Biogeosciences Discussions

Interactive comment on "Identification of the accretion rate for annually resolved archives" *by* F. De Ridder et al.

F. De Ridder et al.

In the name of all authors, I acknowledge the very helpful comments of the referee. I accept all comments.

1. We agree to inform the reader that this method solves a sub-problem in the broader class of signals consisting of noise spectra. However, the signal model can quite easily be replaced by different deterministic models. A problem with arbitrary signal models is that it can be quite hard to find initial values for the time base distortion and model parameters. For periodic signals, good non-parametric models exist to initialize these parameters and start the local optimization. If stochastic models would be used (I think of AR-MA type models), it will become almost impossible to find a good solution for the time base and signal model simultaneously. This means, unfortunately, that this type of approach will most probably not be applicable to signals consisting only of noise spectra.

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2. We have tried to minimize the amount of mathematics and statistics. For that reason we had originally decided not to mention the Monte-Carlo simulation, but we will implement this in the manuscript.

3. We will copy the t(i), d(i), x(i), i=1,...,n notation. We agree that this clarifies the method a lot.

4. The algorithm has been written in matlab. If a reader would like to repeat the computation, I can provide the code.

5. Martinson et al. (1982) have proposed a similar method. Actually, if we freeze the signal model by fixing its parameters, our approach simplifies to the one proposed by Martinson et al. However, freezing these parameters implicates that the time series are already known, while we usually measure the proxy to get this time series. I will refer and discuss briefly this paper and Bruggeman's work (1992 - see other referee report).

Reference

Bruggemann, W., 1992, A minimal cost function method for optimizing the age-depth relation of deep-sea sediment cores, Paleoceanography, v. 7, p. 467-487.

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