EUFAR:

Access to airborne research facilities in environmental and geo-sciences.

Workshop: Towards harmonisation of polar infrastructure access, Plovdiv, 1 Aug 2019

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What is EUFAR?

- EUFAR is the European Facility for Airborne Research in Environmental and Geosciences
- EUFAR links the operators of research aircraft and their instrumentation, scientific users and funding agencies
- EUFAR aims to enhance collaboration, spread best practice, promote efficiency and enhance user access to both the facilities and their data
- EUFAR website provides a central information portal

Keywords:
Environmental sciences
Geo sciences
Airborne research
Atmospheric measurements
Remote sensing
Multi-domain

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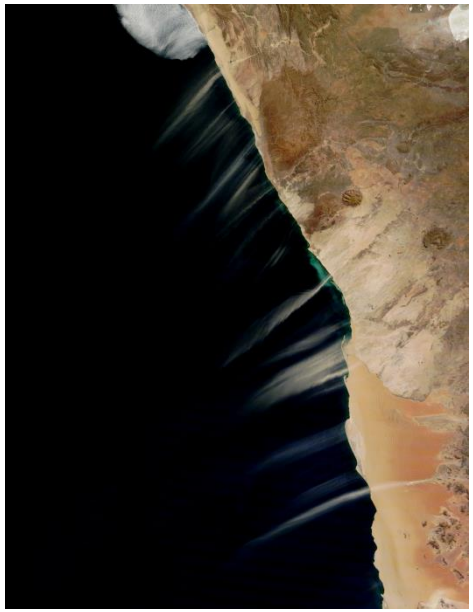
What for?

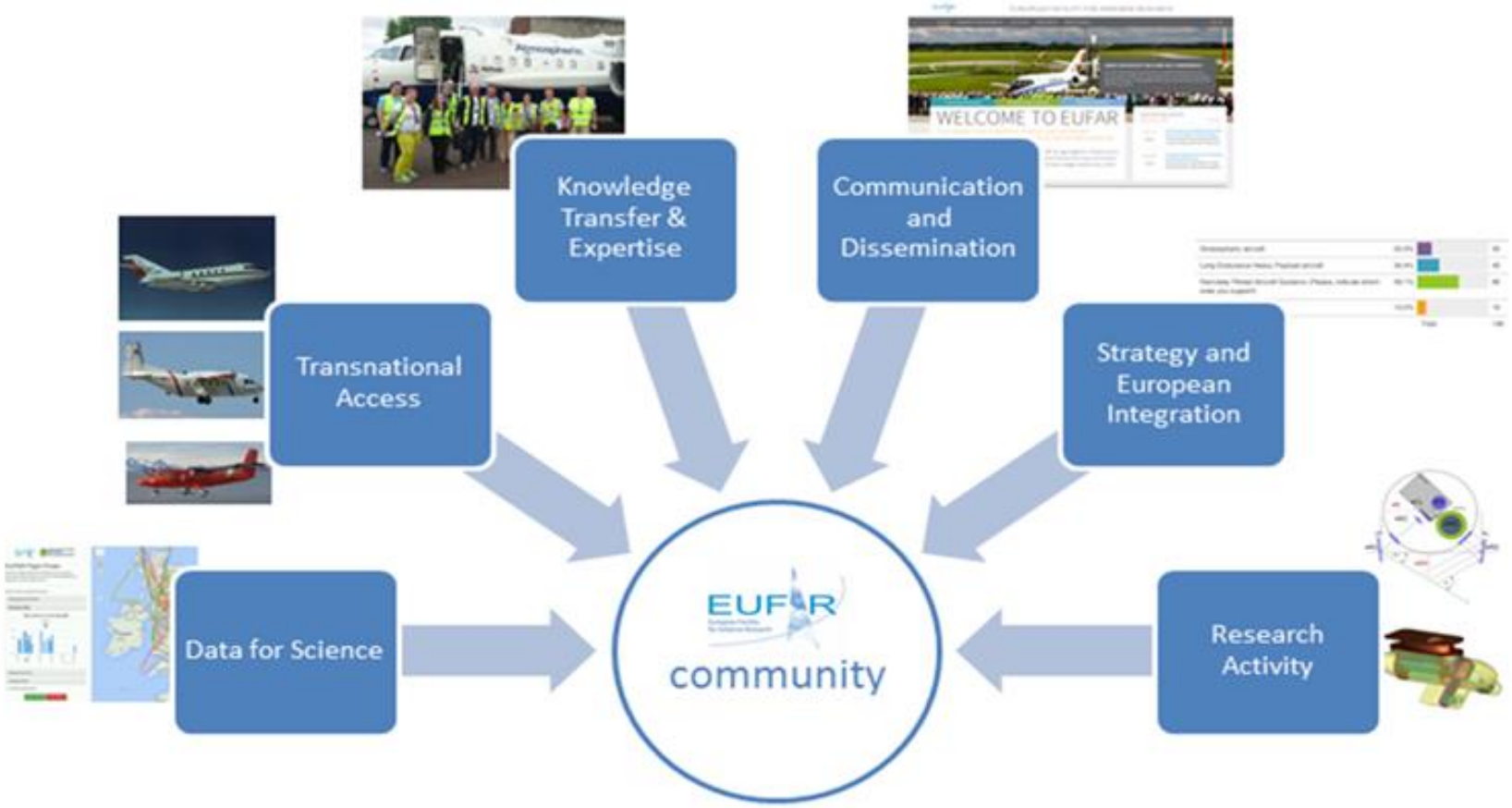
- Airborne observational research contributes incremental developments in the scientific understanding of Earth-System processes.
- These developments proceed in parallel with the capability to observe these processes on a global scale from space and to model them in operational Numerical Weather Prediction (NWP), climate and Earth-System models.
- The fields of science impacted by an airborne research observing capability are very broad, and span the atmosphere, ocean, land surface and biological systems.
- Airborne observations continue to be required to support Earth-System model development and space-based observing programs such as COPERNICUS.

