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UPPER ARCTIC OCEAN DECADAL CHANGES: FRESHWATER, STRATIFICATION AND SURFACE VELOCITY

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Recent decades have shown substantial changes in the Arctic Ocean, yet observations are still relatively sparse compared to most other parts of the world's oceans. Results from numerical models still differ in the distribution of key variables, such as the pathways of liquid freshwater.

From salinity and temperature profiles observed by a variety of platforms since 1992 we are able to show a substantial freshening in the upper Arctic Ocean impacting an increase in stratification between the mixed-layer and the lower halocline. Based on temperature and salinity profiles, we will present an objective analysis of mixed-layer depth, sea surface height and geostrophic velocity during the recent two decades. We are able to derive decadal trends as well as seasonal cycles during the most recent decade.

Surface geostrophic velocity points to a flow in the Amerasian Basin toward the Lomonosov Ridge. Although most of the freshwater volume increase occurred on the Amerasian side of the Arctic Ocean, the changes on the Eurasian side have strong implications not only for the stratification but also the vertical exchange of nutrients in the upper ocean.