1919 1st LABORATORY OF EARTH SCIENCES • EARTH PHYSICS INSTITUTE

2009 1st LABORATORY OF ENVIRONMENT • LHYGES

2021 1st LABORATORY OF GEOSCIENCES

ites

Institut **Terre** & **environnement** de **Strasbourg**

In search of fundamental knowledge about the origin, evolution and future of the world around us

unique center of expertise in geosciences in Strasbourg

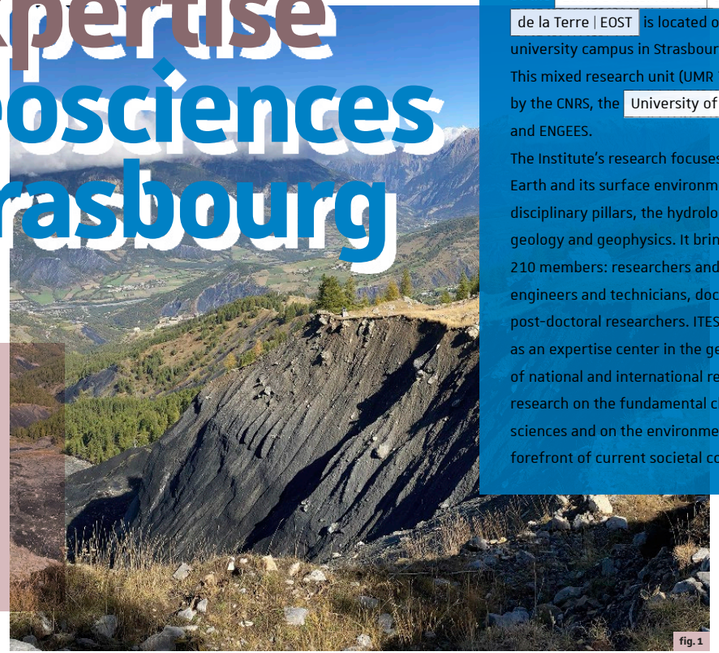


fig. 1

The Institut | Terre & environnement of Strasbourg | ITES | laboratory of research of the | École & observatoire | des sciences de la Terre | EOST | is located on the Esplanade university campus in Strasbourg.
This mixed research unit (UMR 7063) is supervised by the CNRS, the | University of Strasbourg | and ENGEES.
The Institute's research focuses on the study of the Earth and its surface environment. It relies on four disciplinary pillars, the hydrology, geochemistry, geology and geophysics. It brings together around 210 members: researchers and university lecturers, engineers and technicians, doctoral students and post-doctoral researchers. ITES has positioned itself as an expertise center in the geosciences, at the core of national and international research, and conducts research on the fundamental challenges in Earth sciences and on the environmental issues at the forefront of current societal concerns.

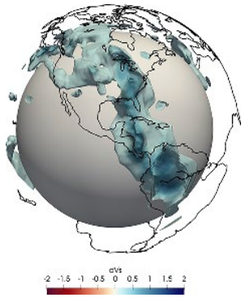
innovative research and platforms

Knowledge and understanding of complex interactions

Within continental ecosystems
- Physical, chemical and biological processes which control the matter transfers
- Mechanical, thermal and chemical processess within hydrosystems
- Tectonic and gravitational deformations, erosion/alteration **(FIG.1)**
- Climatic and anthropogenic forcing in the critical zone
- Bio-geochemical nutrient cycles
- Tectonic, gravitational, climatic and hydrological forcings of the relief

Between the Earth's surface and interior
- Fluid-rock interactions (rift and passive margins, subduction, orogeny)
- Heritage and architecture of margins (sediments, magmas)
- Surface mass redistributions, deformation and rotation of the Earth **(FIG.3)**
- Couplings between crust, mantle, fluid core and solid inner core

fig. 2



Earth structure, from local to global scales
- Global tomography **(FIG.2)**
- Geophysical and geological imaging of subsoil, aquifers and reservoirs
- Imaging by studying natural or anthropogenic seismic noise

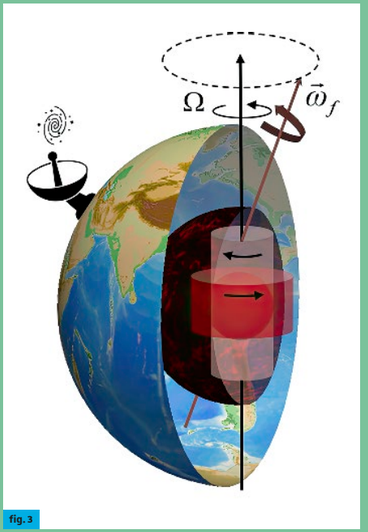


fig. 3

fig. 4

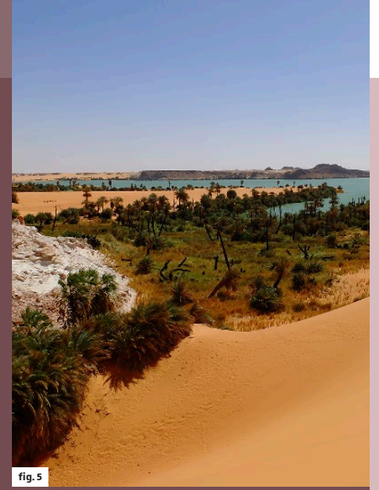


fig. 5

knowledge and understanding of natural phenomena

- Physics and chemistry of magmatic and metamorphic processes (mineral phase transitions, melting, cristallisation) **(FIG.4)**
- Sedimentary deposits on the continent and in the marine domain (turbiditic, lacustrine, glacial systems) **(FIG.5)**
- Hydrology, volcanism, seismicity **(FIG.6)**

