

IAG Webinar Central-Eastern Europe



Date: 28 February 2022, 12:00-18:00 CET

Coordinators: Piotr Migon, Konstantinos Vouvalidis, Mihai Micu

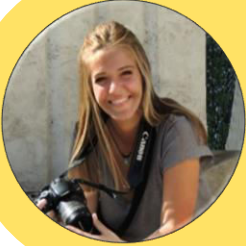
INTERNATIONAL GEOMORPHOLOGY WEEK 2022

Snow avalanche activity in the Țarcu Mountains, Southern Carpathians. Comparative analysis based on tree ring studies

Renata Feher, West University of Timișoara, Romania

Information regarding the spatio-temporal behavior of extreme natural phenomena, such as avalanches, has become necessary due to the increase in human casualties and property damage in recent decades. The aim of this study is to 1) reconstruct the past activity of snow avalanches in the Țarcu Mountains and to fill a gap in knowledge due to the lack of such studies in the studied area and 2) to point out the synchronicity of major events with those reconstructed in other mountain areas in the Southern Carpathians: Bucegi, Făgăraș, Piatra Craiului, Parâng Mountains. We identified 51 events in a 101-year chronology in Picea abies and 11 events synchronous with events of another 11 couloirs.

12:15 – 12:30



Combining surface exposure and luminescence dating to constrain deglaciation timing in Antarctic Peninsula region

Matěj Roman, Masaryk University, Brno, Czechia

The pattern and chronology of the past Antarctic Ice Sheet retreat is subject to intensive research in order to comprehend the currently observed, analogous negative mass balance of Polar ice sheets and glaciers in connection with the changing climate. Palaeolimnological and glacial-geomorphological evidence of deglaciation in the James Ross Archipelago, Antarctic Peninsula, is compared through several dating methods, including surface exposure (TCN) dating of glacial erratics and luminescence (OSL) and radiocarbon (^{14}C) dating of lacustrine sediments. Implications for the recession of the local ice stream and glaciers during the last termination are discussed.

12:30 – 12:45



Inventory of glacial lake systems on Svalbard and glacial lake outburst floods (GLOF) susceptibility

Iwo Wieczorek, University of Wrocław, Poland

Since the 1990s, there has been a rapid development of glacial lakes around the world. These lakes are considered a dynamic element of the landscape of high mountains and polar regions, testifying to the progressing climatic changes there. By analysing a set of remote sensing and mapping materials, I was able to demonstrate the development of 566 glacial lakes on the Svalbard archipelago in the period 1936-2020. The study also aims to analyse the geohazard of glacial lake outburst floods (GLOF). Over the analysed period, I detected 256 GLOF or rapid lake drainage events.

12:45 – 13:00



The dendrogeomorphological method for determining the annual erosion rates of tourist trails. Case studies in the Southern Carpathians

Mihai Radu Jula, West University of Timișoara, Romania

Mountain trails are access ways to natural and remote areas. In the forest, by trampling, tourists accelerate erosion processes revealing exposed roots. This study estimates the annual erosion rates along some intensely used trails from the Southern Carpathians, using dendrogeomorphological approaches. All samples were taken from living exposed roots along the trails, were scanned and analysed with special software. The achieved results are comparable to similar studies from other mountain areas. This study highlighted the sensitivity of the high mountain environment and the dendrogeomorphological approach proves to be useful for assessing the erosion rates of tourist trails.

13:00 – 13:15



Multi-approach study of pseudokarst caves within the Outer Western Carpathians

Martin Kašing, Technical University of Ostrava, Czechia

The research of pseudokarst caves in the Outer Western Carpathians is considered to be an important approach for recognition of various features of slope failures, e.g. its internal structure, spatial extent or recent movements. However, many features of pseudokarst caves that are being neglected or poorly studied can be analyzed. These can be absolutely essential for understanding of genesis of slope failures, regional geological research and mapping, geomorphic interpretations or paleoenvironmental reconstructions. This contribution represents a compilation of three papers dealing with yet unstudied issues of the three largest pseudokarst caves within the Czech part of the Outer Western Carpathians.

