Quick Report DOI: https://doi.org/10.64862/ajeg.2025.202.01.322 Open Access

Report on the 15th Asian Regional Conference of the International Association for Engineering Geology and the Environment (ARC-15), Kathmandu, Nepal, 27–29 November 2025

Anjila Babu Malla[1], Ranjan Kumar Dahal[2], ATM Shakhawat Hossain[3], Feruj Alam[4], Kanchan Chaulagain[5], Sunil Poudel[6], Ujjwal Krishna Raghubansa[2], Sweata Sijapati[7], Manita Timilsina[8], Sunam Kumar Sharma[8], Praveen Upadhyaya Kandel[8], Dhruba Tiwari[8], Sajeev Kumar Regmi[9], Kumud Raj Kafle[10]

[1]Shimane University, Matsue, Shimane, Japan
[2]Central Department of Geology, Tribhuvan University, Kirtipur, Kathmandu 44618, Nepal
[3]Jahangirnagar University, Savar, Dhaka-1342, Bangladesh
[4]Geological Survey of Bangladesh, Segunbagicha, Dhaka-1000, Bangladesh
[5]Underground Space Engineering, Jwagal, Lalitpur, Nepal
[6]Hong Kong University of Science and Technology, Hong Kong
[7]GeoHazards International, 6701 Koll Center Pkwy, Suite 250, Pleasanton, CA 94566, USA
[8]Geotech Solutions International, Dhobighat, Lalitpur, Nepal
[9]Nepal Electricity Authority, Ratnapark, Kathmandu, Nepal
[10]Department of Environmental Science and Engineering, Kathmandu University, Nepal

(*Corresponding E-mail: mallaanjila22@gmail.com)

Received: December 07, 2025, Accepted: December 21, 2025

Abstract: The 15th Asian Regional Conference of the International Association for Engineering Geology and the Environment (ARC-15) was held in Kathmandu, Nepal, from 27 to 29 November 2025 under the theme "Geological Engineering for Societal and Sustainable Development." Jointly organized by the Nepal Society of Engineering Geology (NSEG) and the IAEG Bangladesh National Group (IBNG), the conference hosted more than 340 participants from over 25 countries representing academia, industry, governmental institutions, and students. While ARC-15 is an Asian regional conference, the program and participation reflected strong global engagement. A total of 217 scientific presentations were delivered, including 190 oral and 27 poster contributions. The conference also included keynote and invited lectures, parallel technical sessions, poster exhibitions, training workshops, Women in Engineering Geology (WEG) and Young Engineering Geologists (YEG) activities, and pre- and post-conference field excursions in Nepal and Bangladesh. This report summarizes the main components of ARC-15 and highlights key outcomes and lessons relevant to future regional and international conferences.

Keywords: ***IAEG, Asian Regional Conference, ARC-15, WEG, YEG. Kathmandu, NSEG, Engineering geology.***

Introduction

Engineering geology has become increasingly important for societies facing rapid development and intensifying natural hazards. In many parts of Asia, expanding infrastructure networks, including roads, hydropower projects, tunnels, and urban developments, are being constructed in complex geological environments. At the same time, landslides, debris flows, floods, and earthquakes continue to affect lives and economies, particularly in mountain belts such as the Himalayas.

The International Association for Engineering Geology and the Environment (IAEG) promotes international collaboration and the advancement of engineering geology through global and regional conferences, technical commissions, and professional networks (IAEG, 2025). Among its major regional events, the Asian Regional Conference (ARC) series has served as an important platform for fostering scientific exchange and professional cooperation across Asia. The 15th Asian Regional Conference (ARC-15) was held in Kathmandu, Nepal, from 27 to 29 November 2025, and was jointly organized by the Nepal Society of Engineering Geology (NSEG) and the IAEG Bangladesh National Group (IBNG) under the theme "Geological Engineering for Societal and Sustainable Development." Although regional in scope, ARC-15 attracted internationally renowned keynote and invited speakers and welcomed more than 340 participants from over 25 countries. This report summarizes the conference organization, participation, scientific program, workshops, Women in Engineering Geology (WEG) and Young Engineering Geologists (YEG) activities, field excursions, and major outcomes, highlighting its

contributions to advancing engineering geology and strengthening international collaboration.

