

## FLUXPYR, what is it?

FLUXPYR (www.fluxpyr.eu) is a cross-border network of instruments and multidisciplinary experts for the determination and management of water, carbon and energy fluxes in Pyrenean agricultural and pastoral ecosystems, in the context of climate and land use changes.

INTERREG IV-A – POCTEFA Programme - Duration: 2009-2012 - Budget: 2.2 M. euros Co-financing: European Union (EU) - ERDF, Generalitat de Catalunya and Conseil Régional Midi-Pyrénées Participants: 11 partners from France, Spain, Andorra and external collaborators - Coordination: Forest Sciences Center of Catalonia (CTFC, Solsona) Contacts: Maria Teresa Sebastià (teresa.sebastia@ctfc.cat) (Coordinator) - Fabrice Gouriveau (fabrice.gouriveau@ctfc.es) (Manager)

## What do FLUXPYR's partners do?



UPS - CESBIO Water, productivity & carbon models using satellite & flux tower technologies in cropland

UPS - LA Regional physicochemical transport, atmospheric processes & remote sensing

CNRS - GAME Meteorological modelling, high performance computing, remote sensing

UTM - GEODE Spatiotemporal vegetation & hydroclimatic dynamics, landscape ecology, socioeconomics

ENFA Mountain landscape analysis, geographical processes, socioeconomics

> **CENMA** Climatological models, grassland management, ecosystem productivity

CTFC (Project coordinator) Ecosystem biodiversity & productivity, carbon & nitrogen cycles in mountain ecosystems

**FLUXPYR** 

UPC Instrumentation technology, signal processing & micrometeorological modelling

UPNA

Grassland management, ecosystem

productivity, carbon & nitrogen cycles

IC3 Regional CO<sub>2</sub> transport using aircraft platforms & continuous methods

IG Geomatics for acquisition & geometric processing of low-height aerial imagery

> ICTJA-CSIC Earth observation, vegetation, phenology

Advisory board APEM, ARPE, IPE, CEFE, ETH, OCCC

**40%** 

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http://www.maps-for-free.com

## What are FLUXPYR's objectives?

- 1. To evaluate and manage water, carbon and energy fluxes and stocks in Pyrenean agroecosystems, and better understand ecosystem processes and functions.
- 2. To assess the impacts of climate and land use changes in the Pyrenees and propose suitable mitigation and adaptation strategies.
- 3. To promote the exchange of knowledge and experiences, multidisciplinarity, and to train researchers and students.
- 4. To advise local actors for the sustainable use of natural resources.
- 5. To sensibilise the society to the causes and consequences of climate change and ways to face it.

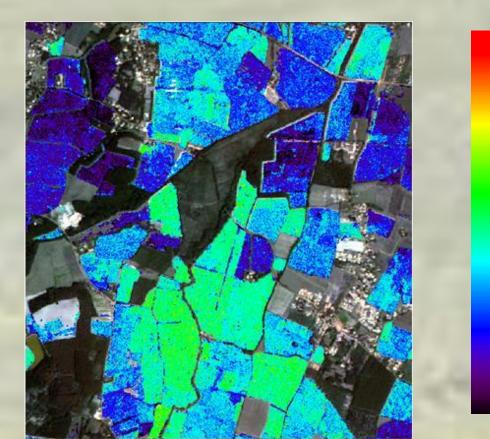
## What about FLUXPYR's activities and applications?

FLUXPYR combines ecosystem, atmospheric and satellite studies to investigate the impacts of climate and land use changes in the Pyrenees. It helps to create greenhouse gas balances, maps and models of climate, soil water and carbon content, land cover, snow cover dynamics, etc. It also offers workshops and internships and promotes multidisciplinary research, as well as the transfer of knowledge and experience.