13:15 – 13:30



Contact karst of the Postojna Basin, SW Slovenia - what can we learn from the interaction of karst and fluvial geomorphological processes

Astrid Švara, Karst Research Institute, Postojna, Slovenia

Postojna Basin, located in the NW part of the Dinaric Mountains, is represented by a complex structure with karst/contact karst features. These geomorphic features in the karst periphery of the flysch Postojna Basin are displayed due to different past hydrological processes. The assumption is: these changes were mostly a consequence of different tectonic mechanisms induced by neotectonic activity in the Adria-Eurasia collision zone during the last 6 Ma. By studying the geomorphic features and cave sediments, these past changes can be explained and an attempt to connect them with past tectonic activity can be made.

13:30 – 13:45



IAG Webinar Central-Eastern Europe



Date: 28 February 2022, 12:00-18:00 CET

Coordinators: Piotr Migon, Konstantinos Vouvalidis, Mihai Micu

INTERNATIONAL GEOMORPHOLOGY WEEK 2022

The Quaternary geomorphic record of alpine karst environments: examples from Southern Carpathians, Romania

Maria-Laura Tîrlă, University of Bucharest, Romania

Alpine caves and karst are reliable markers of past climatic changes that affected the sensitive high-altitude environments. Geomorphological research is crucial for understanding the depositional context of cave sediments and the karst landform evolution. Based on a multi-method approach, we show how cave remnants and their sedimentary content preserved in karst enclaves on the summits of Southern Carpathians have archived evidence on their Quaternary evolution. Speleothem U-Th ages provided geochronological constraints on landform changes and allowed reconstructing a time-slice evolution scenario of the alpine landscape in the central Făgăraş Mountains since >560 ka until present.

13:45 – 14:00



Coastal vulnerability to tsunami: the case of Kamari settlement in Santorini, Greece

Dimitrios-Vasileios Batzakis, Harokopio University of Athens, Greece

The Eastern Mediterranean Sea is characterized as a major tsunamigenic area. Significant tsunami events triggered by earthquakes have occurred in the Hellenic Arc and have greatly affected the coasts of the Eastern Mediterranean Sea in the past. Focusing on the South Aegean Sea and Santorini Island, the tsunami simulation depicts the characteristics of the past and potential tsunamis. By considering a “worst-case scenario” of tsunami run-up, a vulnerability assessment was conducted in Kamari, a settlement in the eastern coast of Santorini, which shows the extent of the impact of tsunami inundation flows to the built environment.

14:15 – 14:30



Tracking coastal evolution and relative sea level changes through coastal landforms. Examples from Greece

Anna Karkani, National and Kapodistrian University of Athens, Greece

Various landforms in the coastal and shallow submarine environment allow a detailed palaeogeographic reconstruction and assessment of relative sea level change. The Aegean Sea is unique due to the active geodynamics, and ongoing geological processes, owed to the convergence between the Eurasian and the African continental plates. This presentation will focus on cases studies from the Aegean Sea investigating RSL changes and coastal evolution, where coastal landforms testify to long-term and short-term processes.

14:30 – 14:45



Coastal vulnerability assessment of Ios Island, Cyclades

Apostolia Komi, National and Kapodistrian University of Athens, Greece

The present study aims to assess the coastal vulnerability of the coasts of Ios Island, Cyclades and to identify areas that are comparatively more vulnerable to sea level change. From the application of Coastal Vulnerability Index, 92,37% of the total length of the coastline of Ios Island is characterized by very low vulnerability as it consists of rocky shores and cliffs with a slope of over 12%. The smallest percentage of the entire coastline corresponds to 1,72 km, is characterized by very high vulnerability and is represented by sandy and pocket beaches.

14:45 – 15:00



Coastal morphodynamics of Iturup island (SE Russia)

Mikhail Arkadievich Kuznetsov, Lomonosov Moscow State University, Russia

Iturup is the largest island of Kuril Archipelago, SE Russia. Based on a field study (2019, 2021) of the Iturup Island coastal zone relief and interpretation of space images taken from 1980 to 2021, we found that even though 85% of the coasts are eroding, but 80% are stable and haven't undergone changes during the above mentioned period of time. Erosional coasts lose area up to 2–2.5 m/yr. Accumulative coasts in different parts of the island experience multidirectional movements: accumulate 1.5–2.5 m or lose 1–2.7 m yearly. We identified the directions of sediment movement in large bays.

