

Wavelet analysis of oxygen isotope and paleotemperature records from NGRIP Ice Core

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The recent completion of drilling of ice core at the North Greenland (NGRIP) has allowed the studies of climate back to 123000 years before the present. That high resolution oxygen 18 isotopic composition data with 100 yrs sampling averages are investigated by means of wavelet transform and wavelet coherence methods (Torrence and Compo, 1996, and Grinsted et al., 2004). The obtained wavelet spectrum indicates that the stronger variability of the oxygen 18 content are related to cooler, glacial seasons when clear oscillations in data occur with the periods of about 1,5 - 4 ky. Such oscillations were significant at the 95 % confidence level in the time intervals 10-12 ky, 34-36.5 ky and 72-76 ky back in time. The warmer, interglacial times are much more quiet and the climate is more stable then. The implications of the results are discussed. The results are compared with similar studies in which other advanced spectral methods were used.