



Newsletter #6

September 2021

Dear Readers,

Coordinator:



ELTE

Partners:



GTK



UMIL



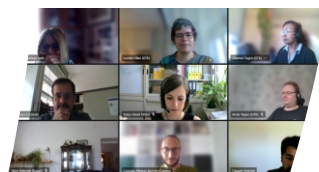
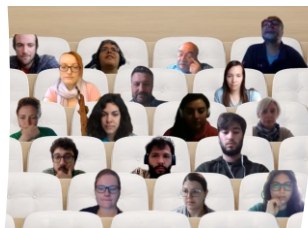
Welcome to the sixth issue of the ENeRAG newsletter, which aims to provide you up-to-date news on project results and information about the upcoming activities and events.



CONFERENCE
ATTENDANCE

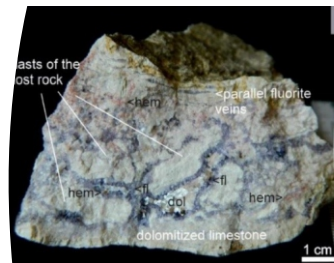


TRAINING
WORKSHOPS



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OPEN ACCESS
PUBLICATIONS



STUDENT/STAFF
EXCHANGES



SYMPOSIUM
ORGANIZATION



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

International Symposium on Geofluids



The ENERAG project successfully hosted its most significant scientific event, the [International Symposium on Geofluids](#). The largest and most anticipated event of the project was held virtually between **7-9 July 2021**. The main objective of the Symposium was to bring together scientists, professionals, and stakeholders to share and discuss all kinds of topics in geofluids.



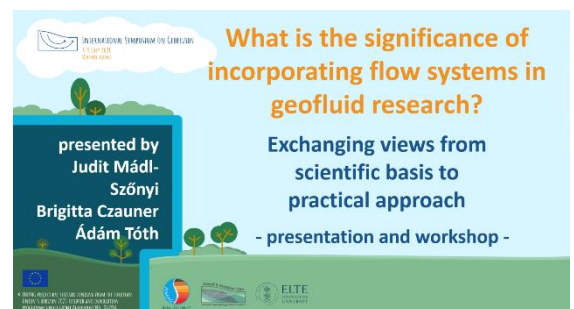
The symposium featured 40 live lectures and 28 poster presentations on 5 topics. The audience came from 26 different countries who actively participated in the follow-up discussion.

The standard of the event was elevated by the presentation of 5 internationally renowned keynote speakers who shared their forward-looking and high-quality research findings with the participants.

Interactive workshop was organized within the framework of the event, where the significance of incorporating flow systems in geofluid research was demonstrated, involving the audience with thought-provoking questions.

The symposium also included virtual social events, where participants were able to get an insight into the mysteries of the Hungarian cuisine with a cooking competition held within the framework of the gala dinner, as well as they were able to virtually visit the streets of Budapest and get acquainted with the diverse architecture of Hungarian capital during a virtual sightseeing tour.

Detailed info on the Symposium can be found [here](#).



Conference attendances

Due to the continuing pandemic situation, in 2021 the annual **EGU General Assembly** was held online, just like in 2020). The events of the EGU 2021 conference were scheduled between **19-30 April 2021**, in which **8** representatives of the **ENeRAG Team** were also present. Find out more [here](#).



On the online event **Judit Mádl-Szőnyi** (scientific coordinator of ENeRAG) and **Anita Erőss** (research associate) were session convenors. Moreover **Katalin Csondor** (PhD student), **Petra Baják** (PhD student), **Zsóka Szabó** (PhD student), **Hana Ben Mahrez** (PhD student), **Ádám Tóth** (assistant professor) and **Tímea Trásy-Havril** (research associate) presented their research, as representatives of the ENeRAG project from ELTE. More info [here](#).



