

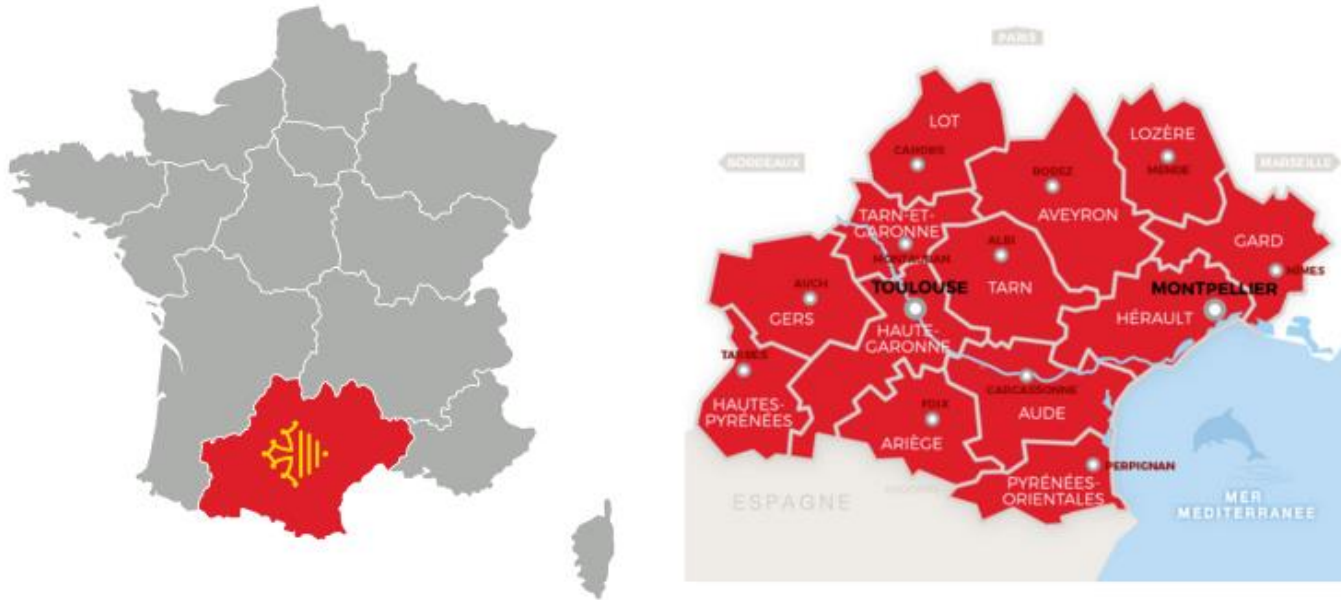
Spatial Research Ecosystem in Occitanie

NEREUS / Baden-Württemberg

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Overview of Occitanie Region



- 13 departments, 4,500 local districts
- 6 millions of habitants and a net growth each year
- 2 mountain ranges, Massif Central and Pyrenees and 220km of Mediterranean coastline.
- Patchwork of varying climate conditions (Mediterranean climate or slightly warmer ocean climate)
- 2 metropolitan areas (Toulouse and Montpellier)

Occitanie is a dynamic Region but this dynamism put pressures on natural ressources, land-use, ...

Spatial in Occitanie / Research in Occitanie

As a reminder, the space industry in Occitanie represents:

- 25% of French employment in the space sector is in Occitanie
- 260 firms and €10 billion of revenue
- Across the entire value chain (R&D, design, manufacture and operation of space systems, downstream application services)
- Particular attention is paid to new developments in the sector (NewSpace)

Key figures:

- 270,000 students (+20% in 10 years)
- 3rd region in terms of teaching and research staff: 13% of the national total
- 3rd nationally in terms of scientific publications (10.3%)
 - TOP 5/10 in international rankings for several scientific fields (Shanghai ranking)*
- 1st nationally in terms of R&D expenditure as a percentage of GDP, i.e. 3.5% (private R&D accounting for 60%)
- Strong representation of spatial research organisations (CNES, ONERA, etc.) : Almost 70% of engineering management staff in Toulouse

Capitalise on strengths to reinforce the ecosystem's dynamism :

- 1/ Developing scientific potential with the ambition of becoming one of Europe's leading scientific and technological regions
- 2/ The challenge of preparing the skills of tomorrow, supporting and guiding transitions

Research in Occitanie / Spatial in Occitanie (2)

AEROSPACE VALLEY SPACE ACADEMICS & RESEARCH LABS ECOSYSTEM MAP (Occitanie)



Spatial academic ecosystem : Some structures

Main universities / Research public structure : University of Toulouse / University of Montpellier / CNRS / ISAE-Supaéro / ONERA

- 2 OSU ([Observatoire Midi-Pyrénées](#), [OREME](#)) : 3,000 researchers/engineers
 - ❖ Scientific excellence of research laboratories in Earth observation, water or biodiversity
 - ❖ Scientific involment to define space missions (link with CNES/NASA): SWOT (water height)
 - ❖ High-value observation systems : data acquisition, exploitation and analyse (including spatial data)

➔ **Key themes: Atmospheric sciences, oceanography, remote sensing (Top 10 Shanghai)**

- [O3T – key challenge initiated by Occitanie](#): Community of researchers / Using Earth observation to understand regional issues and anticipate the responses needed for adaptation (green tourism, pastoralism, etc.). Interdisciplinary and integrated approach: Combining hard sciences with humanities and social sciences
- [DATA TERRA](#) : French research infrastructure that collects, processes and disseminates multi-source data (satellite, in situ) on the Earth system (atmosphere, oceans, soil, biodiversity, etc.)
- [CEREMA](#) (Member of NEREUS) : Studies and research on territorial engineering, adaptation to climate change and the use of satellite imagery
- CSUs ([Montpellier](#) et Toulouse) : designs, integrates and tests nanosatellites with students for training, space research and technological missions / 1st student nanosatellite launched

Spatial academic ecosystem

Some examples of the work carried out by regional laboratories:

Several collaborations between research laboratories and local authorities on topics related to climate change – using space technologies.

- 1/ Artificial intelligence to prevent forest fires => satellite data input into models.
- 2/ Large-scale mapping of the ecological maturity of forests using multimodal remote sensing and deep learning.

Benefit to work with NEREUS:

- ✓ Institutional relay at European level for regional issues
- ✓ Raising visibility of regional initiatives in the sector of space technology-based services
- ✓ Using the network to respond to potential requests from our local stakeholders
- ✓ SATSDIFACTION: linking local initiatives and other partners: identification of common issues (e.g. flooding with Wallonia)

Thanks for your attention

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