interface to interact easily with EGADS and other modules without the need of a Python script.</p>	<p>HYLIGHT</p> <p>HYLIGHT</p> <p>Ready to use</p> <p>Product: EUFR</p> <p>The main objective of the HYLIGHT joint research activity is to improve hyperspectral imaging processing using airborne laser scanning.</p>	<p>HYSONIA</p> <p>Hyperspectral Soil Mapper</p> <p>Ready to use</p> <p>Product: EUFR</p> <p>The HYSONIA is a software for soil mapping applications of hyperspectral imagery developed by GFZ German Research Center for Geosciences.</p>
<p>PML IOP Model</p> <p>PML</p> <p>Inherent Optical Property Model</p> <p>Ready to use</p> <p>Product: EUFR</p> <p>The IOP model was provided in EGADS toolbox and is now available as a standalone.</p>	<p>ARTMO</p> <p>Automated Radiative Transfer Models Operator</p> <p>Ready to use</p> <p>Product: Other</p> <p>The ARTMO GUI provides essential tools for running and inverting a suite of plant RTMs.</p>	<p>EnMAP-BOX</p> <p>EnMAP-BOX</p> <p>Ready to use</p> <p>Product: Other</p> <p>The EnMAP-Box is a free software designed to process hyperspectral remote sensing data and EnMAP sensor data.</p>	<p>GMT</p> <p>THE GENERIC MAPPING TOOLS</p> <p>Ready to use</p> <p>Product: Other</p> <p>GMT is an open source collection of about 80 command-line tools for manipulating geographic and Cartesian data sets.</p>
<p>HIHAT</p> <p>HIHAT</p> <p>Ready to use</p> <p>Product: Other</p> <p>HIHAT is an intelligent assistant to help analysts efficiently browse, summarize, and search hyperspectral images.</p>	<p>HSDAR</p> <p>hyperspectral data analysis in R</p> <p>Ready to use</p> <p>Product: Other</p> <p>The HSDAR package contains classes and functions to manage, analyse and simulate hyperspectral data.</p>	<p>HYPERCUBE</p> <p>HYPERCUBE</p> <p>Ready to use</p> <p>Product: Other</p> <p>HyperCube is a program created by ERDC's Geospatial Research Laboratory (GRL) that analyzes and displays multi- and hyperspectral imagery.</p>	<p>HyperfixTool</p> <p>HyperfixTool</p> <p>Ready to use</p> <p>Product: Other</p> <p>Hyperfix is a free open source tool, including several popular algorithms, dedicated to remote sensed hyperspectral image unmixing.</p>
<p>HyperSpy</p> <p>HyperSpy</p> <p>Ready to use</p> <p>Product: Other</p> <p>HyperSpy is an open source Python library which provides tools to facilitate the interactive data analysis of multi-dimensional datasets.</p>	<p>LAStools</p> <p>LAStools</p> <p>Ready to use</p> <p>Product: Other</p> <p>LAStools is a collection of highly efficient, batch-scriptable, multithreaded command line tools to classify, tile, convert, filter, raster ...</p>	<p>MultiSpec</p> <p>MultiSpec</p> <p>Ready to use</p> <p>Product: Other</p> <p>MultiSpec is a processing system for interactively analyzing Earth observational multispectral image data, such as that produced by Landsat.</p>	<p>NPLUnc_10x</p> <p>NPLUnc_10x</p> <p>Ready to use</p> <p>Product: Other</p> <p>NPLUnc_10x and NPLUnc_10x are software to promote and support the use of the Guide to the expression of uncertainty in measurement (GUM).</p>

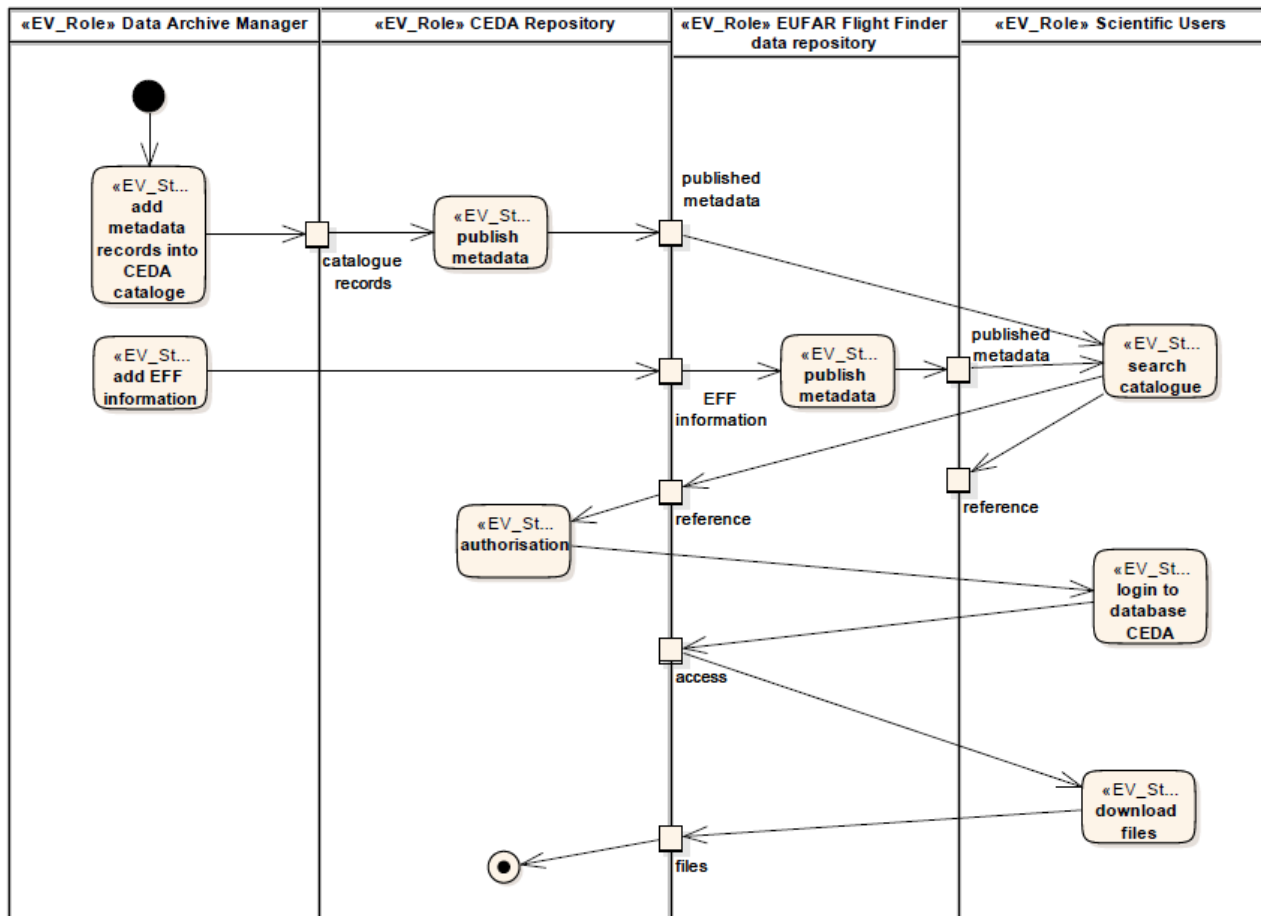
N7SP: Screenshot of data processing tools and toolboxes on the website

Testimonials

“Overall it [ENVRI RM] will provide a clearer picture and a better understanding both internally and externally.” Dan Lear, DASSH

ENVRI RM makes interaction a lot easier by offering a common language and a common understanding about how a Research Infrastructure works.” Stefanie Holzwarth, EUFAR

N7SP: Extract from the “ENVRI Reference Model News”



N7SP: Activity Diagram of EUFAR process “Data Discovery and Access”

3.5.8 Tutorial

Here is a NetCDF file, created by EGADS, and viewed by the command `ncdump -h ...`:

```
>>> ncdump -h main_netcdf_file.nc
netcdf main_netcdf_file {
  dimensions:
    time = 5 ;
  variables:
    double time(time) ;
    timeunits = "seconds since 19700101T00:00:00" ;
    timelong_name = "time" ;
    double sea_level(time) ;
    sea_level::_FillValue = -9999. ;
    sea_level:category = "TEST" ;
    sea_level:scale_factor = 1. ;
    sea_level:add_offset = 0. ;
    sea_level:long_name = "sea level" ;
    sea_level:units = "mm" ;
    double corrected_sea_level(time) ;
    corrected_sea_level::_FillValue = -9999. ;
    corrected_sea_level:units = "mm" ;
    corrected_sea_level:add_offset = 0. ;
    corrected_sea_level:scale_factor = 1. ;
    corrected_sea_level:long_name = "corr sea level" ;

  // global attributes:
  :Conventions = "CF-1.0" ;
  :history = "the netcdf file has been created by EGADS" ;
  :comments = "no comments on the netcdf file" ;
  :institution = "My institution" ;
}
```

This file has been created with the following commands:

- import EGADS module:

```
>>> import egads
```

- create two main variables, following the official EGADS convention:

```
>>> data1 = egads.EgadsData(value=[5.0,2.0,-2.0,0.5,4.0], units="mm", name=
--'sea level', scale_factor=1., add_offset=0., _FillValue=-9999)
>>> data2 = egads.EgadsData(value=[1.0,3.0,-1.0,2.5,6.0], units="mm", name=
--'corr sea level', scale_factor=1., add_offset=0., _FillValue=-9999)
```

- create an independent variable, still by following the official EGADS convention:

```
>>> time = egads.EgadsData(value=[1.0,2.0,3.0,4.0,5.0], units="seconds since,
--19700101T00:00:00", name="time")
```

- create a new EgadsNetCdf instance with a file name:

```
>>> f = egads.input.EgadsNetCdf('main_netcdf_file.nc', 'w')
```

- add the global attributes to the NetCDF file:

```
>>> f.add_attribute('Conventions', 'CF-1.0')
>>> f.add_attribute('history', 'the netcdf file has been created by EGADS')
>>> f.add_attribute('comments', 'no comments on the netcdf file')
>>> f.add_attribute('institution', 'My institution')
```

- add the dimension(s) of your variable(s), here it is time:

```
>>> f.add_dim('time', len(time))
```

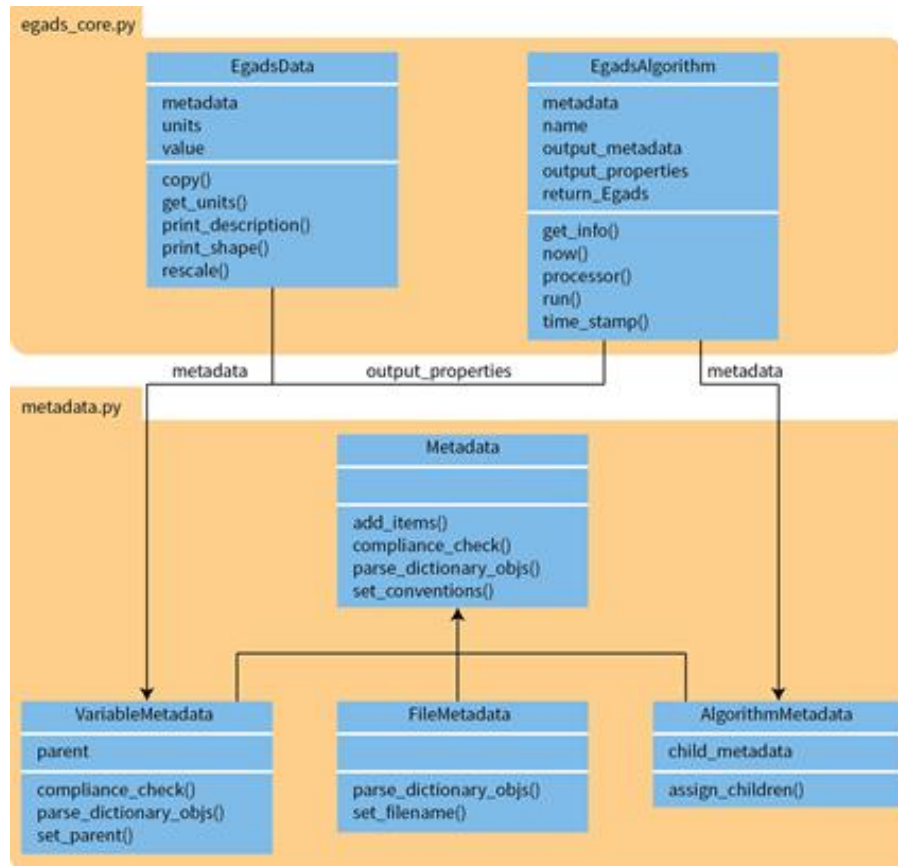
- write the variable(s), it is a good practice to write at the first place the independent variable time:

```
>>> f.write_variable(time, 'time', ('time',), 'double')
>>> f.write_variable(data1, 'sea_level', ('time',), 'double')
>>> f.write_variable(data2, 'corrected_sea_level', ('time',), 'double')
```

