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Sedimentary fluxes and budgets in cold climate environments: The SEDIBUD (Sediment budgets in cold environments) Programme

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Amplified climate change and ecological sensitivity of polar and high-altitude cold climate environments has been high-lighted as a key global environmental issue. Projected climate change in cold environments is expected to alter melt season duration and intensity, along with the number of extreme rainfall events, total annual precipitation and the balance between snowfall and rainfall. Similarly, changes to the thermal balance are expected to reduce the extent of permafrost and seasonal ground frost and increase active layer depth. These effects will undoubtedly change surface environments in cold environments and will alter fluxes of sediments, nutrients and solutes, but the absence of long-term monitoring data and quantitative analysis to understand the sensitivity of the surface environment are acute especially in cold climate environments.

The I.A.G./A.I.G. SEDIBUD (Sediment Budgets in Cold Environments) Programme, building on the ESF SEDIFLUX (Sedimentary Source-to-Sink Fluxes in Cold Environments) Network (2004 - 2006), was formed in 2005 to address this key knowledge gap. SEDIBUD has currently about 400 members worldwide and the Steering Committee of this global programme is composed of scientists from nine different countries. The central research question of this international group of scientists is to

Assess and model the contemporary sedimentary fluxes in cold climates, with emphasis on both particulate and dissolved components.

Field research performed at currently 42 defined SEDIBUD Key Test Sites varies by programme, logistics and available ressources, but typically represents interdisciplinary collaborations of geomorphologists, hydrologists, ecologists, and permafrost scientists and glaciologists. SEDIBUD Key Test Sites provide data on annual climate conditions, total runoff and particulate and dissolved fluxes as well as information on other relevant denudative surface processes. A number of selected Key Test Sites are providing high-resolution data on climatic conditions, runoff and fluvial fluxes, which in addition to the annual data contribute to the created SEDIBUD Metadata Database. To support these efforts, the SEDIFLUX Manual has been produced to establish common methods and data standards.

Comparable datasets from different SEDIBUD Key Test Sites will be analysed to address key research questions of the SEDIBUD Programme as defined in the SEDIBUD Working Group Objective which is, as all other relevant SEDIBUD documents, available at the SEDIBUD Website (http://www.geomorph.org/wg/wgsb.html).