

IAG Webinar south and West Asia



March 3, 2022

07:30-10.40 CET (13:00-16.10 IST)



Co-conveners

Sunil Kumar De (India)

Adel Sepehr (Iran)



Anthropogenic Geomorphology and examples from Turkey

T.Ahmet ERTEK

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Although not yet approved by the International Commission on Stratigraphy (ICS); from the Industrial Revolution to the present, it is possible to say that a new epoch has started in order to protect our Earth's landforms intentionally and deliberately with their own needs and to prevent accidents or disasters or to remove the damages. We can now say that there are new man-made landforms on earth and in all parts of the world and the different appearance of nature has emerged. Therefore, the name of this proposed period is Anthropocene. In this presentation, in Turkey, which has changed rapidly in the last 20 years, it was followed by the surface and underground morphology and the traces of the Anthropocene as a result of these; therefore, we would like to talk about the Turkey's Mega Structures and Turkish megapols. As a result, all these mega structures continue to act as bridges between the continents of Europe and Asia.



13.10-13.35

Mechanisms controlling soil landforms

Narges Kariminejad

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Integrating soil erosion processes together with hydro-geomorphic and soil biological activity's scenarios, make better understanding erosional events that have happened in the past and in the future of these processes in this century. In this study, we considered different activities of ecosystem elements and assessed their functions using spatial point pattern analysis ($g(r)$ & $g_{12}(r)$), Ground Penetration Radar (GPR), and physical-chemical soil properties in Sarakhs, Khorasan Razavi province, Iran, with an area of 55.91 ha. The results of three main applied tests showed that the dispersion and positive relationship between soil erosion and biological activities. The potential distribution of subsurface erosion by soil piping applying GPR were much more than surface observations. The quantitative algorithms of soil properties revealed significant changes of SAR for soil profiles with and without erosion, but they themselves are not enough to cause piping development in the study site.



13.35-14.00

The cascade effects of a geomorphological hazard in Melamchi catchment, Nepal

Sanjoy Giri

Delft Hydraulics, The Netherlands (From Nepal)

The recent disaster, occurred in Nepal during the monsoon of 2021, is another fatal example of geomorphological extremes which the country is prone to. The main concern now is about the faith of many destroyed settlement areas and critical infrastructures, and whether it is possible to rehabilitate them. In this presentation, we revisit the hazards and their cascade effects. We focus on fluvial geomorphological processes along the Melamchi River. We assessed pre- and post-disaster geomorphological features and conditions of different spatial scales. We made a rapid technical assessment of the cascade effects of the hazards with a focus on geomorphological processes and impacts. We demonstrated how rapid numerical modelling and satellite image analysis could be used for replicating the underlying processes, making first quantification and assessing future possible scenarios. Finally, we discuss about various possible trends and options regarding future impacts and rehabilitation efforts.



14.00-14.25

Geomorphological Heritage and Geomorphosites

Paola Coratza

Department of Chemical and Geological Sciences, University of Modena and Reggio Emilia, Italy

The interest for Geoheritage, its conservation and tourism exploitation have dramatically accelerated since the mid-2000s. Among the geoscientists involved in Geoheritage studies, a considerable impulse to investigations on this topic was given at first by the Geomorphology scientific community. This presentation aims to define clearly what geomorphological heritage is, its specificities and the main methodological issues related to its identification, assessment and management.



14.25-14.50

Charland (sand bars) Dynamics: Physical and Human Dimension

Mohd. Shamsul Alam

Department of Geography and Environment, Jahangirnagar University, Savar, Dhaka-1342, Bangladesh

The paper first intends to present a broad overview of the physical and human aspects of *charlands* of Bangladesh and then attempts to focus on a specific case of a Jamuna *charlands*. In terms of hydro-morphological and planform dynamics, the Jamuna and the Ganges *chars* are characteristically different. The dynamics of braided Jamuna river *chars* are more complex than the meandering Ganges River. All the *charlands* are extremely vulnerable to both erosion and flood hazard. Apart from the upper Meghna river most of the *charlands* of other rivers are unstable; stability varying between one and two decades. The *charlands* are mainly used as human settlement, agriculture and cattle grazing. From human ecological aspects, a regulatory regime with a view to sustainable *charlands* management approach should be adopted for a *char* like *Alekdia*.



14.50-15.15

Recognition criteria for canals and rivers in the Mesopotamian floodplain

Jaafar Jotheri

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The ability to distinguish between the remaining traces of rivers and those of canals would greatly increase our understanding of water history and management within a given area. Such an understanding would lead in turn to a greatly enhanced understanding of the landscape, social structure, political life and economy of that area. For the Mesopotamian floodplain, intensive water-management activities, together with the frequent avulsions of the Euphrates and Tigris rivers, have rendered channel networks complex and interlocked. This complexity has long confused researchers in regard to channel origins, and whether they are natural or anthropogenic, or a combination of the two. It is a challenging task, but the present work proposes and discusses seven key differences between the two types of channels, namely topographical cross-sections, crevasse splays, marshes, meandering, cut-offs and oxbow lakes, channel patterns, and stream directions.



15.15-15.40

Evolution of Drainage in the Ganga-Brahmaputra Delta since 18th Century: Evidences from Cartographic Resources and Field Surveys

Sayantana DAS

Department of Geography, Dum Dum Motijheel College, Kolkata, India

The courses of major rivers that drain the Ganga-Brahmaputra Delta within India and Bangladesh have frequently shifted in the past and are characterised by intense meandering. The off-takes of the distributaries, especially on the Indian part, are affected by the shifting of the *Ganga*. Whereas, *Brahmaputra*, one of the largest rivers in the world, is characterised by a number of avulsion events during the Holocene. The degeneration of the *Ganga* distributaries at their headwaters has occurred due to siltation, leading to gradual decay of their courses, except the artificially resuscitated *Bhagirathi-Hugli*. Whereas, the westward shifting main channel of the *Brahmaputra* was captured by a bifurcated channel of the *Tista* distributary system in the Late 18th Century, thus triggering the latest avulsion. Within Bangladesh, the present passage for *Brahmaputra* (*Jamuna*) was acquired ~170 years ago.



15.40-16.05

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