



TOPO-EUROPE workshop 30th September – 3rd October 2025

29th September

Arrival of participants

18.00-19.30 Icebreaker in HUN-REN Institute of Earth Physics and Space Science (EPSS)
(Sopron, Csatkai Endre utca 6-8).

30th September Ligneum, Sopron University, Sopron, Bajcsy-Zsilinszky u. 4.

Online access is available through the following link: <https://us02web.zoom.us/j/87359390474>

9.00-9.10 Opening and welcome by István Kovács, HUN-REN EPSS Acting Director

9.10-9.30 Sierd Cloetingh: TOPO-EUROPE: the science of Earth System Dynamics and its impact on geo-environment and geo-energy

9.30-11.40 Session 1: Coupled Deep Earth and Surface processes (Chair Pietro Sternai, Milan)

9.30-9.50 Liviu Matenco: Understanding multiscale tectonic cyclicity in sedimentary basins

9.50-10.10 Nevena Andrić-Tomašević: Sedimentary basins: fingerprinting the lithospheric-scale processes

10.10-10.40 Coffee break

10.40-11.00 Alessio Lavecchia: Plume–Lithosphere Interaction and the role of the Mid-Lithospheric Discontinuity in craton delamination

11.00-11.20 Ross Mitchell: The next supercontinent: Plate tectonics of the future

11.20-11.40 Taras Gerya: Future dynamics and long-term survival of human civilization

12.00-13.00 Lunch in the Nyugat Restaurant (5 min walk)

13.00-14.00 Session 2: Melts and fluids of the lithosphere – the Pannonian Basin as a natural laboratory (Chair: István Kovács)

13.00-13.20 László Fodor & Réka Lukács: Migration of deformation, basin subsidence, magmatism in extensional basins: comparative constraints from numerical models and observations (Pannonian Basin)

13.20-13.40 Márta Berkesi: Quantifying geological CO₂ accumulation in the subcontinental lithospheric mantle during post-rift evolution of a sedimentary basin (Bakony-Balaton Highland Volcanic Field, Pannonian Basin, Central Europe)

13.40-14.00 Artur Ionescu: Quantifying present and past geological CO₂ degassing: The Carpathian Mofettic Area

14.00-17.00 Session 3: Renewable geo-energy and geo-hazards (Chair János Szanyi)

14.00-14.30 Tom Beer: GeoHazards, GeoRisks and the guns of Flanders Fields

14.30-14.50 Tony Alfredo Stabile: Exploring reservoir and fluid-injection induced seismicity in a seismically active region: A case study from the High Agri Valley, Southern Italy

14.50-15.10 Miklós Kázmér: Seismic activity along the Periadriatic Lineament in the past 2000 years

15.10-16.00 Coffee break and posters

- 16.00-16.20 Rita Njeru Mwendia: From reservoir to pore scale: Technology-driven digital approaches for sustainable geothermal energy
- 16.20-16.40 Abdulhaq Hawkar: A data-driven sand channel prediction ml-model from well log data for optimized sites selection and thermal breakthrough prevention: Case study from Hungary
- 16.40-17.00 János Szanyi: The future of the geothermal energy sector in Hungary

17.00-18.20 Posters

18.20-18.50 Public lecture by István Bozsó: Assessing environmental hazards from space: novel applications of low-cost space geodesy to track topographic changes (*in Hungarian*)

19.00 Conference dinner, wine, music

1st October HUN-REN Institute of Earth Physics and Space Science (Sopron, Csatkai Endre utca 6-8).

9.00-10.30 Working group meetings on the topic of the workshop

Presentations of objectives for WG's, followed by short presentations of individual members of WG members and open discussion

WG1: Tectonics, climate and biogeodynamics (Chairs Pietro Sternai and Taras Gerya)

WG2: Renewable geo-energy and geohazards (Chairs: Kristóf Porkoláb)

10.30-11.00 Coffee break

11.00-12.30 Opening of the HUN-REN TKI Rybach Research Centre for Renewable Geo-energy

- 11.00-11.10 Sierd Cloetingh: The Rybach Research Centre (RRC) and the energy transition: a forward look
- 11.10-11.40 Brief introduction to the host and shareholders of the HUN-REN TKI Rybach Research Centre
- 11.40-12.00 Jan-Diederik van Wees (TNO/UU): Advances in geothermal research and innovation: a Dutch and European perspective
- 12.00-12.10 Balázs Gulyás (President HUN-REN): Official opening of the LRC
- 12.10-12.30 Ladislaus Rybach (ETH Zürich): Looking back and ahead

12.30-13.30 Lunch break at EPSS

13.30-16.00: WG group meetings: synthesis: components for research proposals, Rybach Research Centre council meeting

16.00-16.30: Coffee break

16.30-18.00: Reports to plenary for the two WG's + General discussion

18.00: Closure of TOPO-EUROPE meeting and drinks

2nd October: short course by Taras Gerya (ETH Zürich): Biogeodynamics and subduction modelling: state of the art and hands-on

3rd October: short course by Pietro Sternai (Uni Milano-Bicocca): Neo-Tethyan geodynamics and Cenozoic climate: setting the stage for our present and future world – with coupled geodynamic and surface process numerical modelling practicals