An example of the application of EUFAR airborne measurements:



Two FP7-EUFAR-funded research flight campaigns clustered with the AEROCLO-sA umbrella flight campaign took place in Namibia in Aug and Sept 2017 (EriSMA and ALLDUST-SA) to investigate sources and emissions of dust in Namibia

Which activities?



EUFAR's timeline

2000-2004	2004-2008	2008-2013	2014-2018
EUFAR	**EUFAR**	**EUFAR**	**EUFAR2**
FP5 Infrastructure Cooperation Network	FP6 Integrated Infrastructure Initiative	FP7 Integrated Infrastructure Initiative	FP7 Integrated Infrastructure Initiative
€640k	€5M	€8M	€6M
9 partners	22 partners	34 partners	24 partners

2000

2007-2011
COPAL
FP7 Preparatory Phase Study
€1M
13 partners

January 2018
EUFAR AISBL
Constitution of the EUFAR AISBL

€20M+
EU funding
over 17 years

EUFAR capabilities

Atmospheric in-situ observation

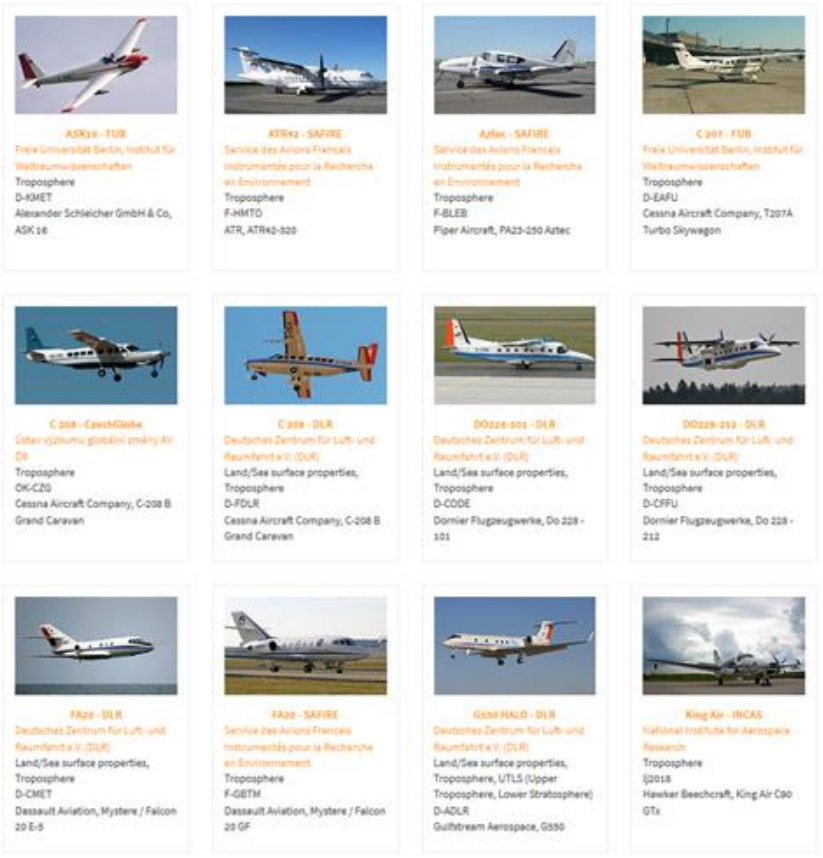
- Atmospheric composition
  (trace gases and aerosols)
- Cloud and precipitation microphysics
- Radiative transfer
  (visible to sub-millimetre)“
- Atmospheric dynamics and thermodynamics

Airborne imaging of the Earth’s surface

- Hyperspectral imaging
  (Vis, Near-IR, Thermal-IR)
- Lidar terrain-scanning
- Synthetic aperture radar
- Soil / Vegetation / Water / Minerals

Categories

- Jet / Large / Medium / Small aircraft



EUFAR members do not currently operate specialised polar aircraft

EUFAR Access

- Transnational Access
  - With EU funding EUFAR was able to support fully-funded flight hours given to user groups without access to the necessary facilities in their own country of working
  - Such funding is not currently available
- Open Access
  - EUFAR still seeks to broaden access to the facilities operated by its Members and is working towards the development of Open Access principles
  - The objective is to ensure the optimum usage of the existing fleet of aircraft

TA access process

- Calls for Proposals published via EUFAR website
- Proposals peer-reviewed – must meet a quality threshold
