



Newsletter #5

March 2021

Dear Readers,

Coordinator:



ELTE

Partners:



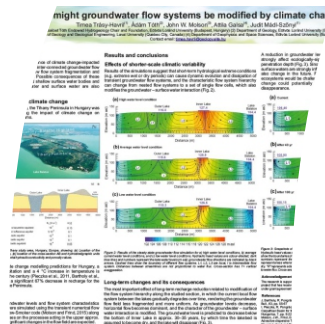
GTK



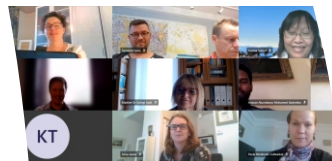
UMIL



Welcome to the fifth issue of the ENeRAG newsletter, which aims to provide you up-to-date news on project results and information about the upcoming activities and events.



CONFERENCE ATTENDANCE



TRAINING WORKSHOPS



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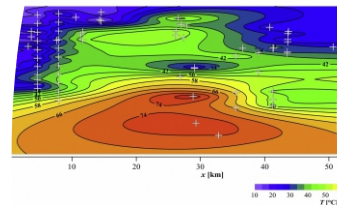
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OPEN ACCESS PUBLICATIONS



STUDENT COMPETITION



PUBLIC EVENT



The ENeRAG project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 810980.

Events of the last 6 months

The [IWRA 2020 Conference](#) focusing on “Addressing Groundwater Resilience under Climate Change” and organized by the International Water Resources Association (IWRA) was held online between 28 and 30 October 2020.

The conference offered a special opportunity to share research results about the effects of climate change on natural groundwater resources, groundwater pollution and remediation, and the available technology. It also highlighted the importance of water governance, management, water related policy and education. Among others, Managed Aquifer Recharge, that represents one of the main topics of ENeRAG, and its role in climate change adaptation was introduced. In “Q&A” sessions following the presentations, questions and answers were discussed promoting scientific knowledge exchange and resulting in new ideas for the participants to improve their research.

At the conference the ENeRAG project was represented by Timea Trásy-Havril (early career researcher), Zsóka Szabó (PhD student) and Sikandar Hayat (MSc student) from the ELTE.



The ENeRAG H2020 project compiled three spectacular videos (*in Hungarian language*) for the event of the *Researchers' Night* held online on 27 November 2020. With the help of these short films, those who interested can gain insight and broaden their knowledge about the hidden world of groundwater.

If you would like to know,



- how the water moves under the surface,
- what the connection is between surface water and groundwater,
- what kind of impact human activities have on groundwater,
- how pollutants behave below the surface,
- how much water we consume in our daily activities,
- how much water is available to us globally,

watch the lecture and the experiments presented in the videos below, and find the answers to the questions above!

The [video](#) of Judit Mádl-Szőnyi (the coordinator of ENeRAG).

The [video](#) of Petra Baják (PhD student).

The [video](#) of Soma Oláh (BSc student).



Events of the last 6 months

Workshops

The first online workshop of ENeRAG on [Environmental Isotope Tracers in Hydrogeological Applications](#) held between 5 and 9 October 2020 raised great interest worldwide. The scientific leader/organizer of the workshop was the GTK and the UMIL.

The course covered a comprehensive and extensive content. In addition to the theoretical background, practical exercises, virtual laboratory and field visits enriched the program. The course aimed to enhance, exchange and transfer knowledge on the application of environmental tracers in hydrogeology, including theory and practical exercises and virtual, hands-on experiences.

Moreover, ENeRAG partners (UMIL, GTK, ELTE) took the opportunity to get together and meet in the form of closed meetings to discuss possible joint publications, where isotopes could be great assets.



The second online workshop of ENeRAG on [Shallow geothermal energy: from the ground to buildings, from the field to modelling](#) was held between 30 November and 3 December 2020. The workshop attracted significant attention worldwide, partly as a result of its easy accessibility for project outsiders due to the online organization. The scientific organizer of the workshop was the UMIL.

The lectures of the workshop were interesting and forward-thinking. In addition to the theoretical components, practical examples also enriched the program.

The workshop aimed to provide an overview of current practices and research advances in the field of shallow geothermal energy, that is also considered the new alternative in the “European Green Deal”.



Similarly to former practice, a closed session was held between the ENeRAG partners to discuss possible joint publications, this time with the focus being on shallow geothermal energy.

Events of the last 6 months

GTK organized an online workshop within the ENeRAG project towards project consortium partners on **Funding opportunities** on the 14th of December 2020. The workshop was specifically focused on training partners on successful EU Fundraising and on preparing HORIZON Project Proposals. The presented lectures improved grant writing skills that are useful for Horizon Europe and research project applications. In addition, it reviewed cooperation possibilities in Horizon Europe in order to prepare for the Horizon Europe calls opening in the spring of 2021.



Online short course on **Modelling shallow bedrock energy utilisation** was organized and led by the GTK between 23 and 25 March 2021. The course addressed the theory, principles, planning and optimization of shallow geothermal energy. The lectures also provided insight on geophysical measurement tools for modelling, including bedrock borehole temperature measurements with DTS (distributed temperature sensing) methods and thermal response test (TRT). Videos aided the better understanding of the site activity. From the GTK, Teppo Arola opened the workshop and lectures were given by Nina Leppäharju, Annu Martinkauppi, Ilkka Martinkauppi and Lasse Ahonen.



