



EUFAR MANAGEMENT

General Assembly 2018 marks the end of another EUFAR chapter

The 5th and final General Assembly of the current EUFAR2 project (2014 -2018) took place from 22 to 25 January in the medieval town of Lugo in Spain. EUFAR partner INTA hosted the meeting, choosing Lugo strategically as it is home to the **Rozas Aerospace Research Centre** (CIAR) which is being developed by **INTA** as an R&D centre for research aircraft and UAV operations.

The very first day of the meeting, participants were invited to the town hall where they met the Mayor of Lugo - Lara Méndez and Municipal Spokesman - Miguel Fernández. The Mayor welcomed the EUFAR delegation to the city of Lugo, and praised INTA's initiative in hosting the EUFAR General Assembly and fostering future alliances in airborne research in Lugo. The Mayor further expressed her appreciation by offering a replica of a part of Lugo's ancient Roman Walls to the EUFAR's project and scientific coordinators, Elisabeth Gérard (Météo-France) and Phil Brown (Met Office) respectively.

The General Assembly then kicked off with a presentation of each activity's final report, giving a breakdown on all that was achieved in the last 12 months, as well as over the project's 4-year lifespan. Some of the highlights of this busy last reporting period include the organisation of **three summer schools** and 2nd edition of the International Conference on Airborne Research for the Environment (**ICARE 2017**) over the summer of 2017, and a number of fruitful **expert workshops** ranging from stratospheric aircraft to measurement of cloud particles, and more importantly the constitution of the EUFAR AISBL (an international not-for-profit association under Belgian law), establishing EUFAR as an independent legal structure and ensuring EUFAR's future.

During the four days of the meeting, a special session was dedicated to the forward-looking strategy of EUFAR and the evolution of its networking activities with regard to the **EUFAR AISBL**, established in 2018, which will supersede the governance of EUFAR.

Consequently, the EUFAR project General Assembly was followed by the EUFAR AISBL Executive Board and General Assembly meetings, which served to discuss the strategy of the AISBL in terms of networking and joint research activities given the AISBL self-financing capacity and potential sources of external funding (see section on "3").

Participants were also treated to a visit of the CIAR and got to see a number of UAV facilities and aircraft, and learn about the centre's promising R&D initiatives. On the cultural side, the participants were given a tour of the impressive Roman walls surrounding the city dating back to the 3rd century, and which remain one of the finest examples of late Roman fortifications in western Europe.

18 of EUFAR's **24 partner consortium** attended the gathering including a number of invited guests. A big thanks goes out to EUFAR partner INTA, namely José Antonio Gomez Sanchez and his team, for hosting and organising yet another successful edition of the general assembly.



Left: GA participants with Mayor and Municipal Spokesperson of Lugo



Below: Mayor of Lugo - Lara Méndez together with Jose Antonio Gomez Sanchez (INTA) and EUFAR's project and scientific coordinators, Elisabeth Gérard & Phil Brown



Left: Participants in front of a UAV during the visit to INTA's Rozas Aerospace Research Centre (CIAR)



Links to articles in the local news in Lugo (only in Spanish):

- [El progreso article on EUFAR delegation's visit to CIAR centre, 23 January 2018](#)
- [Lugo city council article on EUFAR representatives' visit to the town hall, 23 January 2018](#)
- [Television de Galicia news article on EUFAR delegation visit to CIAR, 24 January 2018](#)
- [Television de Galicia news article on EUFAR General Assembly, 24 January 2018](#)
- [La Voz de Galicia article on the EUFAR gathering and the future of airborne research, 24 January 2018](#)

Partial payment of the second period expenses

Following the end of the second reporting period, the EUFAR project coordinator (Météo-France) received the overall requested amount from the European Commission (cut to 85% of the €6M total budget according to the RP1 + RP2 cumulated interim payment threshold and guarantee fund retention). This was distributed to the 24 project beneficiaries in December 2017 for the reimbursement of expenses that were incurred during RP2 (August 2015 – January 2017).

