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Outflow of shelf dense water in Arctic Ocean - Storfjorden in Svalbard.

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In the Arctic Ocean the production of the dense water in coastal polynyas and its cascading along the slope is the principal mechanism of the deep water formation. Here we discuss the observations done in Storfjorden area, where the coastal polynya leads to formation of the brine–enriched shelf waters (BSW). In winter the BSW spill over the sill in Storfjord, reach the shelf break and descend along the continental slope of Svalbard, entraining the ambient waters.

In the Arctic Ocean the plume of dense water passes through the warm Atlantic Water Layer and entrains it. Hence the plume appears in the bottom layer of Greenland sea rather as maximum of temperature than the minimum of the temperature on the shelf.

CTD casts and time series from moorings from 2002, as well as historical data, were analyzed to study plume dynamics and variability. The Killworth's scheme for the descending rate was applied using the IBCAO topography in the area of research. The scheme of constant volumetric entrainment rate was used in order to describe the observed properties of the plume. Numerical experiments with a three-dimensional s-coordinate model have been carried out, and first results are presented.