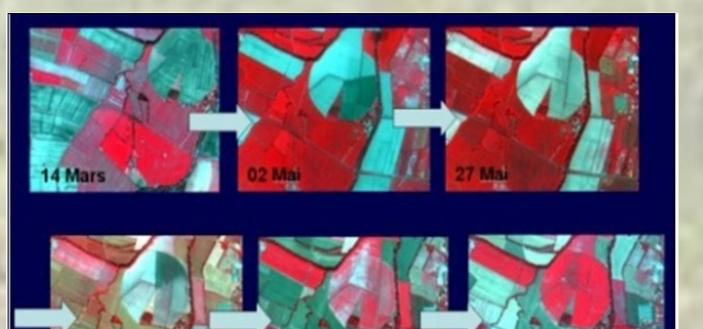
**Satellite studies** (Local to regional scale)

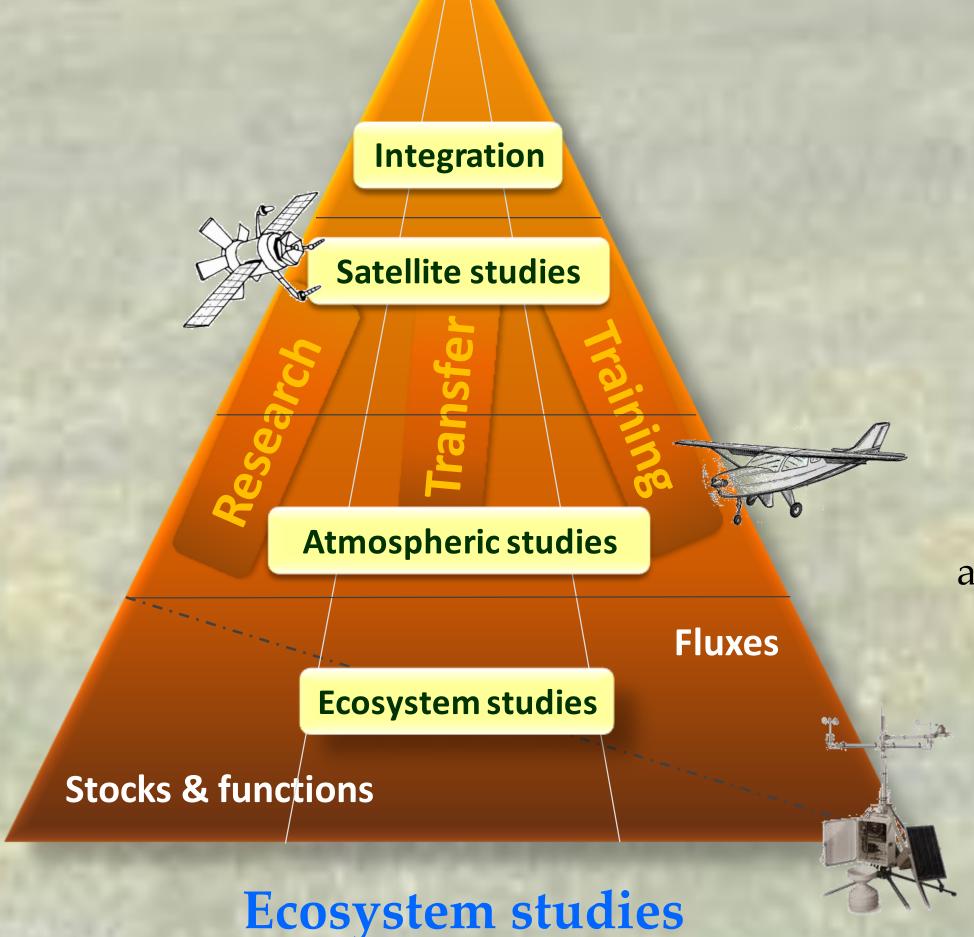


Snow cover, Pyrenees (CESBIO)



Soil water content - Radar TERRASAR X data (F. Baup, CESBIO)





Atmospheric studies (Local to regional scale)



