



Project acronym: KolymaSed

Project title: Assessment of sediment fluxes in the lower Kolyma River System, Siberia, Russia

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Discipline: Earth Sciences & Environment: Water sciences/Hydrology

Station(s): North-East Science Station (RU)

In the last decades, the sediment flux in Arctic regions has been investigated by a few studies at different locations. However, available river sediment discharge data is very rare especially in the Eastern Siberian territory. Our expedition will contribute to fill the gap and will conduct the first suspended and bedload flux measurements ever done in the Kolyma River. In many regions, like in the Kolyma River basin, discharge processes are increasingly impacted by climate change (Screen, 2014; Cohen et al., 2014). Additionally, anthropogenic pressures have a significant influence on the runoff and sediment transport regimes in these sensitive regions. Few studies have suggested new drivers of sediment transport that arise due to the degradation of the permafrost. Sediment transport in and to river channels is strongly influenced by climatic conditions, particularly when heavy precipitation and warmer climate triggers high-concentrated flows in association with snow/permafrost melting in the catchment area. We will focus our measurements on small tributary catchments and river profiles near the North-East Science Station in Chersky. A range of investigative methods will be conducted such as: in-situ monitoring of suspended sediments, water sampling for geochemical sediment fingerprinting, velocity and discharge measurements, bathymetry mapping for morphological and hydraulic 1D and 2D model calibration, investigation of slope/river terrace stability parameters, Unmanned Aerial Vehicle (UAV) based DTM derivation, as well as numerical modelling applications to assess the morphological dynamics of slopes, river terraces and small tributary catchments. The proposed integrated methodological approach will help to understand present day dynamics but also to assess future developments of Arctic rivers during the summer melt season.