Conference program structure

ARC-15 was jointly organized by NSEG and IBNG. The conference theme, "Geological Engineering for Societal and Sustainable Development," guided the scientific sessions, workshops, and field activities.

Program overview

The program was designed to combine scientific exchange with training, networking, and field-based learning. The overall structure consisted of three phases (Figure 1).

Figure 1, Overall program structure of ARC-15.

Inaugural ceremony and institutional engagement

The inaugural ceremony was a major highlight of ARC-15, reflecting the growing recognition of engineering geology in national development and disaster risk reduction. The presence of high-level government representatives, including a ministerial guest, emphasized the importance of integrating engineering geology into sustainable infrastructure planning and resilience initiatives (Figure 2a). The ceremony also celebrated individuals who made significant contributions to strengthening the activities and global presence of both IAEG and NSEG. A Certificate of Appreciation was presented to Ms. Anjila Babu Malla in recognition of her outstanding efforts in promoting membership growth, enhancing member engagement, and supporting the continued development of the engineering geology community through IAEG and NSEG initiatives (Figure 2b).

Participation and demographics

ARC-15 brought together more than 340 participants from over 25 countries (Table 1), creating an international forum for engineering geology. Participants represented universities, research institutions, consulting and engineering companies, government agencies, and student communities. This diverse professional and geographical representation enriched technical discussions, strengthened international collaboration, and promoted valuable exchanges between academic research and engineering practice, reflecting the growing global engagement and scientific capacity of the engineering geology community.

Figure 2, Inaugural ceremony highlights: (a) opening session with ministerial participation and distinguished guests, and (b) Certificate of Appreciation awarded to Ms. Anjila Babu Malla in recognition of contributions supporting IAEG and NSEG.

Table 1, National Group and Regional Group-wise distribution of ARC-15 participants (top contributing countries and others).

Country	Participants
Nepal	178
Bangladesh	44
Japan	30
China	24
Chinese Taipei (RG)	21
India	6
Malaysia	6
South Korea	6
Canada	4
Germany	4
Others	24
TOTAL	343

Scientific sessions and technical contributions

Scientific presentations

A total of 217 scientific presentations were delivered during ARC-15, including 190 oral and 27 poster presentations. In addition, the conference featured keynote and invited lectures delivered in dedicated sessions. Figure 3 presents the country-wise distribution of oral and poster contributions based on the available presenter dataset, which also includes keynote and invited lecture entries.

Keynote and invited lectures

The conference featured keynotes and invited lectures from internationally recognized experts (Table 2). These lectures addressed major contemporary challenges in engineering geology, including:

- Engineering geology in tunneling and underground construction
- Deep-seated landslides and slope instability
- Climate change and geo-environmental risks
- Advances in remote sensing and monitoring technologies

