



The I.A.G. / A.I.G. SEDIBUD Book Project: Source-to-Sink Fluxes in Undisturbed Cold Environments

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The currently prepared SEDIBUD Book on "Source-to-Sink Fluxes in Undisturbed Cold Environments" (edited by Achim A. Beylich, John C. Dixon and Zbigniew Zwolinski and published by Cambridge University Press) is summarizing and synthesizing the achievements of the International Association of Geomorphologists' (I.A.G./A.I.G.) Working Group SEDIBUD (Sediment Budgets in Cold Environments), which has been active since 2005 (<http://www.geomorph.org/wg/wgsb.html>).

Amplified climate change and ecological sensitivity of largely undisturbed polar and high-altitude cold climate environments have been highlighted as key global environmental issues. The effects of projected climate change will change surface environments in cold regions and will alter the fluxes of sediments, nutrients and solutes, but the absence of quantitative data and coordinated geomorphic process monitoring and analysis to understand the sensitivity of the Earth surface environment in these largely undisturbed environments is acute.

Our book addresses this existing key knowledge gap. The applied approach of integrating comparable and longer-term field datasets on contemporary solute and sedimentary fluxes from a number of different defined cold climate catchment geosystems for better understanding (i) the environmental drivers and rates of contemporary denudational surface processes and (ii) possible effects of projected climate change in cold regions is unique in the field of geomorphology. Largely undisturbed cold climate environments can provide baseline data for modeling the effects of environmental change.

The book synthesizes work carried out by numerous SEDIBUD Members over the last decade in numerous cold climate catchment geosystems worldwide. For reaching a global cover of different cold climate environments the book is - after providing an introduction part and a basic part on climate change in cold environments and general implications for solute and sedimentary fluxes - dealing in different defined parts with Sub-Arctic and Arctic Environments, Sub-Antarctic and Antarctic Environments, and Alpine / Mountain Environments. The book includes a synthesis key chapter where comparable datasets on contemporary solute and sedimentary fluxes generated during the conducted coordinated research efforts in different cold climate catchment geosystems are integrated with the key goals to (i) identify the main environmental drivers and rates of contemporary solute and sedimentary fluxes, and (ii) model possible effects of projected climate change on solute and sedimentary fluxes in cold climate environments.

The SEDIBUD Book provides new key findings on environmental drivers and rates of contemporary solute and sedimentary fluxes, and on spatial variability within global cold climate environments. The book will go in production in July 2015.