

# Flux of sediment-associated chemical elements in rivers draining to the Arctic Ocean

Bogen, J.<sup>1</sup>, Froehlich, W.<sup>2</sup>, Golosov, V.<sup>3</sup>, Hanxing, C.<sup>4</sup>, Horowitz, A.<sup>5</sup>, Ottesen, R.T.<sup>6</sup>, and Walling, D. E.<sup>7</sup>

<sup>1</sup>Norwegian Water Resources and Energy Directorate, P.O. Box 5091, 0301, Oslo, Norway Phone: +47 22 95 90 46 E-mail:

<sup>2</sup>Polish Academy of Science, <sup>3</sup>Univ. of Moscow, Russia, <sup>4</sup>Inst. of Geophys. and Geochem. Expl., Beijing, <sup>5</sup>USGS, Geol. Survey of Norway, <sup>6</sup>Univ of Exeter UK <sup>7</sup>jbo@nve.no

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This paper describe a project that aims to estimate the present, past and future flux of sediment-bound chemical elements and compounds (metals, nutrients and organic pollutants) delivered to the polar sea by sampling overbank sediments from floodplains and deltas.

Historical data concerning delta development and Cs<sup>137</sup>, Pb<sup>210</sup> or C<sup>14</sup> dating techniques will be used to identify young and older layers within the sedimentary sequences. To determine the reasons for changes in the fluxes of sediment-bound chemical elements, sediment sources as well as the distribution of elements within the river basins will be investigated. The information acquired will reveal the distribution of both natural and man-made contamination and the impact of hydropower development, mining and other human activity. These data will provide a basis for predicting of the effect of climate changes on particle bound sediment delivery. From a broader perspective, when all data from the rivers around the polar sea are included, it will be possible to detect large scale variations in the distribution of elements related to large-scale global patterns. Such an overview is of practical importance from both an environmental and policy making perspective as well as in exploration for mineral resources.

The principal objective is to assemble a database of modern and historical fluxes of sediment-associated chemical elements to the Arctic Ocean and their relationships to natural and man-induced changes in sediment yields and sediment sources and to predict the impact of future climate changes on the fluxes. Secondary objectives are to establish the relationships between these fluxes and the distribution of sediment sources, and particle bound elements within the drainage basins, assess the impact of man-induced changes on sediment sources and sediment flux and predict the impact of future climate changes on the fluxes.