- and do not forget to close the file:

```
>>> f.close()
```

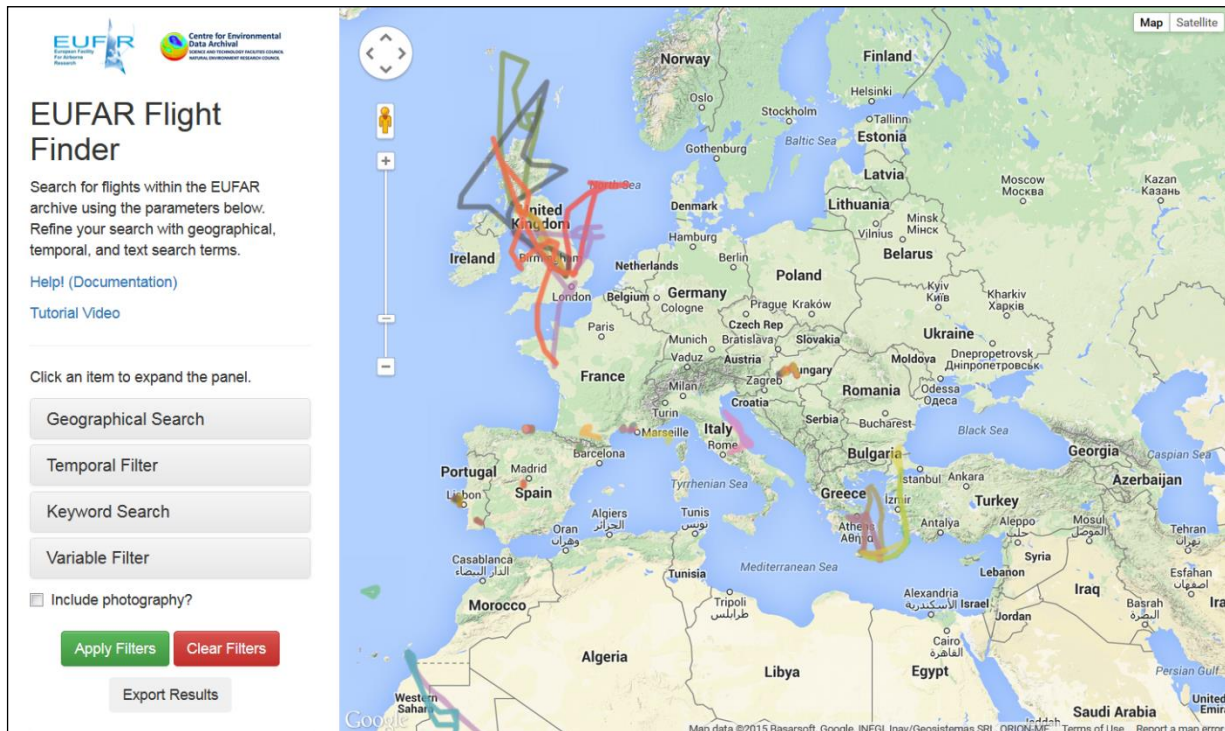
N7SP: Example of a tutorial included in the EGADS documentation



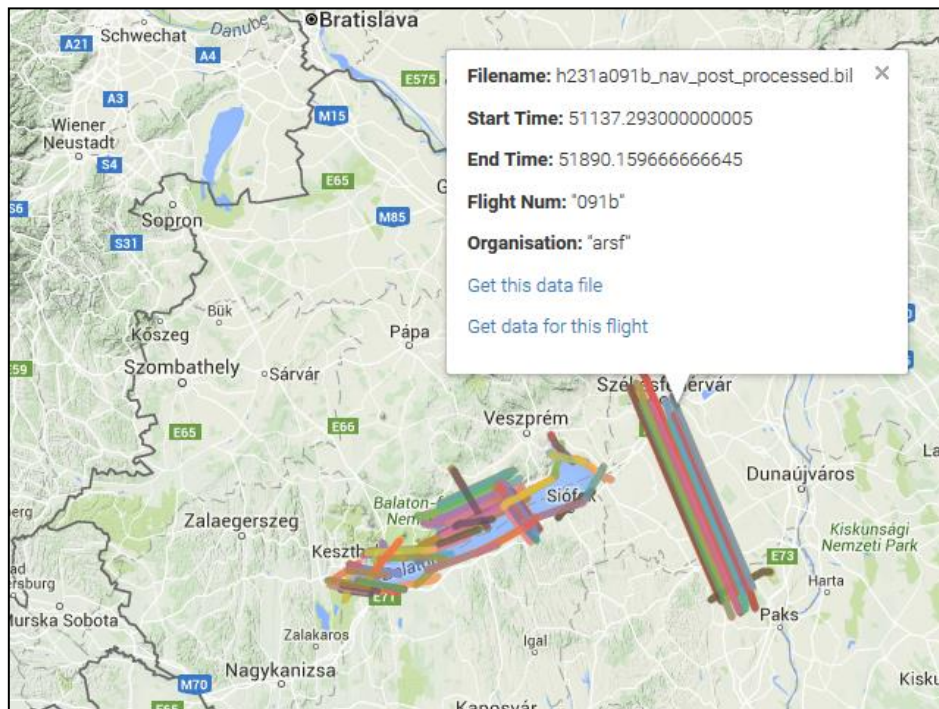
N7SP: UML representation of EGADS core and metadata classes

N8DB: Data Base

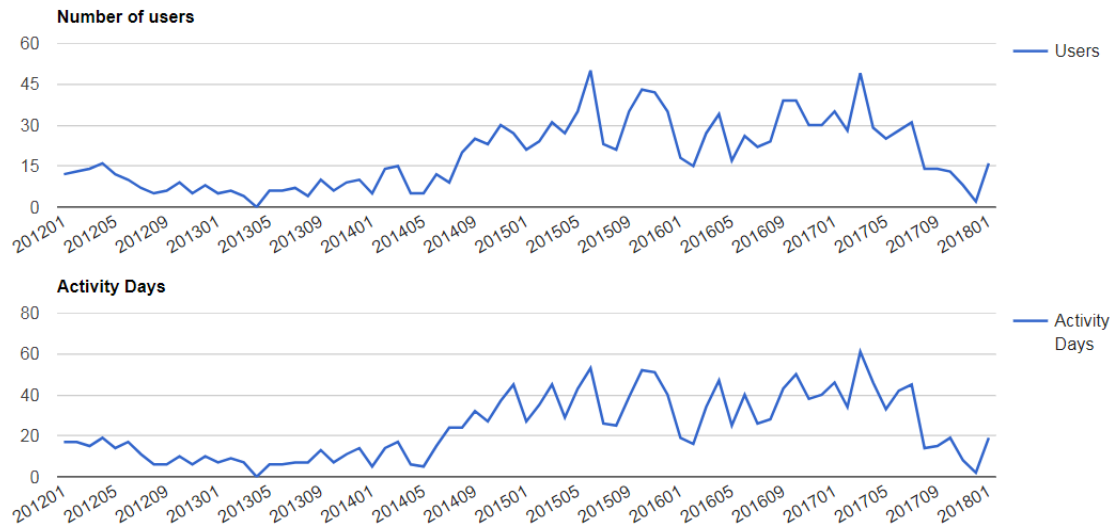
N8DB: EUFAR Flight Finder - <http://flight-finder.ceda.ac.uk/>



N8DB: Screen shot EUFAR Flight Finder



N8DB: Example of flight details and link to the data associated, on the EUFAR Flight Finder



N8DB: Download statistics including number of users and activity days (equivalent to download sessions) per month from January 2012 to March 2018. An increase in usage has been observed since the launch of the EFF.



N8DB: EUFR Data and Standard & Protocols Team Meeting with IAGOS representative, Météo-France, Toulouse, June 2016

EU-FAR TOOLS & SOFTWARE

The EU-FAR Flight Finder (EFF)

The EFF is a geospatial-temporal search interface to locate flight data within the EU-FAR data archive at BADC and can be found at <http://flight-finder.ceda.ac.uk/>. Flights from FAAM, NERC-ARSF and SAFIRE aircraft are currently included - more will be added shortly.

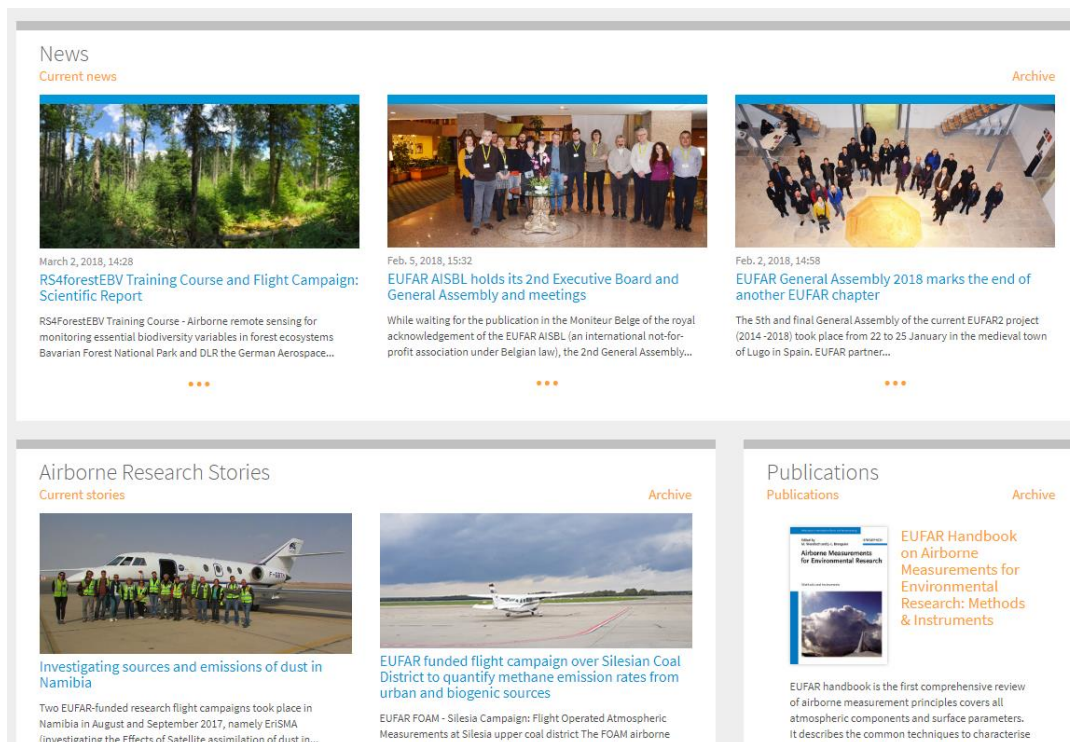
All comments and feedback are welcome, by emailing: support@ceda.ac.uk.