EUFAR2 project closure (2014-2018) and review of activity

The EUFAR2 project came to an end on 31 January 2018 after a busy four years of activity. The next two months will be dedicated to finalising the activity technical and financial reports, and justifying the transnational access unit costs. The project coordinator plans to make the final submission to the EC in spring to close the project and receive the final payment to be distributed among the 24-partner consortium in mid-2018.

With the committed devotion of the steering committee, and EUFAR partners and operators, a number of remarkable achievements were made. This includes support to 29 [transnational access](#) flight campaigns, the organisation of 4 [training courses](#) (two on remote sensing and two on airborne atmospheric research), 11 expert workshops, the [ICARE conference 2017](#), the launch of the new EUFAR website end of 2015, development and launch of [14 software tools](#) serving to improve processing and interpretation of airborne hyperspectral imagery and laser scanning data by the joint research activity [HYLIGHT](#), advances in the calibration of airborne trace gas measurements from the joint research activity [TGOE](#), tools developed by EUFAR's standard and protocols' team ([airborne science mission metadata](#) and [EUFAR metadata creator](#)), and the [EUFAR flight finder](#) tool to locate flight data within the EUFAR data archive, to mention a few. Another significant and somewhat essential achievement is the establishment of the [EUFAR AISBL](#) (an international not-for-profit association under Belgian law), establishing EUFAR as an independent legal structure and ensuring EUFAR's continuity.

NEXT PHASE OF EUFAR

EUFAR AISBL 1st & 2nd General Assembly and Executive Board meetings

The 1st General Assembly and Executive Board meetings of the EUFAR AISBL - an international not-for-profit association under Belgian law - took place from 10 to 11 October 2017 in Brussels, at the EUFAR AISBL registered office hosted by the DLR Office, 98 rue du Trône.

The meetings aimed to bring together representatives of the eight founding organisations of the AISBL (in alphabetical order of their home country: [VITO](#), [CzechGlobe](#), [CNRS](#), [Météo-France](#), [ONERA](#), [DLR](#), [University of Warsaw](#), [Met Office](#)) and invited guests to start operating the EUFAR AISBL to be [formally constituted](#) in early 2018. Four other partners of the EUFAR2 consortium at that time were candidates for admission ([CNR](#), [INTA](#), [TAU](#), and [FUB](#)), and [University of Chieti-Pescara \(UNICH\)](#) also expressed its wish to join the AISBL.

During the GA meeting, the GA President and Vice-President, EB members, EB Chair and Vice-Chair and Executive Secretary were elected and the internal regulations signed. Each of the founding organisations expressed their expectations with respect to the AISBL, and invited guests, were requested to express the motivation and report on progress in joining the AISBL of their organisation candidate for admission.

The EUFAR AISBL the 2nd General Assembly and Executive Board meetings of the EUFAR AISBL took place from 25 to 26 January 2018 in Lugo (Spain), just after the 5th and final General Assembly of the EUFAR project (2014-2018). The Executive Board discussed the strategy of the AISBL in terms of networking activities and joint research activities within the scopes of AISBL self-financing and potential external funding. During the General Assembly meeting, the membership fee of €3500 per Member for 2018 was adopted by unanimous vote but the approval of the 4-year financial and activity plans was postponed to a later date, to be finalised after the consolidation of the proposal for the [Horizon2020 call INFRAIA-01-2018-2019](#) (see next section on "[EUFAR Horizon2020 proposal and future joint research activities](#)"). The second General Assembly of the EUFAR AISBL also marks the unanimous admission of three new members - [INCAS](#), [FUB](#) and [UNICH](#). A big welcome to them!

Only after the meetings, the Executive Board was pleasantly surprised to learn that on 23 January, the Monitor Belge had published the royal acknowledgement of the EUFAR AISBL, confirming its legal status as an AISBL under Belgian law.

In total, the EUFAR AISBL is currently composed of 11 Members from 8 EU Members States. EUFAR's next adventure has only just begun!

