

SUMMARY

Climate change strongly affects the landform systems and especially those located in cold environments – polar regions and high mountain areas. There could be observed increased variability in hydrological regime and geomorphological processes, leading to higher degradation of land surface and intensive transportation of rock debris. Sediment transfer is an object of multiple studies in various climatic zones for a long time and the fundamentals of this approach are standardized. Collection, comparison and evaluation of data and knowledge from a range of different environments are general tasks for the geomorphological society.

The main goal of this project is characteristics of sediment transfer in the area of the Bulgarian Antarctic base (BAB) in the context of climate change. Analysis of matter transportation from higher to lower altitudes and its spatial-temporal variability is a possibility for BAB to be included in the international network for data exchange of the SEDIBUD/DENUCHANGE working group of International Association of Geomorphologists (I.A.G.). Up to now at the Bulgarian base at Livingston Island are characterized the main landforms and their state for the period 2004-2010. Activities planned for this project aim to develop and continue the previous geomorphological work at Livingston Island. As a result are expected first quantitative parameters of geomorphological processes dynamics to be given based on standardized monitoring, which is in full correspondence to the scientific goals of the National program for polar studies 2017-2021. They also are related with the contemporary tendencies for scientific development, part of the strategy of SCAR 2016-2022, the EPB 2016-2025 and the scientific report of UNESCO, strategy to 2030.

Sediment transfer's dynamics is highly dependent on climate changes. The last have very individual manifestation in different localities and thus it is necessary field data collection to be done. The second part of the project activities are dedicated to this goal. The results from this study are not devoted to the project aims only but for general knowledge about local patterns of climate change in cold territories.

Suggested methodology about sediment transfer quantification is deeply related to previous geomorphological and climatological investigations of BAB's area – both Bulgarian and international. Highly valuable in this study would be the close relations with the Portuguese scientific team, who worked from a long time at BAB's area and currently precede the co-operation with the Bulgarian research team. Generally, up to now the Portuguese geomorphologists works are devoted to definition and study of permafrost and its active layer and as well geomorphological mapping of the Antarctic Peninsula and nearest archipelagos. Proposed project activities would provoke interest to them and would contribute to the permafrost study.

Study of sediment transfer in the BAB's area would provide valuable input to the knowledge about polar regions – territories most sensitive to global climate change. Generally it will permit modeling of the effects of climate change in different areas. Considering Bulgarian researchers in Antarctica, it will provide opportunity for data exchange in a global network for regional climate change response and as result this would improve the quality of their scientific production.