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## EUFAR: European Fleet for Airborne Research

**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. The EU-funded EUFAR project improves the coordination between aircraft operators, elaborates on common schemes for access to the fleet, promotes the co-operative construction of aircraft that are not yet available in Europe and supports the development of innovative instruments. Most importantly, it provides new users with free transnational access to the aircraft of the fleet.**

### ● 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 so much valuable as essential. Sometimes the necessary altitude is provided by satellites or balloons, but in many cases scientists rely on aeroplanes for in situ measurements of the atmospheric parameters and close remote sensing of clouds and of the surface.

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

Aircraft may be less costly and more flexible than satellites, but that does not mean that airborne facilities are cheap or easy to set up. The EUFAR project aims to ensure that Europe's fleet of research aircraft is used to best advantage by matching scientific projects to the most suited aircraft. EUFAR will make it easier for researchers to locate and book time on suitable aircraft, even across national boundaries, and to find sources of funding.

EUFAR brings together 24 European institutions and companies involved in airborne research, which between them operate over 30 instrumented aircraft. Of these, 24 are offered for transnational access funding. The smallest is an ultralight aircraft that can carry 80kg at low speeds just 30 metres above the ground. The largest is a four-engine jet with a payload of several tonnes and a ceiling of 15 000 metres.

### ● MAIN ACTIVITIES

EUFAR has three main fields of activities: 'Networking', 'Transnational Access', and 'Joint Research'. Networking has created a management structure for the project and two working groups on the future development of airborne research. The 'Scientific Advisory Committee', under the umbrella of the European Science Foundation and the 'Working Group on the Future of the Fleet', are completing a forward look on the scientific demand, an evaluation of the present fleet performance, and a survey of the needs for the construction of new aircraft to fill the gaps. 'Expert Working Groups' support the research community involved in airborne instrumentation for exchanging knowledge and promoting best practice and investments in airborne instrumentation. The activity on 'Education and Training' is promoting the benefits of airborne research to academics, by offering access and tutoring to young scientists.

Transnational Access is concerned with promoting the use of instrumented aircraft in the scientific community. This activity helps scientists plan and fund their airborne studies, locate suitable aircraft, carry out the work and analyse the resulting data with full financial support. The project has made flying hours available on a competitive basis, with researchers with their own projects applying to EUFAR and the lucky winners getting free scientific and engineering support, travel, flying time and data analysis. Young scientists without projects of their own can still learn about airborne surveys by joining an existing project.

The third activity, Joint Research, aims at designing and constructing an Aerosol Reference Pod that can be mounted on many aircraft of the fleet and that contains a comprehensive set of aerosol instruments. This system will serve as a standard and true



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basis for the inter-calibration of airborne aerosol instrumentation. The European fleet is presently limited to small- and medium-range/payload aircraft. Together, EUFAR will help to create a larger and more active user community and greater cooperation among aircraft operators and the research funding institutions.

In the long term, say the organisers, this will progressively reduce duplication of facilities and optimise the investments in aircraft and instrumentation to provide European users with the most complete suite of airborne platforms that are necessary to cover the very diverse needs of environmental and geo-sciences.

### ● EUROPEAN FLEET FOR AIRBORNE RESEARCH IN SUMMARY

**Project acronym:** EUFAR

**Funding scheme (FP6):** Integrated Infrastructures Initiative (I3)

**EU financial contribution:** €5 million

**EU project officer:** Brigitte Weiss

**Duration:** 48 months

**Start date:** 1 October 2004

**Completion date:** 30 September 2008

**Project webpage:** [www.eufar.net](http://www.eufar.net)

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GmbH (DE), Centre National de la Recherche Scientifique (FR), Met Office (UK), Natural Environment Research Council (ARSF/BGS) (UK), Instituto Nacional de Técnica Aeroespacial (ES), Tel Aviv University (IL), Geologian Tutkimuskeskus (Geological Survey of Finland) (FIN), Technical University of Braunschweig (DE), Freie Universität Berlin (DE), MetAir AG (CH), CNR-Istituto Sistemi Agricoli e Forestali Mediterraneo (IT), Forschungszentrum Karlsruhe GmbH (DE), Stockholms Universitet (SE), Max-Planck-Institute for Chemistry, Mainz (DE), National University of Ireland (IE), University of Manchester (UK), Leibniz-Institut für Troposphärenforschung (DE), Geophysica-Gruppo Europeo di Interesse Economico (IT), Alfred Wegener Institut (DE), National Administration of Meteorology of Romania (RO)