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Framework to address the challenges of soil erosion on the livelihoods of local people in semi-arid areas

Tatenda Musasa, Department of Earth Sciences, University of the Western Cape, Cape Town, South Africa

The present study sought to develop a framework to address the challenges of soil erosion on the livelihoods of local communities in the semi-arid areas. To solicit data, the study adopted the descriptive research design which combined both qualitative and quantitative methods to enhance complementarity and expansion of results. A questionnaire survey was carried out with 120 randomly selected households. Semi-structured interviews were conducted with purposefully selected key informants in the local community. Results also show that increasing soil erosion if not closely monitored will result in washing away of arable top soil which exposes local communities to food insecurity.

Multiple hazards model, analysis of the geomorphological hazards of flash floods on the archaeological sites of the El-Ambagi Basin, Eastern Desert, Egypt

Emad El BARDAN, Department of Geography, Damietta University, Egypt

The term "multi-hazard risk analysis" encompasses analyzing risks in a specific time and place, their interactions, and cumulative effects on a target group. It goes beyond single-hazard analysis and considers extreme hazards with high statistical significance. The study focuses on the Wadi El-Ambagi basin, aiming to model the risks from flash floods and their impact on the road between El-Quseir and Qift, as well as Roman archaeological sites. The analysis involves qualitative, quantitative, and semi-quantitative methods, along with field surveying, remote sensing interpretation, and GIS mapping.



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Application of Geographical Information Systems for modelling water erosion in the Sogui-Ogo watershed : approach based on the universal equation of land loss

Seydou Alassane SOW, Department of Geography, Cheikh Anta Diop University of Dakar, Senegal

The objective of this work is to integrate geospatial data into a GIS to model water erosion in the Sogui-Ogo watershed in Senegal. The integration of the universal land loss equation into the ArcGIS software algorithms made it possible to combine the R, K, LS, C, and P factors of the model to obtain a synthetic map of land loss. These land loss rates range from 0 t/ha/year to 457.3 t/ha/year and are mainly recorded in areas with steep slopes, high erosivity and erodibility and low vegetation cover.

The geomorphological heritage of Jbel Demmer (south-east Tunisia) between abandonment and development

Mohamed Houcine KHARCHOUFI, Faculty of Humanities at Tunis, Tunisia

The risks of water and wind erosion, associated with inadequate and intensive human intervention, are considered to be among the most significant risks in arid regions, particularly in Jbel Demmer. The latter is located on the Matmata-Dahar plateau in south-east Tunisia. The region's wealth of different geosites has helped to make them part of the "Destination Dahar" tourist destination. However, socio-economic conditions are being affected by the increasing risk of erosion and inappropriate human intervention. There is a need to safeguard the geomorphological landscapes and varied heritage, while encouraging improvements in socio-economic conditions.



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Granulometric characterisation and distribution of contemporary fluvial sediment in the sink of the Magoye River, Southern Zambia

Manoah Muchanga, University of Zambia, Zambia

The study granulometrically analysed the sediment in the Magoye River in Zambia, using field sampling, GPS, GIS, and laboratory analysis to create a regression model for the region. It found that downstream of the Magoye River bed, had diverse sediment of different sizes, with larger particles being more common near the bridge. Sediment with small particle sizes takes longer to settle and had implications for river bed degradation and water quality in the Kafue River. The study's insights into sediment dynamics have implications for neighbouring river catchments, and the development of a specific regression model for Zambian river catchments represents a significant advancement in understanding sediment transport in the region.

Morphodynamics of mangrove coastlines in Morondava, south-west Madagascar

Sitrakiniaina Ramarokoto, Department of Geological Engineering, University of Antananarivo, Madagascar

Coastlines are extremely dynamic and can be subject to accretion or erosion. The latter leads to enormous economic and ecological losses. This study analyses the coastal dynamics of the mangrove coasts of Morondava, which, like the Malagasy west coast, are known to be subject to accretion, and of the mangrove coasts. Satellite images from different dates were mobilised using DSAS Tools geomatic methods. The results showed that the Morondava coastline is dominated by an erosion phenomenon that worsens over time. The presence of mangroves on this coastline does not seem to be able to slow down this coastal erosion.