World Geothermal Congress is the world's largest geothermal exhibition. WGC2020+1 is organized in a hybrid format with online presentation between **March-July 2021** with over 2000 papers presented and discussed interacting with the audience, as well as with on-site appearance in October 2021 in Reykjavik, Iceland.

ELTE PhD student **Ábel Markó** presented two conference papers at the World Geothermal Congress 2020+1 online event. The papers introduce reinjection problems related to geothermal utilization and present specific methods to understand and prevent them. Find more info [here](#).

Supported by the ENeRAG project, **Sándor Józsa** (associate professor at ELTE) participated in the **11th Assembly of Petrology and Geochemistry** that took place between **2-4 September** in Sopron, Hungary. **Sándor Józsa** presented an ENeRAG project-related research work, with the title of "*Unusual mixed carbonate-silica hot spring deposits from the SE Börzsöny Mts (N Hungary)*" in the poster session. Besides oral and poster presentations, there was a dedicated day for a field trip focusing on high pressure metamorphic rocks, in the Alpine metamorphic region of the Sopron Mountains. More info [here](#).



On **10-11 September 2021**, two young researchers from ELTE gave awarded presentations at the **51st Meeting of Young Geoscientists** in Zalakaros, Hungary. **Petra Baják** (PhD student) gave an oral presentation on the topic of natural radioactivity in groundwater, and **Ábel Markó** (PhD student) also had an oral presentation on geothermal systems related topic. Due to their excellent research work and presenting performance they were awarded by the jury. Petra received second place and Ábel third place in applied category. More information can be found [here](#).



The **47th IAH Congress** was organized in a fully digital format between **August 22nd and 26th, 2021**.

The main theme of the event was

GROUNDWATER 4.0: CONNECTED, VISIBLE AND ETHICAL.

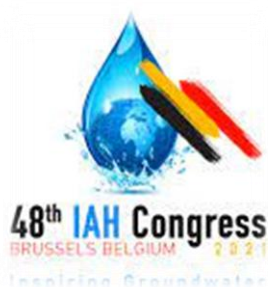
ENeRAG supported the participation of **Ádám Tóth** (assistant professor of ELTE) who presented his research work with the title of "*Basin-scale Characterization of Geothermal Resources in Convection Dominated Geothermal Plays*" in the session of Groundwater, Energy and Climate change. For [more info](#) visit our website.



ENeRAG was present at the **48th IAH Congress (6-10 September 2021, Brussels, Belgium)** as well.

The motto of the 48th conference was:

INSPIRING GROUNDWATER



ENeRAG supported the participation of 4 researchers (**Zsóka Szabó, Hana Ben Mahrez, Petra Baják, Ádám Tóth**) from ELTE and 1 researcher (**Andrea Citrini**) from UMIL, who presented their research on 4 different topics, such as Managed aquifer recharge, Hydrogeophysics, Hydrogeochemistry and Geothermal and hydro-energy, which are related to ENeRAG project.

Besides the inspiring plenary lectures and interesting discussions during the oral and poster sessions, many social events were organized in order to facilitate networking. On Wednesday various interesting field trips were organized through Belgium. The ENeRAG project members attended a field trip in Spa and visited the famous Spa water bottling factory and learned the hydrogeologic characteristics of the source region and visited the Rochefort area and its Devonian limestone fractured and karstic aquifers.

It was a great pleasure and a huge success for us that this year the scientific coordinator of the ENeRAG project, **Judit Mádl-Szőnyi** received one of the most prestigious awards of the International Association of Hydrogeologist, the **IAH Presidents' Award** in the framework of the Congress. If you wish to know more about this conference and the award, just click [here](#).

A young researcher represented the ENeRAG project at the **Hungarian Groundwater Conference** on **28-29 September 2021**, in Siófok, Hungary. **Zsóka Szabó** (PhD student at ELTE) gave a poster presentation on her research topic, entitled "*Managed Aquifer Recharge using shallow wells – Experimental analysis of potential and environmental impacts in Kerekegyháza, Hungary*"



Attending the conferences created great opportunities to engage in networking, to broaden our network, to increase the level of dissemination of the ENeRAG and to exchange research ideas.