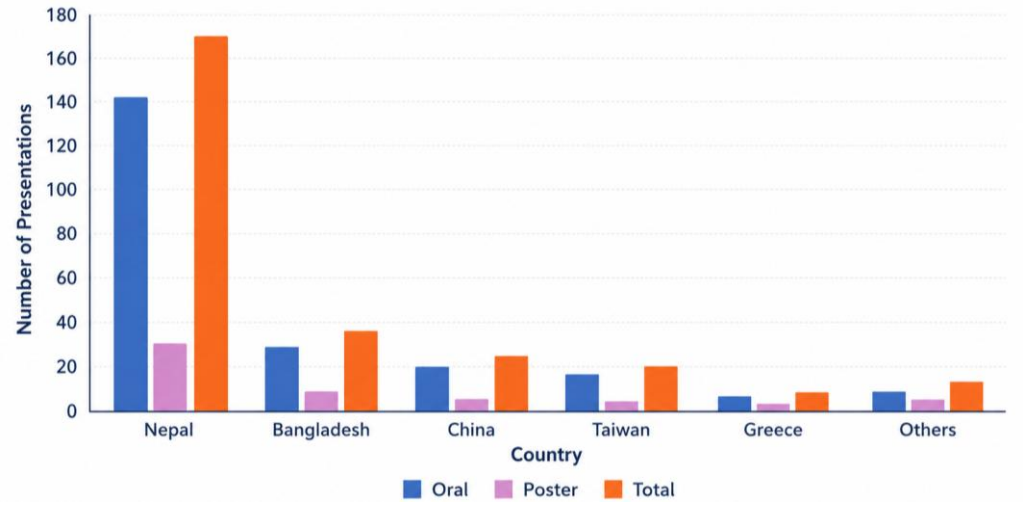

Figure 3, Country-wise distribution of ARC-15 presentations (oral and poster).

Parallel technical sessions

Parallel technical sessions were conducted throughout the three main conference days, forming the core of the scientific program. A total of 22 parallel technical sessions were organized, complemented by keynote and invited lectures, as well as two dedicated poster sessions. The program showcased the latest advances in engineering geology, geotechnical engineering, and geohazard research, providing an excellent platform for knowledge exchange among researchers, practitioners, consultants, industry professionals, and students from across Asia and beyond.

The technical sessions covered a broad spectrum of topics, with particular emphasis on engineering geological challenges in the Himalayan region. Major themes included landslide mechanisms, hazard and risk assessment, debris flows, rockfalls, active tectonics, earthquake-induced geohazards, groundwater and hydrogeology, tunneling, hydropower development, transportation infrastructure, urban geology, and climate change impacts. Several sessions highlighted innovative approaches in geological mapping, remote sensing, numerical modeling, monitoring technologies, and field investigations for improving hazard evaluation and infrastructure resilience. A distinctive feature of ARC-15 was its strong commitment to professional development and inclusivity. Dedicated technical sessions were organized by the Women in Engineering Geology (WEG) Committee on the first conference day and the Young Engineering Geologists (YEG) Committee on the second day. In addition, a special session focused on engineering geology education, professional training, and scientific communication, promoting capacity building and international collaboration. Overall, the parallel technical sessions successfully fostered scientific exchange, strengthened regional partnerships, and highlighted the growing contribution of engineering geology to sustainable infrastructure development and disaster risk reduction across Asia.

Workshops and training programs

Pre-conference workshops

Several pre-conference workshops and training sessions were organized to strengthen technical capacity and provide hands-on learning. The program included a full-day software-based workshop on tunneling and rock slope engineering, a technical workshop on engineering geological modeling using IAEG Commission 25 guidelines, and a training session on manuscript preparation for international journals (Table 3).

Table 2, Summary of keynote and invited lectures at ARC-15 (NSEG, 2025).

