ARTICLE OF SPECIAL INTEREST

Editorial-Special Issue: Landslides: Forecasting, Assessment and Mitigation

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With immense pleasure, we present the special issue of Indian Geotechnical Journal on Landslides: Forecasting, Assessment and Mitigation. The issue has 17 original articles and a technical note, contributed by national and international experts in the field of landslides. India is one among the highly affected landslides zones in the world with 12% (0.42 million sq. km) of its landmass highly susceptible to landslides. It has landslides of every class, shade and description. Rainfall-induced landslides dominate because India contributes 16% of all rainfall-triggered landslide events in the global dataset. India being highly seismic with 5 great earthquakes in the recent history starting from the Shillong earthquake of 1897, its professionals and researchers have flagged earthquake-induced landslides as a topic of very high priority. This special issue has different case studies and research outcomes regarding different landslide typologies, from a geotechnical perspective. We would like to take this opportunity to congratulate all the contributing authors for their research work and expertise in writing, which helped us in framing this wonderful piece of work.

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The article from Wenzhou University, China (Jin et al. 2020) discusses the shear characteristics of typical colluvial soil with gravel and the slope stability in Wenzhou. The experimental and numerical modeling results using finite element method show that the factor of safety of the binary slope depends on the strength of the overlying soil. Sunbul et al. (2021) discuss the detailed case study of Deverik landslide, 2015, happened in Turkey, and the static and dynamic analysis shows a deterioration in landslide stability during seismic loading puts the study area at risk. Ravindran et al. (2021) describe a new approach to estimate a model parameter related to shear strength conditions of local soils and prove that the shear strength parameters of unsaturated soil can be used for the prediction of shallow landslides induced by rainfall. Ganesan et al. (2021) explore effect of mature tree on suction distribution in a natural slope. Using detailed real-time monitoring evidence, the study shows that that antecedent rainfall plays an effective role in suction recovery rates and changes in soil hydraulic conductivity. Kalra et al. (2021) present a technical note on a simple trilingual APP for determining near-surface soil moisture which quantifies the spatiotemporal heterogeneity of soil moisture and can be connected to drones for field monitoring in large areas. Abraham et al. (2021) present a case study from Idukki district in Kerala and show that a model using mobility functions is 97% efficient in smaller areas with uniform topographical and geological conditions in forecasting the occurrence of rainfall-induced landslides. Al-Jawadi et al. (2021) evaluate in detail the case study of Bekhme Residential Complex in North Iraq and provide detailed slope assessment and slope design for the residential complex. Chandel et al. (2021) present results from an experimental study conducted to investigate the failure mechanism of a

retrogressive failure of reservoir rim sandy slopes induced by steady-state seepage condition. The study asserts the need for emphasizing the time-dependent analysis for such cases. Lin et al. (2021) evaluate the strength of unsaturated granite residual soil of Shantou coastal region considering effects of seepage using modified direct shear test, and the results show that the shear strength of granite residual soil decreases by about 15–30% under the influence of seepage. Verma et al. (2021) investigate the rockfall hazard along Lengpui-Aizawl Highway, NH-44A, Mizoram, India. The results reveal that vehicles on the roadway are under continuous threat, and the falling blocks have a kinetic energy of 196 kJ which is enough to damage the buildings and vehicles. Nath et al. (2021) present a case study on Impact of Main Boundary Thrust (MBT) on Landslide Susceptibility in Garhwal Himalaya. The results of the study show that slope angle, road network and distance from MBT are the most crucial landslide causative parameters in the study area, and the susceptibility map classified almost 30% of the area has high to very high degree of landslide susceptibility. Sharma et al. (2021) present an experimental and theoretical study on force–displacement characteristics of helical soil nail under different overburden pressure and monotonic pullout loading. The study concludes that that truncated cone rupture failure during group behavior significantly governs the stress–displacement response majorly by bearing than interface shearing resistance of soil plugging in hollow shafts. Jennifer et al. (2021) applied frequency ratio and logistic regression model in the assessment of landslide susceptibility mapping for Nilgiris District, Tamilnadu, India, and the maps were prepared with an area under the curve 82.3% and 84.29% using frequency ratio and logistic regression, respectively. Kumar et al. (2021) present a case study on Tangni landslide, on prediction of real-world slope movements via recurrent and non-recurrent neural network algorithms using used two years' weekly data of slope movements. The results imply that the slope movements can be predicted using machine learning approaches. Pandit et al. (2021) conducted the back-analysis of a debris slope through numerical methods and field observations of slope displacements using a combination of numerical techniques like limit equilibrium method and finite element method. The results contribute a base work for calibrated long-term monitoring of the slope displacements and will be useful for slope strengthening measure designs at the study area. Badhon et al. (2021) discuss the contribution of vetiver root on the improvement of slope stability through laboratory investigations. Test results indicate that vetiver root has a significant contribution in enhancing the shear strength parameters of soil-root matrix and the utilization of vegetation can be a sustainable and environment-friendly technique against slope failure-related problems. In general, the special issue deals with different aspects of landslide research such as forecasting, monitoring, hazard mapping, field investigations, stability analysis and case studies of recent landslides. Chang et al. (2021) assessed the landslides along NH 29 in the Kevüza area, Kohima, Nagaland through satellite imagery of the study area and field evidence. The detailed study indicates the presence of soil with less unconfined compressive strength and structurally weak jointed rocks in the study area. Ali et al. (2021) performed coupled hydro-mechanical simulations using the elastoplastic Barcelona Basic Model (BBM) and compared the results with conventional Mohr–Coulomb model. The result shows significant differences in the displacement values using both the approaches, and it was found that soil slope does not have to be entirely saturated to experience failure.

The guest editors would like to express our sincere gratitude to the Editor-in-Chief, Prof. Madhavi Latha for the support throughout the process. Her leadership and coordinating skills have helped us in organizing the articles and publishing the issue within the schedule. The time and effort from all the reviewers have also helped us during the processing. The whole team of Indian Geotechnical Journal and the publisher have supported us in the timely processing of all articles. We hope the issue will be worthwhile for the research community and will encourage further studies on geotechnical aspects of landslide research.