Laboratory of Soil Mechanics in Figures

Over years 2008 to 2011
60 peer reviewed journal articles
54 papers in international conference proceedings
11 books and journal special issues
10 Ph.D theses

Total research grants:
3 Million Swiss Francs. Main contractors: EU Programs, Swiss National Science Foundation, Swiss Competence Center Environment and Sustainability, Swiss Federal Offices (OFEN, OFROU, FGU), Industrial partners (Swisselectric Research, Holcim, NAGRA, EOS Holding, ...)

The team

Professors
- Lyesse Laloui Director of LMS
- Laurent Vuillet Attached Professor

Senior staff
- Alessio Ferrari Senior Scientist
- Laurent Tacher Senior Scientist
- Gilbert Gruaz Civil engineer

Post-Docs
- Fabrice Dupray PhD/Scientist
- Azad Koliji PhD/Scientist
- Mohammad Monfared PhD/Scientist

Ph.D Students
- Alice Di Donna
- Ali Seiphour
- Suzanne Fauriel
- Marta Rizzi
- John Eichenberger
- Chao Li

Key Employees
- Jérôme Guex
- Bastien Pasquier
- Jessica Garcia
- Patrick Dubey
- Laurent Monier
- Julien Wahid Nocera

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Foundations for the Future

Expertise in Environmental Geomechanics

The Soil Mechanics Laboratory gives priority to the protection from geo-hazards and industrial damage to the environment, landforms and structures. Our experimental and modelling resources are mobilised to understand, describe and predict the environmental impact of the technologies of future days, such as nuclear and chemical waste disposal, petroleum and gas exploitation, transportation and storage, methane hydrate technology, CO2 geological sequestration, and energy technologies elated to heat storage.

Contacts
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Modelling Capabilities
1. Numerical modelling of landslides
2. Simulation of nuclear waste barriers
3. Prediction of earthdam failure
4. Heat exchanger geostructures

Civil Engineering
The historical vocation of the soil mechanics laboratory is geotechnical and foundation engineering. We comply with practical needs of construction by addressing problems of soil dynamics, soil-structure interactions and soil-ground water flows interactions.

Transport
The behaviour of unbound granular materials is of particular importance for the integrity of road pavements and embankments. We study the effect of cyclic loads due to traffic, and climatic changes on road subsoil.

Energy
The underground is a suitable alternative source of energy. We develop and promote intelligent foundations that extract heat and cold from the soil. We are also competent in understanding and modelling the capabilities of the underground to serve as a storage for nuclear and hazardous chemical waste, CO2 and other gases.

Geoenvironmental Engineering
Our field of expertise covers environmental issues such as the effects of gas emissions from the ground and underground, the performances of active watertight barriers (geomembranes) or passive barriers (clays) in storage and retention structures and landfills.

Natural Hazards and Climate Changes
Debris flows, landslides and their triggering mechanisms are at the heart of our scientists’ interests. We propose a multi-disciplinary analysis of risks related to soil slopes through the elaboration of a management strategy implying the modelling of crisis events and their consequences.

Scientific challenges at a glance