



EUFAR: European Facility for Airborne Research in Environmental and Geo-sciences

Instrumented aircraft are essential tools in environmental and geo-sciences. Many European countries operate their own research aircraft, but access across national boundaries is difficult and not all researchers are familiar with the potential advantages of airborne experiments. Building on the work of its predecessors under FP5 and FP6, the EUFAR FP7 project brings together 15 operators of airborne facilities and 18 laboratories of experts in airborne research. Its aim is to integrate the airborne community, to ensure that researchers may have access to the infrastructure most suited to their needs, irrespective of the location of the infrastructure.

● A FLYING TOUR OF EUROPEAN RESEARCH

A bird's-eye view is often valuable, and in the case of much atmospheric and land-use research, not just valuable but essential. Sometimes the necessary altitude is provided by satellites or balloons, but in many cases scientists rely on aeroplanes for in situ measurements of clouds and atmospheric parameters, and for remote sensing of the surface.

Research topics that rely on dedicated survey aircraft include weather (including atmospheric dynamics, clouds, lightning and storms); pollution; atmospheric chemistry of gases and aerosol (essential to climate change and air quality); crop health; conservation research (such as tracking the spread of alien plants or counting polar bears); and mapping. The equipment carried onboard can include visible-light and infrared cameras, spectrometers, radar devices and in situ samplers.

EUFAR began in 2000 under FP5 within a context of nationally fragmented communities of infrastructure operators and users. In the few countries where instrumented aircraft were operated, development of and access to airborne infrastructures was managed by the national research funding institutions, aircraft operators and scientific users.

For the users, access to national subsidised facilities was possible, but it was more difficult to use aircraft operated outside the country, even when it was more suited to the objectives. For researchers from countries that were not operating any aircraft, the only opportunities to participate in airborne research were as an invited participant, rarely as principal investigator. For the operators, developments were decided at national level, with little consideration of similar facilities already available in other European countries.



EUFAR aims to integrate the research aircraft communities at European level to create a highly efficient and cost-effective technology base that will underpin solutions to a wide range of scientific and environmental problems. In particular, EUFAR will give scientific users fast and easy access to information, funding opportunities, applications for access to the infrastructures, processed data and data analysis expertise. For aircraft and instrument operators, the project is fostering a culture of cooperation to facilitate the exchange of knowledge and good practice, improve the operation of existing infrastructures, and better support the joint development of new ones.

In addition, EUFAR is working to identify obstacles to the integrated management of the infrastructures, proposing technical solutions and preparing all information necessary for strategic decisions on joint development of new infrastructures.

● MAIN ACTIVITIES

EUFAR has three main fields of activities: Networking, Trans-national Access and Joint Research Activities. Networking has created a management structure for the project including a Scientific Advisory Committee, composed of eminent scientists to tackle new or unexpected user-driven developments, and a series of working groups comprising leading specialists in their field. Trans-national Access coordination aims to provide a wider and more efficient use of the research infrastructures. Three Joint Research Activities develop innovative measurement and data processing techniques for humidity, cloud drop sizing and analysis of hyperspectral imaging of the surface.

The Expert Working Groups are working to promote and facilitate the dissemination of knowledge and technologies between academia and industry, and the activity for Education and Training provides training courses to new users. The Working Group on Standards and Protocols contributes to improve the compatibility between various research infrastructures. The working group for the Future of the Fleet fosters the joint development of airborne research infrastructures in terms of capacity and performance.

EUFAR will also build a central gateway to data collected in the field by airborne infrastructures and a unique web portal to European airborne research activities.

The working group on the Sustainable Structure aims to promote solutions for the long-term sustainability of EUFAR



and at providing the research funding institutions with the information necessary to better structure and integrate European airborne research infrastructures. A key objective will be to obtain commitments from national funding institutions to provide equal terms trans-national access. This working group will also manage the coordination with international organisations within the framework of the ISPRS working Groups for Airborne Research.

Transnational access activities focus on providing a wider and more efficient access to the infrastructures. Access will be available to some 14 infrastructures, 25 installations, for 63 projects, 187 users, and a total amount of 520 flight hours. The EUFAR fleet, with its large diversity, allows researchers to design experiments taking measurements from the surface to the lower stratosphere, from targeted objectives on a small light aircraft to multidisciplinary projects on high payload aircraft, and in very diverse scientific fields, including solid Earth, surface observation, atmospheric dynamics, chemistry, microphysics and radiation.



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Partners:

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Met Office (UK)
Forschungszentrum Juelich GmbH (DE)
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