Climate of the Past Discussions, 1, S138–S139, 2005
www.climate-of-the-past.net/cpd/1/S138/
European Geosciences Union

Climate of the Past Discussions

Interactive comment on "Orbital forcings of the Earth's climate in wavelet domain" *by* A. V. Glushkov et al.

J. Guiot (Editor)

guiot@cerege.fr

Received and published: 28 November 2005

Referees 1 and 2 point out the fact that references are not always appropriate, not evenly distributed and several key references are missing. They point out also the fact that no explantion is given on the reason to have chosen the Antarctica and the composite record from the tropical pacific and how the latter is done. It is also difficult to understand some parts of the paper because of poor english and lack of explanations.

Their criticisms tend to show also that the paleoclimatic background of the paper is not well established, which is a clear weakness when we know that the paper wants to prove existence of well known climatic cycles. The interpretation of the analyses is superficial and let a lot of questions without responses. The conclusions about cycles detected and orbital parameters are far to be established in the paper, in particular the 100 kyr cycle which is not necessarily related to eccentricity.

From a statistical point of view, referee 2 regrets that it is not well clearly explained why a nondecimated wavelet is statistically adapted. He find the methodology section extremely obscure with rather irrelevant technical details and without treating any aspect of statistical significance. In particular, comparison between two spectra in Fig.3 without confidence intervals is not acceptable.

Referee 3 points the fact that uncertainties in the age-depth models may cause problems when applying non-decimated wavelet analysis. She points out also the fact that often paleorecords (at least the marine ones) are adjusted on the Milankovitch scale which is a problem to discuss the tuned cycles. Only records with considerable amount of measured dates with confidence intervals significantly smaller than cycles studied : severe problems can then occur with the 20kyr cycle. A fair analysis should then involve different age models with discussion of their effect on the spectral analysis. Another problem pointed out is the interpolation of unevenly sampled data in a uniformly spaced grid. Referee 3 proposes alternative analyses to cope with that problem and overall statistical tests to distinguish periodic components from noise. A wavelet analysis with different wavelet scale parameters has been done by the referee on the Vostok deuterium record and she obtained some different results. Even if the point is not to discuss whether analysis is right, it is at least necessary to discuss in greater details the effect of the choice of these scale parameters on the results.

My conclusion from these comments is that (1) the paleoclimatological science behind this paper is not at an acceptable level, and (2) the statistical problems are superficially treated. Additional computations must be done and only a paper completely reworked to take into account all the pointed problems could be considered for publication.

Interactive comment on Climate of the Past Discussions, 1, 193, 2005.