N8DB: Permanent featured article on EFF in newsletter

N9EC: E-Communication



N9EC: Screenshot of EUFAR website homepage



N9EC: Screenshot of EUFAR website homepage: news section

[EUFAR](#) > [EUFAR Achievements](#)

24 EUFAR2 PARTNERS

originating from 11 countries:
9 EU member states &
2 associated states (Switzerland & Israel)

(O) - aircraft operator providing transitional access to aircraft and/or instruments under the framework of EUFAR2

Map labels (O) include: IcelOffshore, NERIC, UEDIN, UNIALEEDS, STIC, UAW, PML, VITO, DLR, AWA, Enviscope, FBR, KIT, JULE3, CVC2, TU Wernau, UZH, CNR, MI-CNRM, CNRS, ONERA, INTA, TALU.

- Significant progress towards constitution of legal sustainable entity for EUFAR. The legal form to be established is an International non-profit Association under Belgian law (AISBL), so far 12 partners are on board and its final constitution is expected in 2017;
- Improved links with other EU Research Infrastructures (IAGOS, ACTRIS, ENVRIplus) & US research aircraft community on topics of interest.

- Development of Algorithm Theoretical Basis Document (ATBD) and Detailed Processing Model (DPM) for improved HSI processing using ALS and improved ALS processing using HSI;
- 12 out of an expected 14 trials have been prototyped, tested and developed by the HVI/IQ/T working

[EUFAR](#) > [EUFAR Presentation](#)

Chemistry payload intercalibration day in Cranfield for the FAAM, ARSF Dornier-228 and MOCCA Cessna 421 research aircrafts. July 2014. Photo credit: FAAM

- ↑ RP 2 -Reporting Period August 2104 - January 2017
- ↑ RP3 - Reporting Period February 2017 - January 2018
- ↑ Q13-14 report
- ↑ Q15 report
- ▲ OVH Data centre accident - 2017-11-09 OVH - SBG: An electrical problems,
RBX: An optical network problems, interconnection between HUBs interrupted
- ▲ Implementation CA on Dev server - (SSL technology implementation)
- ▲ Implementation CA on Prod server - (SSL technology implementation)
- ▲ UW IT infrastructure reorgansation - 2017-08-26 - 2017-08-27
- ▲ UW FUW IT infrastructure reorgansation - 2017 November and December
- EUFAR General Assambly February 2017 - Warszawa, Pland
- EUFAR General Assambly January 2018 - Lugo, Spain

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N9EC: Example of E-communication timetable - reporting period February 2017 - January 2018

RESEARCH PROJECT: MASOMED

AIRCRAFT & INSTRUMENTS > RESEARCH PROJECTS > Research project: MASOMED



General information

Project acronym	MASOMED	
Project title	MApping SOil variability within rainfed MEDiterranean agroecosystems using hyperspectral data	
Project type	Scientific project	
TA status	Yes	
TC status	No	
Project leader	CHABRILLAT Sabine	
Aircraft currently selected	CASA 212 RS - INTA	Operator INTA
Instrument currently selected	INTA Airborne Hyperspectral Scanner	Operator INTA
Workflow status	Confirmed	
Publications status	No publications	
Report status	Report saved	

Application preview

Application details

Documents (3)

Comments (8)

Action board

Edit application

View report

Edit report

Change status

Tutoring by EUFAR experts

Search for a EUFAR expert

Contact a EUFAR expert

Aircraft

Remove aircraft from the application form

Select aircraft and contact operator

N9EC: Edit report option – Research project page

EDIT REPORT

General information

Project acronym	MASOMED	
Project title	MApping SOil variability within rainfed MEDiterranean agroecosystems using hyperspectral data	
Project type	Scientific project	
TA status	Yes	
TC status	No	
Project leader	CHABRILLAT Sabine	
Aircraft currently selected	CASA 212 RS - INTA	Operator INTA
Instrument currently selected	INTA Airborne Hyperspectral Scanner	Operator INTA
Workflow status	Confirmed	
Publications status	No publications	
Report status	Report saved	

Campaign dates

From*	To*
2017-05-03	2017-05-19

Participants

Name	First time using this aircraft*	Participation in the campaign*	Number of visits to campaign*	Duration of stay (days)*	T&S reimbursed*	Additional information
BEN DOR Eyal	Yes ▼	Remotely ▼	0	0	No ▼	0
CHABRILLAT Sabine	Yes ▼	On-site ▼	1	5	Yes ▼	1
EISELE Andreas	Yes ▼	Remotely ▼	0	0	No ▼	0
ESCRIBANO Paula	Yes ▼	On-site ▼	1	2	Yes ▼	1
GARCIA Monica	Yes ▼	Remotely ▼	0	0	No ▼	0
GUILLASO Stéphane	Yes ▼	Remotely ▼	0	0	No ▼	0
MILEWSKI Robert	Yes ▼	On-site ▼	1	5	Yes ▼	1

N9EC: Edit report option – Edit report form

MANAGE MESSAGE - COMMENTS

ACTIVITIES > MANAGE MESSAGES > JRA - Expression of Interest - manage message comments

Sender details

Username: ChristianeVoigt	Name: VOIGT Christiane	Email: christiane.voigt@dlr.de	Institution name: Public Research Organisation	Country of institution: Germany
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Message details

Message #: 28
Submission: Oct. 2, 2017, 10:30
Topic: JRA - Expression of Interest
Subject: ARISE - Airborne Cloud Instrumentation Software Development
Status: Reviewed
Clause:
 None

Message content:
 We want to submit an Expressions of Interest (Eoi) for a EUFAR future Joint Research Activity (JRA) on cloud instrument and software development with the title ARISE – Airborne Cloud Instrumentation Software Development (Towards the integration of analysis software of airborne in-situ cloud instruments into a common tool for cloud data processing). The JRA will advance airborne observations of clouds by developing and evaluating cloud probe analysis methods and software algorithms in an effort to move towards common use of cloud probe software by the international cloud research community.

Attached file:
[files/EUFAR_JRA_2017_ARISE.pdf](#)

Comment history
Comment form
Action board

Role:

Name: BROWN Phil
Submission: Oct. 2, 2017, 14:11
Role: Reviewer
Comment:
Dear Colleague,

Many thanks for submitting your Expression of Interest in a EUFAR Joint Research Activity. You will probably have received an automatic message from the EUFAR website to indicate that the status of your Eoi has been changed to "reviewed" and I would like to clarify what this means.

It does not indicate any type of formal scientific review. Rather, it simply means that your submission has been read and will be discussed at forthcoming EUFAR meetings. We will be looking for two types of activity: those which may form part of a future EUFAR funding proposal under Horizon2020 and those which may form part of the activity plan of EUFAR AISBL (<http://www.eufar.net/weblog/2017/08/31/eufar-forms-aisbl/>).

Following these discussion, we will aim to update you all and may request further information as we decide how to proceed.

Best regards.
Phil
Philip R.A. Brown, EUFAR Scientific and Transnational Access Coordinator

N9EC: Manage message- comments

EUFAR Back Office

Tuesday, 27th March 2018

14:33

Home

Aircraft

Applications

Bulletin

CMS

Configuration

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Events

Registration for event

FAQ

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Planning Of The Fleet

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Affiliations

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+ Add

Aircraft

Aircraft

Change

+ Add

Aircraft categories

Change

+ Add

Aircraft sizes

Change

+ Add

Comments

Comments

Change

+ Add

Configuration

Airborne research stories

Change

EUFAR Presentation

Change

Education and training

Change

Expert working groups list

Change

Menu configuration

Change

Overall coordination

Change

Proposal Calls

Change

Research

Change

Static pages

Change

TA Documents

Change

Tools

Change

Transnational and open access

Change

Welcome to EUFAR

Change

Contact_Messages

Comments

Change

+ Add

Request messages

Change

+ Add

Topics

Change

+ Add

Contact_Website_Issues

Comments

Change

+ Add

Issue messages

Change

+ Add

Data_Archive

Last Actions

Changed entry [Trainees' test](#)

Changed training course appl

Changed training course appl

Changed training course appl

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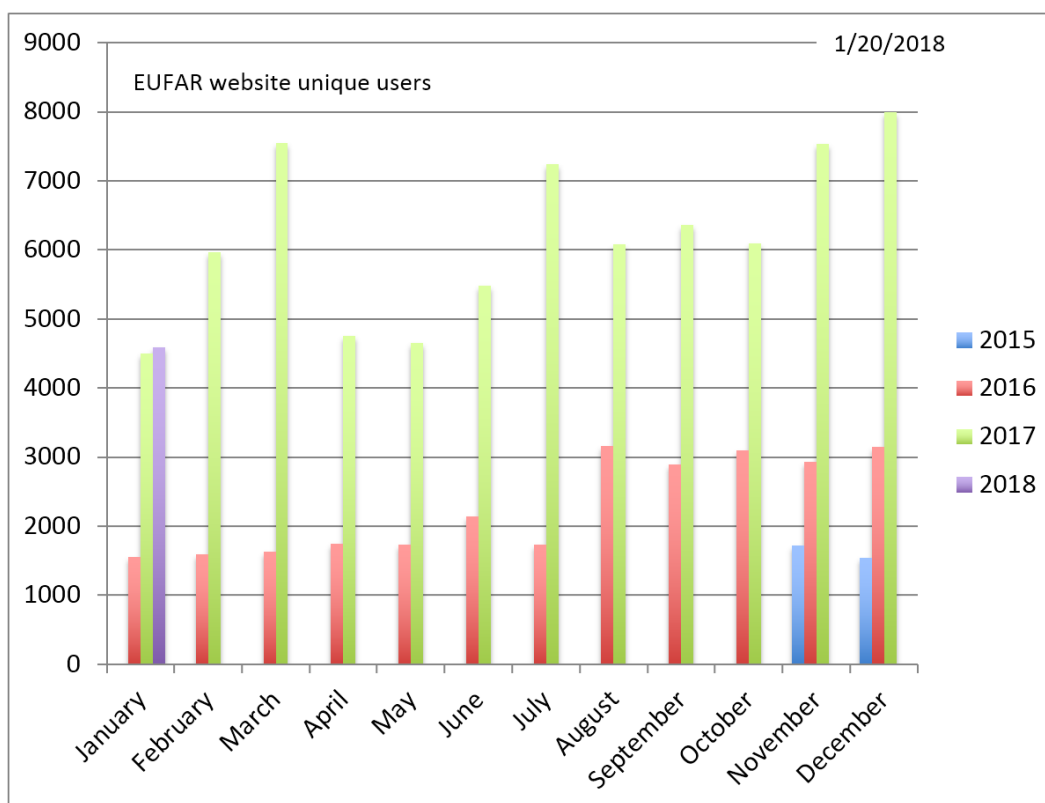
Changed training course appl

