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Upper Arctic Ocean changes since 1992: freshwater, stratification and implications for biogeochemistry

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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 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 a first attempt at an objective analysis of mixed-layer depth changes during the recent two decades.

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.