- Selection panel – selection in line with Call requirements and available funding
- Eligibility criteria
  - open to users who don't have access to the required facilities through their national research funding

TA Strengths and Limitations

- Strengths
  - Provides essentially cost-free access to users (plus limited travel support)
  - Enables clustering of TA activities with larger campaigns
    - possibility to participate in remote locations incl. polar regions
    - By this means, EUFAR has supported TA campaigns in Antarctica, Namibia, Cape Verde
  - Broad range of facilities available

TA Strengths and Limitations

Limitations

- High costs of aircraft activity (typically €5,000-25,000 per flight hour)
- Size of awards usually restricted to ~10 flight-hours or 2 observing flights by available funding
- Hence scientific scope of TA projects necessarily limited
  - but can be enhanced by appropriate clustering with nationally-supported activities
  - clustering typically allows TA user to participate in a longer-duration observing campaign – better chance to obtain optimum observing conditions
- Problems of attracting peer-reviewers

Experience in harmonizing access requirements

- Timescale between submission of application to proposed observing work should ideally be 18-24 months
- Research aircraft operations typically planned 1-2 years ahead – TA projects have to fit in with this schedule
- Encourage multi-disciplinary approach combining aircraft and other RIs

Best practice recommendations

- Calls for Proposals linked to broad strategic objectives to enhance science impact
- Obtain additional external funding to support TA!
  - Any additional flying beyond what is supported by national funding will raise additional costs
    - Fuel, airport fees, T&S for aircraft crews
- Where access time is limited by funding, encourage clustering with existing activities
- Where possible, link to existing peer-review systems

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