Category	Speaker	Lecture title
Keynote	Dr. Vassilis P. Marinos	Advancements in Tunneling: the Role of Engineering Geology in Design and Construction over the Last 30 Years
Keynote	Prof. Dr. Shuichi Hasegawa	Significance of Dissected Deep-seated Landside Topography and Hydrothermal Alteration in Active Mountain Belts
Keynote	Dr. Ann Williams	Climate Change: closing the gap between challenges faced by developing and developed countries
Keynote	Prof. Dr. rer. nat. Muhammad Qumrul Hassan	Smart Water Management for Sustainable Development: Bridging Groundwater–Surface Water Dynamics Amid Climate Change
Keynote	Er. Keshav Kumar Sharma	Slope Stability and Resilient Roads in the Himalayas: Nepal's Challenges and Initiatives
Keynote	Prof. Dr. Christian Zangerl	Deep-Seated Rock Slides: Understanding Processes and Assessing Impacts on Settlements and Infrastructure
Keynote	Dr. Shahid Azam	New Methods for Characterizing and Modeling the Engineering Behavior of Expansive Soils
Keynote	Prof. Dr. Trilok Nath Singh	Rockfall Prediction and Prevention in High Hills of Deccan Trap
Keynote	Dr. Shengwen Qi	Geological Environment and Geohazards in the Qinghai–Xizang Plateau, China
Keynote	Dr. Daniele Giordan	Glacier instabilities identification and monitoring: case studies in the Alps
Keynote	Prof. Dr. Keh-Jian (Albert) Shou	On the Catchment Sedimentation and Landslides Induced by 1999 Taiwan Chi-Chi Earthquake
Keynote	Mr. Anil Pokhrel	An Interdisciplinary Approach to Disaster Risk Reduction and Management and Sustainable Development in Nepal
Keynote	Prof. Dr. Giovanna Vessia	Neo Deterministic Seismic Hazard Approach (NDSHA) for Seismic Response Analyses in urban areas: a case study from Italian territory
Keynote	Prof. Dr. Tümay Kadakci Koca	Erosion and Mass Wasting Processes in Post-Wildfire Mountainous Terrains: Impacts and Challenges
Keynote	Dr. Scott Andersen	The evolution of remote sensing for regional characterization and response to geohazards and extreme events
Keynote	Mr. Dinesh Napit	Role of the Department of Mines and Geology (DMG) in Advancing Engineering Geological Sciences in Nepal
Invited	Dr. Mike Winter	Debris Flow Risk to Roads and Road Users
Invited	Dr. Ko-Fei Liu	Wave Dynamics and Geohazards Monitoring
Invited	Prof. Dr. Tetsuya Sakai	Potential Natural Hazards in Kathmandu, Nepal: Lessons from Stratigraphic Analysis of the Pleistocene Succession in the Kathmandu Valley
Invited	Prof. Dr. Younus Ahmed Khan	Progressive failure analysis based on a method of non-vertical slices *(presented in closing ceremony in Dhaka)*
Invited	Dr. Md. Shofiqul Islam	Tectonic Evolution and Seismic Hazards in Bangladesh: Insights from Geophysical and Geotechnical Studies
Invited	Dr. H. M. Sayem	Role of Suction in Unsaturated soils
Invited	Dr. Arvind Kumar Jha	Development of a Laboratory-Scale Model to Evaluate Rainfall-Induced Surface Erosion Mitigation in MICP-Treated Sand
Invited	Prof. Dr. Toru Terao	Asian Monsoon, Climate and Climate-Induced Hazards in the Asia and Pacific Region
Invited	Dr. Sultana Nasrin Nury	Quantitative Analysis for Greening as an option for Sustainable City
Invited	Dr. Mahmuda Khatun	Establishment of Rainfall Thresholds for Shallow Landslide in Rangamati Sadar, Bangladesh
Invited	Prof. Dr. Tomochika Tokunaga	Land Subsidence and Subsurface Environmental Changes in the Tokyo Metropolitan Area, and Possible Groundwater Management for Urban Sustainability
Invited	Prof. Dr. Jia-Jyun Dong	Random Field Modeling of Subsurface Stratigraphic/Parameters and Its Applications: Using the Taipei Basin as an Example
Invited	Dr. Abd Rasid Jaapar	Emerging Roles of Engineering Geologist in Geotourism Industry: Some Case Studies from Malaysia

Table 3, Workshops and training programs conducted during ARC-15.

Date	Title	Mentor
25 Nov 2025	Enhancing Tunneling and Rock Slope Engineering with Rocscience Software Tools	Dr. Manoj Verman (Rocscience India)
26 Nov 2025	Engineering Geological Models – Traditional and Digital Approaches Using IAEG Commission 25 Guidelines	Fred Baynes, Mark Eggers, Anthony Bowden
26 Nov 2025	Preparing a Manuscript for an International Scientific Journal – What Editors and Reviewers Look For	Janusz Wasowski

Women in Engineering Geology (WEG) activities

ARC-15 included a strong Women in Engineering Geology (WEG) program under the theme "The Role of Women in the Development of Engineering Geology." The WEG session was convened by Dr. Ann Williams (IAEG-WEG Chair) and coordinated by Ms. Anjila Babu Malla (NSEG-WEG Chair, IAEG-WEGC Member) and Dr. Mahmuda Khatun (IBNG-WEG Chair). The activities brought together women engineering geology professionals, researchers, and students and aimed to strengthen professional networking, visibility, mentorship, and collaboration.

