

EUFAR on-board training opportunities to advance airborne research

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EUFAR N5ET and TA opportunities

30th EARSeL Symposium, 31th May – 3rd June 2010, UNESCO, Paris, France

EUFR - European Facility for Airborne Research



EUFR

Integrating Activity of the EC FP7



Budget 8 M€

Duration 4 years (2008-2012)

33 Partners

7 instruments and 19 aircraft open to Trans-national Access

www.eufr.net



EUFR Consortium

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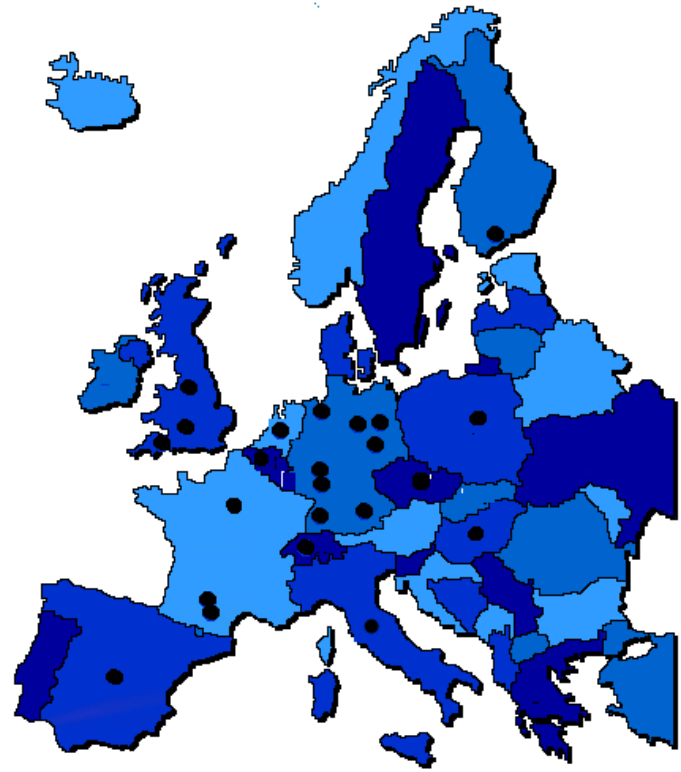
Consortium
Aircraft open to TA
HSI sensors open to TA
Objectives
Activities

EUFR N5ET

Objectives
Training opportunities
ET-TC
ET-EC
ET-TA
ET-VO

EUFR TA

- ▲ **Météo-France (FR) Coordinator**
- ▲ **MetOffice (UK)**
- ▲ **DLR (DE)**
- ▲ **NLR (NL)**
- ▲ **Enviscope (DE)**
- ▲ **CNRS (FR)**
- ▲ **NERC (UK)**
- ▲ **INTA (ES)**
- ▲ **GTK (FI)**
- ▲ **FUB (DE)**
- ▲ **FZK (DE)**
- ▲ **AWI (DE)**
- ▲ **CNR-IBIMET (IT)**
- ▲ **UNIMAN (UK)**
- ▲ **VITO (BE)**



- ▲ **Jülich (DE)**
- ▲ **JOGU (DE)**
- ▲ **STFC (UK)**
- ▲ **USZ (HU)**
- ▲ **UCAM-DCHEM (UK)**
- ▲ **UHEI (DE)**
- ▲ **UWAR (PL)**
- ▲ **COSINE (NL)**
- ▲ **IRSN (FR)**
- ▲ **COMAT (FR)**
- ▲ **VKI (BE)**
- ▲ **UZH-RSL (CH)**
- ▲ **WU (NL)**
- ▲ **USBE (CZ)**
- ▲ **TAU (IL)**
- ▲ **GFZ (DE)**
- ▲ **PML (UK)**
- ▲ **ONERA (FR)**

15 aircraft or instruments operators
18 experts in airborne measurements
Of which 12 hyperspectral instrument providers
and/or hyperspectral remote sensing experts

Instrumented aircraft open to TA

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Aircraft open to TA

HSI sensors open to TA

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OPERATORS	CATEGORIES				
	1. Stratospheric aircraft	2. High level jets	3. Large aircraft	4. Medium aircraft	5. Small tropospheric aircraft
MetOffice			BAe146		
DLR		HALO		Do-228	
NLR		Citation		Metro	
ENVISCOPE		Learjet			Partenavia
SAFIRE		Falcon 20	ATR42		Piper-Aztec
NERC				Do-228	
INTA				CASA-212	
GTK				Twin-Otter	
FUB					Cessna 207
FZK					ASK-16
AWI			Polar 5		Microlight
ISAFoM					ERA Sky-Arrow
UNIMAN					Cessna 182J
TOTAL AIRCRAFT: 19	0	4	3	5	7
k€ / Flight hour	none	7 to 28	4 to 13	4 to 5	0.9 to 4

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HyperSpectral Imaging sensors open to TA

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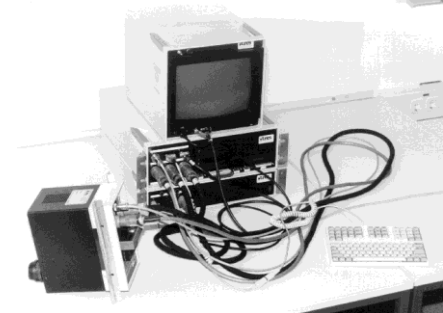
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Operator	Instrument
VITO	APEX
DLR	ARES
NERC	Eagle/Hawk
INTA	AHS
FUB	CASI



Long Term Objectives

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To lay the groundwork of a European distributed infrastructure for airborne research in environmental and geo-sciences ...