15:00 – 15:15

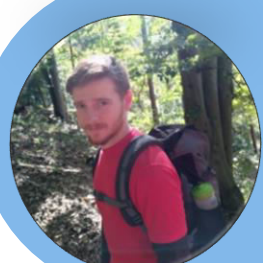


The morphological development of benches on braided rivers: the Belá River case study, Slovak Carpathians

Peter Labaš, Slovak Academy of Sciences, Bratislava, Slovakia

The Belá River run through the Liptov Basin in the Slovak Carpathians. The aerial photographs prove, that the river had been changing in its channel plan form from braided to braided-wandering in the last 70years. Moreover, we observed incision of the river channel as a consequences of discharge decreasing, extreme floods reducing and land cover changes. The result is multiple floodplain levels, preserving benches as a sediment storage, separated from the river. The benches will be used to several analyses including magnetic susceptibility, grain size analyses, ²¹⁰Pb and ¹³⁷Cs dating of the benches.

15:15 – 15:30



IAG Webinar Central-Eastern Europe



Date: 28 February 2022, 12:00-18:00 CET

Coordinators: Piotr Migon, Konstantinos Vouvalidis, Mihai Micu

INTERNATIONAL GEOMORPHOLOGY WEEK 2022

What does the beach sand hide in? Multiproxy textural studies of sand beach sediments from Poland and Latvia

Joanna Martewicz, Nicolaus Copernicus University in Toruń, Poland

Sand beaches occur along the southern coast of the Baltic Sea and their sediments serve as an excellent archive about the environment in the past. In this study, we explore three beach locations in Poland and Latvia with a special interest with their sediments in a microscale. We apply the grain-size analysis, the shape and character of sand grain surfaces under a binocular and particle shape parameters with a use of the Camsizer M1 followed by the statistical analysis to determine the character of the sediment, potential extreme events record and type of transportation. Clearly, the statistical approach allows deeper insight in the sediment and grain characteristic that is hampered while looking at results in a traditional way.

15:30 – 15:45



The influence of different sediment sources within the fluvial systems in Svalbard and Antarctica

Lenka Ondráčková, Masaryk University, Brno, Czechia

Proglacial streams in polar regions are very active. The sediment sources and its impact on bedload transport were identified. The Monolith Stream catchment area in the James Ross Island and the Munin River catchment on Svalbard were studied. Main petrological types were observed during to the field survey. The results show the categorized 4 sediment sources as morainic complex, debris-flow dominated fans and fluvial-flow dominated fans and bedrock erosion parts.

15:45 – 16:00



Records of past, high - energy marine inundation events in Greece

Konstantinos Tsanakas, Harokopio University, Athens, Greece

The study of past, high-energy marine inundation events can contribute to disaster prevention work in densely populated coastal lowland regions. The deposits of such events, recorded in the coastal sedimentary stratigraphy can provide essential information for their magnitude, frequency and their driving mechanisms. Geomorphological and sedimentological evidence, as well as numerous historical accounts and earthquake catalogues, document that Greece is a global hot spot for storm surge and tsunami occurrence. Effectively discriminating storm surge from tsunami deposits is a key issue in coastal hazards research and one of the most challenging topics in coastal geoscience.

16:00 – 16:15



Upper Volga's Incision Valleys: geomorphology, age, development

Anna Utkina, Institute of Geography of Russian Academy of Sciences, Moscow, Russia

Evolution of the most upstream part of the Volga River, though extensively studied, is still uncertain. According to one of the most popular models, Plyos and Tutayev, incision valleys were directly connected to the Upper Volga valley formation in MIS 2. In search of proper proof for this model, we collected new data on the incision valleys' geomorphological structure and sediment age, and no evidence for MIS 2 formation was found. We determined that the valleys were formed in late MIS 6, thus redefining the age of the entire Upper Volga valley.

