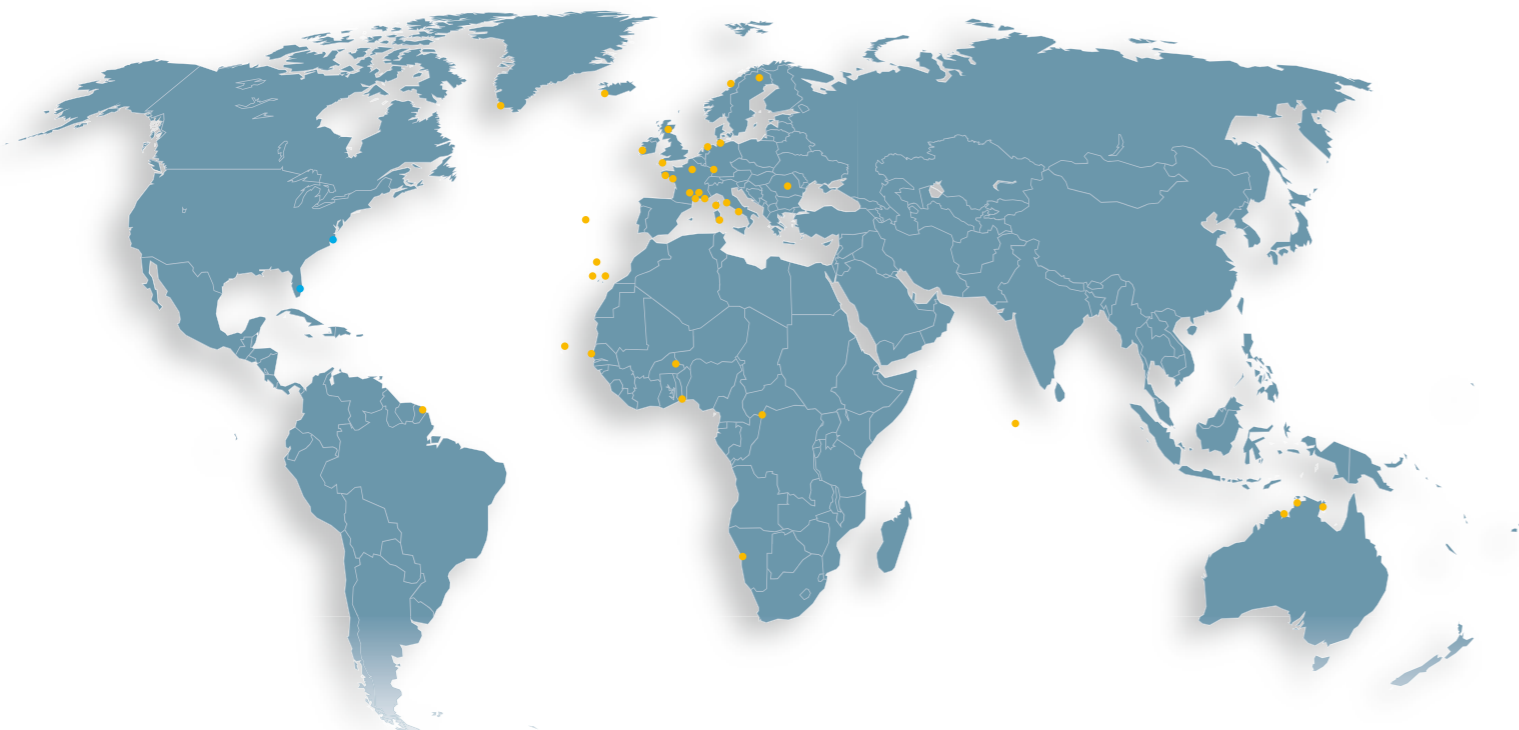


## → SAFIRE OPERATIONS



- Themes: atmosphere, continental and oceanic surfaces and interfaces, geophysics
- Pursuit of intense meteorological phenomena: severe storms, thunderstorms, volcanic eruptions, cyclones...
- Real-time observations for modeling the atmosphere (greenhouse gases, aerosols, chemistry, clouds, etc.) for climate change
- In-situ measurements and remote sensing (radars, lidars, imagers, etc.)
- Development, Calibration & Validation of instruments (methane, CO<sub>2</sub>, wind profiles, wave height, water stress on plants, etc.) of French and European space missions

