



On the long-term variability of the paleoclimatic NorthGRID data as seen by wavelet analysis

A. Wysokinski (1), Z. Kobylnski (2)

(1) University of Podlasie, Dept. of Renewable Energies, Siedlce, Poland, e-mail: arekwys@ap.siedlce.pl (2) University of Humanities and Economics, Faculty of Economics and Computer Science, Wlocavek, Poland e-mail: zbigniewkobylnski@yahoo.com

Understanding of modes of climate variability would help to better comprehend the factors which govern the process of climate change. High resolution climate records of the oxygen 18 in the ice core with 50 yr sampling averages obtained by North Greenland Ice Core Project members, which extends now back to 123000 years before the present and available from World Data Center for Paleoclimatology, are studied by means of modern and powerful wavelet technique with established significance levels (Torrence and Compo, 1996). Wavelet method is a suitable tool to derive spectral information of the data both as a function of frequency or wavelength and time. 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, 34-365 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.