The lists of GA representatives appointed by the organisations and EUFAR AISBL elected members are provided in the following tables:

| 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 o-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 |



Participants at the 2nd EUFAR AISBL Executive Board and General Assembly meetings, Lugo, Spain, January 2018



Participants at the 1st EUFAR AISBL General Assembly and Executive Board meetings, Brussels, Belgium, October 2017



EUFAR Horizon2020 proposal and future joint research activities

To secure funding for future transnational access and joint research activities, the EUFAR AISBL is working on a proposal for the **Horizon2020 call INFRAIA-01-2018-2019: Integrating Activities for Advanced Communities**, single-stage RIA Research and Innovation action.

Part of the proposal will include joint research activities (JRAs), therefore a **Call for Expressions of Interest (EoIs)** was launched in May 2017. The call was successful and 15 interesting submissions were received, which were thereafter reviewed for possible inclusion as JRAs in the H2020 proposal. In early December 2017, 8 EoIs were shortlisted for further review.

Since the timescale for preparation of the proposal is quite short (submission deadline is 22 March), the leaders of the selected EoIs were requested to prepare their JRA proposal in an adapted template for inclusion in the final submission providing details on identification of potential members, a draft budget of about €750k, list of deliverables, etc.

To increase the chance of selection, the shortlisted EoI leaders were also advised to consider the possibility of including a strong role for SMEs in their proposals, which is an important criterion for success. For example, a JRA could include instrument manufacturers and developers or service providers to portray technology and innovation transfer.

A special session was devoted to the presentation of the 8 shortlisted EoIs during the final EUFAR General Assembly in Lugo in January. With the final selection of 4 propositions (2 dedicated to in-situ observation and 2 to Earth observation) by the EUFAR AISBL Executive Board, the proposal will be submitted in mid-March.

EUFAR TRANSNATIONAL ACCESS FLIGHT CAMPAIGNS

Investigating sources and emissions of dust in Namibia: EriSMA and ALLDUST-SA research projects

By Stefanie FEUERSTEIN & Alexandra TSEKERI

Two EUFAR-funded research flight campaigns took place in Namibia in August and September 2017, namely 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). These projects were clustered with the AEROCLO-sA flight campaign (**Aerosol RadiatiOn and CLOUDs in southern Africa**), headed by lead scientists Paola Formenti (**LISA**) and Cyrille Flamant who headed the flight campaign. AEROCLO-sA project is a French national research initiative led by six French laboratories consisting of **Météo-France**, the **CNRS** and various universities. Although the two EUFAR flight campaigns had their own specific research objectives, they were however organised under the umbrella of the AEROCLO-sA consortium, and hence could benefit from the spirit of the project and the scientific and technical expertise involved. Measurements were performed with the French FALCON F20 aircraft operated by **SAFIRE**, and equipped with a set of different instruments, in particular the high spectral resolution LIDAR LNG, the infra-red radiometer CLIMAT, the solar sun-photometer PLASMA, the OSIRIS radiometer, up- and down-welling pyranometers and pyrgeometers and in-situ instruments, and a releasing device for dropsondes as well as optical sensors for aerosol and cloud particle properties. Altogether, the measurements offered the possibility to profile and sample the aerosol load of the atmospheric column at high vertical resolution.

The **ALLDUST-SA project** aims for the sub-basin scale characterisation of dust emission from the Etosha Pan, one of the most active dust sources in southern Africa. This salt pan located in northern Namibia is particularly interesting as it forms the endpoint of an ephemeral drainage system, which suggests a strong connection between annual precipitation pattern and dust activity. A strong variation in the dust activity from year to year is evident and documented by recent satellite-based studies - a significant feature that is essential to understand and hard to predict. Due to stronger than usual inundations of the pan during the first half of 2017 caused by above average rainfall amounts, the pan showed lower than usual dust emissions during this year's dry season. However, an Etosha survey overflight was performed on 5 Sept 2017 (flight # fs20170006) aiming to assess the dust source activity and the contribution of dust originating from Etosha to the general aerosol burden over northern Namibia.

