

### Supporting & promoting the young researchers

Despite the difficulties and the travel restrictions, Geothermal-DHC granted 3 STSMs and 2 ITC conference grants.

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**Simona Adrinek**, from the Geological Survey of Slovenia, traveled to the Norwegian University of Science and Technology for 1 month. She met her PhD co-supervisor and gained knowledge on different methods for analysing the thermal properties of sediments. During her stay, she enjoyed both the field work (observation of geothermal probes installation, the use of fiber-optic cables and familiarisation with TRT) and the laboratory experience (use of analytical thermal conductivity estimation models).



“I can say that the exchange was a great thing that gave me the opportunity to share and acquire new knowledge in shallow geothermal utilisation and an opportunity to meet new people and get to know the Norwegian lifestyle and rainy weather”, said Simona.

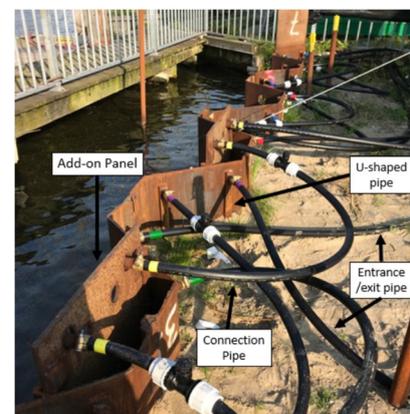
*“Future climate change and city expansion scenarios would lead to the highest thermal energy increment in the subsurface compared to shallow geothermal development, which, for this reason, should be highly supported!”*, said **Alberto Previati**, STSM participant

An STSM was also granted to **Alberto Previati** to investigate the thermal status and the impact of human activities on the shallow aquifers in the Milan City area through numerical modeling techniques. Results of the simulations were used to evaluate the thermal exchange potential as the maximum positive/negative energy change per volumetric unit of the subsurface. They were also compared against groundwater samples to assess the effects of urbanization and SUHI development on the shallow groundwater micro fauna. For this, he collaborated with the Applied and Environmental Geology research group, Dept. of Environmental Sciences, at the University of Basel.

**Francesco Cecinato**, from the University of Milan, is another researcher who carried out a STSM. He spent one week at TU Delft, at the beginning of September 2021. There,



Groundwater temperature monitoring and sampling in Milan, behind the Duomo (Alberto Previati)



EQW experimental site at Delft (Francesco Cecinato)

J.P. De Vries (2021). “Quays rather than boilers. Extracting heat from water and soil through energy sheet piles”. MSc Thesis, TU Delft, The Netherlands

he joined efforts with Phil Vardon's research group to investigate the complex behaviour of energy quay walls (EQW), with special regards to their energy performance. Knowledge sharing regarding modelling assumptions, simulation techniques, and experimental data analysis between the two institutions are the results of this collaboration.

*"It was indeed fulfilling for the knowledge I could gather but also for the collaboration and network that was created among the participants group, the trainers and organizers. From the spiciness jokes about our own geothermal energy to the several discussions about the future of our, hopefully, decarbonized society.  
João Figueira, 1st training school participant*

## Training Schools

Geothermal-DHC, the University of Ljubljana (NTF UL), the Geological Survey of Slovenia (GeoZS), the Geological Survey of Croatia (HGI-CGS) and the University of Zagreb (RGN UZ) organised the **1<sup>st</sup> training school**, which took place in Slovenia and Croatia (9-16 July 2021). The topic was "**Coupling technologies to use low and medium depth hydro-geothermal energy**".

The aim of the summer school was the attendees to apply geothermal concepts in order to learn how to use the available geothermal potential. Geothermal energy utilization can be applied almost anywhere, we just need a sound knowledge of proper project development and application of best possible technical solutions. The outcome of the summer school is the Fieldtrip Guidebook, which is now available for [download](#).

The **2<sup>nd</sup> training school** took place in Cyprus (20-24 September 2021) and was organised by the Geothermal-DHC and the Cyprus University of Technology. The topic was about "**Design and operation of shallow geothermal energy systems with reference to low temperature heating and cooling grids**".

The aim was he participants to learn and apply basic principles of geothermal science on the design and operation of Shallow Geothermal Energy Systems with a special focus on the application on low temperature heating and cooling grids



1<sup>st</sup> training school, Slovenia & Croatia, July 2021



2<sup>nd</sup> training school, Cyprus, September 2021

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## Success Stories of Geothermal-DHC

A collaboration between the University of Milan and TU Delft is about to begin and Francesco Cecinato's **STSM grant** initiated it. Francesco recently obtained a PhD grant from the Italian Ministry of Education and co-funded by Dutch company CRUX Engineering. The PhD will start in January 2022 and it will be co-supervised by Phil Vardon. The hired PhD student will spend 12 months in the Netherlands.

The grant aims to study the behaviour of Energy Quay Walls and will include numerical simulations and in-situ experiments, to gain a complete understanding of the behaviour of EQW, and their possible role as parts of district heating and cooling networks.

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