### → Contact us:

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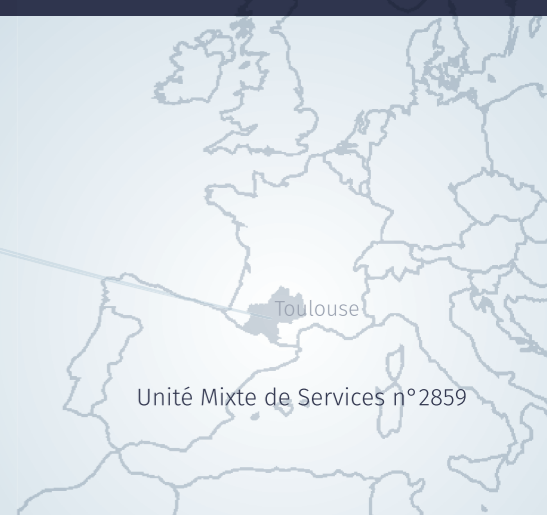
SAFIRE is the French leading facility for airborne research.  
Our public research facility is an infrastructure of the largest French governmental research organization (CNRS), the French national meteorological service (Météo-France) and the French space agency (CNES)

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SERVICE DES  
AVIONS  
FRANCAIS  
INSTRUMENTES POUR LA  
RECHERCHE EN  
ENVIRONNEMENT

the French facility for airborne research



Unité Mixte de Services n°2859



the French facility for airborne research

# What can SAFIRE offer?

## OPERATIONAL FLEXIBILITY

### A FLEET OF 3 FLYING LABS

SAFIRE operates three aircraft which have been deeply modified with various capabilities for airborne equipments.

- Large aircraft (ATR 42): efficient for multi-disciplinary measurements at low to medium altitude with a heavy scientific payload;
- High altitude (Falcon 20): fly fast and high enough to study the top of the troposphere.
- Small aircraft (Piper Aztec): suitable for low altitude flight with light instruments;

### A DEDICATED TEAM OF EXPERTS

25 specialists offering a complete range of services to users: a team including pilots, flight engineers, measurement and data experts

#### Before the flight:

- Instrumentation: prepare and install adapted scientific or R&T equipment onboard
- Flight plans: Define them and negotiate with aviation authorities
- Logistics: Organize the field campaign from any airport worldwide

#### During the flight:

- Pilot the aircraft according to scientific needs
- Check core instrumentation and monitor real-time acquisition
- Advise and support scientific users onboard
- Air/ground satcom available

#### After the flight:

- Provide a first set of data (quick-looks and raw data) just after the landing
- Deliver post-processed data (calibrated, synchronized, georectified...)

	Piper Aztec (small)	ATR 42 (large)	Falcon 20 (high altitude)
Measurement altitude	Low troposphere	Low and medium troposphere	Low to high troposphere
Endurance	3h45	5h30	4h30
Ceiling	10000 feet	25000 ft	41000 ft
Max scientific payload	150 kg	2500 kg	1200 kg
Max measurement speed	80 m/s	100 m/s	200 m/s
Owner	Météo-France	Météo-France	CNRS

## INSTRUMENTATION

### CORE INSTRUMENTATION ONBOARD

SAFIRE provides more than 100 certified instruments and its expertise on in-situ and remote-sensing measurements.

- Atmospheric characteristics: thermodynamics, turbulence and wind, radiative measurements, humidity...
- Air chemistry: Green house and pollutant gas (analysers of CO<sub>2</sub>, CH<sub>4</sub>, NO<sub>x</sub>, O<sub>3</sub>, CO, SO<sub>2</sub> ...)
- Cloud microphysics and aerosols: water content, droplet and aerosol size distribution, aerosol density profile (lidar)...
- Surface study: thermal infrared camera, GNSS...
- Aircraft position and altitude: inertial measurement units, geolocalization

### YOUR OWN INSTRUMENTS

#### We help you to fly your equipments:

- By running a feasibility study
- By obtaining the aeronautical certification
- By designing and manufacturing the interfaces
- By connecting the instrument to our information technology system

#### Examples of flown instruments

Remote sensing : lidars, radars, spectrometers ...

In-situ: mass spectrometers, gas analyzers, gravimeters

imagers, hyperspectral cameras

#### Test of aeronautical equipment

Pitot probe, ELT, location transmitter, icing probes ...

### Our partners:

#### More than 1000 users involved for various organizations:

French science and R&D labs involving CNRS, CNES, Météo-France, French universities, ONERA, IRD, DGA

International collaboration with various institutes :

NASA, KIT, MPI, European universities...

Aeronautical Industry:

Airbus, Thalès, Dassault, ADS TAS, Honeywell.

Flights funded by

French and European Research Agencies,

French and European Space Agency, European and US

Aviation Authorities

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