Workshops

The workshop on **Mineral resources in hydrothermal mineral systems** held online between **17-20 May 2021** attracted participants worldwide. The lecturers of the short course were excellent experts from GTK, namely **Ferenc Molnár, Fredrik Karell and Torppa Johanna**.

The course aimed to continue the educational path started in [the first workshop on mineral systems held in Hungary](#) during the project. The workshop went through on the theory and practice for research of hydrothermal systems. Geophysical basis and mineral prospectivity mapping techniques ending with spatial modeling methods and applications were also introduced.

Attendees of the event had the opportunity to present their research during the workshop, who could thus discuss their work with experts on the field. More info on the workshop can be found [here](#).



GTK organized an online workshop within the ENeRAG project towards project consortium partners on **Funding opportunities – project planning** on the **8th of June 2021**. The workshop was specifically focused on the potential Horizon Europe calls where further cooperation between the partners (GTK, UMIL, ELTE) might be possible in the future as well. This possibility also reinforces the partnership established during the ENeRAG project. Some specific calls were discussed in the field of geoenery, mineral resources, agriculture, pollution and water availability.

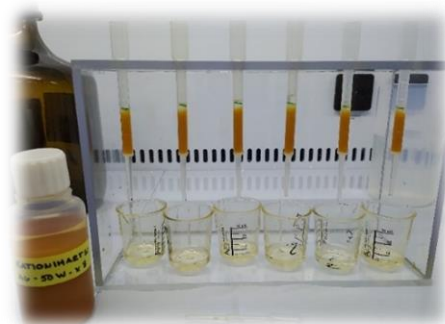


The workshops provide knowledge transfer and also an opportunity for young researchers to build new connections.

Student and staff exchanges

A PhD student from UMIL, **Giulia Casiraghi** spent her training at the laboratory facilities of GTK between **12th of October 2020 to the 12th of February 2021**. The main purpose of the visiting period was to carry out hands-on training in order to develop skills in isotope measurements with Multicollector-Inductively Coupled Plasma Mass Spectrometer (MC-ICPMS) and in chromatographic separation.

The PhD student learned the procedure for sample preparation and running the instruments, as well as the successive processing of the data. Ultimately, the skills acquired will be useful for her to develop a method of analysis for Cl- stable isotopes, and for Sr, Li and S isotope for further characterization of her PhD study site.



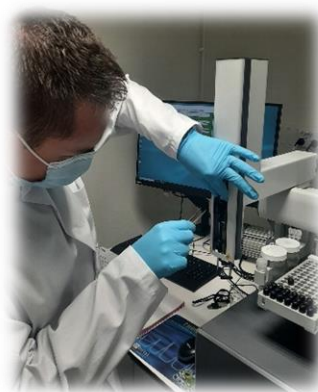
Petra Baják (PhD student, ELTE) visited the laboratory of one of the GTK's units named Circular Economic Solutions (CES) between **12-24 September 2021**. The purpose of her exchange was to learn how stable isotope measurements work and how the results can be evaluated and be involved in the mapping of groundwater flow systems.

During her two-week stay, she learnt how to prepare water samples for the analysis and then she measured the δO and δD isotopic composition of her own samples. She also acquired a knowledge of post-measurement calibration and data processing. She deepened her knowledge in stable isotope geochemistry and she got a better understanding not only in the equilibrium and kinetic fractionation both at molecular and effective scales, but also in the assessment of processes

leading to fractionation, especially diffusion, evaporation and condensation. More information on her exchange is [here](#).

The staff exchange of **Ádám Tóth** (assistant professor, ELTE) – scheduled for **12-16 September 2021** - focused on the application of isotope techniques in hydrogeology, understanding groundwater flow conditions and mixing of surface water and groundwater.

