GROUNDWATCH – Joint Master Programme in Groundwater and Global Change: Impacts and Adaptation

Summary

The programme offers a distinctive curriculum built on the cornerstones of hydrogeology, hydrology and climatology. With this curriculum GroundwatCH aims to address the current gaps in higher education with regard to the understanding of the interactions between groundwater, surface water, climate and global change, and how we need to consider and can benefit from these interactions when dealing with adaptation.

Groundwater is the largest liquid freshwater reservoir on earth. As such it plays a crucial role in the existence and future development of humanity, but also in the preservation of groundwater dependent ecosystems, rivers, wetlands, flora and fauna.

Groundwater has both a huge environmental and economic value, and the latter will continue to increase as the large and still growing direct (consumptive) and indirect (crop) water demands of the global population need to be satisfied.

Several factors foster the need for a more comprehensive and multidisciplinary educational groundwater programme.

First, groundwater is a component of the water cycle interacting with all other components at various temporal and spatial scales. Second, groundwater systems are largely interdependent with socio-economic development. Third, climate change is foreseen to affect freshwater availability globally, with several hotspots, among which many areas that currently already suffer periods of severe droughts and freshwater scarcity, such as the Mediterranean area of southern Europe and Northern Africa, northeast China, northern and south-western Latin America, large parts of Australia and the western United States, among others. Fourth, important feedback mechanisms exist between groundwater (and its use), climate and global change, which vary in time and space.

GroundwatCH's curriculum is based around the following academic areas:

- General Hydrogeology.
- Groundwater Data Collection.
- Interpretation and Modelling.
- Climate Processes and Modelling.
- Integrated River Basin and Water Resource Management.
- Groundwater and Environmental Impacts.
- Groundwater, Society and Policies.
- Groundwater, Climate and Global Change Impacts and Adaptation.

Innovation and excellence of the GroundwatCH programme is stimulated by the combination of vast educational and research experience of three full partner Higher Education Institutions with high national and international recognition, each with a distinct profile providing added value to the course.

Figure 1. Graduation Day of the 1st Master course GroundwatCH.

Figure 2. Pumping test in Lisbon downtown during COVID pandemic.

Figure 3. GroundwatCH 3rd batch of students at IST.

Project Reference

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Leading Institution

IHE Delft Institute for Water Education (Netherlands)

Partners

IST – Instituto Superior Técnico (Portugal), TU Dresden – Technische Universität Dresden (Germany)

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CERIS

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Project Website

www.groundwatermaster.eu