... for each European scientist to get access at "equal terms" to the airborne facility the most suited to his scientific objectives, irrespective of his origin and of where the facility is operated.

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• **Networking Activities – 2 M€**

- N1. Scientific Advisory Committee (N1SAC-CNRM)
- N2. TA coordination (N2TAC-MetOffice)
- N3. Future of the Fleet (N3FF-Jülich)
- N4. Expert Working Groups (N4FWG-JOGU)
- N5. Education and Training (N5ET-VITO)**
- N6. Standards and Protocols (N6SP-DLR)
- N7. Airborne Data Base (N7DB-STFC)
- N8. E-Communication (N8EC-CNRM)
- N9. Sustainable structure (N9SST-CNRM)

• **Transnational Activities (TA) – 3 M€**

• **Joint Research Activities (JRA) – 2,4 M€**

- JRA1.** Development and evaluation of new and improved hygrometers for airborne research (DENCHAR-Jülich)
- JRA2.** Quality layers for airborne hyperspectral imagery and data products (HYQUAPRO-VITO)
- JRA3.** Airborne Laser Interferometric Drop Sizer (ALIDS-IRSN)

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Objectives

- ❖ To attract new early-stage researchers to airborne research
- ❖ To educate and train (theoretically and practically) new early-stage researchers in airborne atmospheric research and airborne hyperspectral remote sensing
- ❖ To train trainers (e.g. university lecturers) in airborne atmospheric research and airborne hyperspectral remote sensing

N5ET - Education and Training

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- ▶ EUFAR offers four **training opportunities**:
 - ❖ Training Courses on airborne research (ET-TC)
 - ❖ Join an Existing Campaign (ET-EC)
 - ❖ Participation in the design of a new field campaign, in the frame of Transnational Access (TA). Tutoring by experienced scientists (ET-TA)
 - ❖ Visit to aircraft/instrument operator for exchange of knowledge and know-how (ET-VO)

- ▶ EUFAR provides **100% support** for:
 - ❖ Training
 - ❖ Flight costs of research aircraft and instruments (through TA)
 - ❖ Travel and Subsistence (T&S) expenses (reimbursement rules available at the EUFAR website) for the participants

N5ET - Education and Training



❖ EUFA offers 4 training courses (ET-TC)

- For early-stage researchers
- For trainers/university lecturers (= NEW in FP7)
- Total number of participants to the training courses (60 students and 20 trainers/university lecturers)
- **During 1 week to 10 days**
- **Equal emphasis on theory and practical training/demonstration + flight experiment** (i.e. demo, hands-on exercises, design an experiment, definition of sampling strategy, flight plan, flight, ...)
- Top-class scientists cover **complete chain** from acquisition to interpretation of airborne data
 - Upstream topics (e.g. sensor development)
 - Downstream topics (e.g. corrections, analysis, interpretation)
 - With special attention to « common definitions and standard approach » (EUFA N6-SP)
- Hand-outs (or syllabi) + airborne data provided
- Evaluation by participants
- Scientific reports from the participants published at the EUFA website

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- ❖ **ADDRESSSS** training course, 19-28 August 2010, Tihany, Hungary (**Registration closed 20th May 2010; 72 registrations received, 20(+10) selected for EUFRAR funding**)

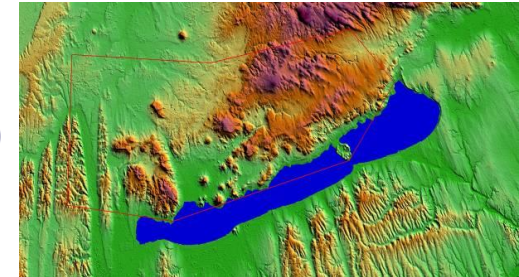
Topic: Ecology and Earth sciences

Aircraft: DO228 D-CALM
operated by NERC ARSF (UK)

Sensor: AISA Eagle/Hawk
hyperspectral sensor
LEICA ALS50-II LIDAR
LEICA RCD 105 digital camera
operated by NERC ARSF (UK)

Host: Balaton Limnological Research Institute

Working area: Including lakes and wetlands, drainage basins, plains, hill and mountain regions, grasslands, forests, cultivated areas, conservation sanctuary sites and areas under high anthropogenic impact



Training Courses (2/4)

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- ❖ ADDRESSS programme
 - Theory (LIDAR measurement principle, hyperspectral remote sensing, water quality, vegetation, ...)
 - Hands-on (LIDAR data quality analysis, atmospheric correction, vegetation classification, ...)
 - Field measurements (field spectroscopy)
 - Flight planning design
 - Excursion to airport/aircraft
 - 3 student flights (if weather and time allow)
 - Presentation of results