Events of the last 6 months

By the end of 2020, seven short films were submitted by the teams that qualified for the final round of the International Problem Solver [Competition](#). The videos were evaluated by an international jury consisting of four experts, then the results were released.



Each contestant was awarded with a full-year membership of the International Association of Hydrogeologists and the best of the bests was offered a registration to the International Symposium on Geofluids free of charge.

Congratulations to all teams and we are grateful for their hard work and perseverance!

Final revision of the videos based on the comments of our experts is in progress. The finalized videos will be shared soon. Stay tuned!

With the joint effort of researchers of the ELTE and the GTK, the **second joint** paper of the ENERAG was published as an Open Access publication in Minerals (MDPI).



The [study](#) demonstrates that the combined use of SEM-CL imaging and LA-ICP-MS analyses, coupled with fluid inclusion microthermometry, can constrain the different fluid conditions of ore forming and barren stages of evolving submarine hydrothermal systems. This approach is seldom used in Cyprus-type Fe-Cu-Zn volcanogenic massive sulphide deposits, thus the joint work of ELTE and GTK researchers is pioneering in this field.

Side events of the last 6 months

The traditional **Innovation Day** of ELTE was held online on November 12, 2020. As part of the main program of the event, the scientific coordinator of ENeRAG took part in a roundtable discussion, which talked over the opportunities offered by EU Horizon 2020 and its successor, Horizon Europe.

Judit Mádlné Szőnyi shared her experiences, mainly about the Twinning program and the importance of a good management structure.

The aim of the discussion was not only to introduce the current funding opportunities and programs concerning innovation, but also to encourage the interest of professors, researchers and students working at ELTE to submit proposals for EU Grants.



The leaders of the ENeRAG project held an online **Governing Board Meeting** on 16 November 2020. Important issues were discussed at the meeting. The items on the agenda included the planned Special Issue of the project, the joint publications, the Geofluids Symposium organized by the project, the possible future joint projects and the amendment of the ENeRAG which became necessary due to the measures taken due to the COVID-19 situation. The **Amendment** was adopted by the EU on March 26, 2021, which means that the project closing date has been extended by 6 months, therefore the closing date will be March 31, 2022.





Governing Board Meeting

16 November 2020
9:30 am – 12:30 pm (CET)
Project Number: 810980

ENeRAG

Excellency Network Building for Comprehensive Research and Assessment of Geofluids

Workshops

Student/staff exchanges



- 1) cutting-edge modern analytical techniques in research on crustal fluid systems, clay minerals and related geological resources
- 2) isotopic data collection for shallow flow systems and for isotopic analysis
- 3) use of instruments and techniques to monitor the effect of shallow geothermal energy on both fractured and porous aquifers

In the framework of augmenting scientific impact in the research of geofluids, the participants of the ENeRAG project will attend the following conferences to advance knowledge and disseminate research results.

19-30 April 2021

22-27 August 2021

6-10 September 2021, Belgium

Groundwater Conference
28-30 September 2021, Hungary



International Symposium on Geofluids

The ENeRAG H2020 project organizes the **International Symposium on Geofluids**, together with the Eötvös Loránd University, the József and Erzsébet Tóth Endowed Hydrogeology Chair Foundation, the Regional Groundwater Flow, the Managed Aquifer Recharge Commissions and the Hungarian National Chapter of the International Association of Hydrogeologists, which will be held between **July 7-9 2021** as a **virtual** event.

The declared objective of the Symposium is to bring together scientists, professionals, stakeholders to share and discuss all kinds of aspects of geofluids, i.e., groundwater, geothermal energy, hydrocarbon, geogenic contaminations and hydrothermal mineral resources, with special emphasis on harmonized exploration and utilization.

For more information visit the [website](#) of the Symposium.



INTERNATIONAL SYMPOSIUM ON GEOFLUIDS 7-9 JULY 2021 | VIRTUAL EVENT

Publications in the framework of ENeRAG in the last 6 months:

- ✓ Ádám Tóth; Attila Galsa; Judit Mádl-Szőnyi (2020): [Significance of basin asymmetry and regional groundwater flow conditions in preliminary geothermal potential assessment – Implications on extensional geothermal plays](#)
- ✓ Zsóka Szabó; Ágnes Tahy; Judit Mádl-Szőnyi (2020): [Managed Aquifer Recharge – State of the art, needs and possibilities in Hungary](#)
- ✓ Brigitta Czauner, Judit Mádl-Szőnyi (2020): [Short overview of basin-scale hydrogeological research conducted at ELTE in the last two decades](#)
- ✓ Gabriella B. Kiss; Zsolt Bendő; Giorgio Garuti; Federica Zaccarini; Edit Király; Ferenc Molnár (2021): [Reconstruction of Hydrothermal Processes in the Cyprus Type Fe-Cu-Zn Deposits of the Italian Northern Apennines: Results of Combined Fluid Inclusion Microthermometry, SEM-CL Imaging and Trace Element Analyses by LA-ICP-MS](#)
- ✓ Márk Szijártó; Attila Galsa; Ádám Tóth, Judit Mádl-Szőnyi (2021): [Numerical analysis of the potential for mixed thermal convection in the Buda Thermal Karst, Hungary](#)

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