



## **International Siberian Shelf Study 2008 (ISSS-08): towards establishing a geographically distributed picture of the bulk geochemical composition of surface sediments on the East Siberian Sea**

J. Vonk (1), O. Dudarev (2), I. Semiletov (2), A. Charkin (2), P. Andersson (3), L. Sánchez-García (1), M. Kruså (1), B. van Dongen (4), D. Porcelli (5), and Ö. Gustafsson (1)

(1) Stockholm University, Dept of Applied Environmental Sciences (ITM), Stockholm, Sweden (jorien.vonk@itm.su.se), (2) Pacific Oceanological Institute, Russian Academy of Sciences, Vladivostok, Russia, (3) Laboratory for Isotope Geology, Swedish Museum of Natural History, Stockholm, Sweden, (4) School of Earth, Atmospheric and Environmental Sciences, The University of Manchester, United Kingdom, (5) Department of Earth Sciences, University of Oxford, United Kingdom

The Arctic Ocean has unusually large and shallow continental shelves, covering more than 50% of its total area. Large amounts of fluvially transported terrestrial organic carbon (terrOC) are delivered to the East Siberian Arctic Shelves (ESAS; Laptev, East Siberian and Chuckchi Seas), in addition to input of coastally eroded material that, based on very limited data, is estimated to be equally large. The fate of these large-scale releases of terrOC into the ESAS seas is still poorly understood. The urgency of this question is underscored by the fact that the East-Siberian Arctic landmass is expected to experience the strongest climate warming on Earth, with potential for various carbon-climate feedback links.

Improving our understanding of terrOC processing on the Eurasian Arctic shelves was one of the main objectives of the International Siberian Shelf Study (ISSS-08), a 42-day ship-based research expedition onboard the Russian vessel Yakob Smirnitskiy in August/September 2008. The East Siberian Sea (ESS) was the main geographical focus as it is not only the largest Arctic shelf sea but also the least studied. The ISSS-08 campaign obtained surface sediments from over 60 locations and is here combined with results obtained from campaigns in 2003, 2004 and 2007 to facilitate a comprehensive investigation of the ESS sediment composition. The ISSS-08 sediments were obtained both from near coast, as were earlier samples, but also had coverage out to the mid-shelf region.

Analyses of ESS surface sediments from 2003 and 2004 show sedimentary organic carbon contents between 0.5 and 1.5% with highest values, locally up to 2.5-3% near the Indigirka and Kolyma river mouths and in Long Strait. Stable carbon isotope values were mostly in the range of -27 to -25 per mille, with more depleted values close to the coast. A clear transition was observed east from 170° E towards Long Strait with more enriched values, signalling a regime shift with stronger influence of the Pacific Ocean. Here we will interpret bulk geochemical surface sediment analyses from the ISSS-08 and earlier expeditions with a detailed spatial coverage in the East-Siberian Sea.