Toward a Holocene Sediment Budget of the Central Kara Sea Shelf

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High-resolution acoustic data and several sediment gravity cores taken in the Ob and Yenisei estuaries and the central Kara Sea shelf allow us to balance the Holocene sediment budget of the central Kara Sea shelf and to reconstruct the sedimentary history. Cores were radiocarbon dated and linked to acoustic profiles using whole-core physical properties.

The Ob and Yenisei estuaries, with their sea water/freshwater mixing zone, act as major sediment sinks for fluvial-derived terrigeneous material in Holocene times. Most of the suspended and large amounts of dissolved matter precipitate in this zone termed "marginal filter." High thickness of Holocene sediments occurs between 72°N and 73°30'N where a distinct decrease in thickness is observed to the north. Two major acoustic units could be differentiated, separated by a prominent reflector interpreted as the base of the Holocene. High-resolution echosound data suggest a fluvial-dominated depositional environment for the early Holocene, displaying lateral accretion as point bars and vertical accreted overbank deposits in a fluvial channel-levee complex. During the early Holocene sea-level rise the marginal filter migrated progressively southward (upstream) to its present position, forming a typical high-stand system tract in acoustic images. Estuarine sedimentation in a sedimentary environment similar to today's, started at approximately 5 cal. kyrs. B.P. An estimated total of 14.3 * 1010 t and 9.2 * 1010 t of fine-grained brackish-marine sediments, in the Ob and Yenisei estuaries, respectively, were accumulated during Holocene times. This is only about 75% and about 50% of Ob and Yenisei estuarine sediment budgets, respectively, estimated by extrapolation of recent river runoff data over the past 7,500 years. Filled paleoriver channels indicate active river incision in the southern part of the Kara Sea shelf prior to the Holocene.

New Parasound data obtained during the recent (2003) cruise of RV *Boris Petrov* and the interpretation of the existing data allow a first estimate of Holocene sediment volume deposited on the Kara Sea shelf.

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