During the visit, Ádám could gain insight into the ongoing projects and the research labs, including a rooftop rainwater collection station. Ádám could acquire knowledge on water sample preparation, measurement routine, data calibration and data processing. An in-person meeting was also organised with other ENeRAG participants of GTK, under the supervision of Mia Tiljander, Nina Hendriksson, Kirsti Korkka-Niemi, Tiina Kaipainen, to evaluate and discuss the isotopic composition of his water samples. More info can be found [here](#).



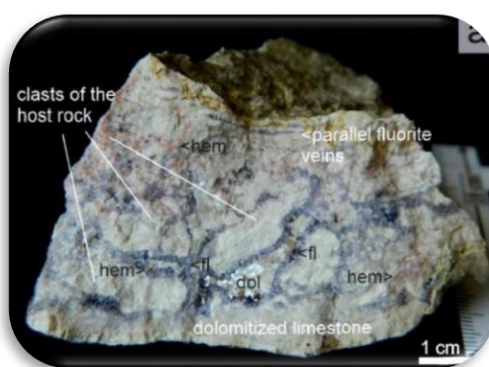
These researcher exchanges can develop strong connections between ELTE, GTK and UMIL on topics of interest for all three Institutes. They help to implement the gathered knowledge into the ongoing research projects.



Publications

With the joint effort of researchers of the ELTE and the GTK, the third **joint paper** of the ENeRAG was published as an **open access** publication in Minerals (MDPI).

Results of the research presented in the paper provide a new background for the evaluation of the metallogenetic context of the peculiar mineralization at Pécsely and highlight the potential role of the overprinting regional scale Alpine fluid flow systems on older mineral deposits in formation of unusual metal associations and enrichments. The whole paper is accessible [here](#).



!!! SPECIAL ISSUE CALL !!!

ENeRAG together with the Regional Groundwater Flow Commission of IAH has settled down an Open Access **Special Issue** with [Water MDPI](#), titled

“From Groundwater Flow Understanding to Sustainable Water Management”.

This SI “brings together manuscripts from different fields of groundwater studies with the common aspect of *understanding regional groundwater flow systems* for improved water management”.

All paper that fits in the scope of the SI are welcomed!

The planned latest submission deadline for the papers is 31 December 2021. If you are interested, you can find detailed information on the SI [here](#).



Side events of the last 6 months

Conference attendances

The 16th Carpathian Basin Conference for Environmental Sciences was held online between 30 March and 1 April 2021, where ELTE was represented by Petra Baják, Katalin Csondor and Zsóka Szabó. Moreover, keynote presentation was given by Judit Mádl-Szőnyi.



With his presentation Máté Hencz (MSc student at ELTE) represented the ENeRAG project on the 8th Mineral Sciences in the Carpathians Conference that was organized online on 13-14 May 2021.



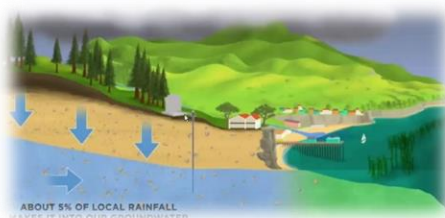
Dissemination of knowledge

ELTE ENeRAG group has participated in several awareness-raising events aimed at widely promoting and understanding geoscience with the general public.



Danube Day 2021

Educational tale was translated for the little ones.



Earth Day 2021

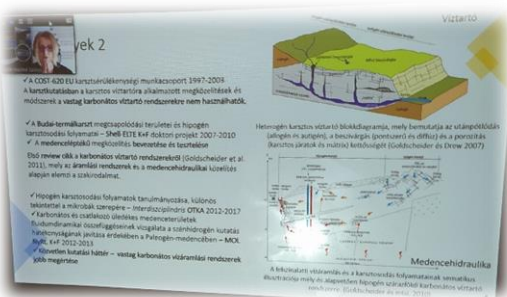
Scientific presentation on groundwater flow through the goggles of a geophysicist



Radio interviews

2 radio interviews about groundwater and groundwater under Budapest

PhD and DSc work defence



On 27 May 2021 Judit Mádl-Szőnyi successfully defended her MTA dissertation and thus she became a Doctor of Sciences.