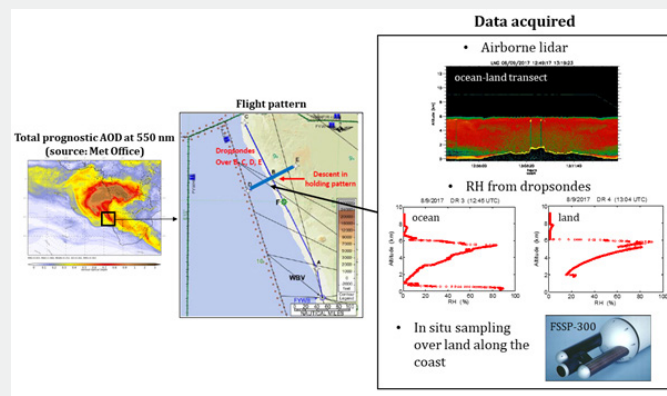


Left: Dust emission from Namibian dust sources seen from MODIS Terra, acquired on 9 June 2004 (Image courtesy Jacques Descloitres, NASA-Goddard Space Flight Center)

Below: Scientist team in front of SAFIRE's F20 aircraft for the airborne campaign at Walvis Bay airport, Namibia (Image courtesy Laurent Labbouz)



Namibia from above: a glance out of the Falcon's window reveals the aridity of the country (Image courtesy Dominique Duchanoy)



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 the EriSMA project

Indeed, several other hydrologically influenced dust source regions were within the range of the aircraft. Henceforth, due to the low dust activity in the Etosha pan during the flight campaign, the study area was broadened to other hydrologically-influenced dust sources along the Namibian coast. Fortunately, we were able to obtain LIDAR measurements showing airborne dust above the coastal dust sources during two flights in the morning and afternoon of 8 Sept 2017 (flight # fs20170011 and fs20170012). These measurements allow us to examine the precise location of the over-flown Namibian coastal dust sources and the near-source transport of dust in the vicinity of the Atlantic Ocean.

The **EriSMA project** on the other hand aimed to improve the description of the dust plumes in the area provided by the NMM-DREAM model, by assimilating satellite dust retrievals within it, such as the MSG-SEVIRI dust optical depth and the CALIPSO and CATS dust vertical profiling. The results would be compared with dust microphysical and optical property retrievals, utilising the airborne LIDAR profiles and the airborne in situ observations. The focus of the analysis has changed due to the low dust occurrence in the area during the research campaign. The interest has been shifted to the high-AOD smoke transport from the North of Namibia. This impressive smoke plume almost persisted during the whole period of the airborne measurements. The first analysis revealed some very interesting cases of smoke hydration above the ocean (flight on 7 September 2017, at 9 UTC) and/or land (flight on 8 September 2017, at 11 UTC), as well as above the Etosha pan (flight on 6 September 2017, at 11 UTC). These cases will be analysed with the In situ/Remote sensing aerosol Retrieval Algorithm (IRRA) (Tsekeri et al., 2017). IRRA combines airborne in situ with remote sensing measurements and provides the optical, microphysical and hygroscopic properties of the atmospheric aerosols.

Contact Stefanie Feuerstein (feuerstein@tropos.de) for more information.



EUFAR FOAM- Silesia Campaign: Aircraft Crew and ground based team meeting at Katowice-Pyrzowice airport

Flight campaign over Silesian Coal District to quantify methane emission rates from urban and biogenic sources

By Jaroslaw Necki, Heinrich Bovensmann & Thomas Ruhtz

The **FOAM - Silesia flight campaign** (Katowice Pyrzowice, Poland, 28 September - 4 October 2017), funded by **EUFAR Transnational Access** and jointly organised by the **AGH-University Kraków**, **Freie Universität Berlin**, and the **Universität Bremen**, aimed at directly measuring the methane concentration from an airborne platform using in-situ cavity ring down spectroscopy (Picarro Fast Greenhouse Gas Analyzer G2311-f) and the remote sensing hyperspectral camera HySpex.

Methane is a well-known greenhouse gas and inventory of its sources is currently a priority task of the scientific community as well as of industrial big role players. Release rates of CH₄ are mandatorily reported in Europe by most of the industrial facilities like coal mines. However, bottom up inventories are still very heterogenic. In the case of the Silesia area yearly methane release estimates range from 350 Tg/year (reported by national inventories in Poland and Ukraine) over 500Tg/year (EPTR database) and up to 1300Tg/year (as reported by EDGAR database). All these numbers are elaborated in a specific way and may be used by policy makers for important decisions concerning greenhouse gas limitations and reduction.