The Earth in motion, from millions of years to seconds

- Evolution and reactivation of rift margins
- Set-up of orogenic systems
- Exhumation of the mantle (fluids, heat transfers)
- Evolution of reliefs (erosion, destruction)
- Pollutant transfers, groundwater flow and storage
- The Earth in rotation
- The seismic cycle
- The tides
- Ice mass dynamics **(FIG.7)**

fig. 6

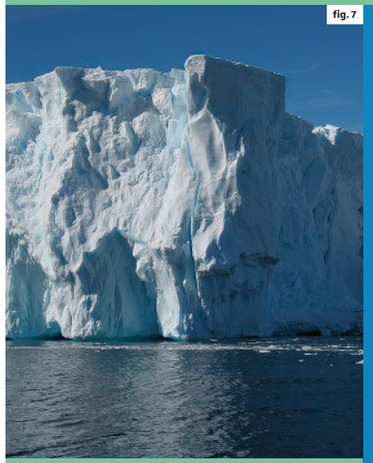


fig. 7

Measurements, observations and experiments

From laboratory to catchment scales

- Experiments in controlled environments **(FIG.8)**
- Instrumentation of natural sites: hydrology, geochemistry, seismology, deformation **(FIG.9)**

From local to global scale

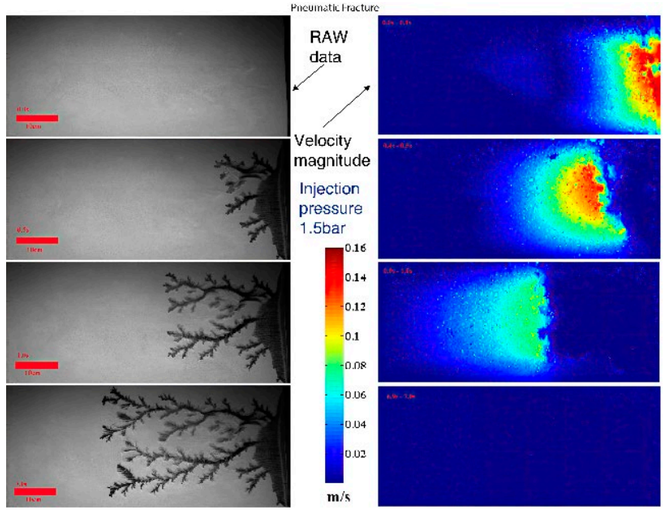
- Gravimetry, magnetism, seismic, radar, proton magnetic resonance and electromagnetism **(FIG.10)**

fig. 10

fig. 9

fig. 8

fig. 11



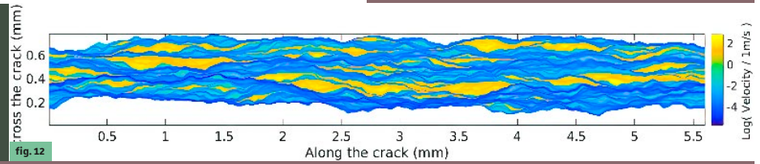
Numerical modellings

- Development of software for data acquisition, processing, analysis and modeling **(FIG.11 & 12)**
- Flow and transport models
- Sensitivity and uncertainty analyses
- Artificial intelligence

Societal issues

- Water and soil management in forest, agricultural and urban catchments
- Reservoirs and resources
- Geothermy
- Natural and man-made hazards & risks (seismicity, volcanism, landslides)

fig. 12



The laboratory has equipment of scientific excellence and cutting-edge expertise in the fields of geophysics, hydrology, geochemistry, geodesy, petrology and mineralogy. This expertise is supported by integrated clusters and platforms within the CORTECS network of the University of Strasbourg, CNRS and INSERM, serving the needs of public research actors and the socio-economic world.

scientific mediation

ITES develops mediation activities within the Museums of Seismology and Mineralogy, but also works with the general public, notably during the Fête de la science, or takes part in various scientific exhibitions and events.

The teams host secondary school classes for science discovery sessions, to stimulate their interest in geosciences and open up new knowledge to a wider public.

collaborations & partnerships

ITES has numerous industrial partners: in the fields of water and soil management, geotechnics, resource exploitation and management (energy, minerals, water, liquids and gases), agricultural practices, management and prevention of natural and man-made hazards (seismicity, landslides, etc.) at the local, regional, national, European and global scales.

ITES also has numerous collaborations with academic partners at local, regional, cross-border, national, European and global scales. ITES also has partnerships with the French (CNES) and European (ESA) space agencies.

Link to the ITES website
→

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Link to the virtual exhibition
"Precious Earth: a geosciences laboratory"
←

unistra2024 • com. Valérie Sellani • 1000 ex.