N9EC: Screenshot of EUFAR website Back Office

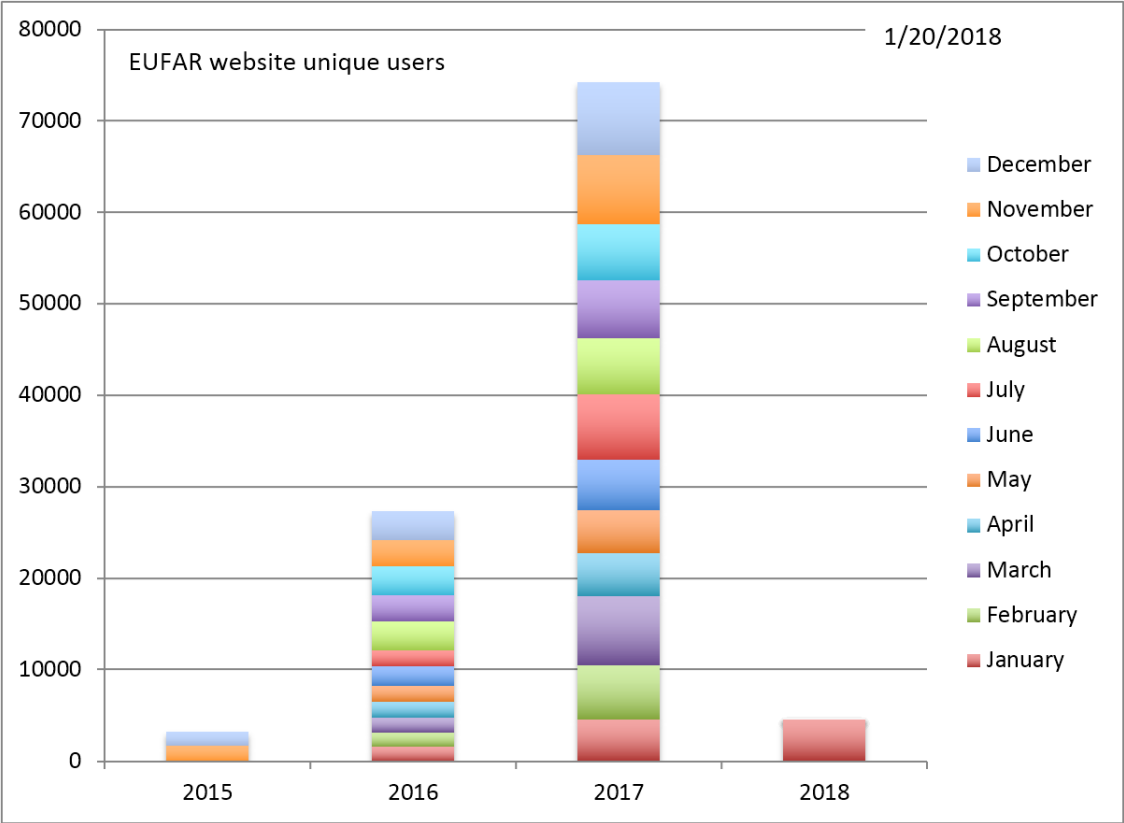
EUFAR website unique users table 1/20/2018

Month	2015	2016	2017	2018	Sum
January	0	1,549	4,506	4,594	10,649
February	0	1,591	5,967	0	7,558
March	0	1,625	7,551	0	9,176
April	0	1,747	4,755	0	6,502
May	0	1,727	4,652	0	6,379
June	0	2,145	5,487	0	7,632
July	0	1,739	7,240	0	8,979
August	0	3,163	6,080	0	9,243
September	0	2,897	6,360	0	9,257
October	0	3,093	6,093	0	9,186
November	1719	2,930	7,542	0	12,191
December	1543	3,154	7,991	0	12,688
Sum	3,262.00	27,360	74,224	4,594	109,440

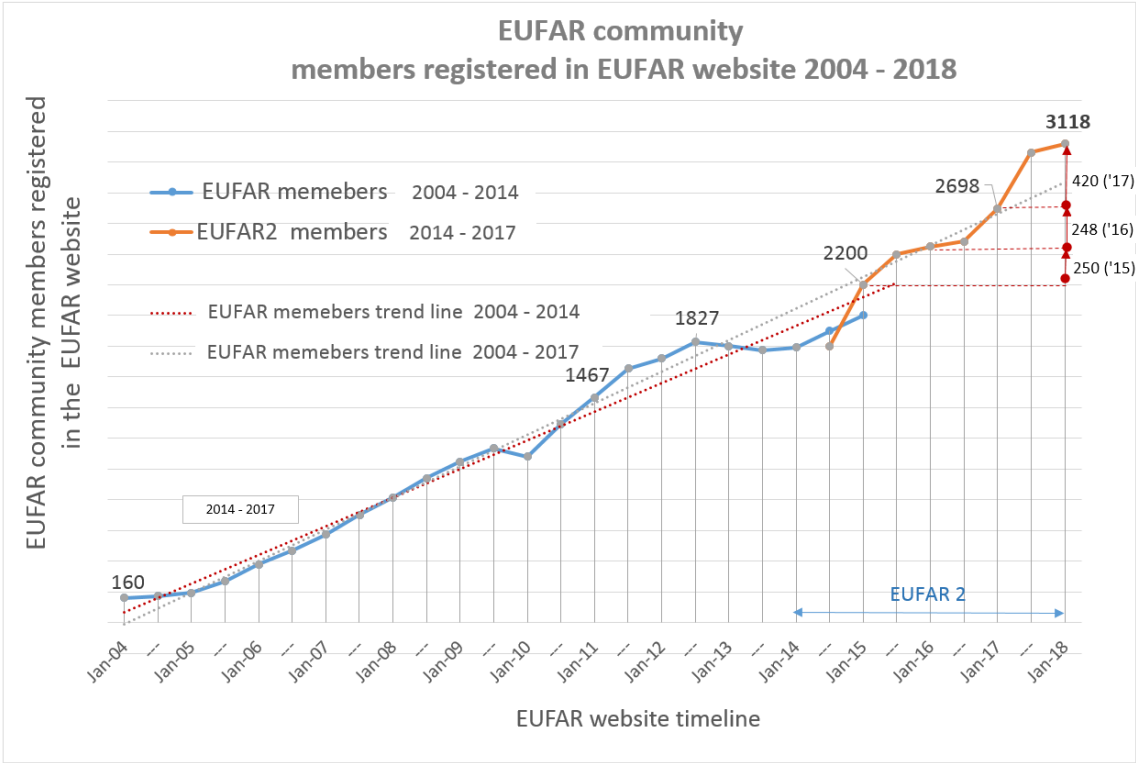
N9EC: EUFAR website unique users table



N9EC: EUFAR website unique users monthly



N9EC: EUFAR website unique users yearly



N9EC: EUFAR community members registered in the EUFAR website 2004-2018

JRA1-HYLIGHT

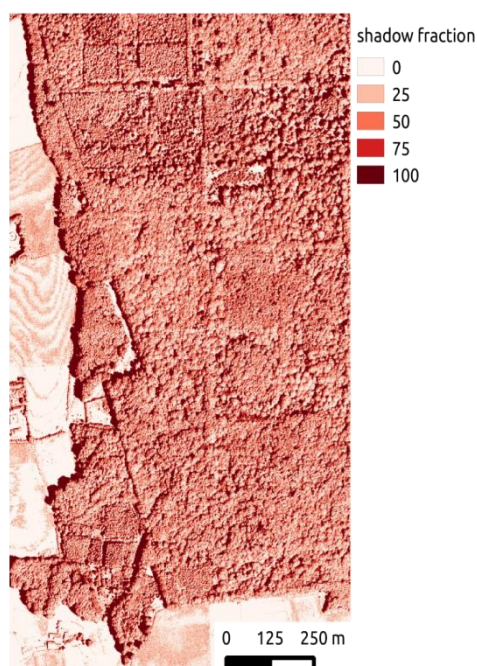
DEVELOPMENT OF HYLIGHT TOOLS

EUFAR > Development of HYLIGHT tools

Under the **Joint Research Activity - HYLIGHT** dedicated to the integration of airborne hyperspectral imagery and laser scanning data to improve image processing and interpretation, the following tools were developed by the HYLIGHT working group. Tools can be downloaded by clicking on the name of the tool and after registration as a EUFAR member.

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 improvement (1)	TU Vienna	HYLIGHT tool: opelsRadioCal Purpose: Use Full Waveform information to compute reflectance for laser scanning points of extended targets
ALS/HSI comparison toward calibration improvement (2)	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 tools: BiomassMapper tool Purpose: Estimate tree biomass
ALS to improve HSI		
Advanced slope and aspect data for HSI processing using ALS	IINTA	HYLIGHT tool: SLP_ASP_calculator Purpose: Improving the calculation of slope and aspect maps using ALS data and actual characteristics of HSI imagery
DSM for improved geometric correction	VITO	HYLIGHT tool: DSM creator Purpose: Create DSM from ALS data
3D atmospheric correction (1)	ONERA	HYLIGHT tool: ICARE-HS Purpose: Atmospheric correction of urban HSI images using ALS-derived DSM to account for 3D radiometric effects Please contact xavier.cesmenos@onera.fr if you are interested in downloading ICARE-HS. After filling out a license agreement, ICARE-HS will be sent to you free of charge.
3D atmospheric correction (2)	UZH	HYLIGHT tool: AtmoCorr3D (under development) 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
Generation of shadow fraction (1)	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 (2)	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
Tree classification	VITO	HYLIGHT tool: Tree species classification tool Purpose: Classify tree species using ALS-derived vegetation percentage height values (PHV) as additional layer


JRA1-HYLIGHT: Screenshot of featured HYLIGHT tools on EUFAR website



JRA1-HYLIGHT: Shadow fraction map (in percentage) per HSI APEX pixel based on ALS-derived DSM and sun geometry, Wijnendale forest (Belgium), credit shadow fraction map VITO, credit APEX and ALS data Belgian Science Policy



JRA1-HYLIGHT: Photo of HYLIGHT working group, with members from 9 EUFAR partners (TU Vienna, VITO, ONERA, TAU, PML, UZH, CzechGlobe, INTA and DLR), Prague, Czech Republic, April 2016



RESEARCH ACTIVITY HYLIGHT

INTEGRATION OF AIRBORNE HYPERSPECTRAL IMAGERY
AND LASER SCANNING DATA TO IMPROVE PROCESSING
AND INTERPRETATION

Airborne hyperspectral imaging (HSI) sensors provide the opportunity to generate imagery with more detailed information on the spectral properties (reflectance or spectral signature) of the Earth's surface far beyond the capabilities of broad-band multispectral sensors. Airborne Laser Scanning (ALS) sensors, providing height/structure information, are commonly used to produce digital surface models (DSMs) and digital terrain models (DTMs).

The objective of the EUFAR Joint Research Activity HYLIGHT is to combine the two different airborne remote sensing technologies (HSI and ALS) to improve the processing and analysis of both types of acquired data.