In this situation, independent measurements are required to verify the reported emission rates and monitor the CH₄ concentration in the atmosphere. Certainly, measurements performed “on ground” can’t validate the emission rate from particular exhaust mine shafts but may be treated as the preliminary indicator of big sources. The advantage of airborne platforms in this case is evident and FOAM-Silesia campaign aimed at quantifying the methane burden over the Silesia area with direct measurements of methane plumes from mining facilities.

FOAM Silesia was initially designed to cooperate with another aircraft campaign – **COMET**. However, due to the change of the COMET timeframe, FOAM was finally designed as a precursor campaign of COMET, aimed to perform airborne measurements in 2018 over the same area. A group of scientists from Poland (AGH) and Germany (FUB, UBremen) undertook a joint effort to proceed with the delayed flight campaign using a smaller Cessna aircraft. The first direct airborne in-situ measurements of methane were performed by the FUB Cessna aircraft on 21 September 2017 in Germany over the landfill Schoneiche and on 29 September in Poland over Silesia. Regarding the measurements over Silesia, the aircraft was deployed at the Katowice – Pyrzowice airport and reported an anomaly high methane concentration already at the runaway of the airport.

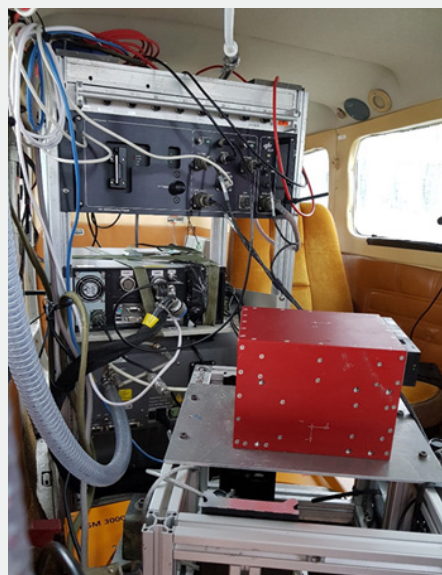
The main goal of the different measurement missions was divided into 4 categories:

1. Mining exhaust shafts (3 days of successful flights)
2. City gas network leakages (measurements over the city area was cancelled during the campaign due to very low signal and CTR restrictions)
3. Landfills (moved to German landfill Schoneiche)
4. Natural wetlands (emission not visible by aircraft instrumentation due to highly elevated methane concentration over Silesia area connected with mining industry)

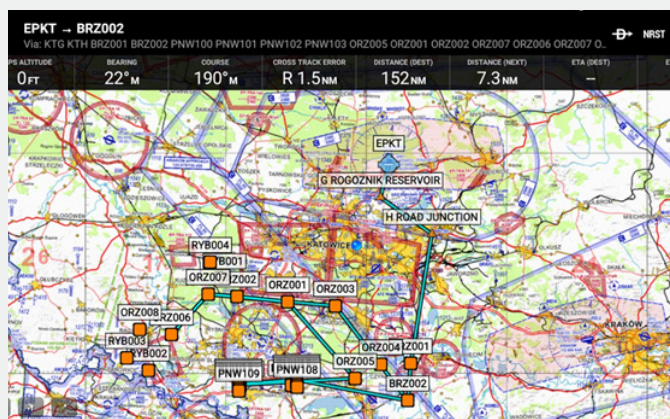
Unfortunately, a large part of the Silesian area is covered by temporal flight restriction areas (TRAs) and airport controlled traffic regions (CTRs). Only westerly winds can assure proper methane mass-balance measurements using wall patterns performed by the aircraft in the south-eastern part of the region. During the measurements, the Moravian Gate, however, induced southerly winds over the territory of South Silesia where most of the methane is released from mines. Therefore during the first days of the campaign, only parts of the relevant areas could be properly covered. The Aero club in Rybnik did not support the FOAM flight due to the heavy traffic in the airfield and access to the Rybnik TRA was possible only on one day. Also a parachute school controlling one of the TRAs was located there preventing lower flights. Atmospheric conditions during the flight appeared to be principally variable and wind direction changed spontaneously from SW to SE directions in the time-scale of an hour. In this case, wind forecasts were not reliable during campaign.

