


ArtEmis Newsletter

Artemis is a Horizon-Euratom project funded by the European Commission that brings together 14 partners from 9 countries. Launched on 1st October 2022 its aim is to address one of the most damaging natural hazards on earth: earthquakes. Our goal is to improve radon-based earthquake forecasting methods. The artEmis project will develop a smart and cheap sensor system with about 100 units monitoring radon, temperature, acidity, and other observables in ground water in real time. The data from the sensor system will be combined with seismic and geological data and analysed via machine learning algorithms. The sensors will be placed along fault zones in earthquake prone areas in Greece and Italy, and in Switzerland.

To stay further informed with updates about the ArtEmis project, please do also visit our official website (click image below)



Newsletter #3

Message from ArTemis Project Coordinator – Prof. Ayşe Ataç Nyberg

Dear reader,

I am delighted to send you our third newsletter in which you will find the latest outcomes of the artEmis.

Installation of first sensor prototypes

After a prolonged preparation phase due to delayed component deliveries, we successfully deployed six prototype sensor units in the selected sites in Italy, Greece and in Switzerland in February and early March. Measurement sites were chosen based on the seismotectonics, geology and hydrology of the areas along fault zones. The sensor units were installed in wells, springs and in tunnels with access to ground water.

ArtEmis prototype sensor units were designed and produced at GSI, Darmstadt (see Fig.1 below).



*Fig.1 ArtEmis sensor unit in a watertight housing.
Figure by J. Gerl.*

They contain gamma-rays detectors as well as PHT sensors (pressure, humidity, temperature, humidity), accelerometers and microphones. While taking measurements, we were able to combine the sensors in a communication network and test the data flow to an MQTT broker/server at KTH in Stockholm. This was the result of excellent cross-disciplinary collaboration and devoted work from

several of artEmis Work Packages. Fig.2 displays pictures from sensor installations at a few of the measurement sites where sensors are currently deployed.