Pre-conference virtual networking (17 November 2025)

The WEG program began with an informal virtual networking session held via Zoom on 17 November 2025. This introductory networking session allowed participants to connect prior to arriving in Kathmandu and helped create a welcoming environment for the in-person activities.

Outdoor "Walk and Talk" geological session (26 November 2025)

The first in-person WEG activity was the Outdoor Walk and Talk Session, held on 26 November 2025 in the Chovar area of Kathmandu Valley (Figure 4). The event brought together participants for a guided geological walk, introducing the area's unique geology and geomorphology while fostering informal discussions on professional experiences, career development, and shared challenges in engineering geology. Field notes and educational handouts were provided to enhance learning and encourage active participation. The program also included a visit to the Central Department of Geology, Tribhuvan University, where participants interacted with faculty members and students, strengthening academic collaboration, professional networking, and knowledge exchange between experienced practitioners and the next generation of engineering geologists.

Figure 4, WEG Walk and Talk session in the Chovar area.

WEG technical session, panel discussion, and career development workshop

The WEG Technical Session was held on 27 November 2025 and included an invited lecture and multiple technical presentations covering diverse topics relevant to engineering geology. The session concluded with a panel discussion titled "Global Perspectives on Women's Careers in Engineering Geology: Overcoming Barriers and Creating Opportunities."

The panel included Dr. Ann Williams, Prof. Ranjan Kumar Dahal, Dr. Mahmuda Khatun, and Dr. Hiromi Kaji, and was moderated by Dr. Sweata Sijapati and Ms. Anjila Babu Malla. The discussion addressed leadership, mentorship, field challenges, institutional barriers, and pathways for strengthening women's participation across regions. Tokens of appreciation were presented to presenters and panelists in recognition of their contributions (Figure 5a). The final WEG event was a career development workshop held on 29 November 2025, focusing on essential professional skills including communication, leadership, negotiation, and allyship (Figure 5b).

Figure 5, WEG activities (a) Panel discussion at ARC-15 and (b) Career development workshop at ARC-15.

Young Engineering Geologists (YEG) program

The Young Engineering Geologists (YEG) program at ARC-15 attracted strong participation and provided early-career professionals and students with opportunities for technical exchange, networking, and professional development. The program was coordinated by Mr. Shankar Pantha (NSEG-YEG Chair), Mr. Om Prasad Dhakal (NSEG-YEG; IAEG-YEG), and Mr. Shafiqul Islam Sany (IBNG-YEG Secretary).

A pre-conference online "Meet and Greet" session was held on 16 November 2025 to introduce participants and support early connections. The main YEG session was conducted on 28 November 2025 and included a panel discussion titled "Past, Present and Future of Engineering Geology," moderated by Mr. Om Prasad Dhakal, followed by a recorded presentation on AI in engineering geology (Figure 6). The session also featured a Quick-fire YEG Research Session with short presentations and interactive discussion, including a Best Quick-fire YEG Presentation Award supported by the IAEG-YEG committee.

Figure 6, YEG panel discussion at ARC-15.

The YEG program concluded with a networking dinner and cultural evening on 28 November 2025 (Figure 7), strengthening international connections among young engineering geologists.

Figure 7, YEG networking dinner and cultural evening at ARC-15.

Pre- and post-conference field excursions

Field excursions were a key component of ARC-15 and provided participants with direct exposure to engineering geological conditions in Nepal and Bangladesh. The excursions strengthened the applied character of the conference and allowed participants to connect technical discussions with real geological settings, infrastructure corridors, and hazard processes.

Pre-conference excursions

Pre-conference excursions were conducted in the Kathmandu Valley on 26 November 2025. The program included two parallel day tours: Ex-2, a Kathmandu Valley tour focusing on ground response and reconstruction aspects following the 2015 Gorkha earthquake, and Ex-3, a day tour exploring the engineering geological setting of the Kathmandu Valley.