On 13 September 2021 Katalin Csondor successfully defended her doctoral dissertation and thus she became a Doctor of Philosophy.

Science competition

The 3rd edition of Water4Future Hackathon competition was held online on 5-6 March 2021, focusing on the topic "Water and city". From the ELTE the event was attended by Ádám Tóth PhD hydrogeologist and Hana Ben Mahrez PhD student. The "Tree of life project" won the 3rd prize, which is a special pleasure for us, as Hana Ben Mahrez was a key member in the development of this project.



Current event in the project

The 2 weeks **winter school**, which serves the purpose to improving skills in conservative and reactive transport modelling, was scheduled between **20-30 September 2021**. As the deadline for this newsletter was on the 30th of September, we will get back to you with detailed info in our next issue.

Stay tuned!

Planned events during the last 6 months of the project

ELTE will host 2 project closing events:

- 1) Project closing workshop on Innovative development and networking in geofluids' research
- 2) Roundtable discussion: Introduction and transfer of the results of the project to public and governmental institutions, companies, NGOs, universities from Hungary.



Student and staff exchanges will be carried out in the following topics:

- 1) cutting-edge modern analytical techniques in research on crustal fluid systems, clay minerals and related geological resources
- 2) machine learning and numerical simulations in shallow geothermal systems' analysis
- 3) use of instruments and techniques to monitor the effect of shallow geothermal energy on both fractured and porous aquifers



Conference attendance

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

World Geothermal Congress
24-27 October 2021, Reykjavik, Iceland



**WORLD
GEOTHERMAL
CONGRESS
2020 REYKJAVIK**



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

- ✓ Márk Szijártó; Attila Galsa (2021): [Termohalin konvekció numerikus vizsgálata porózus közegmodellben](#)
- ✓ Kamilla Modrovits, András Csepregi, Ilona Kovácsné Székely, István Gábor Hatvani, József Kovács (2021): [Comparison of Various Growth Curve Models in Characterizing and Predicting Water Table Change after Intensive Mine Dewatering Is Discontinued in an East Central European Karstic Area](#)
- ✓ Csondor Katalin, Baják Petra, Heinz Surbeck, Izsák Bálint, Horváth Ákos, Vargha Márta, Pándics Tamás, Erőss Anita (2021): [Parti szűrővíz vízbázisok természetes radioaktivitása nuklidspecifikus mérések tapasztalatai alapján](#)
- ✓ Zsuzsa Molnár, Gabriella B. Kiss, Ferenc Molnár, Tamás Váczi, György Czuppon, István Dunkl, Federica Zaccarini, István Dódonny (2021): [Epigenetic-Hydrothermal Fluorite Veins in a Phosphorite Deposit from Balaton Highland \(Pannonian Basin, Hungary\): Signatures of a Regional Fluid Flow System in an Alpine Triassic Platform](#)
- ✓ Judit Mádl-Szőnyi, Ildikó Erhardt, Róbert Hohol (edit) (2021): [International Symposium on Geofluids - Abstract Volume](#)
- ✓ Sikandar Hayat, Zsóka Szabó, Ádám Tóth, Judit Mádl-Szőnyi (2021): [MAR site suitability mapping for arid-semiarid regions by remote data and combined approach: A case study from Balochistan, Pakistan](#)



Contact ENeRAG through the media platforms of the project:



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[enerag.geofluids](https://www.instagram.com/enerag.geofluids)



[enerag_geofluid](https://twitter.com/enerag_geofluid)



[ENeRAG](https://www.facebook.com/ENeRAG)



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