Aircraft equipped to take photographs and monitor the atmospheric composition





Colour and infrared cameras

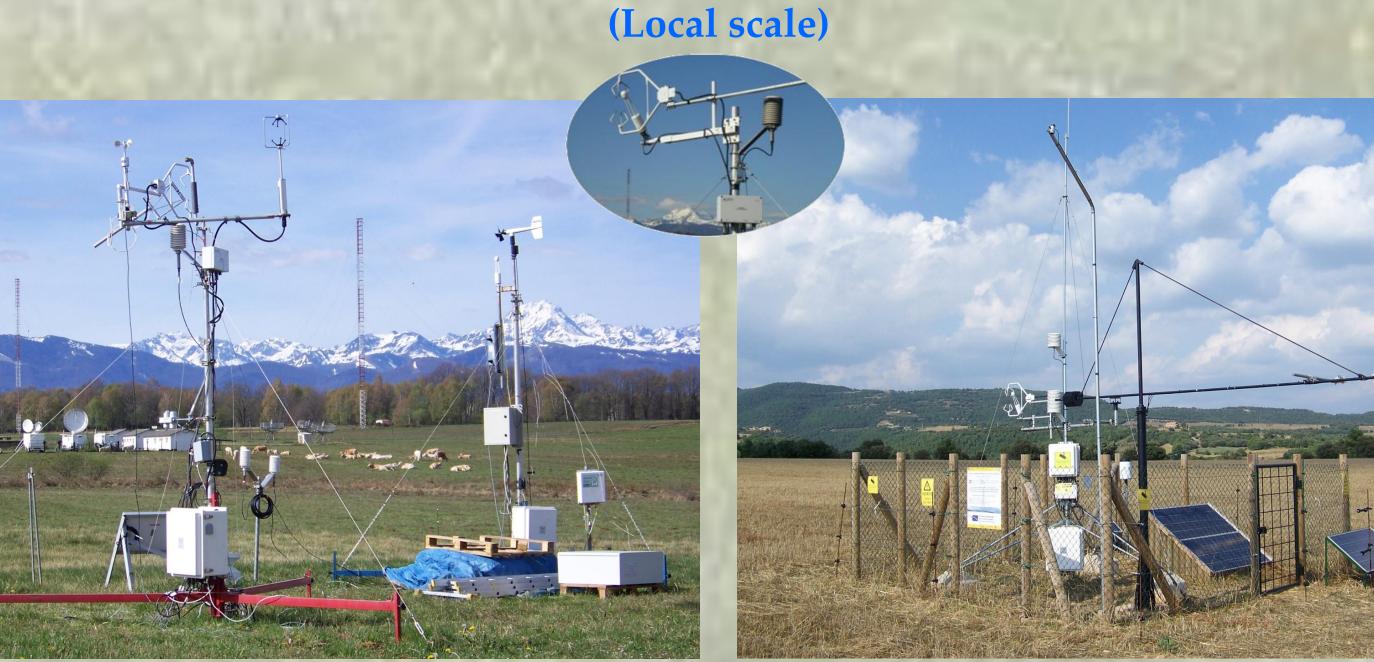




Vegetation photosynthetic activity (FORMOSAT 2 Images, copyright of NSPO, produced by SpotImage, analysed by CNES/CESBIO)



Greenhouse gas emission measurements with a photoacoustic sensor in an agricultural plot



Three newly established micrometeorological stations (at 1000, 1300, 1900 m) for the monitoring of carbon, water and energy fluxes between the soil and the atmosphere

Vet CO<sup>2</sup> Elux (mol m<sup>-2</sup> s<sup>-1</sup>) Vet CO<sup>2</sup> Elux (mol m<sup>-2</sup> s<sup>-1</sup>) up colza / triticale spring summer autumn winter

Aerial colour and infrared photographs (IG-ICTJA)

Absorption and emission of CO<sub>2</sub> in two agricultural plots (Béziat *et al.*, CESBIO)