Post-conference excursions

Post-conference field excursions were conducted from 30 November to 2 December 2025, providing participants with opportunities to examine engineering geological conditions and geohazards in the field. Two major multi-day excursions were organized in Nepal. Ex-5, covering the Kathmandu–Pokhara corridor, focused on engineering geological conditions, geotechnical characteristics and infrastructure challenges, and was organized by the Women in Engineering Geology (WEG) team of NSEG under the field leadership of Dr. Manita Timilsina and Dr. Sweata Sijapati (Figure 8). Ex-6, exploring the Koshi River, Jhapa, and Ilam corridor in eastern Nepal, was led by Prof. Shuichi Hasegawa and Mr. Praveen Upadhyaya Kandel, highlighting landslide processes, geological diversity, and infrastructure development (Figure 9). Additional excursion programs were also organized in Bangladesh, reflecting the joint organizational framework and regional collaboration of ARC-15.

Figure 8, Field excursion Ex-5 (Kathmandu–Pokhara corridor) led by the WEG team of NSEG.

Figure 9, Field excursion Ex-6 in Far Eastern Nepal (Koshi River–Jhapa–Ilam corridor).

Awards and recognition

ARC-15 included presenter awards to recognize outstanding technical contributions and encourage high-quality scientific communication. Awards were presented for outstanding oral and poster presentations, with encouragement for early-career contributors (Figure 10). The awardees and their countries are summarized in Table 4.

Table 4, Presenter awardees at ARC-15.

Award category	Awardee	Country
Best Oral Presentation	**Tunisha Gyawali**, Prajwal Timsina, Bhim Kumar Dahal and Ellen B. Robson	UK
Best Oral Presentation	**Yong-Zhi Huang**, Chia-Hong Chiu, and Tai-Tien Wang	Taiwan
Best Poster Presentation	**Hiroyuki Hashimoto**, Akira Sato and Reiko Kuwano	Japan
Best Poster Presentation	**Aonan Dong** and Jie Dou	China
Best Quick-fire YEG Presentation	**Jui-Ming Chang**	Taiwan

Institutional support and sponsorship

ARC-15 benefited from strong institutional support from IAEG leadership, national groups, commissions, and international sponsors. Their guidance, encouragement, and best wishes contributed significantly to the scientific quality and organizational success of the conference. Sponsorship support enabled the delivery of workshops, special sessions, field excursions, and WEG and YEG programs, reinforcing the collaborative spirit of the global engineering geology community.

Figure 10, Presenter awardees recognized during ARC-15.

Conclusion

ARC-15 successfully combined scientific exchange, global participation, capacity building, and inclusive professional engagement. The conference hosted more than 340 participants from over 25 countries and featured 217 scientific presentations, including 190 oral and 27 poster contributions. Although it was organized as an Asian regional conference, ARC-15 demonstrated strong international relevance through its international participation and globally connected scientific program.

The integration of workshops, WEG and YEG activities, and extensive field excursions in Nepal and Bangladesh strengthened the overall impact of ARC-15 and set a strong benchmark for future Asian Regional Conferences of IAEG. The outcomes of ARC-15 contribute to advancing engineering geology in support of societal resilience and sustainable development.

Acknowledgement

The authors acknowledge the International Association for Engineering Geology and the Environment (IAEG), the Nepal Society of Engineering Geology (NSEG), and the IAEG Bangladesh National Group (IBNG) for organizing ARC-15. The authors also acknowledge international sponsors, supporting organizations, session conveners, volunteers, and all participants who contributed to the success of the conference.

References

IAEG, (2025). International Association for Engineering Geology and the Environment (IAEG) website, Available at: http://www.iaeg.info/

NSEG, (2025). Conference Program Book of the 15th Asian Regional Conference of the International Association for Engineering Geology and the Environment (ARC-15), Kathmandu, Nepal. Nepal Society of Engineering Geology (NSEG) website, Available at: http://www.nseg.org.np/