# IAG DENUCHANGE business meeting

## 16 September 2022, 10:00-11:00 CEST

- **DENUCHANGE activities during the IAG International Conference on Geomorphology in Coimbra, Portugal, 12-16 September 2022 (ICG2022)**

DENUCHANGE joint lunch on 13 September 2022, 12:45-14:15

DENUCHANGE session section as part of the Thematic Session 5 on Forms, Processes and Landscape Change on 15 September 2022 (entire day)

DENUCHANGE business meeting on 16 September 2022, 10:00-11:00

- **DENUCHANGE publications**

The multi-authored review paper on *Denudation and geomorphic change in the Anthropocene; a global overview* by Antonio Cendrero, Juan Remondo et al. has been accepted for publication in the journal Earth-Science Reviews (Elsevier).

A DENUCHANGE special issue is planned and a special issue proposal is currently prepared. The theme of the special issue shall be on *Denudation under changing environment at different spatial and temporal scales*. The special issue shall include contributions from the Thematic Session 5 at ICG2022, from the session GM 4.1 at EGU 2022, from all interested DENUCHANGE members, and from additional colleagues to be invited.

A proposal for an edited book on the theme of *Climate and Anthropogenic Impacts on Earth Surface Processes in the Anthropocene* was approved by Elsevier and will be produced until August 2023. The book will be edited by Achim A. Beylich, Dongfeng Li, Daniel Vázquez Tarrío, Mario Morellon Marteles and Marc Oliva. DENUCHANGE colleagues are kindly invited to contribute to this edited book.

Book title: **Climate and Anthropogenic Impacts on Earth Surface Processes in the Anthropocene**

Preface

Block 1 - Changing Earth Surface Processes

Chapter 1 - Introduction

- Global environmental change: from past to present
- Drivers of earth surface processes
- The Anthropocene

Chapter 2 - Detection and quantification of earth surface processes

- Sedimentary records of Global Environmental Change
- Landform record
- Dating techniques
- Remote sensing
- Process monitoring

Chapter 3 - Conclusive remarks about technical issues and improvements on the identification of 'Global environmental change' [Editors]

Block 2 - Climatic and anthropogenic drivers of earth surface processes

Chapter 4 - Climate impacts on earth surface processes

- Glacial and periglacial processes
- Hillslope and mass-wasting processes
- Fluvial processes
- Aeolian processes
- Estuaries and deltas
- Coastal processes (cliffs, beaches, barriers, coastal dunes…), and wetlands
- Karst processes
- Considerations on the inherent complexities of disentangling anthropogenic and natural signals in landscape changes

Chapter 5 - Anthropogenic impacts on earth surface processes

- Glacial and periglacial processes
- Hillslope and mass-wasting processes
- Fluvial processes
- Aeolian processes
- Estuaries and deltas
- Coastal processes (cliffs, beaches, barriers, coastal dunes…), and wetlands
- Karst processes

Chapter 6 - Conclusive remarks highlighting key global problems [Editors]

Block 3 - The temporal and spatial scales

Chapter 7 - The (relative) role of climate and anthropogenic impacts on earth surface processes

- Through the Anthropocene: Sediment-routing at the global scale in the Anthropocene / The sediment cascade in the Anthropocene
- Today
- Future outlook, prediction, modelling

Chapter 8 - Suggestions for adapted and sustainable mitigation and management strategies

- (Sub)polar regions
- Mountain areas
- Karst environments
- River systems (river restoration/rehabilitation)
- Estuaries and deltas
- Beaches, dunes and coastal areas, and wetlands
- Arid environments (deserts)

Chapter 9 - Conclusive remarks disentangling climatic from anthropic signals in earth surface processes and highlighting future strategies [Editors]

## • Ongoing initiatives within DENUCHANGE headed by DENUCHANGE members

Please find here information on three initiatives within DENUCHANGE headed by DENUCHANGE members.

*Artyom Gusarov (Russia)*

A new initiative on the further development of a concept of different erosion systems will be presented and headed by Artyom Gusarov (Russia) (avgusarov@mail.ru) and shall result in a multi-authored review paper. Detailed information on this new initiative and the planned working steps will follow soon.

*Katja Laute (Norway)*

After the online publication of the DENUCHANGE Field Test Site Catalogue (Laute, K., Beylich, A.A., and Li, D., Eds., 2022) (https://geofieldlab.com/wp-content/uploads/2022/02/GFL_Geomorphological_Field_Laboratory_Publication_Series_Number3_February2022.pdf), Katja Laute (Norway) summarizes her ideas on possible DENUCHANGE

multimedia presentations from defined DENUCHANGE field test sites. Please get in contact with Katja Laute (katja.laute@geofieldlab.com) if you wish to participate in this activity.

