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Quantitative analysis of sediment budgets in cold environments: The global SEDIBUD programme

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Projected climate change in cold regions is expected to alter melt season duration and intensity, along with total precipitation and the balance between snowfall and rainfall. Similarly, changes to the thermal balance are expected to reduce the extent of permafrost and increase active layer depth. These effects will change surface water environments in cold environments and alter the flux of sediment, solutes and nutrients, but the absence of quantitative data and analysis to understand the sensitivity of surface water environments are acute in cold regions.

The I.A.G./A.I.G. SEDIBUD (Sediment Budgets in Cold Environments) programme is addressing this key knowledge gap. The central research question of this global programme is to assess the contemporary sediment fluxes in cold environments, with emphasis on both particulate and dissolved components. Initially formed as ESF project SEDIFLUX, SEDIBUD has developed to a global group of researchers with defined field research sites located in polar and alpine regions in the northern and southern hemisphere.

SEDIBUD has developed a key set of primary research data requirements intended incorporate results from these varied projects and allow analysis across the network. Defined key field test sites report annual climate conditions as well as total annual runoff, annual yield of suspended sediments and annual solute yields corrected by atmospheric inputs. To support these efforts, the SEDIFLUX Manual and Field Protocols have been produced to establish common methods and data standards.

SEDIBUD currently has identified 38 Key Field Test Sites with the goal to extend the network to 40-45 Sites that cover the widest range of cold environments possible. Collected annual data from these sites are integrated in the SEDIBUD Metadata Database.