16:15 – 16:30



The role of subsurface processes in the evolution of sandstone tablelands

Filip Duszyński, University of Wrocław, Poland

Our recent research has revealed a pervasive role of processes operating at depth in the evolution of the sandstone tablelands. Mechanical removal of sandy detritus along the lines of discontinuities leads to the progressive enlargement of fissures and the resultant development of a network of joint-aligned slots and corridors, altogether giving rise to *ruiniform relief* in the marginal parts of mesas and plateaus. Due to the loss of material at depth, sandstone compartments are subject to gradual tilting. It is hypothesized the preparatory role for the erosional processes already discovered is played by the silica dissolution (the *arenization* phenomenon).

16:45 – 17:00



IAG Webinar Central-Eastern Europe



Date: 28 February 2022, 12:00-18:00 CET Coordinators: Piotr Migon, Konstantinos Vouvalidis, Mihai Micu

INTERNATIONAL GEOMORPHOLOGY WEEK 2022

The relief of the quarries of Lviv city in the middle of the XIX - the beginning of the XXI century

Maria Halaiko, Ivan Franko National University of Lviv, Ukraine

The analysis of cartographic and cadastral materials revealed the location of more than 100 objects of mining industry within Lviv city in the middle of the XIX – beginning of the XXI century. The sand, gypsum and clay quarries were widespread across the surveyed territory. In the middle of the XIX century most quarries have the average length of 20-100 m, and in the XX century the maximum length reached 300 m. They were located mainly on watershed and slope surfaces. At the beginning of the twenty-first century, almost all quarries were flattened and became poorly expressed in relief.

17:00 – 17:15



Baer knolls of the Northern Caspian land as a key to understand the paleogeography of the Caspian Sea (Russia)

Daria Lobacheva, MSU Lomonosov Moscow State University, Russia

Baer knolls (BK) are elongated ridge and depressions often close to the sub-latitudinal orientation sometimes spatially isometric that are widespread in the entire Northern Caspian Region up to 0 m a.s.l. that is the upper limit of the Late Khvalynian sea transgression. We identify it as giant dunes, formed under water in subcritical regime of the flux. Studying these landforms is very important for restoring the history of the Caspian Sea and environments that existed on its shores during the Late Pleistocene - onset of Holocene. The results of radiocarbon dating of mollusk shells based on four samples showed the age from 16.4 to 13.8 th years cal mostly correlating with the period of deglaciation after LGM.

17:15 – 17:30



What do we know about the Holocene history of Hornsund (S Svalbard)?

Aleksandra Osika, University of Silesia in Katowice, Poland

Analyzing the glacial history of Svalbard allows predicting the consequences of the ongoing warming of the Arctic. The fluctuations of tidewater glaciers have determined the functioning of Hornsund as a fjord or a strait between the Greenland and Barents Seas. Our geochronological studies indicate the glaciers retreat in the Early Holocene when the climate of Svalbard was warmer than today. After readvances in Neoglacial, the strait was closed until the glacier recession in the Medieval Warm Period. Since the Little Ice Age, when the glaciers reached their maximal known extent in the Holocene, the strait has been closed.

17:30 – 17:45



Formation and evolution of coastal lakes of the Crimea during the Holocene

Yevhenii Rohozin, Taras Shevchenko National University of Kyiv, Ukraine

On the Crimean peninsula, there are around 50 saline lakes, which formed during the Holocene due to marine transgression. The chronology and evolution of these lakes remain largely unknown today, considering their role of valuable archives of the Holocene sea-level changes in the Black Sea. Here we present results of multidisciplinary studies of lakes Saki and Chokrak and analyse findings of the previous studies of the Crimean lakes. The obtained data have shown that the investigated lakes were separated from the seas at different rates and underwent multiple stages of lake-level changes, which were influenced by climate variability.

17:45 – 18:00



The Late Pleistocene history of the Black Sea — Caspian strait

Daria Semikolennykh, Institute of Geography of Russian Academy of Sciences, Moscow, Russia

The opening of the strait connecting the Black Sea and Caspian Sea is a striking feature of Pleistocene history in the Ponto-Caspian region. The main links of the strait are the Manych Depression and the Kerch Strait. Using the sedimentary record in the Manych Depression, soviet researchers found that there were several stages when waters spilled over from Caspian Sea to Black Sea. But the question of palaeogeographic reconstruction and chronological framework of the strait still remains. Here we combine new data on palaeoecology and geochronology with previous geological research to help resolve these questions.

18:00 – 18:15