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Paleo karst geomorphology of Qarat Umm Al-Saghir, Western Desert, Egypt

Noura Fayad, Damanhour University, Egypt – Nova Gorica University, Slovenia

In Umm Al Saghir area, the formation and evolution of karst is significantly influenced by the different carbonate rock beds which have been cut through by wadis. Occurring in various sizes, the smaller wadis join the bigger ones in dendritic patterns. The rock layers display different resistance to weathering and have been shaped by different processes, giving rise to the distinctive shape of the rocky perimeter of wadis and the occurrence of smaller and bigger rock solitaires and stone pillars with unique rock relief and led to a number of caves along the bedding planes.

Geomorphological evidences of neotectonics at Bamako and vicinity, Mali

N'dji dit Jacques DEMBELE, Faculty of History and Geography, Université des Sciences Sociales et de Gestion de Bamako

Bamako, capital city of Mali is located on the west African craton that was believed to be tectonically stable. The discovery of Quaternary age soft sediment deformations: clastic dikes, faults and micro faults, folds, convolutes attest that the region has know major earthquakes lately. The occurrence of active tectonic was certified by geomorphological evidences such are: valley asymmetry, mountains front sinuosity, river course anomalies. These evidences were analysed using DEM and geomorphometry.



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Backup of Geodiversity and Biodiversity of the Togo's mountains

Kodzo Tini OLANLO, Department of geography, Univerty of Lomé, Togo

The mountains landscapes of Togo, estimated at 17 813 km², are characterized by a rich geodiversity and biodiversity which provide the essential resources for the well-being of the human species. But human pressure on these geosystems threatens the survival of both animal and plant species; which leads to severe erosion of the slopes and the filling of hill reservoirs or dams. This study provides a general overview of the current state of Togo's mountain ecosystems while also defining sustainable measures for their conservation.

Modelling the impacts of forestry on catchment and wetland hydrology using the Soil Water Assessment Tool

Colby Leigh Weiss, Department of Geography, University of the Free State, South Africa

Conversion of ranged grassland to commercial plantation forestry can be potentially devastating for catchment and wetland hydrology. This study focused on hydrologically modelling catchment C81F in South Africa, by implementing the Soil Water Assessment Tool (SWAT+) due to its usability in data-scare regions. The model scenario compared the current state of the hydrology to the proposed change of ranged grassland to commercial plantation forestry. Results showed a reduction in streamflow and groundwater flow, which could impact the wetlands in the catchment, possibly being environmentally detrimental to the region.



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Flood in the town of Gaoua, a first for ever? Geomorphometric approach to the explanation of the phenomenon.

Sié PALE, Département de Géographie Générale et Appliquée / Centre Universitaire de Gaoua, Burkina Faso

Far from being the most exceptional rain recorded in September 2023, this amount of rain of 68.3mm caused a flood in the Gbakono sub-watershed, in Gaoua. This river flows into Poni at the height of a meander. The influx is more or less in the opposite direction to their flow, Poni right on the bank, drifts and causes its waters to rise in the bed of Gbakono up to the first bridge on the RN12. Before the withdrawal took gradually place, the waters of the Gbakono river, unable to make their way to the outlet, accumulated and spread on the banks.

Factors in the development of urban mega-gullies in the high town of Kinshasa

Fils MAKANZU IMWANGANA, Department of Geosciences, University of Kinshasa, DR. Congo

Since the start of urbanization at the end of the 60s', the high town of Kinshasa (DR Congo) is the scenery of dramatic gully development. In order to find a way of prevention and treatment, information has been collected about the way gullies in Kinshasa originate and develop. The causal link between urbanization and gully is evidenced by maps showing the temporal and spatial development of the urbanized area and the mega-gully pattern in 1957, 1977 and 2007. It appears that mega-gullies develop only about ten years after the first urbanization of a sector of the town.



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