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Optimization of mooring observations in Northern Bering Sea

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The problem of the optimal sampling strategy for moored current velocity observations in the Northern Bering Sea is addressed. We analyze dynamically induced correlations in the North Bering Sea currents and conduct their sensitivity analysis to optimize positions of a limited number of moorings. Optimization of the sampling strategy is performed with respect to robustness of the reconstruction of the North Bering Sea circulation with a particular emphasis on the accurate monitoring of the mean Bering Strait transport. Computations reveal four major regions in the North Bering Sea basin that are highly correlated with the Bering Strait transport. Apart from the regions within the Bering Strait itself, they include the Anadyr Strait and a region 100 km south of the Cape of Prince of Wales. Results of the sensitivity analysis are tested within the framework of twin data experiments for the examples of the quasi-stationary and oscillatory background circulations.