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Central Greenland late Holocene temperatures

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In the upper 60 meters of snow and firn on the Greenland ice sheet strong diffusive processes dampens the annual δ^{18}O cycle [Johnsen et al., 2000].

Seasonally resolved δ^{18}O records from Greenland ice cores can be used to quantify the effectiveness of past diffusive dampening. As the diffusion in the snow and firn layers are significantly influenced by surface air temperatures, it is possible to reconstruct past temperatures over the ice sheet.

Reconstructed temperatures show a general cooling throughout the past four millennia. The final centuries of the climatic optimum some 3500 years ago is found to be approximately 1K warmer than the medieval warm period and 2-3K warmer than the little ice age.

This is in good agreement with temperature reconstructions based on borehole temperature observations at the GRIP drill site [Dahl-Jensen et al., 1998].

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