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Autumn Gales Carried Oxygen into the Baltic

Since a decade, the first relevant salt water intrusion finally occurred

Physical oceanographers and marine chemists at the IOW returned from their latest monitoring cruise (2-14 February 2012) with good news: the autumn gales of November/December 2011 had spilled a large amount of North-Sea water into the Baltic Sea. Along with the salty water, oxygen is transported into the deep regions of the Baltic which otherwise had suffered even longer from deficiencies of this vital substance.

Nevertheless, the enthusiasm of the scientists remains within limits; the imported mass of salt of about one billion tons (1 Gt) falls clearly behind the earlier major Baltic inflow events in the winters of 2003 (with 2.0 Gt) and 1993 (3.4 Gt). These days, the recently injected water is found east of Bornholm Island as a well-oxygenated near-bottom layer of 20 m thickness. “Later this spring, we expect the inflow to reach also the Gotland Basin in the central Baltic Sea but it will hardly carry enough oxygen with it to ventilate the entire water body there for a longer period”, said Rainer Feistel, physical oceanographer at IOW, estimating the anticipated effects.

The lack of substantial inflows after 1983 had resulted in a pronounced decline in salt and oxygen concentrations in the deep Baltic until 1993. As a consequence, fish like cod that needs salty and oxygen-rich water for spawning decreased significantly. Salinity gradually returned to normal by the inflow events of 1993, 1997 and 2003, as well as by frequent novel, noticeably warm small inflows in late summers. In contrast, oxygen recovered only temporarily for 1-2 years after a strong wintery inflow. Accordingly, cod catches increased in the subsequent years. As a result of the current inflow, we may hope for similar effects in the years to come.

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