



Aims & Objectives

➔ The Geosciences Montpellier lab works to develop new knowledge about the Earth's dynamics and surface manifestations, focusing on the interaction between different layers (atmosphere, hydrosphere, crust and mantle) and using approaches across geology, geophysics and geochemistry.

Its work on Water encompasses the following aspects:

- Hazards and coastal dynamics.
- Climate hazards and reconstructing historical extreme weather and water events (floods, storms).
- Dissolved and particle transport in coastal areas.
- Reservoir geology and water resources.
- Transfers in porous media.
- Serpentinisation of the Earth's mantle.



Research teams involved with IM2E

Team Risks

Led by:

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Team Transfers in Porous Media

Led by:

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Team Reservoir Geology & Resources

Led by:

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Linkage with IM2E disciplines and challenges :

Geosciences Montpellier's work covers a number of IM2E disciplines and challenges:

- WP1: Hydrosystems: movements and resources.
- WP2: Contaminant processes.
- WP4: Hydro-climatic risks.
- WP5: Water, actors and regions.
- C1: Viability and interactions in water basins.
- C2: Water resources and foresight studies.

Linkage with IM2E research fields and emerging issues



Study areas



photo showing the Bise sinkhole (measuring underground flow rate 140 metres below the surface at the Larzac plateau)

highlights

Scientific and/or technical

● Post-doctoral research topic:

Building a 3D geological model of the Thau-Balaruc karst reservoir –Dem'Eaux Thau project

● Thesis topic:

Gravimetry and earthquake monitoring for water system monitoring in the Durzon karst basin (Larzac, France).

● Thesis topic:

Sandy beaches: interaction between waves, water level and groundwater dynamics.

● Thesis topic:

Reconstruction of extreme floods of the Moulouya River (Morocco) in recent millennia via the study of river sediment records.

Platforms and Equipments

Geosciences Montpellier uses four platforms to carry out its research work:

- Geochemistry (nuclear spectrometry, GC-MS, ICP-MS, Microsonde Sud lab, clean rooms).
- Geophysics (gravimetry, GPS, hydrogeophysics, electrical and seismic processes).
- Petrophysics (ICARE).
- Coastal studies (GLADYS research group on marine hydrodynamics – www.gladys-littoral.org).
- Development of experimental sites, such as Lazarc and Majorca (Balearic Islands), through Long-term Environmental Research Monitoring and Testing Systems (SOEREs) – H+ (aquifer hydrodynamics), Lavalette (use of hydrogeophysics research in sinkholes) and Argenton, Catalonia (via the CRITEX Equipex project).



Academic and industrial partners

France

- HSM
- MARBEC
- LSCE
- MNHN
- M2C
- ASM
- EPOC
- IRSTEA Lyon,
- CNRM
- Géosystèmes
- IDES
- CERFACS
- LMD
- EOST
- LA
- MOI
- BRGM
- Géosciences Rennes
- EOST

Europes

- Universidad de Murcia (Espagne)
- IDAEA Barcelona (CSIC)
- Universitat Politècnica de Catalunya (UPC)
- Universidad de Barcelona (UB)
- Universitat de les Illes Balears (UIB)
- Università di Bologna (Italie)
- Université de Vigo (Spain)
- Université d'Oslo/METOS (Norway).

Worldwide

- USTH (Vietnam)
- Universidad Católica del Norte (Chili)
- Universidade Federal do Ceara (Brazil)
- Université Mohamed V, Rabat (Maroc)
- CRAAG (Algérie)
- USTHB (Algérie)
- Faculté des Sciences de Sfax (Tunisie)
- Université de Gabès (Tunisie)
- Faculté des Sciences de Tunis (Tunisie)
- INSTN (Tunisie)
- NTU (Taiwan)
- UQAC (Québec)



Examples of partnership project

ANR Hydrokarst G2 project

> Application of geophysics to the study of transfers and groundwater storage in limestone karst environments.

KUNSHEN project

> Application of measurement and modelling methods to study expected water levels during typhoons and extreme floods along the coast of Taiwan.

Paléomex-Mistrals Mediterranean Site project

> Transport and transformation of particles, carbon, nutrients and associated contaminants from key Mediterranean sources.

Mistrals Mermex-Merite project

> Transport and transformation of particles, carbon, nutrients and associated contaminants from key Mediterranean sources.

Dem'Eaux Thau and Dem'Eaux Roussillon project (ERDF)

> Development of a system to manage groundwater resources in a complex karst water system in the Mediterranean (Thau). Analysis of coastal aquifer salinisation processes on the Roussillon plain (project two).

géosciences Montpellier keywords

Climate hazard
Coastal dynamics
Coastal hazard
Geothermal
Porous media
Palaeoclimatology
Fractured-rock reservoirs
Hydrothermalism
Geo-hydrothermalism
Sinkhole monitoring
Karst
Hydrogeophysics

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