HYLIGHT TOOLS UNDER DEVELOPMENT:

>> Combined analyses of ALS and HSI


- PML** **ALS/HSI target matching tool** : matches near neighbours of ALS to HSI points and vice-versa
- TU Vienna** **opalsRadioCal** : uses Full Waveform information to compute reflectance for laser scanning points of extended targets, enhanced by atmospheric correction
- TAU** **LWIR radiance Planck fit and Temperature extraction** : Planck curve fitting with temperature extraction and ALS shadow modelling

>> HSI to improve ALS

- PML, ONERA** **ALS classification tool** : improves classification of ALS using the HSI classifications. If data are collected at the same time then also classifies cloud & haze
- Czech Globe** **BiomassMapper tool** : estimates tree biomass

>> ALS to improve HSI


- INTA** **SLP_ASP_calculator** : improves the calculation of slope and aspect maps using ALS data and actual characteristics of HSI imagery
- VITO** **DSM creator** : creates a DSM from ALS data
- ONERA** **ICARE-HS tool** : atmospheric correction of urban HSI images using ALS-derived 3D information
- UZH** **AtmoCorr3D** : shadow correction for HSI images using 3D canopy structure parameters derived from ALS and a radiative transfer model
- DLR** **LAVA - LAS Variability tool** : calculates error margins of the DSM/ DTM and DSM/ DTM related errors for atmospheric correction steps
- UZH** **Irradiance fraction tool** : estimates direct and diffuse irradiance fraction for each HSI pixel using a radiative transfer modelling approach
- VITO** **Shadow fraction tool** : shadow fraction with LAS processing and put in the same grid cell
- UZH** **PAI estimation tool** : estimates voxel based plant area index (PAI) for the parameterisation of the radiative transfer model DART
- VITO** **Tree species classification tool** : classifies tree species using ALS-derived vegetation percentage height values (PHV) as additional layer



Example of output of the PAI tool for the Loosdrecht test site (credits UZH)










Extraction of PAI allows the parameterisation of the DART model for the analysis of the 3D radiative budget to quantify the amount of irradiance for each HSI pixel to be used to compensate shadowed pixels



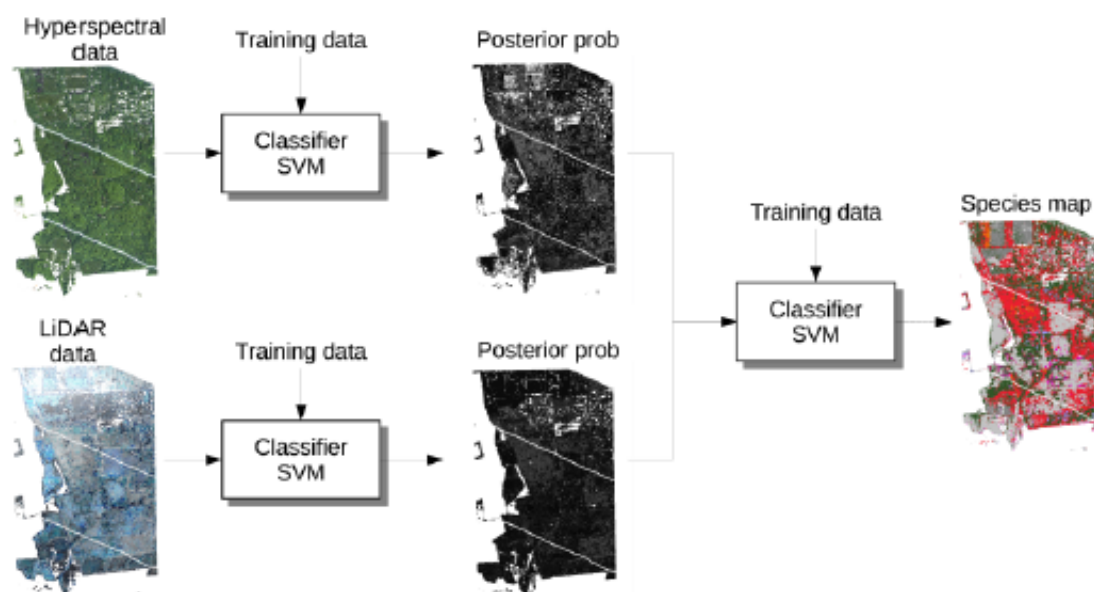
HYLIGHT working group photo

For more information, contact Itz.Reusen@vito.be or visit www.eufar.net/tools

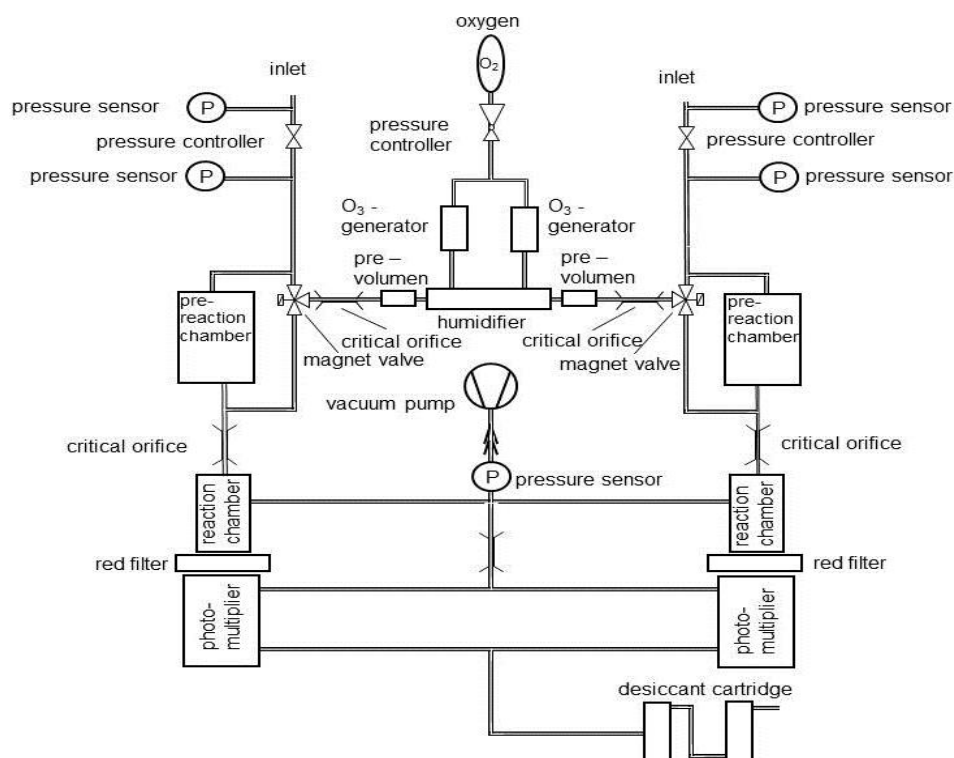



JRA1-HYLIGHT: HYLIGHT tools flyer circulated within the EUFAR community and beyond

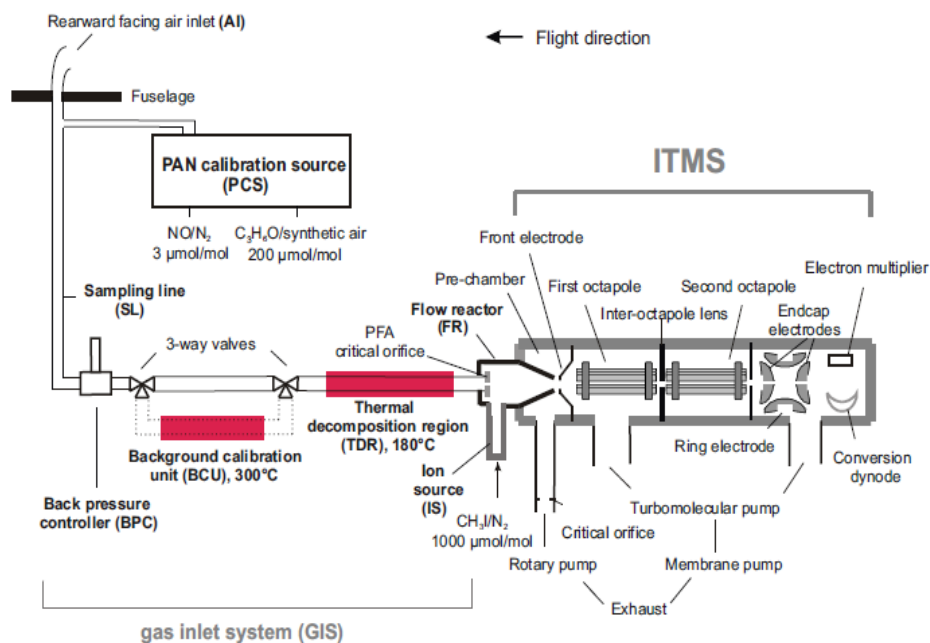


JRA1-HYLIGHT: Schematic overview of the decision fusion approach

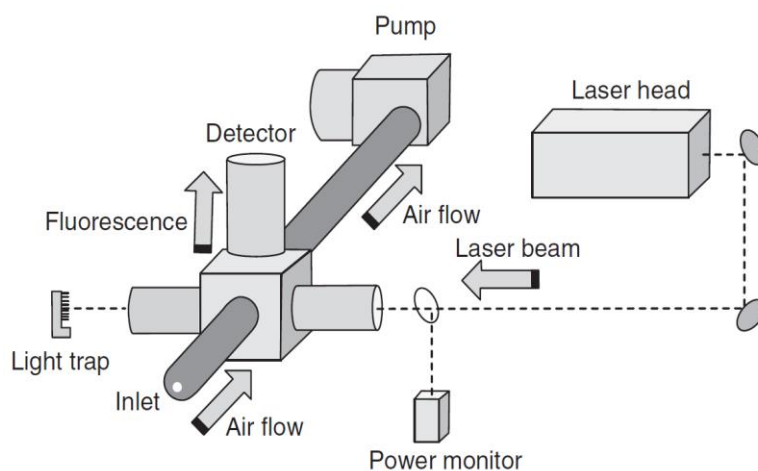
JRA2-TGOE



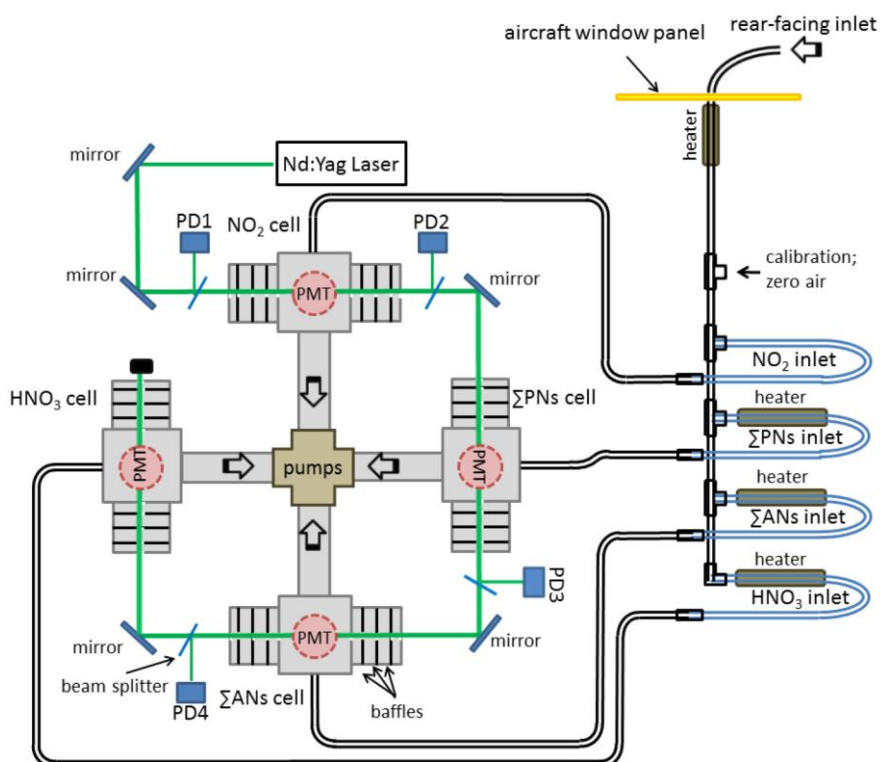
JRA2-TGOE: Schematic diagram of a two-channel CLD. The sample air is passed through the reaction chambers. Ozone is added to the sample flow either in the pre-reaction chamber or in the main reaction chamber, depending on in which mode the instrument is operated



JRA2-TGOE: Schematics of the set-up of the DLR Chemical Ionisation Ion Trap Mass Spectrometer. The main components are a gas inlet system (GIS), a PAN calibration source (PCS), a tubular flow reactor (FR), an ion source (IS) and an ion trap mass spectrometer (ITMS)



JRA2-TGOE: Schematic of the detection cell with its main parts of a LIF system, Wendisch and Brenguier, 2013



