IAG Webinar Africa

2 March 2021 at 09:00 – 13:00 CET

Coordinator: ***Ghislain ZANGMO TEFOGOUM***

INTERNATIONAL GEOMORPHOLOGY WEEK 2021

INAUGURAL PROGRAM

9:00 – 9:20

Ghislain ZANGMO TEFOGOUM
Department of Earth Sciences
University of Maroua, Cameroon
IAG Executive Committee Member in Charge of African Contacts

Tracers and Hydro-Geomorphological Researches in Nigeria

9:20 – 9:40

Adebayo ELUDOYIN
Department of Geography, Obafemi Awolowo University, Ile-Ife, Nigeria

The use of chemical and isotopic tracers for dating and delineating flow paths in hydro-geomorphological researches is proven, globally, to provide insights into perceived difficult research hypotheses. Review of literature on the Nigerian landscape however reveals that tracer use is essentially rudimentary, even as many research hypotheses remain undeciphered. This presentation is aimed at providing information about the capacity of tracers for hydro-geomorphological studies and the challenges in the Nigerian research environment. Information used in the presentation is from expository review of literature and previous personal experience. Better supports for the problem-solving science of geomorphology in the region is recommended.

The Wouri Estuary in Cameroon: An Eroding Coastline in the Gulf of Guinea

9:40 – 10:00

Mbevo Fendoung P.
Department of Geography University of Yaoundé 1 (Cameroon) & Liège (Belgium)

In Cameroon, coastal erosion is a concern in the Wouri estuary with Cape Cameroon as a hot spot. Here we assess coastal dynamics at large scale and at Cap Cameroon at small scale using Landsat and Pleiades images, land use using Landsat image classification, and the hydrogeomorphological context to understand the sedimentary dynamics dominated by the sedimentary input of 4 large rivers and marine processes still little constrained. In spite of a weakening of the environment by deforestation and urbanization, coastal erosion is remarkably low except in Cape Cameroon thanks to significant river sedimentary input currently compensating for this weakening.

The Performance of Different CNN Architectures on Barchan Asymmetry Classification

10:00 – 10:20

Barend VAN DER MERWE
Department of Geography, Geoinformatics and Meteorology, University of Pretoria, South Africa

Convolutional Neural Networks (CNN's) promise to be a useful tool for automating the image interpretation workflow. As it result, it is possible to increase the amount of data derived from imagery for geomorphological research. Despite this, the application of CNNs to aeolian landforms have been minimal. A particular gap in the knowledge is the use of CNNs to classify barchans based on their morphometric characteristics (i.e. shape). We investigate the suitability of different CNN architectures and training parameters to binary asymmetry classification tasks that incrementally increase in difficulty. Preliminary results are presented.

Re-geomorphic Mapping of Unroofed Cave of Crystal Mountain Area, Bahariya – Farafra Depressions, Western Desert of Egypt

10:20 – 10:40

Noura FAYAD
Egyptian MA student, Primorska University, Sloveniia

Eroded unroofed cave system was recognized between Bahariya and Farafra depressions, Egypt. The objective of this work is to create a detailed geomorphological map of the eroded cave, depending on the karst remain features, definition of the stages of its eroding by erosion processes, study types of epikarstic deposits and definition of the stages of the cave system exposure to erosion factors. The present work focuses on the geomorphological evidence of paleo- cavern system, based on detailed field surveying by using total station and field topographic profiling, satellite image interpretation, DEM analysis, geomorphic mapping.

Earth Systems Modelling in Changing Tropical Environment – Southwestern Nigeria

10:40 – 11:00

Olumide D. ONAFESO
Department of Geography, Olabisi Onabanjo University, Ago Iwoye, Nigeria

African landscapes have shown deep history of geomorphic processes driven largely by climate change and expressed in fluvial dynamics. The combined role of advances in climate change modelling and developments in geospatial analysis especially in improving knowledge of basin scale landform history remains less explored. Furthermore, our understanding of future landscapes remains limited, obscured by the little progress in deciphering paleo-environments. Understanding the past and present drivers of landscape change in southwestern Nigeria, and analyses of climate induced hydrological scenarios for the future provide quantifiable indices towards more resilient landscape futures that could plausibly minimize future climate event impacts.