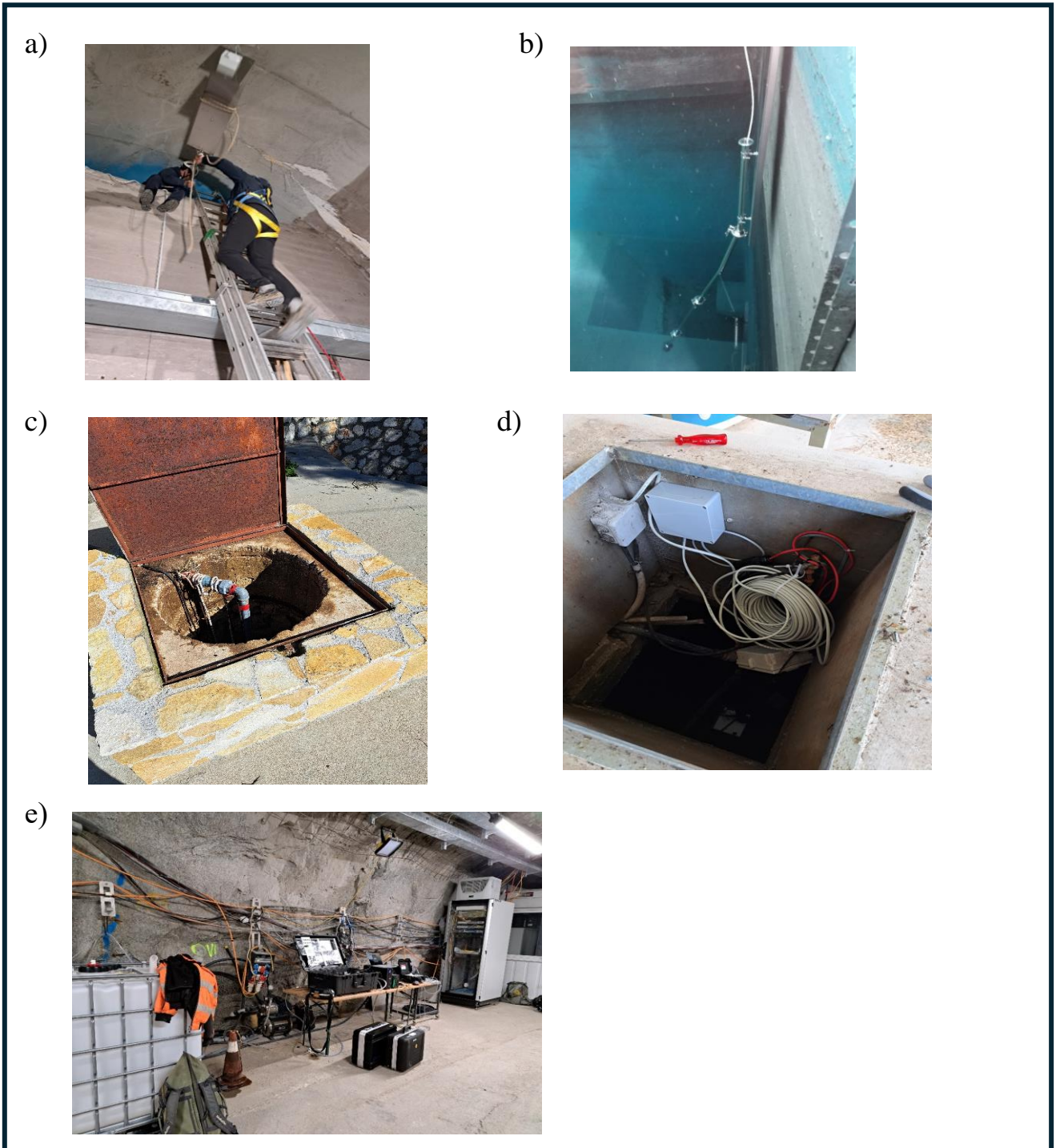


Fig. 2 a) and b) North East Gran Sasso tunnel drainage, Italy, c) well in Kamilio, Lefkada, Greece, d) village well in Lefkada, Greece and e) Bedretto Underground Laboratory, Furka Tunnel, Switzerland. Foto by Juergen Gerl and Gururaj Kumar.

After the deployment of the prototype units, artEmis activities will move on from the preparatory phase into the new phase of data collection and analysis. We intend to improve the sensor system, increase the number of units as well as developing the AI tools for data analysis. We expect to deploy 30 more sensor units during the summer months until September 2024.

Outreach activities in Lefkada

During the installation of the first two sensors at the Lefkada island, the artEmis consortium arranged a lecture for students at the Lefkada Lyceum and a separate meeting with the mayor of the island.

The lecture for students, arranged with support of teachers and representatives for artEmis, gave an overview of the seismotectonic properties and history of earthquakes in Greece and Ionian Island to the students. This was followed by an explanation of the benefits of Radon for observation of changes in groundwater and their possible implications as a precursor. The possibility of further engagement was discussed.

Similarly, the discussion with the mayor centered around the installation and further cooperation supporting maintenance and cooperation with the local communities.

Both events were reported in the [local press](#).

First General Assembly

After the deployment of the sensor units, artEmis activities moved on from the preparatory phase into new phase of data collection and analysis. In this phase, we plan to improve our existing system, increase the number of sensor units and measurement sites as well as developing the AI tools for data analysis.

First General Assembly of artEmis tool place in Brussels, 20-22 March 2024. Here, we had the opportunity to discuss the project developments in detail, make extensive future plans and prepare the coming artEmis Science and Stakeholder Workshop which is expected to take place in June 17 – 18, in Barcelona. The meeting ended with an excursion to JRC-Geel.

In Fig. 3, you can see a large part of the artEmis family during the General Assembly.

We will be glad to keep you informed along our path.

Prof. Ayşe Ataç Nyberg, KTH
artEmis Project Coordinator



Fig. 3 ArtEmis collaboration at General Assembly organised by JRC in Brussels, 20th -22th March 2024.



Funded by the EU



*[why did I get this?](#) [unsubscribe from this list](#) [update subscription preferences](#)
ArtEmis Project EU · Carrer D'Arnus I De Gari 7 · Barcelona · Barcelona,
Catalunya 08034 · Spain*