



## 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

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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.