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## Changes in Arctic Halocline Waters along the East Siberian Slope and in the Makarov Basin from 2007 to 2020

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The Makarov Basin halocline receives contributions from diverse water masses of Atlantic, Pacific, and East Siberian Sea origin. Changes in surface circulation (e.g., in the Transpolar Drift and Beaufort Gyre) have been documented since the 2000s, while the upper ocean column in the Makarov Basin has received little attention. The evolution of the upper and lower halocline in the Makarov Basin and along the East Siberian Sea slope was examined combining drifting platforms observations, shipborne hydrographic data, and modelled fields from a global operational physical model.

In 2015, the upper halocline in the Makarov Basin was warmer, fresher, and thicker compared to 2008 and 2017, likely resulting from the particularly westward extension of the Beaufort Gyre that year. From 2012-onwards, cold Atlantic-derived lower halocline waters, previously restricted to the Lomonosov Ridge area, progressed eastward along the East Siberian slope, with a sharp shift from 155 to 170°E above the 1000 m isobath in winter 2011-2012, followed by a progressive eastward motion after winter 2015-2016 and reached the western Chukchi Sea in 2017. In parallel, an active mixing between upwelled Atlantic water and shelf water along the slope, formed dense warm water which also supplied the Makarov Basin lower halocline.

The progressive weakening of the halocline, together with shallower Atlantic Waters, is emblematic of a new Arctic Ocean regime that started in the early 2000s in the Eurasian Basin. Our results suggest that this new Arctic regime now may extend toward the Amerasian Basin.