



Quantitative analysis of source-to-sink-fluxes and sediment budgets in changing cold environments – the global SEDIBUD program

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The International Association of Geomorphologists (I.A.G./A.I.G.) has endorsed a working group called SEDIBUD – Sediment Budgets in Cold Environments (<http://www.geomorph.org/wg/wgsb.html>). The primary aim of SEDIBUD is to provide an integrated quantitative analysis of sediment transfers, nutrient fluxes and sediment budgets across a range of key cold environments. Hence, the geographic scope of SEDIBUD comprises the Arctic and Antarctic, as well as global alpine regions. A number of core SEDIBUD activities are integrated into long term monitoring efforts and contribute to International Polar Year (IPY) programs supported by several countries. SEDIBUD activities typically provide for strong linkages to terrestrial and aquatic ecology, permafrost studies, and contribute to hydrological observatories.

Focus of the program is on the impact on sedimentary transfer processes in response to a variety of climate change scenarios from source to sink. In order to perform a fully integrated study of source to sink fluxes and sediment budgets, SEDIBUD analyses the key components of weathering, chemical denudation, erosion, aeolian processes, mass movements, fluvial transport, glacial sediment transfer and sedimentation in lakes, fjords and coastal areas.

The benefit generated by coordinated data exchange and the unification of methods and techniques applied to long-term geomorphic process analysis (process monitoring), the quantitative analysis of storage elements and for integrated sediment budget studies in cold environments has become apparent. Comparable datasets generated in a global network of different SEDIBUD key test sites that follow the recommendations, instrumentations and field protocols provided in the SEDIFLUX Manual are contributing to the SEDIBUD metadata database. This metadata database is used to model effects of projected climate change on solute fluxes, sediment fluxes and sediment budgets in sensitive and changing cold environments worldwide.

We anticipate that SEDIBUD activities will contribute to a number of larger IPY program goals, and will provide additional scientific contributions to ongoing polar and alpine field observatories.