

I.A.G./A.I.G. DENUCHANGE Working Group Objective (by 20 November 2018)

[\(http://www.geomorph.org/denuchange-working-group/\)](http://www.geomorph.org/denuchange-working-group/)

The key question of DENUCHANGE is:

What are the contemporary chemical and mechanical denudation rates in different morphoclimatic zones on the Earth?

Denudation, including both chemical and mechanical processes, is of high relevance for Earth surface and landscape development and the transfer of solutes and sediments from headwater systems through main stem of drainage basin systems to the world oceans. Denudation is controlled by a range of environmental drivers and can be significantly affected by anthropogenic activities.

The better understanding of possible effects of ongoing and accelerated environmental changes on present-day denudation requires systematic and quantitative studies (environmental monitoring) on the actual drivers of denudational processes. Only if we have an improved knowledge of drivers and quantitative rates of contemporary denudational hillslope and fluvial processes as well as of the connectivity in landscapes and between hillslope and fluvial systems across a range of different selected climatic environments, possible effects of global environmental changes on denudation can be better assessed. Special focus will be given to selected morphoclimatic zones that are expected to react particularly sensitively to ongoing and accelerated environmental changes, and the key focus of DENUCHANGE will therefore be on (i) cold regions (including glacierized, glaciated and unglaciated cold climate environments), (ii) temperate regions, (iii) arid / semi-arid regions and (iv) tropical regions. The different morphoclimatic zones are defined by morphometric characteristics/signatures detected in the various zones.

DENUCHANGE will

- Provide a detailed compilation and comparison of contemporary chemical and mechanical (drainage-basin wide) denudation rates in selected and clearly defined drainage basin systems in selected cold regions, temperate regions, arid / semi-arid regions and tropical regions worldwide. As denudation is scale-dependent, the selected drainage basin systems will be of a defined and comparable size to allow direct comparisons between the drainage basin systems situated in the different morphoclimatic zones. The existing/available and compiled data on contemporary chemical and mechanical denudation must be based on comparable sampling periods, sampling frequencies, and on comparable monitoring methods and techniques applied.
- Provide a process-oriented, coordinated and integrated analysis and compilation of the respective key drivers of contemporary denudation occurring under the different present-day morphoclimates.
- Based on the previous two compilations: Address the key question how environmental changes are affecting contemporary denudation rates in different morphoclimates. This also includes human activities in different morphoclimatic zones, in the context of environmental changes in the Anthropocene.