



Coordinated analysis and quantification of sedimentary fluxes and budgets in cold environments: The SEDIBUD Programme

Achim A. Beylich (1,2) and Scott F. Lamoureux (3)

(1) Geological Survey of Norway (NGU), Quaternary Geology & Climate group, Trondheim, Norway (achim.beylich@ngu.no), (2) Norwegian University of Science and Technology (NTNU), Department of Geography, Trondheim, Norway, (3) Queen's University, Department of Geography, Kingston, Canada

Amplified climate change and ecological sensitivity of polar and high-altitude cold environments has been highlighted as a key global environmental issue. Projected climate change in cold climate 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 alter fluxes of sediments, nutrients and solutes, but the absence of data and coordinated analysis to understand the sensitivity of the surface environment are acute in cold climate environments. The SEDIBUD (Sediment Budgets in Cold Environments) Programme of the International Association of Geomorphologists (I.A.G./A.I.G.) was formed in 2005 to address this key knowledge gap. SEDIBUD has currently about 400 members worldwide and the Steering Committee of this international programme is composed of ten scientists from nine different countries. The central research question of this global group of scientists is to

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

Research carried out at currently 38 defined SEDIBUD Key Test Sites varies by programme, logistics and available resources, but typically represent interdisciplinary collaborations of geomorphologists, hydrologists, ecologists, and permafrost scientists and glaciologists with different levels of detail. SEDIBUD key test sites provide data on annual climate conditions, total runoff and particulate and dissolved fluxes as well as information on other relevant 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 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 other relevant SEDIBUD documents, available at the I.A.G./A.I.G. SEDIBUD Website (<http://www.geomorph.org/wg/wgsb.html>).