IAG Webinar South and West Asia

07 March 2025 at 11:30–13:40 UTC

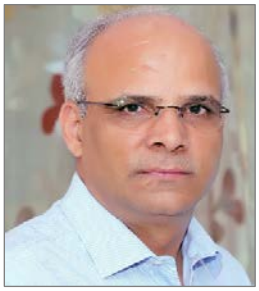
11:35-11:40: Welcome Address by *Prof. Sunil Kumar De,* IAG President

Coordinators:

Dr. Sayantan DAS, India
Dr. Kapil GHOSH, India
Dr. Narges KARIMINEJAD, Iran
Prof. Cengiz YILDIRIM, Türkiye

INTERNATIONAL GEOMORPHOLOGY WEEK 2025

11:40–12:00



Unveiling the Possible Causes of July 2023 Unprecedented Flood in Delhi

Prof. Omvir Singh, Kurukshetra University, India

The study aims to unveil the possible causes of July 2023 unprecedented flood in Delhi. Heavy rainfall in upstream of Delhi and subsequently a release of excess water from Hathnikund barrage have been observed the prime causes of flood, which further compounded due to a phenomenal rise in built up area, and a decrease in area under forest, agriculture and water bodies. Besides, reduced carrying capacity of river Yamuna due to encroachment of its floodplain with agriculture and urban settlements played a significant role in intensifying this unprecedented flood.

12:00–12:20

The Spatial Analysis and Statistical Methods Research of Phaselis Ancient City within the Framework of Environmental Archaeology Approach

Şerife Gökaydın, Akdeniz University, Türkiye

This study aims to analyze the spatial relationship of Phaselis Ancient City, located in Kemer, Antalya, Türkiye, with environmental factors. The goal is to reveal the influence of natural elements on settlement preferences. Geological, geomorphological, climatological, hydrological, soil, and vegetation data were used, supported by field research. Multivariate and correlation analyses were methods. Findings indicate that settlement preferences were shaped by topographical fapplied as statistical eatures, proximity to water sources, and climatic conditions. Accessibility to ancient ports and trade routes also played a significant role in spatial organization.

12:20–12:40

Cascading Glacial Lake Outburst Floods: Erosional Moraine-Dam Breach Dynamics and Flood Exposure Assessment

Dr. Arindam Chowdhury, Wadia Institute of Himalayan Geology, India

Glacial retreat has accelerated lake expansion, heightening the risk of glacial lake outburst floods (GLOFs). In the Sikkim Himalayas, the Gurudongmar Lake Complex (GLC) holds ~148 × 10^6 m^3 of water, expanding at 74 ± 3%. This study integrates TELEMAC 2D, SISYPHE, and HEC-RAS to model moraine-dam breaches, flood inundation, and exposure. Extreme scenarios project peak discharges of 8882.0 m^3/s, severely impacting Thangu Valley and Chungthang. A 15×15 m fishnet analysis reveals significant infrastructural exposure. Findings underscore multi-lake outburst dynamics, providing a critical framework for hazard mitigation in the Eastern Himalayas and similar glaciated regions.

12:40–13:00

Geomorphic Drivers of Bedrock River Meandering: Insights from the West coast of India

Dr. Archana D. Patil, JDB Commerce and NSC Science College, India

Sinuous bedrock rivers served as early catalysts in geomorphological research, prompting the investigation of landscapes as repositories of past tectonic and climatic forces. Coastal rivers of the Jawhar Plateau in north Konkan show high sinuosity and deep incision. Geomorphic indices for the Purna, Ambika, Auranga, Par, and Damanganga rivers indicate significant dyke and lineament control on channel morphology. Despite larger mid-elevation drainage basins, these rivers are deeply entrenched and highly sinuous. Evidence points to an increase in regional slope, induced by a fall in erosional base-level, playing a crucial role in forming incised bedrock meanders in the Deccan Traps region.

13:00–13:20

Cheniers Development in the Eastern Subarnarekha Coastal Region, India during Meghalayan Age

Pritam Kumar Santra, University of Calcutta, India

The Eastern Subarnarekha Coastal Region, lying between the Subarnarekha and Rasulpur estuaries, Eastern India, preserves shore-parallel chenier ridges extending up to 12 km landward from the present coastline. Among these, three largest dune complexes, viz. Paniparul–Kanthi, Jairampur–Ramnagar and Talsari–Digha, were selected for study. OSL data indicate the development of these ridges in three successive phases (2.71–2.05 kyr, 1.21–1.12 kyr and 0.43–0.37 kyr). Sediment facies analysis, geochronology and the study of maps and images indicate a phased progradation of the deltaic facies association — reminiscent of upper shoreface, aeolian, shoal, and lagoonal environments — under a transgressive regime.

13:20–13:40

Constraining the Timelines of Glacial, Paraglacial, and Periglacial Processes in the Miyar Valley, Himachal Pradesh

Elora Chakraborty, Jawaharlal Nehru University, India

The Miyar Valley in the northwestern Himalaya hosts the Miyar Nala, a key headwater of the Chandrabhaga River. Its diverse geomorphic landscape results from glacial, paraglacial, periglacial, and permafrost processes. The valley features the trunk Miyar Glacier and 105 smaller glaciers. A geomorphological map and micro-textural quartz analysis reveal past and present landscape-shaping processes. To date the transition from glacial to postglacial regimes since the Last Local Glacial Maximum (LLGM), a multi-proxy approach using radiocarbon (^{14}C), optically stimulated luminescence (OSL), and cosmogenic radionuclide (^{10}Be) was applied. This study enhances understanding of the Miyar Valley's geomorphic evolution and contributes to knowledge of Higher Himalayan landscape dynamics.