
Linking recent changes in the water column structure of Norwegian fjords with shelf and deep ocean circulation in the Norwegian Sea - preliminary results from a late Holocene Trondheimsfjord sediment archive.

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Résumé

Sills at the entrance of Norwegian fjords create semi enclosed basin that are linked to the Norwegian Sea and react sensitively to local and regional climate changes. Hence the hydrology of the Trondheimsfjord, central Norway, is affected by the horizontal and vertical structure of the the main surface circulation features over the nearby shelf (Norwegian Atlantic Current and Norwegian Coastal Current), and by freshwater discharges through river inlets into the fjord. Both the shelf surface circulation and precipitations over western Norway are driven by wind patterns (strength and direction) over the eastern Nordic Seas. Benthic stable isotope and elemental (major elements) records obtained from a sediment archive at the fjord entrance hold keys to illustrate past (last 2000 years) modifications in the dynamics of the estuarine circulation over the fjord sill. Our results suggest that changes in the water column structure at the fjord entrance were organized according to the timing of some of the major climatic period of the late Holocene, among which the Medieval Climate Anomaly and Little Ice Age. We show, according to NAO-related wind processes, that past changes in the flow strength of the Norwegian Atlantic Current can be reconstructed from proxy records obtained in shallow settings such as fjord sills in coastal Norway.

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