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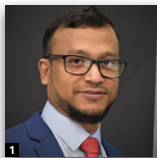
Editorial

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Editorial

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Geotechnical Research (GeoRes), as one of the first gold Open Access (OA) journals, requires authors to pay an Article Processing Charge (APC). However, this model significantly enhances the visibility and impact of research articles and knowledge-based case studies across a broad spectrum of geotechnical challenges. To support and encourage high-quality submissions, Editors-in-Chief Ong and Rahman offer a number of APC waivers for outstanding articles—providing a valuable opportunity for prospective authors and readers alike. For manuscripts that do not qualify for a waiver, a variety of APC discounts may be available, especially for researchers from countries supported by the International Network for the Availability of Scientific Publications (INASP). This discount policy helps reduce economic barriers and promotes the dissemination of research from developing regions. In alignment with the goal of advancing sustainable engineering practices, *GeoRes* is also committed to integrating the United Nations Sustainable Development Goals (UN SDGs)—including relevant keywords and symbols—into its published content.

The issue includes four articles on practical applications in geotechnical engineering, specifically GIS-enabled methods, machine learning, climate-related impacts and rockfill dam safety.

Lim and Moore (2025) highlight the challenges involved in planning geotechnical site investigations, particularly for large-scale projects. These challenges include fragmented data across multiple media and formats, which hampers efficiency and complicates geotechnical risk assessment. Retrieving and managing historical reports is often difficult, and communication with clients frequently lacks clarity. This article introduces innovative, GIS-enabled methods to streamline the investigation process, improve data integration and risk communication, and enhance client engagement—demonstrated through a successful case study on a major highway upgrade in Queensland, Australia.

Gao *et al.* (2025) present a comprehensive methodology for applying machine learning to optimize numerical simulations in geotechnical

engineering, using slope safety factor calculation as a case study. It outlines key steps including parameter selection, neural network design, training standards, dataset preparation using orthogonal and factorial methods, and model performance evaluation. The study also explores prediction error characteristics and model extrapolation. By reducing complexity and expertise requirements, this approach aims to standardize and promote wider adoption of surrogate models in engineering practice.

Climate change poses significant challenges to underground transport infrastructure, increasing geotechnical and structural risks. In this review, Pantoja Porro *et al.* (2025) examine key climate-related impacts, including sea level rise, extreme weather events, groundwater fluctuations, and soil composition changes. These factors contribute to flooding, soil weakening, structural damage, and corrosion—especially in coastal and densely populated areas. The study underscores the urgent need for adaptive design strategies to enhance geotechnical resilience and ensure the long-term safety, functionality, and sustainability of critical transport systems in a changing climate.

Ten years after the completion of the Madani Tabriz rockfill dam, its safety was assessed through instrumentation data and numerical analysis using MIDAS finite element software. Farajniya and Poursorkhabi (2025) present the results for settlement, pore water pressure, and total stress were compared, showing correlation coefficients of 84%, 67%, and 99%, respectively. A sensitivity analysis was conducted for a controlled impounding program, managing pore pressure and stress in the clay core. Findings support a reservoir filling rate of 30 cm/day over 80 days for safe operation.

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