GÉOSCIENCES LE MANS

5 associés au Laboratoire de Planétologie et de Géodynamique (LPG) - UMR CNRS 6112

LE MANS GEOSCIENCES

5 members associated with the Laboratory of Planetology and Geodynamics (LPG) - UMR CNRS 6112

The Le Mans Geosciences laboratory studies the interactions between rocks, fluids and geological deformations. These fluids can be found at the surface (water), within rocks, in porosity and/or fractures (water, gas, hydrocarbons), or in the form of viscous materials which will deform over various timescales: sand, clays, salt, magmas, etc.
The laboratory's researchers are interested in the effects of these fluids in various geological contexts through observations in the field, laboratory analyses and experimental modelling.
The fields of application range from the exploitation of reservoirs (geothermal, hydrocarbons) to the dynamics of ice sheets and glaciers or the building of mountain ranges.

12 people (5 members associated with the LPG - UMR 6112) including
7 researchers and teachers-researchers
3 doctoral students and postdoctoral fellows
2 administrative and technical staff

Partnerships
5 permanent members are associated to the LPG - UMR 6112 (Nantes - Angers)
Collaborations with French and international laboratories (Norway, Canada, Argentina, etc.)
Partnership with companies thanks to the thematics of the laboratory (Total, Engie)

The + of the lab

The only laboratory in Europe specialised in the experimental modelling of geological deformation phenomena involving interstitial fluids and fluid overpressure.
Experimental modelling labs dedicated to the simulation of natural deformation processes via scaled physical models.
Thin-section preparation workshop

Director of Geosciences Le Mans: Alain Zanella | alain.zanella@univ-lemans.fr
Avenue Olivier Messiaen 72085 Le Mans cedex 09
geosciences.univ-lemans.fr

cnrs

Le Mans Université

3 lines of research including 2 in partnership with the LPG

Deformation and surface processes related to fluids

The first line of research is aimed at understanding the processes involved in the evolution of terrestrial surfaces and sediments transfer. Among the processes which shape surfaces, the Le Mans laboratory is particularly interested in the effects of subglacial meltwater generated during periods of climatic warming on glacier dynamics. The large amounts of meltwater produced during such periods alter ice the flow dynamics thereby contributing to their collapse. Meltwater is also responsible for tunnel valleyformation that shows very specific morphological characteristics we are able to reproduce and characterise in the experimental lab.

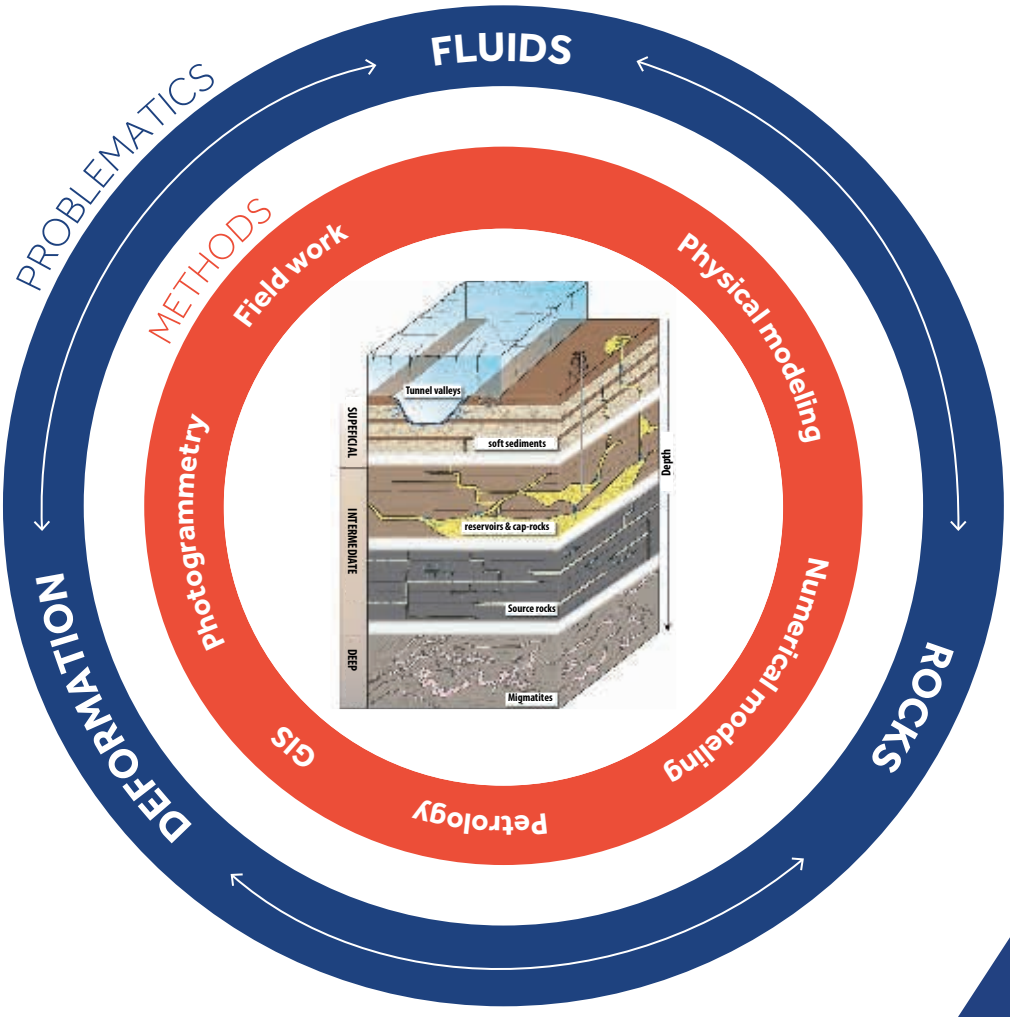
Experimental modelling of a tunnel valley (T. Lelandais)

Fluids under pressure and properties of reservoirs

The second line of research relates to fluids under pressure present in sedimentary basins and their role in the evolution of the hydro-mechanical properties of reservoirs. Several types of phenomena are studied: hydraulic fracturing of source rocks during the generation of hydrocarbons, cover fracturing and remobilisation of sediments in the form of sand intrusions or mud volcanoes, remobilisation of clays within sedimentary reservoirs, mineralization associated with the circulation of fluids.

Orogenic processes

The last area of research focuses on the morphological evolution of orogenic prisms in contexts of tectonic convergence, in particular that of the Europe-Africa convergence (Alps, Tell Atlas, Tunisian Atlas, etc.). This theme is considered from the perspective of critical bevel theory, and aims to understand the complex interactions between mantle dynamics, crust rheology, spatial arrangement of deformations and processes of erosion.



cnrs

Le Mans Université