



## **Early Holocene establishment of the Barents Sea Arctic front**

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A main feature of the Barents Sea oceanography is the Arctic front. The Arctic front marks the transition between the southern Atlantic Water and northern Arctic Water dominated parts of the Barents Sea. Presently, the Barents Sea Arctic front is directed by the location of the Marginal Sea Ice Zone as well as the bathymetry of the Bear Island Trough. During the last glacial maximum, the Barents Sea was covered by the Fennoscandian Ice Sheet. Hence, no water entered the Barents Sea, neither from the south nor from the north. Following the deglaciation of the Barents Sea, the present-day ocean circulation system of the Barents Sea established. The evolution of how the present location of the Barents Sea Arctic front established during the early Holocene are documented by foraminiferal relative assemblage data from six core sites along the western Barents Sea margin and entrance. The relative abundance of front indicator *T. quinqueloba*, in combination with the cold, polar *N. pachyderma* and warm, atlantic *N. incompta*, is used to infer the location of the Arctic front relative to the individual core sites. By combining the information from all six sites, a four-step development is identified. Until 11 ka BP, the Arctic front followed the western margin of the Barents Sea. Hereafter a gradual eastward transition and a stronger influence of Atlantic Water in the Bear Island trough took place. From 7 ka BP the Barents Sea Arctic front has been located close to the present day position.