Preface

Groundwater is a vital natural resource with significant economic, strategic and environmental value. However, it is under stress in many regions worldwide due to increasing urbanization, industrialization, changing climatic, increased demands and other human-driven activities. The depletion of groundwater levels and the deterioration of water quality are particularly concerning issues in numerous areas. To address these challenges, effective groundwater resource management strategies must be developed to reverse the decline in water quality and depleting water levels, ensuring the sustainability of this precious yet limited resource. Currently, India stands as the world's largest and fastest-growing consumer of groundwater. Groundwater is a crucial resource, integral to life and indispensable for comprehensive growth and development of the country in achieving its holistic vision of a developed nation by 2047, the 100th year of its independence.

The International Groundwater Conference 2025, is centered around the main theme "Groundwater Vision 2047: Towards Water Security under Changing Climate". The conference will cover a wide range of topics including groundwater assessment, management and modelling under varied climatic and geological settings; agriculture water management; climate change; environmental flows and river rejuvenation; mountain hydrology and spring-shed management; coastal water resources management; and advanced techniques in groundwater monitoring, management and exploration, etc. The issues are of significant concern to India and are critical for policy makers, water managers and researchers in the country. The overarching theme aligns with India's vision for sustainable and inclusive growth through a multipronged strategy aimed at eradicating poverty by increasing livelihood opportunities, providing social safety net and developing infrastructure for growth, for which sustainable groundwater management is essential.

Researchers from both developed and developing nations are working on various facets of groundwater, such as advancing tools and techniques for monitoring resources, sub-surface characterization, aquifer mapping and modeling, and crafting effective management policies. The IGWC 2025 aims to unite scientists, researchers, planners, policymakers, engineers, water resource managers, students, NGOs, and other stakeholders in the groundwater and environmental sectors. The event will provide a platform for exchanging ideas, knowledge, experiences, techniques, and expertise, offering an opportunity to present research findings, discuss challenges, and explore scientific advancements in water resources development and management under the influence of climate change. The focus is on ensuring a water-secure future and promoting sustainable development, with special emphasis on groundwater.

IGWC 2025 is organized by the National Institute of Hydrology (NIH), Roorkee in association with the Central Ground Water Board, New Delhi, India; Association of Global Groundwater Scientists (AGGS), Coimbatore, India; National Mission for Clean Ganga (NMCG), New Delhi, India; National River Conservation Directorate (NRCD), New Delhi, India; British Geological Survey (BGS), United Kingdom; Hochschule für Technik und

Wirtschaft (HTWD) Dresden, Germany and KTH-Royal Institute of Technology, Stockholm, Sweden.

Focusing on the latest research and technological advancements from around the world, IGWC 2025 aims to deliver meaningful outcomes and offer a vision for 2047 to safeguard groundwater resources, not only in India but globally. This Proceedings Volume includes 41 abstracts from keynote speakers and 311 abstracts from delegates and experts, both from India and abroad. We hope that the research abstracts in this Volume will lead to practical recommendations for developing a framework to implement various programs and initiatives by both government and non-government organizations working in the water sector in general and groundwater in particular.

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Editors