- ❖ Draft detailed time table (incl. keynote lecturers) available at the <http://www.eufar.net>

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- ❖ **TETRAD (Training & Education for Turbulence Research via Airborne Data)** training course, 10-18 September 2010, Hyeres, France (**Registration will close 20th June 2010 6pm**)

Topic: Turbulence research

Aircraft: ATR42

operated by SAFIRE (FR)

Sensor: Wind vector, turbulence probes, scattering spectrometer, imaging spectrometer for cloud droplet spectra, ...

operated by SAFIRE (FR)

Host: CNR ISAC Institute for Atmospheric Sciences and Climate

Working area: Flights, within external constraints, will consist of over-sea patterns, as well as patterns towards French Alps (Provence-Alpes- Cote d'Azur Region)

Training Courses (4/4)

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❖ TETRAD programme

- Theory (measurement of turbulence and clouds interaction with an aircraft, ...)
- Hands-on (exercises with cloud data, data analysis, ...)
- Flight planning design
- 4 student flights (with each 5 students on-board)
- Presentation of results



Picture EUFRAR ACAS summer school, 17-25 April 2008, Utrecht (the Netherlands)

ET-EC Join an existing field campaign

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▶ The list of research campaigns open to students is available in the **planning of the EUFAR fleet** at the EUFAR website

▶ **On-line application at the EUFAR website**

ET-TA Participate in the design of a new field campaign

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- ▶ **In the frame of Transnational Access (TA), EUFAR offers the opportunity to join a host research group to design a field campaign (flight experiment) including**
 - ❖ scientific content
 - ❖ organisation of the campaign
 - ❖ data analysis

- ▶ **Selected applicants will be able to actively participate in the**
 - ❖ research flights
 - ❖ data analysis
 - ❖ publications

- ▶ **On-line application at the EUFAR website**

ET-VO Visit an aircraft/instrument operator

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▲ **EUFRAR offers the opportunity for instrument/aircraft operators to exchange personnel**

- ❖ typically one week visit
- ❖ to share knowledge and know-how about instrument calibration, data acquisition, etc. during field campaigns or test at a ground facility

▲ **Eligibility criteria**

- ❖ applicants should be instrument/aircraft operator from EU member state or associated state (from list available at the EUFRAR website)
- ❖ must work in an institution established in a country other than the legal entity(ies) operating the selected aircraft/instrument
- ❖ after the visit, the participants will be requested to write a report

▲ **On-line application at the EUFRAR website**

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Transnational Access (TA)

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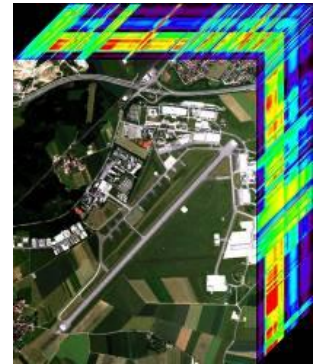
ET-VO

EUFAR TA

- ▶ **7 instruments and 22 aircraft open to TA**
- ▶ **Support planned for 64 projects:
201 users and 538 flight hours**

▶ **EUFAR FP6 Achievements:**

- ❖ 74 proposals received
- ❖ Support allocated to 46 projects: 230 users and 412 flight hours



Transnational Access (TA) call is continuously open!

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- ▶ **EUFA**R Transnational Access call to **get 100% funded flight hours** for your experiments is continuously open!
- ▶ **NEW: Expression of Interest**
- ▶ **Pre-review and evaluation process**
- ▶ **Eligibility criteria available at www.eufar.net**

- ▶ **The competition is open until 2011 but with potential flying opportunities until 30th August 2012.**

Transnational Access (TA) call is continuously open!

Three types of TA proposals can be submitted

❖ Science projects

Proposals for **scientific projects** (primary acceptance criterion is the quality and impact of the science)

❖ Instrument development

Proposals that involve the **testing or development of novel instrumentation** in any area of airborne atmospheric or geo-science research

❖ Training courses

Proposals to **host** a 1 week to 10 days **training course including flight experiment** can be submitted on any topic for which the measurement capabilities of the EUFAR fleet+instruments are relevant.
(primary acceptance criterion is the quality of the teaching)

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Transnational Access (TA)

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TA Eligibility criteria

- ❖ The applicants (leader and the majority of the group) must work in a institution established in a European Member State or Associated State;
- ❖ The applicants (leader and the majority of the group) must work in a country other than the country(ies) where the legal entity(ies) operating the selected aircraft and/or instrument is(are) established;
- ❖ Only groups that are entitled to disseminate the foreground that they have generated under the project are eligible to benefit from access.

Contact person

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**For more info on
EUFRAR Education and Training opportunities**

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Contact person

**For more info on
call for Transnational Access proposals**

Contact

bureau@eufar.net

or

Phil Brown

phil.brown@metoffice.gov.uk

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Thank you for your attention!

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Looking forward to meeting you at one of the EUFA Education and Training activities!

To apply: www.eufar.net

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