Successful flights were performed on 29 September, and 1 and 2 October 2017. A successful short preparation flight was also performed on 21 September over a managed German landfill to asses if the sensitivities of the in-situ instrumentation are sufficient to also detect lower emissions from well controlled landfills. Data collected during the flights are currently used to compare modelled values with measurements which could lead to validation of applied inventories. Due to inappropriate weather conditions and the location of most of the landfills within the restricted TRAs and CTAs, it was decided to perform an additional full measurement flight over the landfill Schöneiche near the home Airport of the Cessna. This allowed the team to perform measurements during more appropriate weather conditions, as landfill measurements require calm to moderate winds and a dedicated flight pattern near the source due to the much weaker methane emissions than the coal mines.

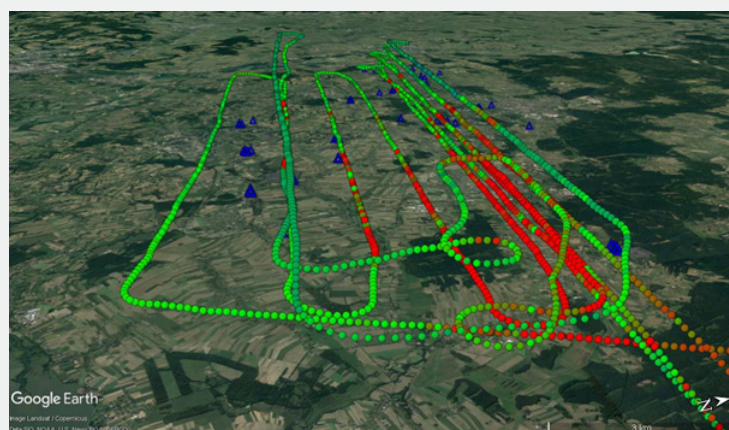
Contact Jaroslaw Necki (necki@agh.edu.pl), for more information.



FOAM - Silesia Campaign: 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)



FOAM - Silesia Campaign: Map of planned flight on 2 October 2017 with important waypoints, also showing the different TRAs and CTAs inside the measurement area



FOAM - Silesia Campaign: Preliminary results obtained from the Picarro CRDS analyser installed on board of the FUB Cessna from 29 September 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

SMES IN AIRBORNE RESEARCH

Zoom in on ATMOSPHERE

ATMOSPHERE, an engineering company with core expertise in aeronautics, satellite telecommunication and weather science, has been working on developing appropriate solutions for the aircraft community since 2010.

The company is currently providing tailored services to several members of the EUFAR community, including **DLR** - the Germany Aerospace Centre, **SAFIRE** – the French Facility for Airborne Environmental Research, and maybe soon to even **FAAM** – the English Facility for Airborne Atmospheric Measurements. One example of such a service is the “**PLANET**” - a collaborative service for efficient flight mission management, allowing for real-time assessment and solutions to unexpected issues during a flight, as well as reliable data exchange between all stakeholders during a flight.

The first version of PLANET service platform flew on a SA-FIRE aircraft in 2012, followed by DLR in 2014, and NRC-CNRC, Honeywell and Airbus in 2015. Thanks to the continuous support from the scientific and flight test community, the platform has improved over the years, and has become a key asset for scientific and flight test engineers. For detailed information on PLANET, click [here](#).

For general information on ATMOSPHERE contact the Managing Director - jean-marc.gaubert@atmosphere.aero

PUBLICATIONS

Article on EUFAR DeInVader Flight Campaign

Under the framework of the EUFAR-funded DeInVader TA flight campaign (**DeInVader: Tracing the invasion of an exotic tree species in protected West-Mediterranean dune ecosystems**) held in 2011, the following article, showing an innovative use of airborne LiDAR in ecology, was published:

Hellmann, C., Große-Stoltenberg, A., Thiele, J., Oldeland, J. and Werner, C.: Heterogeneous environments shape invader impacts: integrating environmental, structural and functional effects by isoscapes and remote sensing, Scientific Reports 7, Article no. 4118 (2017), doi:10.1038/s41598-017-04480-4; dataset published at figshare.

