IAG Webinar Southern Europe

2nd March 2023, 13:00 – 16:00 UTC

Coordinators: Francisco Gutiérrez, *University of Zaragoza, Spain*
Efthimios Karymbalis, *Harokopio University of Athens, Greece*

INTERNATIONAL GEOMORPHOLOGY WEEK 2023

13:00–13:20

Innovative techniques for mapping surface and subsurface landforms with high accuracy, using Unmanned Aerial and Terrestrial Laser Systems

Aliki Konsolaki, PhD Candidate, National and Kapodistrian University of Athens, Greece

Technical advancements have widened the limits in studying landforms and processes, by using close-range remote sensing equipment including terrestrial laser scanning technology and unmanned aerial systems. These innovative techniques can be applied in different case scenarios such as fault surface structural analysis, quantification of erosion processes in badlands, coastal areas, cliff prone to rockslide etc., and mapping karstic landforms both in underground cavities and the surface above. The final products are based on point cloud data processing of high resolution and accuracy which result in the generation of detailed landform 3D models necessary for further interpretation.

13:20–13:40

Morphogenesis of the karst system of the Crnopac massif (Velebit, Croatia, Dinaric karst)

Valerija Butorac, PhD Candidate, University of Zagreb, Croatia

The Crnopac massif is the southernmost part of the Velebit Mountain in Croatia. The aim of the work was to determine the forms, conditions, and processes of morphogenesis of this karst system. This area is well known for high density of caves, and the longest is the Cave System Crnopac (> 55 km). The used methods consist of geomorphological mapping and digital relief analysis. Based on the results, the development of the massif is related to relative tectonic uplift, and at the same time, surface denudation was lowering the surface level. Autogenous seepage of meteoric water from surface formed vertical channels that intersect inactive ones. Geomorphological indicators suggest that this process did not take place with uniform dynamics.

13:40–14:00

Pro et Contra on the existence of karstic uvalas

Dr. Jelena Ćalić, Geographical Institute "Jovan Cvijić" of the Serbian Academy of Sciences and Arts, Serbia

In karstological literature related to karst surface depressions, dolines and poljes are referred to as typical representatives. Karstic uvalas, which are closed depressions as well, are usually mentioned as rather ambiguous in landform classifications, due to unclear, often erroneous definitions. As opposed to a simple explanation that uvalas are „coalesced dolines", careful field mapping, morphometric analyses and observation of basic tectonic settings reveal more complex landforms. Terminological issues, morphostratigraphy and classifications are to be discussed.

14:00–14:20

Multitemporal sinkhole mapping on the western shore of the Dead Sea. Implications for spatial prediction and basis for hazard assessment

Jorge Sevil Aguareles, PhD Candidate, University of Zaragoza, Zaragoza, Spain

Sinkhole development causes significant economic losses in many regions worldwide. Very often, the subsidence damage is induced or enhanced by human activities. In this regard, the highly dynamic eogenetic salt karst of the Dead Sea is one of the most striking examples. The rapid development of sinkholes poses a major threat but it also offers an exceptional opportunity to study the evolution of a typically slow process. In this talk I will present an example of how multitemporal cartographic inventories can provide an objective basis for the development of reliable hazard assessments.

14:40–15:00

Storm-induced morphodynamic processes and geomorphological impacts in coastal barriers

Dr. Carlos Loureiro, University of Algarve, Portugal

Coastal storms are typically characterised by energetic wave forcing associated with extreme water levels, which drive coastal erosion and flooding of low-lying sedimentary coastlines. However, the morphodynamic processes determining the geomorphological impact of coastal storms are diverse, including alongshore variable overwash of coastal barriers or storm-induced beach rotation. This contribution will present a synthesis of case studies that demonstrate the wide range of storm-induced morphodynamic processes that contribute to the variable geomorphological response to storms in coastal barriers.

15:00–15:20

Seasonal Sediment Dynamics: Monitoring of selected Maltese beaches using granulometry, bathymetry and beach profile

Dr. Hiba Wazaz, University of Malta, Malta

Maltese fine sediment accumulations are scarce and found exclusively in pocket beaches. Monitoring their dynamics is challenging yet highly enhance coastal evolution knowledge to better manage and protect this fragile and precious environment. This study aimed at surveying two Maltese sandy pocket beaches, over more than a year, through beach gradient, granulometry, and embayment bathymetry, and at assessing the capacities of a commercially available Unmanned Surface Vessel (USV) to lead coastal zones bathymetry surveys.

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Valuing geodiversity in different geomorphic settings in Slovenia

Dr. Borut Stojilković, University of Primorska, Slovenia

The aim of this talk is to present a geodiversity evaluation method that incorporates both georichness and geoevenness of the geodiversity elements in three study areas (i.e. postglacial, fluvial and karst) in Slovenia in such a way that the evaluations' results are comparable. The results of the evaluations show that the most abiotically diverse areas are the level parts of the study areas (especially of the fluvial ones), where the diversity and the total number of the elements are the highest. The method effectively identifies the areas with the highest index values, while the results of the evaluations in different geomorphic settings remain comparable.

15:40–16:00

The contribution of geomorphology to the monitoring, protection and promotion of geoheritage

Dr. Irene Maria Bollati, University of Milan, Italy

Since the last decade of the XX century a great impulse has been given to the geoheritage field-of-research. From the beginning a relevant role has been played by geomorphology so as the specific term of geomorphosite has been introduced in literature, becoming one of the most interesting object of research for geoscientists in the big box of geosites. From the inventory and assessment of geoheritage sites, considering especially their ecological support role and cultural value, and geodiversity, through the mapping and monitoring of changes, also for hazard, risk and impact analyses, the geomorphology is signing the road to geoheritage management.