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Mena ELASSAL
Department of Geography, Faculty of Humanities, King Khalid University, Saudi Arabia

11:00 – 11:20

Geoarchaeological Sites Assessment For Geo-tourism Purposes in Asir Mountains, Saudi Arabia

The geoarchaeological sites embrace landforms and processes playing a key role in the understanding the history of earth and having a strict relationship with the geoarchaeological and cultural heritage, such geoarchaeological site is unique and distinctive within the geo-heritage and has promoted great interest over time from a touristic viewpoint. This paper is meant to assess the geoarchaeological sites for geo-tourism purposes in Asir Mountains. Geoarchaeological sites is more than ever in a position to become a significant sustainable territorial resource, it promotes the value and benefits of geoarchaeological sites.

The Residual Scenic Landscapes of the Figuil-Bidzar Penepediplain (North Cameroon)

Planation surfaces play an important role in the geomorphological evolution of an area. The extension of the Figuil-Bidzar penepediplain in latitude gives diversified geomorphological landscapes. The models of its evolution are polygenic in which several erosional surfaces appear. However, the residual scenic landscapes remain to be elucidated because some are inherited residual reliefs and others are acquired in the current ecological environment. From observations, it appears that the residual scenic landscapes consist of erosional forms (pediment, glacis, tors and boulders) and accumulation forms (terraces and glacis-terraces), which evolve by pediplanation of the Precambrian basement, tectonics and sedimentation.

11:20 – 11:40

Oumarou TOUMBA
Department of Geography, University of Buea, Cameroon

Nesrine ARRAK
Department de geography, University of Tunis (Tunisia) & Montpellier 3 (France)

11:40 – 12:00

Contribution of Remote Sensing & GIS in the Study of the Spatial-temporal Dynamics Of Desertification in the Bouhamed Watershed: The Effect of the Topographic Factor

The Bouhamed watershed is part of the arid domain, located in the southeast of pre-Saharan Tunisia, this watershed is subject to climatic constraints which are the origin of a fragile ecosystem distinguished by very limited biophysical criteria. Inappropriate, excessive and continued human intervention associated with these conditions promotes the onset and acceleration of the risk of desertification. The aspect and severity of desertification varieties depending on climatic and biophysical conditions and especially the location in relation to the coast / desert, plateau / plain, upstream / downstream, etc. In this context, the Bouhamed watershed was chosen to conduct an evaluative study on desertification based on the spatial-temporal dynamics as a function of topography for four different dates. The evaluation method was developed by valuing the contribution of remote sensing and GIS using radiometric data from "LANDSAT" satellite images.

Flash Flood Modeling and Monitoring of Groundwater Recharge in Alluvial Aquifers Under Arid Conditions

The present study, using Wadi Atfeh catchment as a test site, integrates remote sensing datasets with field and geoelectrical measurements to assess flash flood hazards, suggest mitigation measures, and examine recharge to alluvium aquifer. Estimated peak discharge of 13 March 2020 flood event was 97 m3/h, which exceeded the capacity of the culverts (64 m3/h), and a new dam was suggested, where 75% of the catchment could be controlled. The monitoring of water infiltration into the alluvium aquifer using time-lapse electrical resistivity measurements along a fixed profile showed a limited connection between the wetted surficial sediments and the water table.

12:00 – 12:20

Omnia EL SAADAWY
Division of Geological Applications and Mineral Resources, National Authority of Remote Sensing and Space Sciences, Cairo 1564, Egypt

Olutoyin . A FASHAE
Department of Geography, University of Ibadan, Nigeria

12:20 – 12:40

Riparian Vegetation and Health of a Typical Humid Tropical River

Riparian vegetation is such a valuable and indispensable aspect of the aquatic ecosystem, contributing to stream health, acting as a buffer between the waterway and adjacent lands. However, the riparian ecosystems of the humid tropical region are under severe threats and disturbances emanating from the effect of climate change and human interferences. Specifically, this presentation seeks to examine the biogeography of the riparian corridors of a Nigeria river with the view to affirming the role of the biological components in the modification of the process-form dynamics of the river systems, which in turn has effects on landforms. Factors responsible for the modification of the riparian vegetation and the health of riparian zones of the headwater streams are assessed. Impact-based researches that seek to reveal the robustness of the riparian communities with the combination of more than one index of assessment for both the ecological values and disturbance level should be encouraged.

Discussion about the IGW2021 and Perspectives

12:40 – 13:00

All Attendees