



Holocene submillennial climate variability; evidence from foraminiferal oxygen isotopes from Voldafjorden, western Norway

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Studies from Western Norway, suggest that long term trends in oxygen isotope records obtained from fjord sediments reflect North Atlantic oceanic sea surface variability. Kristensen et al. (2004) proposed that this is also true for higher frequency variability over the last 800 years. Our study spans the time period of 6000-2700 cal yr BP and has a time resolution between 11-17 years. The core was taken in 1994 at 694 m water depth; well below the seasonal fjordwater layer. The outer sill of the fjord is 300 m which provides a good exchange with open seawater. An age model based on 8 AMS datings (primarily *Uvigerina mediterranea*) has been constructed. The $\delta^{18}\text{O}$ analyses were done on two benthic foraminifer species: *U. mediterranea* and *Cassidulina laevigata*. Our isotope record shows covariance with an offshore oceanic record from the Norwegian continental margin, Ormen Lange. The records show similar long term trends and increasing amplitude from 6000-4000 cal yr BP. In the oxygen isotope record from Voldafjorden we can also detect subcentennial changes. By comparing the isotope record with magnetic susceptibility, lithology, carbon isotopes and biological proxies we suggest that the isotope record primarily reflects temperature. In the interval of 4200-4600 cal yr BP the isotope record has the highest amplitude with a temperature variability of 1.5-2°C. Generally the isotope record has a temperature variability with amplitude of 0.5°C to 1.25°C.

Kristensen, D. K., H. P. Sejrup, H. Hafliðason, I. M. Berstad, and G. Mikalsen (2004), Eight-hundred-year temperature variability from the Norwegian continental margin and the North Atlantic thermohaline circulation, *Paleoceanography*, 19, PA2007