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Seasonal climatologies of oxygen and phosphates in the Bering Sea reconstructed by variational data assimilation approach

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ABSTRACT

Climatological fields of dissolved oxygen and phosphates in the Bering Sea during the spring, summer, and fall seasons were generated on the basis of an extensive dataset of hydrochemical observations (16,356 stations, beginning in 1928) and a novel 3D variational algorithm for interpolation of a passive ocean tracer. The resulting patterns comply with maps produced earlier using an optimal interpolation method, though they also provide more detail and contain no “missing data” regions. Vertical spatial, and temporal variability of both parameters follow large-scale patterns of circulation, upper mixed layer depth, and phytoplankton productivity in the Bering Sea.

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