*Ideas on possible multimedia presentations from DENUCHANGE field test sites (by Katja Laute):*
The idea is to create several short video presentations maybe around five minutes showcasing for example field methods applied within the DENUCHANGE field test sites. One goal could be to show how similar measurements or instruments are used in different test sites and environments.
Alike to the DENUCHANGE Field Test Site Catalogue we could use the same layout (e.g. for the start and end of the video clips) in order to have a more uniform presentation.
I recommend recording your video file in the MP4 Video format. I also recommend not to record any voice (explanations) in the field directly as it is usually always too noisy. Instead it will be possible to add either explanations as captions into the video file or you record your explanations as a separate audio file which can be added afterwards to the video clip.
It will be no problem to include also single photographs within the video file. It should be also possible to show e.g. some graphs or illustrations like a location or geomorphological map or simple result figures.

→ The total length of the video clip should be around five minutes and maximum ten minutes.

*"Storyboard" suggestions for shooting your video clip in the field:*

Startslide including title and location (will be added afterwards during the video clip editing)

Timeline 0 to 1 min:

- showing and introducing the setting/surrounding of your site where you want to do the measurement or your instrument is installed
- e.g. you could do a 360 degree round turn or you zoom from a distance closer to your measurement spot

Timeline 1 to 2 min:

- you can introduce your measurement device (e.g. you can zoom on your device or show how it works) or what you would like to measure

Timeline 2 to 4 min:

- you can film the actual measurement

Timeline 4 to 5 min:

- in the end you could show some results e.g. a collected soil sample, tree core or a bedload sample

- we can add one or two figures showing raw data or a graph of preliminary results prepared as a jpeg file

End-slide including name of video producers, affiliation and potential acknowledgement (will be added afterwards)

*Suggested minimum technical requirements:*

| Video resolution (frame width x frame height) | Video frame rate | Video-Bitrate |
|---|---|---|
| 1920 x 1080 | 30 frames/second | 12 Mbit/s |

*Milica Kasanin-Grubin (Serbia)*

Milica Kasanin-Grubin (Serbia) summarizes her ideas on a possible additional direction of work and a possible subgroup within DENUCHANGE.

Please get in contact with Milica Kasanin-Grubin (mkasaningrubin@chem.bg.ac.rs) if you wish to participate in this activity.

*Ideas for possible additional DENUCHANGE research (by Milica Kasanin-Grubin)*

How do we know if heavy metals in river sediments have geological or anthropogenic source?

Heavy metals, regarded as common environmental pollutants, have a tendency to accumulate in river sediments. These microelements can either have natural or anthropogenic origin, and it is important to distinguish between the two. Consequently, this information helps to determine the mobility of microelements.

The geological origin of heavy metals in drainage basins is weathering of rocks, and the main anthropogenic sources of heavy metals are mining and smelting, disposal of effluents containing heavy metals, industrial waste and haphazard use of fertilizers and pesticides that contain heavy metals. The capacity of sediment to adsorb and retain microelements depends mostly on their physico-chemical characteristics, mineralogical composition and grain size distribution.

Pollution indices, often used to quantitatively assess the heavy metal contamination of sediments, offer various approaches for comparing actual values of elements in an evaluated sample with some background values of the environment. Most commonly, in the literature, as the background value the average composition of the upper continental crust, average shale concentration of elements, certified reference material, uncontaminated sediments from the area, and statistical methods, have

been used. However, natural background sample as “normal abundance of an element in barren earth material” and “elemental concentration(s) in sediments before industrialization” should be used wherever and whenever is possible. Representative sampling should be done at an area that is close to the area of interest, i.e. with the same geological setting but undisturbed by human action.

The general characteristic of reference samples is that they should correspond petrologically to the tested samples. Reference samples should be of identical or similar sedimentological origin, i.e. from alluvial systems. Also, the reference samples should not have any anthropogenic influence.

Bearing this in mind, it would be very useful to determine the reference samples for specific small watersheds with similar geology. This approach would allow building a network of reference samples that could be widely used for determining the pollution status of river sediments.

- ## Planned forthcoming DENUCHANGE events

Third DENUCHANGE Workshop in Haifa, Israel, March 2023

Scientific session at EGU 2023, 23-28 April 2023, Vienna, Austria

Selbustrand, 30 September 2022

Achim A. Beylich