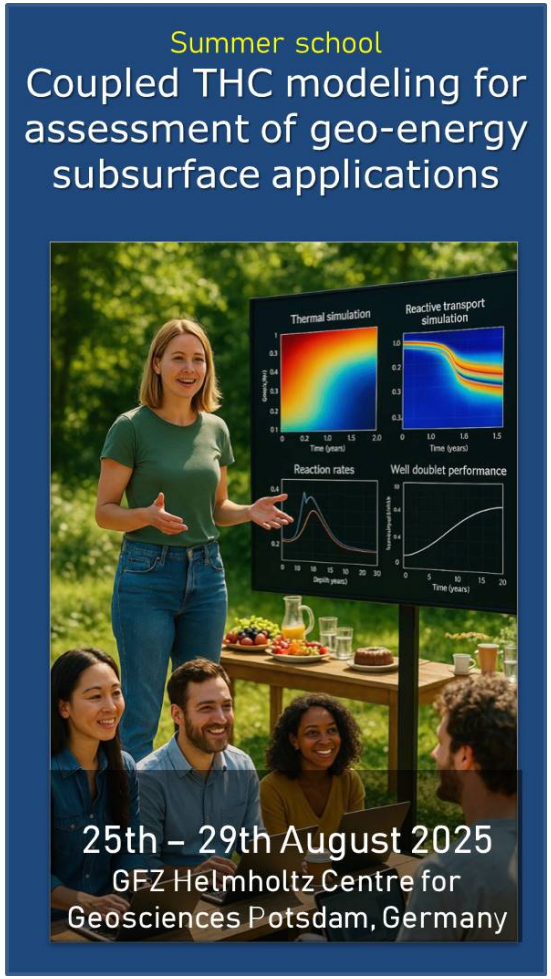
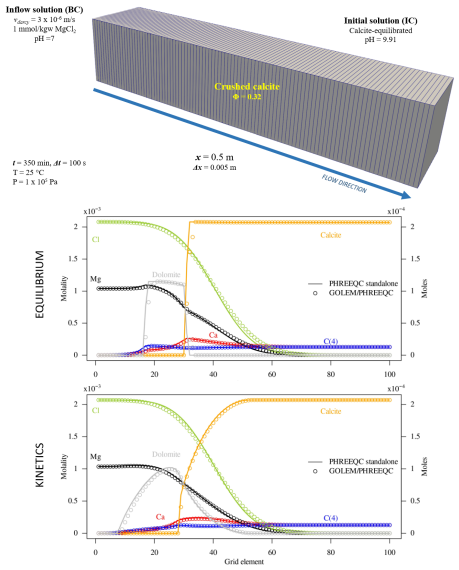
GFZ Helmholtz Centre for Geosciences



About the School

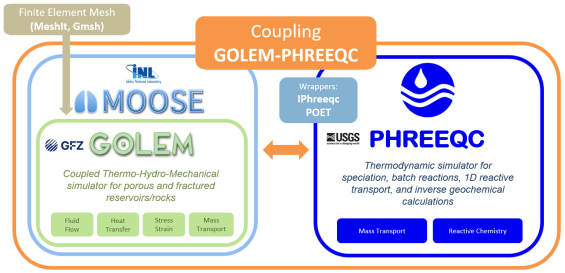
The THC School 2025 offers an immersive 5-day hands-on experience in developing Thermo-Hydraulic-Chemical (THC) models using state-of-the-art open-source software. Participants will engage in a practical simulation exercises that connects transport codes with chemical reactions (e.g., limestone dolomitization).



Tailored for professional consultants, modellers, and early-career scientists, this school provides a unique platform for knowledge transfer. It features expert lectures, interactive discussion sessions, and practical exercises, making it an ideal opportunity for those interested in modeling coupled processes in the subsurface.

Software & Practice

Participants will work with open-source tools for geoscientific simulation, gaining hands-on experience in building and interpreting models using real datasets.



This course will introduce:

- **MeshIt**: open-source meshing tool
- **GOLEM-PHREEQC**: open-source multiphysics reactive transport (THMC) simulator
- **ParaView**: open-access visualization tool for model analysis

Why Join?

- Learn for free from developers and leading experts
- Build your modeling skills
- Collaborate across disciplines
- Join a growing research network

Registration

Register here until **July, 14, 2025**.

`https://events.hifis.net/event/2637/`

The places are limited to 20 participants and will be selected on a **first come - first served** basis. Preference is given to practitioners from industry. Training and catering are offered **free of charge**. The participants are requested to travel and to book accommodation independently.

Who Can Apply?

This school is ideal for:

- Professionals in geosciences
- Industrial modellers
- Academics (from M.Sc. upwards)

Prior modeling experience and a desire in application of process-based simulation for real-world solutions are required.

Program Overview

August 25th
12:00–13:00 Icebreaker lunch
13:00–14:30 General introduction
14:50–16:30 MeshIT: 3D FE-mesh generation
16:30–18:00 TH simulation using MOOSE/GOLEM (installation, testing, input files)

August 26th
10:00–18:00 Thermodynamic modelling with PHREEQC

August 27th
10:00–12:00 Multi-App system
13:00–18:00 THC coupling: GOLEM integrating PHREEQC

August 28th
10:00–15:00 Model analysis using ParaView
15:00–18:00 Discussion on additional applications/objectives

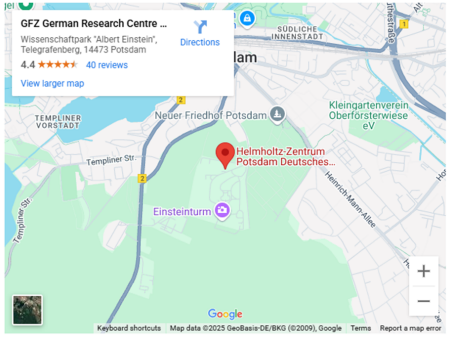
August 29th
10:00–12:00 Implementation of new applications
12:00–open end Lunch and farewell BBQ/picnic

The program may change according to the software's state of development.

Venue & Directions

The school will take place in the green area of GFZ: **Building H, Room VR1 and VR2, Telegrafenberg, 14473 Potsdam**

The location can be reached from Potsdam Hbf by foot (ca. 20 min) or using bus- line 691. Access for people with restricted mobility is granted.



Team & Contact

Instructors: Mauro Cacace (GOLEM and MeshIt developer), Marco De Lucia (POET developer), Guido Blöcher (MeshIt developer), Samuele Frigo, Elena Petrova, Kalliopi Tzoufka

Contact: `guido.bloecher@gfz.de`