

Digital groundwater and geoscience data supports the green transition and UN Sustainable Development Goals

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Societies are profoundly dependent on resources from beneath the Earth's surface. It's crucial to have unrestricted access to accurate, consistent and coherent digital scientific data detailing the subsurface's geological features including the extent of regional and local aquifers down to five kilometers (Hinsby et al. 2023). Such information is pivotal in evaluating and mitigating climate change effects and spearheading the shift towards environmental sustainability. Digital maps and integrated 3D/4D surface and subsurface models are vital for exploring and tackling challenges related to groundwater quantity and quality, impacts of floods and droughts, renewable geo-energy alternatives, availability of essential raw materials supporting the green transition, resilient urban planning carbon storage and capture, natural disaster risk evaluation and adaptation, and safeguarding groundwater dependent ecosystems and biodiversity.

For over ten years, EuroGeoSurveys, representing Europe's Geological Surveys, has dedicated itself to offering harmonized digital data of Europe's subsurface via the European Geological Data Infrastructure (EGDI). These datasets are an unmatched asset for informed decision-making and green transition policy enactment, aligning with UN Sustainable Development Goals and the forthcoming Digital Twins in Earth sciences. The database is continuously refined and expanded with pertinent stakeholders to address societal demands and ensure a balanced, robust, and holistic management of surface and subsurface resources, which sometimes have conflicting uses.' Here, we present selected examples of groundwater quantity and quality data and knowledge with open access in EGDI at European and regional scales.

References (format style Heading)

Hinsby, K., Négrel, P. de Oliveira, D., Barros, R., Venvik, G., Ladenberger, A. Griffioen, J., Piessens, K., Calcagno, P. Götzl, G., Broers, H.P., Gourcy, L., van Heteren, S., Hollis, J., Poyiadjik, E., Čáková, D., & Tulstrup, J. 2023: Mapping and understanding the Earth – open access to digital surface and subsurface data and knowledge supports societal needs and UN Sustainable Development Goals. *Int J Appl Earth Obs Geoinf*, resubmitted.