Geophysical Research Abstracts
Vol. 15, EGU2013-2382, 2013
EGU General Assembly 2013

Signatures on sediment transport from the Bering Sea into the Chukchi Shelf since the Holocene opening of the Bering Strait

Boo-Keun Khim, Lloyd Keigwin, Mi Jung Lee, Hyun Goo Cho, Naomi Harada, and Masao Uchida
Pusan National University, Oceanography, Busan, Korea, Republic Of (bkkhim@pusan.ac.kr)

Since the Holocene opening of the Bering Sea, sediment transport from the Bering Sea into the Chukchi Shelf was studied using the clay mineralogical and isotopic tracers for three sediment cores (GC12ex, JPC30, JPC35). The 5 AMS 14C dates of core GC12ex and the correlation of proxies to the age-dated cores nearby define the age of three cores. Downcore profiles of geochemical and isotopic properties of three cores are obviously consistent, which can be divided into three distinct stages corresponding to the lithologic units; Stage 1 (until about 8.0 ka), Stage 2 (about 8.0 to 3.5 ka), and Stage 3 (3.5 ka to the present). Stage 1 represents the transgressive condition to reflect the less marine productivity and dominant effect of terrestrial input. Stage 2 is characterized by mixture of terrestrial and marine contribution with increasing marine productivity, following the Holocene sea level rise, but still dominant of terrestrial condition relative to marine condition. Stage 3 indicates the stable marine condition with high biogenic opal production similar to the present-day oceanographic feature. Thus, three cores preserve evident signatures of Holocene paleoceanographic changes in the Chukchi Shelf. In particular, the sediment deposition in the Chukchi Shelf after the opening of the Bering Strait seems to be governed by particle transport from diverse sources. However, neodymium isotope value (eNd) of clastic particles and smectite/illite ratios clearly indicate that the sediments originated from the Bering Sea northward through the Bering Strait have been mainly deposited during the late Holocene since about 2-3 ka.