

Title of the project: Study of subsoils suitable for permanent CO₂ storage

Context

By 2025, the EPFL Carbon Team's prototypes will be up and running, capturing the first kilos of CO₂ directly from the atmosphere, as well as from the gas boiler of the animal facility in the SV Faculty. Several solutions are currently being studied for the further processing of this captured CO₂. One of these is permanent storage in specific geological formations in Switzerland. To make this storage as optimal as possible, a number of studies need to be carried out, concerning soil properties, the presence of impurities in the captured CO₂ stream, the conditions under which the carbon dioxide must be present during burial, and the impact of the latter on its environment. To this end, a collaboration with the Laboratory of Soil Mechanics, or LMS, has been developed to enable interested students to work on these topics. This project is focused on analyzing the characteristics of the subsoils suitable for permanent CO₂ storage.

Description

Characterize the geological system for CO₂ injection and permanent storage: a superposition of a porous layer called "reservoir rock" for CO₂ storage, topped by an impermeable layer called "cap rock" to prevent CO₂ from rising to the surface. To be characterized, the breakthrough properties of the cap rock and the volume/capacity of the porous rock will need to be determined.

Requirements

- Knowledge in physics and porous media mechanics.
- Knowledge in civil/environmental engineering.
- Basic Python programming.

Bonus: experience in a lab or with other projects.

Contact

Supervising lab: LMS, Dr. Eleni Stavropoulou.

Student supervisor: Louis Saix (louis.saix@epfl.ch).

Remarks

Project location: Lausanne.

The project can accommodate a maximum of 5 students.

Aimed at ENAC students but students from other sections can also apply to this project.