The full article is freely accessible on the [EUFAR website](#) and in the [Nature scientific journal](#).

EUFAR features in the Feb issue of the Open Access Government Journal

The EUFAR scientific coordinator, Phil Brown from the UK's Met Office, met up with the [Open Access Government](#) and published an interesting two-page article on EUFAR and looking to the future of airborne environmental research in Europe.

Extract from Open Access Government Journal, February 2018 issue:

“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.”

To access the full journal article (pages 294 - 295), click [here](#).

EUFAR TOOLS & SOFTWARE

The EUFAR Flight Finder (EFF)

The EFF is a geospatial-temporal search interface to locate flight data within the EUFAR data archive at BADC and can be found at <http://flight-finder.ceda.ac.uk/>. 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.

ASMM & EMC

Check out the new versions of the ASMM (Airborne Science Mission Metadata) and EMC (EUFAR Metadata Creator) tools developed by EUFAR's standards & protocols team, available via the following links:

- emc.eufar.net
- asmm.eufar.net

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

HYLIGHT tools

Under EUFAR's Joint Research Activity - HYLIGHT dedicated to the integration of airborne hyperspectral imagery and laser scanning data to improve image processing and interpretation, a number of tools have been developed by the working group. Most of the tools are available together with their installation guides and user manuals on the [EUFAR website](#).

EVENTS

PAST EVENTS

GEO Week 2017 - GEO-XIV Plenary Session

Washington DC, USA, 23-27 October 2017

VITO, representing EUFAR, presented invasive species maps and water quality and aquatic vegetation maps derived from airborne hyperspectral images at the side event 'The European Environmental Research Infrastructure Community (ENVRI) as Sustainable In-Situ Contribution for EuroGEOSS' at the **GEO Week 2017** from 23-27 October 2017 in Washington DC, USA.

Over 700 people from diverse geographies, sectors and technical areas came together during the event to explore the use and applications of Earth observations for the benefit of humankind.



Photo above (from left to right): representatives of the LifeWatch, eLTER, EUFAR and ICOS research infrastructures at the ENVRI booth during Geo Week 2017

MSCA Trustee course on drone operations

University of Exeter, UK, 30 October to 3 November 2017

"Drone field operations for environmental monitoring" was the topic of the technical course held last year in Oct/Nov within the **TRUSTEE Network**, hosted by the Drone Lab of the University of Exeter.

During the course, the TRUSTEE PhD students learned about all aspects of drone based monitoring, including regulations, flight planning, to mention a few, taking advantage of the expertise of the Drone Lab. The course was complemented by a lecture about camera systems, including multispectral and hyperspectral cameras, by Stefan Livens from VITO and on the importance of sensor calibration by Alasdair MacArthur from the University of Edinburgh.

The knowledge was put to practice during a field day on a farm in the rural surroundings of Falmouth. There everyone got practical experience with flying drones, while at the same time a real survey of a wetland area was carried out. The course was completed by a day dedicated to image processing using Structure-From-Motion software, hereby transforming the raw data collected during the survey into useful information.



Photos from the MSCA Trustee course on drone operations, Exeter, UK, Oct/Nov 2017

ENVRI Week

Málaga, Spain, 6–10 November 2017

The **5th ENVRI week** took place from 6 to 10 November 2017 in Málaga, Spain, as part of the **ENVRIplus** initiative to host two ENVRI weeks per year bringing together different Environmental Research Infrastructures (ENV RIs). The fruitful ENVRI week consisted of ENVRIplus project related sessions as well as several other sessions targeting different groups of stakeholders.