JRA2-TGOE: Optical layout of the TD-LIF, Di Carlo et al., 2013

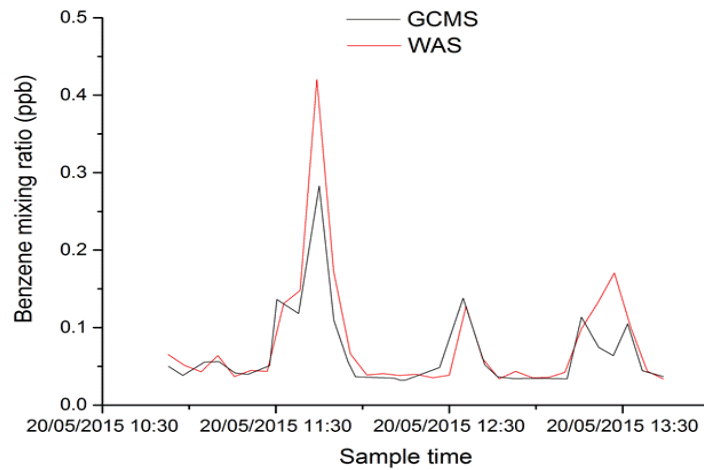
Aircraft acronym:	Type:	Operator:
FA20-DLR	Dassault Falcon 20	DLR, Germany
HALO	G550 Gulfstream	DLR, Germany
BAe146-FAAM	BAe146-301	FAAM, UK
Learjet-Enviroscope	Learjet 35A	GDF/Enviroscope, G
ATR42-SAFIRE	ATR42-320	SAFIRE, France
FA20-SAFIRE	Falcon 20	SAFIRE, France
Geophysica	M-55	MDB, Russia
IAGOS-CARIBIC	A340-600	Lufthansa, Germany
IAGOS-CORE	A340-300	Different Airlines

JRA2-TGOE: European Research aircraft with certified nitrogen oxide instruments

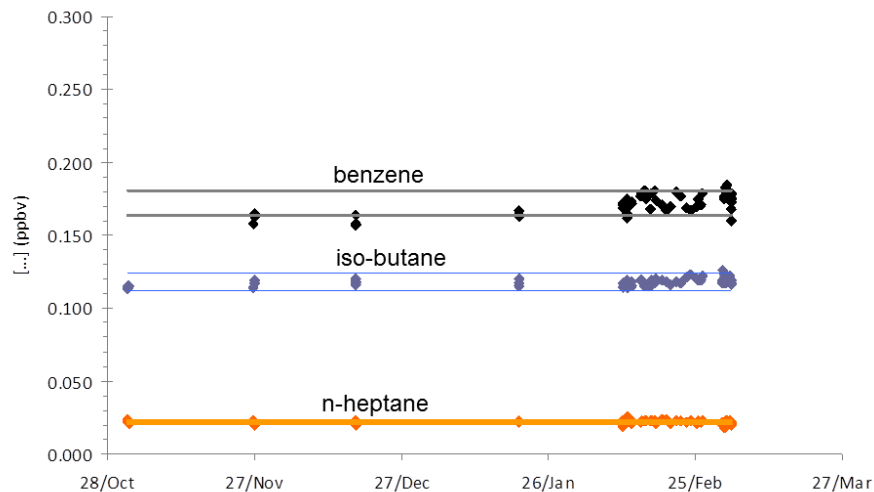
Species	Instrument	Aircraft	Reference (exemplary)
NO	CLD- SR ^a EcoPhysics (mod.)	FA20-DLR, HALO, Geophysica	<i>Schlager et al., 1997, Ziereis et al., 2000</i>
	CLD- SR EcoPhysics (mod.)	IAGOS-CARIBIC	<i>Stratmann, 2015</i>
	CLD- Teco 42c	ATR42 – SAFIRE, FA20 – SAFIRE	<i>Frenay et al., 2014</i>
	CLD- Air Quality Design Inc	BAe146 – FAAM	<i>Brough et al., 2003</i>
NO ₂	Photolytic conversion+CLD	FA20 – DLR, HALO, BAe146 – FAAM	<i>Schulte et al., 1997</i>
	TD-LIF ^b	BAe146 – FAAM	<i>Di Carlo et al., 2013</i>
	CAES ^c	Bae146-FAAM	<i>Kenedy et al. 2011.</i>
	LIF	HALO	<i>Harder et al.</i>
NO _y	Au-Converter+CLD ^d	FA20 – DLR	<i>Ziereis et al., 2000</i> <i>Stratmann, 2015</i>
	Au-Converter+CLD	IAGOS-CARIBIC, IAGOS-CORE	<i>Volz-Thomas et al., 2005</i>
HNO ₃ , HNO ₂	CI-ITMS ^e	FA20 – DLR, HALO, BAe146 – FAAM	<i>Huntrieser et al. 05, Jurkat et al., 2010</i>
HNO ₃	CIMS-QMS ^f	Learjet 35A	<i>Crowley et al.</i>
HNO ₃ , HNO ₂	CIMS-QMS	FA20 – DLR, HALO	<i>Arnold et al., 1992, Jurkat et al., 2014</i>
PAN	GC-ECD ^g	BAe146 – FAAM	<i>McQuaid et al.</i>
	CI-ITMS	FA20 – DLR	<i>Roiger et al., 2010</i>
	CIMS-QMS	Learjet 35A	<i>Crowley et al.</i>
NO ₃ , N ₂ O ₅	CRDS ^h	BAE146-FAAM	<i>Kennedy et al. 2011</i>
NO ₂	QCL ⁱ	Falcon20-DLR	<i>Catoire et al.</i>

^a Chemiluminescence Detector, ^b thermal dissociation laser-induced fluorescence, ^c Cavity-Enhanced Absorption Spectrometer, ^d catalytic reduction in a heated gold tube, ^e ion trap Chemical Ionization Mass Spectrometry, ^f Chemical Ionisation Quadrupole Mass Spectrometer, ^g gas chromatography with an electron capture detector, ^h Cavity-Ring-Down Spectrometer, ⁱ Dual Laser Quantum Cascade Laser Trace Gas Monitor

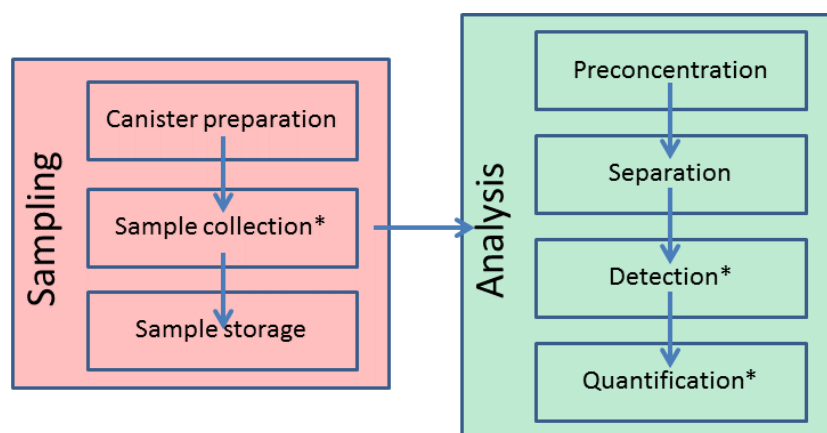
JRA2-TGOE: Overview of nitrogen oxides measurement techniques used on-board European aircraft



JRA2-TGOE: Comparison of GCMS and WAS-GCFID observations of benzene during a research flight in the North Sea in 2015



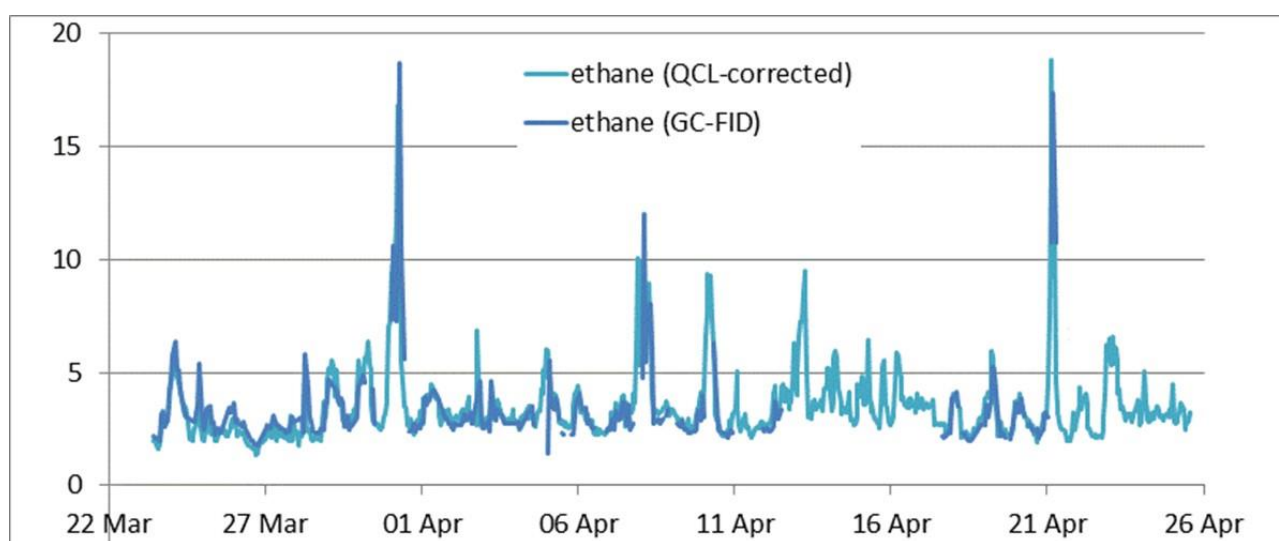
JRA2-TGOE: Analysis of the stability of selected VOC compounds at a range of mixing ratios in air within the working standard cylinder



*JRA2 – TGOE: Schematic representation of the processes involved in airborne observations of VOCs, each of which introduces uncertainty into the observations; * represents those processes common to all instrumentation regardless of methodology*



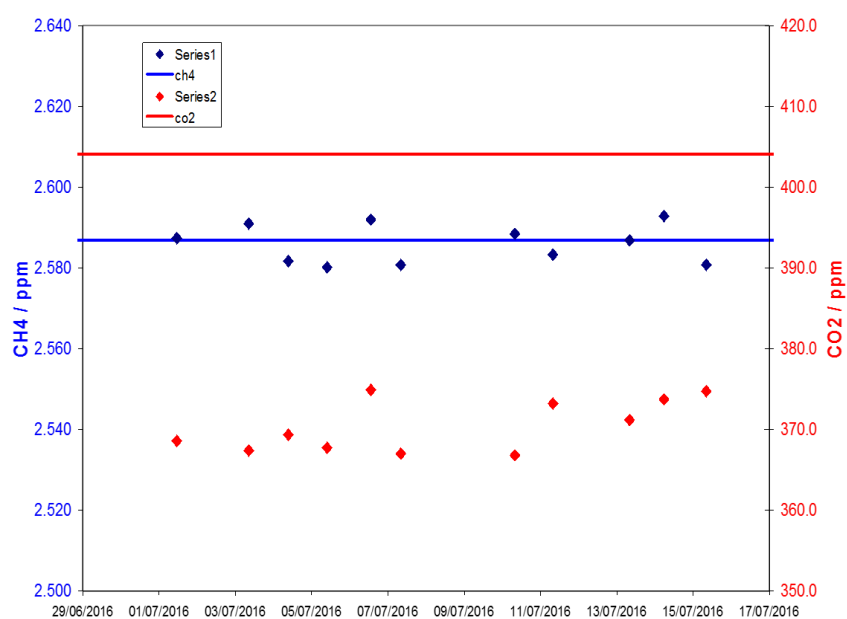
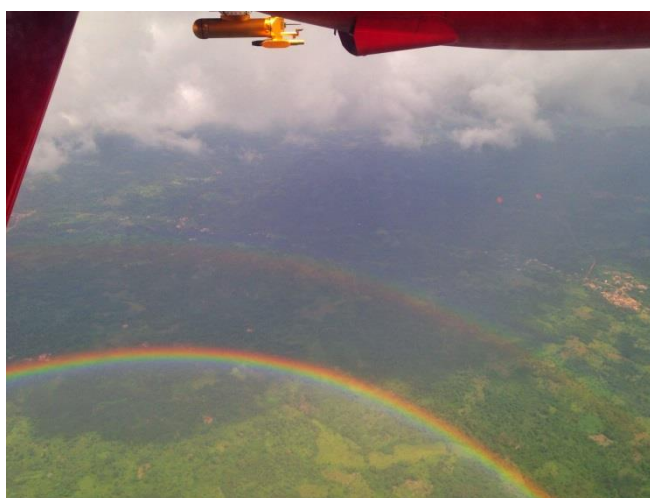
JRA2–TGOE: On 8 July 2014, FAAM organised a chemistry payload intercalibration day in Cranfield for the FAAM, ARSF Dornier-228 and MOCCA Cessna 421 research aircrafts, attended by over 20 scientists



