

Deglacial paleoceanographic changes and CaCO₃ peaks recorded in sediment cores from the Bowers Ridge, Bering Sea

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Two neighboring sediment cores obtained from the western flank of the Bowers Ridge BOW-9A (54° 2.23' N, 178°40.58' E, 2391 m) and U1341C (54°2.00' N, 179°0.54' E, 2139.5 m) were used in this study to discuss the paleoceanographic changes in the southern Bering Sea during the last deglaciation. Both sedimentary records showed pronounced millennial-scale changes responding to the “Greenland-like” climate changes characterized by the Bølling–Allerød (BA) and Preboreal (PB) warmings and the Younger Dryas (YD) cooling. Biogenic opal, CaCO₃, and organic carbon contents and Br intensity by ITRAX XRF core scanner increased during the BA period, suggesting high productivity. The high productivity is supported by abundant *Neodenticula seminae*, a representative diatom species in the subarctic Pacific. A sharp abundance peak of *Thalassiosira hyalina* during BA suggests meltwater input into the Bering Sea. *Rhizoplegma boreale*, a radiolarian species abundant in the polar coastal regions, and *Cycladophora davisiana*, a radiolarian species dwelling in well-ventilated intermediate water, were also abundant during the BA period. These diatom and radiolarian species support the presence of meltwater and well-ventilated intermediate water in the southern Bering Sea. On the contrary, during the YD period, productivity proxies decreased. Instead, concentrations of odd number C₂₅–C₃₁ n-alkanes, organic compounds primarily originate from terrestrial vascular plants, increased, atmospherically transported from the Beringia and the Aleutian Islands. We found an extremely high Ca intensity peak at ~120 cm in Core U1341C, corresponding to the YD period. The peak was not found in Core BOW-9A, where two CaCO₃ peaks during BA and PB periods. The Radiocarbon date of the planktic foraminifera (*Neogloboquadrina pachyderma sinistral*) showed 14.3 cal. kyr BP, age in the middle of BA. Furthermore, three planktic foraminiferal ¹⁴C dates below 190 cm core depth in U1341C were unexpectedly young, showing BA ages. Such ¹⁴C dates were not found in BOW-9A. We suspect the planktic foraminiferal shells living deposited during BA periods were selectively reworked and distributed to the deeper depths by bioturbation.