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Utilising data and knowledge from European geological survey organisations in climate change impact assessments and adaptations

Anker Lajer Hojberg¹, Ida Bjørnholt Karlsson², Klaus Hinsby³, Jacob Kidmose⁴, H el ene Bessiere⁵, Majdi Mansour⁶, and David Pulido-Vel azquez⁷

¹Dept. of Hydrology, Geological Survey of Denmark and Greenland, GEUS, Copenhagen, Denmark (alh@geus.dk)

²Dept. of Hydrology, Geological Survey of Denmark and Greenland, GEUS, Copenhagen, Denmark (ika@geus.dk)

³Dept. of Hydrology, Geological Survey of Denmark and Greenland, GEUS, Copenhagen, Denmark (khi@geus.dk)

⁴Dept. of Hydrology, Geological Survey of Denmark and Greenland, GEUS, Copenhagen, Denmark (jbki@geus.dk)

⁵Dept. of Water, Environment and Ecotechnologies, BRGM French Geological Survey, Orleans, France (H.Bessiere@brgm.fr)

⁶Environmental Science Centre, British Geological Survey, Nottingham, United Kingdom (majm@bgs.ac.uk)

⁷Institute for Geology and Mineral Exploration, IGME, Granada, Spain (d.pulido@igme.es)

Climate change (CC) already have widespread and significant impacts in Europe, which is expected to increase in the future. Groundwater plays a vital role for the land phase of the freshwater cycle and have the capability of buffering or enhancing the impact from extreme climate events causing droughts or floods, depending on the subsurface properties and the status of the system (dry/wet) prior to the climate event. Understanding and taking the hydrogeology into account is therefore essential in the assessment of climate change impacts.

The Geological Survey Organisations (GSOs) in Europe compile the necessary data and knowledge of the groundwater systems across Europe. The overall vision of the project "Tools for Assessment of Climate change Impact on Groundwater and Adaptation Strategies – TACTIC" is to enhance the utilisation of these data and knowledge of the subsurface system in CC impact assessments, and the identification and analyses of potential adaptation strategies. To reach this vision, the objective of TACTIC is to contribute to the development of coherent and transparent assessments of CC impacts on groundwater and surface water, supporting improved EU policy making, and providing decision support for stakeholders and decision makers. To accomplish this, an infra-structure among European Geological Survey Organisations are developed in TACTIC to foster advancement and harmonisation of CC assessments, made up by: 1) The TACTIC Toolbox, consisting of relevant tools and methods for CC impact assessments, 2) TACTIC guidelines that will guide GSOs and other relevant stakeholders on the selection of appropriate tools and their use for producing comparable results, 3) The European Geological Data Infrastructure (EGDI) where data, reports and open-access papers will be stored and made freely available

The project is centred around 40 pilot studies covering a variety of CC challenges as well as different hydrogeological settings and different management systems found in Europe. The pilot

activities are coordinated centrally in the project, to ensure that assessments, to the extent possible, are harmonised and can be compared across pilots. Synthesizing the experiences and results from the pilots will enable the development of a guideline and future roadmap, with the aim of 1) encouraging more GSOs to contribute in CC impact assessments 2) providing guidance to make the learning curve less steep and 3) ensuring that new assessments are comparable with assessments conducted in TACTIC.

TACTIC is part of the Horizon 2020 ERA-NET on Applied Geoscience (GeoERA) and together with the three other GeoERA groundwater projects, TACTIC will provide new and important data for further development of the European Geological Data Infrastructure (EGDI) with publicly available data enabling the development of EU-wide decision support systems for sustainable management of subsurface resources in a changing climate.

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