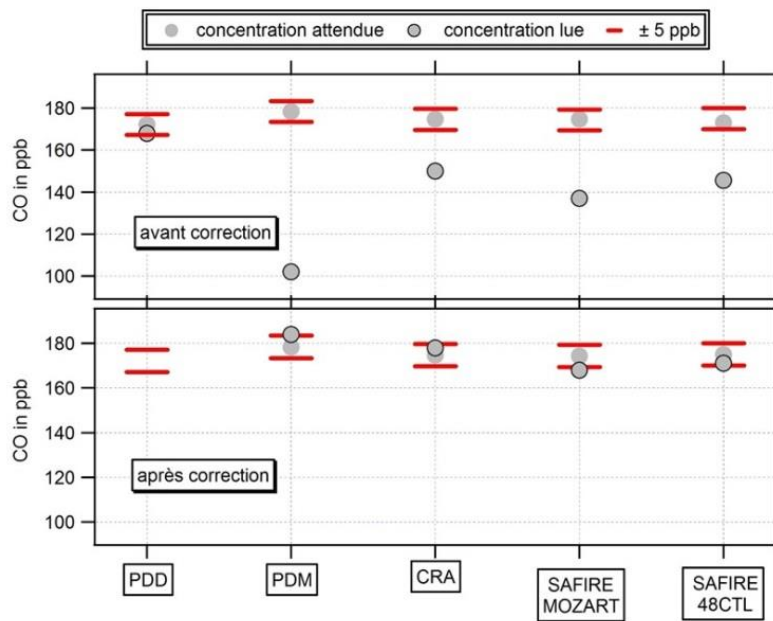
JRA2 –TGOE: Comparison between the GC-FID data for ethane (calibrated to the NPL/GAW-VOC calibration scale) and that from the Aerodyne QCL instrument which has been corrected by removing the instrument background only (and averaged to give hourly data).



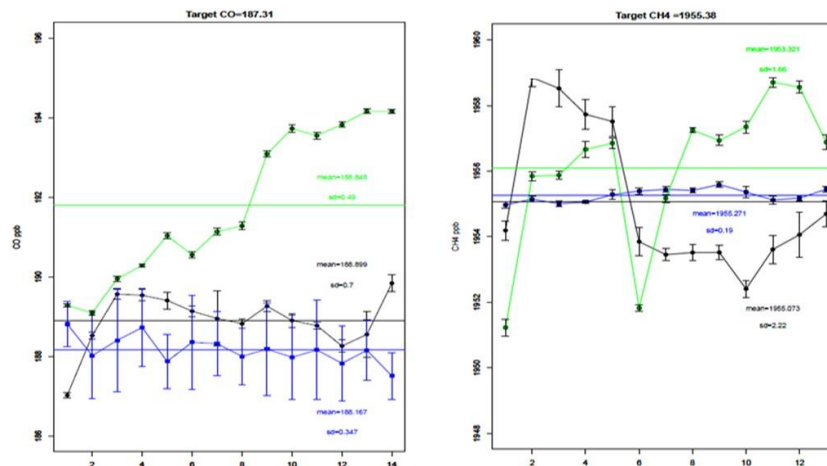
JRA2-TGOE: Pictures taken from the NERC's Twin Otter aircraft flying over Accra during DACCIWA 2016



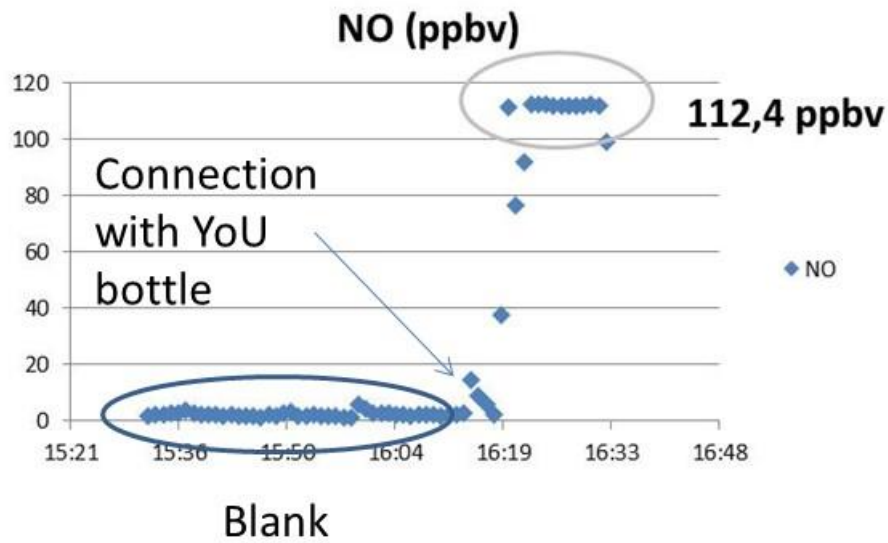
JRA2-TGOE: DACCIWA LGR uGGA CO₂/CH₄ target result



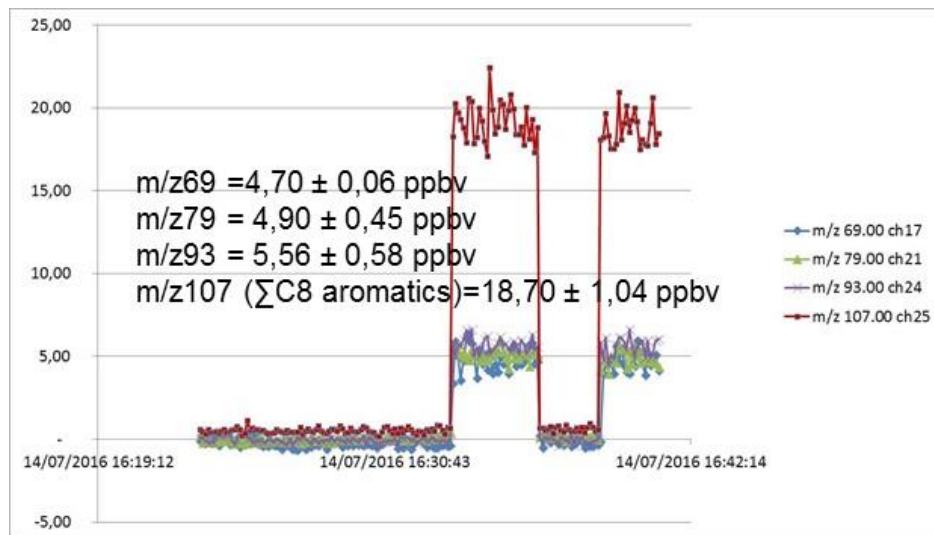
JRA2-TGOE: CO analyser responses at various French platforms (PDD = puy de Dôme Research Observatory; PDM: Pic du Midi Research Observatory; CRA: Centre de Recherches Atmosphériques) before correction (top panel figure) and after correction (bottom panel figure).



JRA2-TGOE: Screening the drift of the tested instruments relative to a target gas of CO and CH₄ injected at regular time intervals during the ChemCallnt intercomparison at the ground.



JRA2-TGOE: Connecting the NO cylinder (110 ppbv) provided by University of York (UoY) to the NO_x analyser installed on board ATR-42



JRA2-TGOE: Connecting the NPL standard cylinder (4 ppbv at $\pm 2\%$) to the PTR-MS installed on-board ATR-42. PTRMS was previously calibrated with a diluted standard mixture provided by Ionimed (1 ppm $\pm 5\%$). Volume mixing ratios (VMR) reported on the graphic area are the VMR measured by the PTRMS when connected to the NPL standard



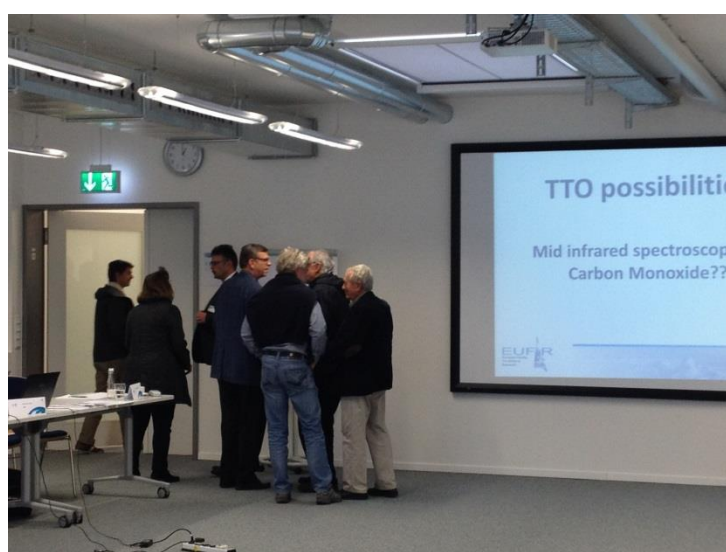
JRA2-TGOE: UK BAe146 aircraft observed from DLR HALO during formation flying to provide an in-flight instrument comparison during EMERGE-EU (2017, Munich)

Management

MNGT: Kick-off meeting & General Assembly 01
Brussels, Belgium, 24 – 27 March 2014



MNGT: General Assembly 02, DLR (the German Aerospace Research Centre)
Oberpfaffenhofen, Germany, 25 – 27 March 2015



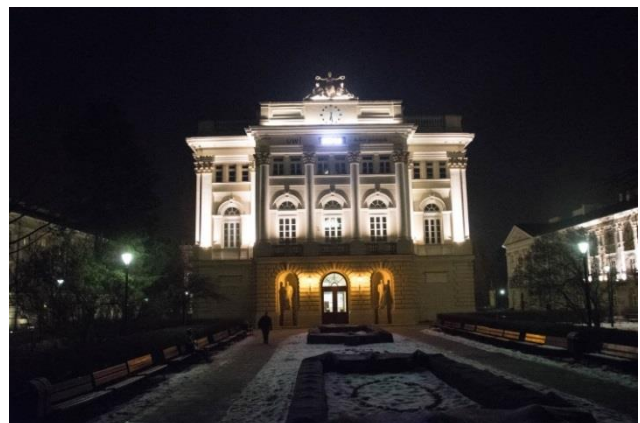
MNGT: General Assembly 03 & Mid-Term Review
Prague, Czech Republic, 5 – 8 April 2016



MNGT: General Assembly 04
Warsaw, Poland, 14-17 February 2017



*MNGT: Group photo outside the Auditorium Minus at the University of Warsaw's main campus
General Assembly 04, Warsaw from 14 to 17 February 2017*



