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Initiative of EuroGeoSurveys' Urban Geology and Water Resources Expert Groups

Special Issue:
Groundwater in the cities of Europe

FOREWORD

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This special publication, Groundwater in the Cities of Europe, comes at a time when groundwater is increasingly recognised as a resource under threat. In 2023, the Earth surpassed the safe operating space for freshwater (Richardson et al., 2023). In 2024, EU President Ursula von der Leyen introduced a coming European Water Resilience Strategy in guidelines for the new 2024 European Commission, focussing on management of European waters including groundwater, which makes up 65% of our drinking water and 25% of water for agricultural use. And while the status of European groundwaters is already of concern (European Environment Agency, 2022), impacts from climate change, industry, and urbanisation are growing.

These challenges highlight the need for a European vision to understand, monitor, protect, and restore our groundwater resources: aquifers do not stop at borders. Water must serve multiple uses (e.g., drinking, agriculture, ecosystem support) and concurrently we must protect and restore groundwater quality and quantity. At the heart of these endeavours is the simple need to understand groundwater dynamics, which is not a simple task at European scale. Nonetheless, this is exactly the task being addressed by the Geological Surveys of Europe through the EU funded 5-year Geological Service for Europe project, delivering pan-European harmonized data on European groundwater quality and quantity. A crucial part of this picture is urban groundwater. Already almost 40% of the population of Europe live in cities and urbanisation is only increasing. With growing pressure on resources to sustain our cities, there are growing and competing uses of the urban subsurface (e.g., underground building, transport, storage, and energy infrastructure) and pressure on the groundwater that shares this subsurface space (e.g., from pollutants or abstraction).

The collaborative work that has delivered this special publication of Groundwater in the Cities of Europe is a microcosm of the larger collaboration of the Geological Surveys of Europe through EuroGeoSurveys, a not-for-profit association representing 37 national organisations. EuroGeoSurveys has a common vision of establishing a Geological Service for Europe to deliver data, research, and expert geological advice at European level. At the heart of EuroGeoSurveys are our ten thematic geoscientific Expert Groups, drawn from experts across Europe. Two of those groups – the Urban Geology Expert Group and the Water Resources Expert Group – collaborated to deliver this special issue. Their collaboration highlights the transversal character of urban geology and the need to consider multiple uses, stakeholders, and priorities. In particular, understanding and managing urban groundwater requires not just a snapshot of groundwater status, city by city, but an understanding of the dynamic processes that continue to influence groundwater quality and quantity through time, requiring ongoing monitoring and modelling.

The publication of Groundwater in the Cities of Europe is an important step in both understanding the status of European urban groundwater and in strengthening the necessary collaborations that will be increasingly needed to allow us to tackle the challenges ahead in achieving good urban groundwater status for future generations.