Stefanie Holzwarth from the German Aerospace Research Center - DLR and EUFAR's Standard and Protocols Activity representative participated during the first two days of the ENVRI week. Stefanie Holzwarth, together with Barbara Magagna (LTER-Europe, member of ENVRIplus), gave a presentation on the modelling of EUFAR using the ENVRIplus **Reference Model (RM)** as part of the session of ENVRIplus Theme 2 "Data for Science: Reference model, semantic linking and architecture".

Offering a simple, structured explanation of the main features to be expected in the information systems of typical environmental Research Infrastructures, the Reference Model has been implemented and tested by EUFAR to serve as a real case example (for more information, click [here](#)). Moreover, the EUFAR RM case study will be completely modelled to be part of the ENVRIplus Knowledge Base, providing reusable solutions to common challenges to analyse and compare the characteristics of Research Infrastructures. Regarding the use of the RM, the experiences of EUFAR are mentioned in the "ENVRI Reference Model News" and will be reported in a film that aims to present success stories of the ENVRI RM.

During the ENVRI week, there was also an advisory panel meeting of the Board of European Environmental Research Infrastructures (**BEERi**), which EUFAR has been part of since November 2016. BEERi gives direct guidance to the ENVRIplus project management and strategic view to project progress, acting as internal advisory board representing the needs of environmental Research Infrastructures.

Another interesting event during the week was the joint workshop of ESFRI Environment Strategy Working Group and ENVRI community on the Landscape of Environmental Research Infrastructures. The scope of the workshop was to strengthen the dialogue between ESFRI and Environmental Research Infrastructures and contribute to the updated landscape analysis.



Photo above: Joint workshop of ESFRI Environment Strategy Working Group and ENVRI community on the Landscape of Environmental Research Infrastructures in the beautiful city hall of Malaga.
Photo credit: ENVRIplus.

This joint session was organised as a combination of presentations and panel discussions, addressing a number of important aspects, such as: innovation, socio-economic impact, IPR and legal issues, Big Data and e-needs + position in EOSC, regional impact, and the pan-European and global dimensions. After the workshop, there was a joint EOSC (**European Open Science Cloud**) discussion session with the latest updates of EOSC development, and the expectations on EOSC and needs of ENVRI research infrastructures.

The next ENVRI week will be organised in Zandvoort, Netherlands, from 14 to 18 May 2018. Mark your calendars!

Contact Stefanie.Holzwarth@dlr.de, for more information.



Photo from FOAM - Silesia campaign: FUB Cessna C207 prepared to start from Katowice-Pyrzowice airport (see article on page 5)

UPCOMING EVENTS

European Geosciences Union General Assembly

Vienna, Austria, 8 - 13 April 2018

The **EGU General Assembly 2018** will bring together geoscientists from all over the world to one meeting covering all disciplines of the Earth, planetary and space sciences. The EGU aims to provide a forum where scientists, especially early career researchers, can present their work and discuss their ideas with experts in all fields of geoscience.

In this edition of the EGU, EUFAR will join the **ENVRI Community** booth (#02/03). EUFAR has also submitted an abstract – that has been accepted – for the session AS4.10 – Aircraft-based observation of the atmosphere and atmosphere-surface exchange processes.

DLR Conference on Climate Change 2018: Atmospheric Research for Understanding and Mitigating Climate Change

Cologne, Germany, 17-19 April 2018

This scientific conference aims to bring international scientists, space agencies and interested parties together with United Nations entities such as UNOOSA, UNSPIDER, UNFCCC, WMO and GCOS and thus provide a discussion forum to elaborate on the substantial challenges faced in atmospheric climate research. By encouraging an open exchange of ideas we hope to facilitate the implementation of suitable measures to support the requirements as outlined in the Paris Agreement.

During the conference, invited oral presentations will be given by renowned experts in the field. In addition, there will be a dedicated poster session for contributed papers.

Online registration closes on 3 April 2018. The deadline for abstract submission for your poster presentation is 15 March 2018.

Please visit www.dlr.de/cc2018 for further information.

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EUFAR Handbook

Reference: Manfred Wendisch & Jean-Louis Brenguier (Eds.)
Airborne Measurements for Environmental Research: Methods and Instruments, Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany, 2013
ISBN: 978-3-527-40996-9, 655pp.

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