MNGT: General Assembly 04 (2017), Auditorium Minus at the University of Warsaw's main campus

**MNGT: General Assembly 05,
Lugo, Spain, 22-25 January 2018**



***MNGT: General Assembly 05, Lugo, Spain, 22-25 January 2018**
EUFR representatives together with Mayor and Municipal Spokesperson of Lugo*



***MNGT: General Assembly 05, Lugo, Spain, 22-25 January 2018**
Mayor of Lugo handing replica of Roman Walls of Lugo to EUFR's coordinators*



***MNGT:** General Assembly 05, Lugo, Spain, 22-25 January 2018
EUFAR General Assembly 2018 participants at the town hall*



***MNGT:** General Assembly 05, Lugo, Spain, 22-25 January 2018
EUFAR General Assembly 2018 proceedings*



***MNGT:** General Assembly 05, Lugo, Spain, 22-25 January 2018
Aircraft exhibited at the Rozas Aerospace Research Centre (CIAR)*



***MNGT:** General Assembly 05, Lugo, Spain, 22-25 January 2018
Participants discuss INTA UAV during the visit to the Rozas Aerospace Research Centre (CIAR)*

Dissemination

Revised communication materials

Poster on EUFAR fleet open to TA

INTRODUCTION TO THE EUFAR FLEET
INSTRUMENTED AIRCRAFT AND SPECIALISED INSTRUMENTS FOR AIRBORNE RESEARCH OF THE ATMOSPHERE AND THE EARTH'S SURFACE AVAILABLE FOR FUNDING TRANSNATIONAL ACCESS UNDER THE EUFAR PROGRAMME

LARGE AIRCRAFT

- ATR42**
Operator: SAFIRE
Country: France
Length: 23.47 m
Height: 7.58 m
Wingspan: 24.57 m
MTOW: 15000 kg
- POLARS**
Operator: AIRC
Country: Germany
Length: 20.46 m
Height: 5.2 m
Wingspan: 28 m
MTOW: 13000 kg
- Falcon 20 E-5**
Operator: DLR
Country: Germany
Length: 18.75 m
Height: 5.5 m
Wingspan: 16.32 m
MTOW: 12700 kg
- BAe146**
Operator: FAIR
Country: UK
Length: 15.58 m
Height: 5.58 m
Wingspan: 20 m
MTOW: 42000 kg
- Falcon 20**
Operator: SAFIRE
Country: France
Length: 17.15 m
Height: 5.32 m
Wingspan: 15.32 m
MTOW: 14500 kg
- Learjet 35A**
Operator: Enbridge
Country: Germany
Length: 14.93 m
Height: 3.72 m
Wingspan: 12.04 m
MTOW: 4500 kg

MEDIUM AIRCRAFT

- CASA 212**
Operator: NVA
Country: Spain
Length: 13.2 m
Height: 4.6 m
Wingspan: 15 m
MTOW: 7700 kg
- Cessna 208 B**
Operator: DLR
Country: Germany
Length: 12.7 m
Height: 4.6 m
Wingspan: 15 m
MTOW: 3877 kg
- Dornier 228**
Operator: DLR
Country: UK
Length: 13.4 m
Height: 4.6 m
Wingspan: 16.97 m
MTOW: 10750 kg
- Twin Otter**
Operator: NRC BAS
Country: UK
Length: 15.77 m
Height: 5.5 m
Wingspan: 18.8 m
MTOW: 18700 kg

SMALL AIRCRAFT

- PIPER AZTEC**
Operator: SAFIRE
Country: France
Length: 9.2 m
Height: 3.5 m
Wingspan: 11.3 m
MTOW: 1577 kg
- ERA Sky Arrow**
Operator: CIR
Country: Italy
Length: 7.8 m
Height: 3.8 m
Wingspan: 7.7 m
MTOW: 600 kg
- ECO DIMONA**
Operator: FBR
Country: Germany
Length: 9.8 m
Height: 3.0 m
Wingspan: 10.92 m
MTOW: 1500 kg
- Cessna 207T**
Operator: FBR
Country: Germany
Length: 9.8 m
Height: 3.0 m
Wingspan: 10.92 m
MTOW: 1500 kg
- ENDURO**
Operator: HTT
Country: Germany
Length: 5.5 m
Height: 3.5 m
Wingspan: 10 m
MTOW: 400 kg
- TASI Partenavia**
Operator: Enbridge
Country: Germany
Length: 5.5 m
Height: 3.4 m
Wingspan: 10 m
MTOW: 1000 kg
- Partenavia P68B**
Operator: Enbridge
Country: Germany
Length: 5.5 m
Height: 3.4 m
Wingspan: 10 m
MTOW: 1000 kg

REMOTE SENSING INSTRUMENTS

Hyperspectral Imagery Sensor (HIS)

- Operator: DLR (Germany)
- Type of instrument: imaging spectrometer
- Parameter measured: radiance spectra
- Mounted on board: Dornier 228, Cessna 208 B

Synthetic Aperture Radar (SAR)

- Operator: DLR (Germany)
- Type of instrument: radar
- Parameter measured: reflectivity
- Mounted on board: Dornier 228

Airborne Prism Experiment (APEX)

- Operator: WIT (Belgium)
- Type of instrument: lidar
- Parameter measured: radiance spectra
- Mounted on board: Dornier 228

APPLY TO AN OPEN CALL FOR FUNDED TRANSNATIONAL ACCESS TO AN AIRCRAFT INSTRUMENT, OR SUBMIT AN EXPRESSION OF INTEREST:
<http://www.eufar.net/projects/ta-application/>

***MTOW: Maximum Take-Off Weight**

For more information and to register as a EUFAR member, visit:
bureau@eufar.net or contact us: +33 (0)5 61 07 98 37/8

Activity poster (example E&T poster)

EDUCATION & TRAINING ACTIVITIES

EUFAR facilitates education and training (theoretical and practical) in airborne atmospheric research and remote sensing of the Earth's surface, with 100% support for flight costs, and travel and subsistence expenses!

APPLY NOW!
FOR A TRAINING OPPORTUNITY
www.eufar.net/projects/education-and-training/

Participate in a EUFAR Training Course with Transnational Access flight hours (ET-TC)
Classroom training in Earth science physical processes, airborne instrumentation, measurements, data analysis and interpretation. Design your own experiment and participate in a research flight to collect data. Analyse the data with the support of experienced researchers.

Visit an Aircraft/Instrument Operator (ET-VO)
EUFAR offers the opportunity for instrument/aircraft operators to exchange personnel (~1 week visit) to share knowledge and know-how about instrument calibration, data acquisition, etc.

Participate in the Design of a New Flight Campaign (ET-TA)
Join a host research group to design a flight campaign (scientific content, campaign organisation, data analysis, etc.). Actively participate in the research flights, data analysis and publications.

Join an Existing Campaign (ET-EC)
Benefit from training by a host research group during their field campaign.

Host a EUFAR Training Course
Host a EUFAR training course (with TA flight hours) by submitting an application for an open call for Proposals under Transnational Access on the EUFAR website.

EUFAR integrates operators of instrumented aircraft and hyperspectral sensors, and experts in airborne measurements in the field of environmental and geo-sciences.

EUFAR2 FP7 contract:

- €6m budget • duration of 4 years
- Météo-France, administrative coordinator
- Met Office, scientific coordinator
- Consortium of 24 partners, including 12 aircraft operators
- Coordinates and funds transnational access to 17 instrumented aircraft & 3 remote sensing instruments

All training applications are reviewed by independent peer-reviewers and are selected by the EUFAR Education & Training evaluation committee.

Selected participants receive full funding to cover their participation. After the training course, the participants are requested to write a group scientific report.

Contact us:
bureau@eufar.net, www.eufar.net
+33 (0)5 61 07 98 37/8

SWAMP Training Course, July 2015, Poland **SONATA Training Course, August 2011, Italy** **REFLEX Training Course, July 2012, Spain**

Poster on EUFAR handbook

HANDBOOK ON AIRBORNE MEASUREMENTS for Environmental Research

The handbook provides a comprehensive overview of airborne measurements, instrumentation, and methods to explore atmospheric parameters and properties of the Earth's surface. It summarises the knowledge of some of the most reputed international experts in airborne measurements, and is based on many years of airborne field experiments and application to environmental research.

The book targets not only experienced researchers, university lecturers and graduate students, but also modellers, project managers and scientists experienced in other fields.

Published in March/April 2013
2 editors: M. Wendisch & J.-L. Brenguier, both eminent actors in EUFAR
91 authors, from 13 countries, majority of whom are active members of EUFAR
Expert Working Groups
22 independent peer reviewers
9 chapters; 655 pages

EXPERT WORKING GROUPS

There are 13 expert working groups within EUFAR which serve to address technical and scientific issues through the organisation of workshops, with a view to exchange knowledge and promote best practices in airborne research.

One of the working groups' tasks is to compile supplementary online material of the EUFAR handbook which provides state-of-the-art airborne measurement principles and techniques.

As a EUFAR registered member, you may apply to join a specific working group. For more information, contact the EUFAR Office (bureau@eufar.net)

Reference: Wendisch, M., & J.-L. 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, 600pp)

To register and for more information:
bureau@eufar.net or contact us: +33 (0)5 61 07 98 37/8

This project has received funding from the European Union's 7th Framework Programme for research, technological development and demonstration under grant agreement no. 312609.

EUFAR General Activity poster

A PAN-EUROPEAN DISTRIBUTED INFRASTRUCTURE FOR AIRBORNE RESEARCH
IN THE FIELDS OF ENVIRONMENTAL AND GEO-SCIENCES

AIRBORNE RESEARCH USERS

APPLY NOW TO THE CURRENT CALLS FOR PROPOSALS:
www.eufar.net

TRAINING

- participate in a training course
- visit an aircraft/instrument operator
- join an existing research campaign
- join a research team & take part in the design of a new campaign

TRANSNATIONAL ACCESS COORDINATION

- FACILITATES TRANSNATIONAL ACCESS TO:
 - 17 instrumented aircraft
 - 3 remote-sensing instruments

STRATEGY & EUROPEAN INTEGRATION

- NATIONAL & EUROPEAN RESEARCH INFRASTRUCTURE
- EUROPEAN ENVIRONMENTAL ORGANISATIONS
- INDUSTRY

NETWORK OF AIRCRAFT OPERATORS

SAFIRE, FAIR, DLR, CIR, WIT, HTT, NRC, Enbridge, GBR, NVA, FBR, ECO, HTT

CENTRALISED DATA ARCHIVE

Databases of Ground & Satellite Earth Observations

DEVELOPMENT OF STANDARDS & PROTOCOLS

EXPERT WORKING GROUPS

Aiming to enhance scientific expertise and facilitate the sharing of knowledge on airborne research, and compile supplementary material for the EUFAR handbook

TECHNOLOGY TRANSFER

Innovation in EUFAR arises through both the technology pull and the market push

JOINT RESEARCH ACTIVITIES

- HIGHLIGHT: development of methodologies & tools for the integrated use of hyperspectral imaging and airborne laser scanning data
- TODE: development of robust calibration techniques for core geo-phase chemical measurements

ABOUT EUFAR (2014 - 2018)

- €6m budget
- 4-year contract
- Météo-France, administrative coordinator
- Met Office, scientific coordinator
- Consortium of 24 partners, including 12 aircraft operators

E-COMMUNICATION: DISSEMINATION OF INFORMATION VIA THE WEBSITE (WWW.EUFAR.NET)

To register, visit:
www.eufar.net

For more information:
bureau@eufar.net or contact us: +33 (0)5 61 07 98 37/8

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EUJAR Post Card:



New EUJAR logo as of 2016:



Previous EUJAR logo:

