

Interactive comment on “The DO-climate events are noise induced: statistical investigation of the claimed 1470 years cycle” by P. D. Ditlevsen et al.

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Both referees have relevant suggestions for minor revisions and additions in order to improve the clarity of the manuscript. These are all been incorporated in the revised manuscript.

Three issues are raised by Peter Huybers:

1. We have tried to double the age-model uncertainty beyond what has been reported. this does of course lower the value of the Max Rayleigh R. It does, however, not change the conclusions, so that we find it most appropriate to use the uncertainties reported by the scientists performing the dating. The second point is central for our conclusion. It is stated quite clearly in the manuscript. The point is that in a noisy signal one can of course never exclude whatever regularities below the noise level. So the relevant

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statistical test in this case is to observe what strength of periodic component is necessary to be able to distinguish the period from a spurious period generated by the noise. The longer the data series the weaker a period can be detected. However, we only have a limited data series at our disposal. In figure 3e it is seen that the $a=0.1$ light green curve fits data better than the $a=0.2$ darker green curve. BUT the grey curve ("no period" repeated from figure 3a) is more "periodic" than the $a=0.1$ curve. The conclusion is that an $a=0.1$ periodicity cannot be detected. The $a=0.2$ curve still has a substantial overlap with the no-period curve, and the only fully detectable SR model is the $a=0.4$ model. Remember that the red markers does not represent a 5-set sample. With an eventual perfect dating we only have one red mark, which with any significance can be attributed to one or another distribution if they are significantly non-overlapping. So to repeat: What is statistically rejected is the claim that an SR signal has been detected in the ice-core signal (not that there couldn't be some weak non-detectable whatever-signal).

2. First part, see discussion above. $\$dB\$$ is standard notation for Brownian white noise. Comments well taken.

3. As explained in the manuscript, the correspondance between climate (represented in isotope values) and accumulation rates is more consistent in the NGRIP dating than in the GISP2 dating. This and other independent reasons make us believe that the NGRIP dating is the better of the two. It is crucial in this connection that how trustworthy the dating is is not based on the feature (periodicity) which is being investigated. Remember that the relatively strong periodicity observed in the GISP2 series is in the period after 40 kyr BP and after omitting DO9, both decided based on optimizing the periodicity.

Interactive comment on Clim. Past Discuss., 2, 1277, 2006.