

## ***Interactive comment on “Astronomical component estimation (ACE v.1) by time-variant sinusoidal modeling” by Matthias Sinnesael et al.***

### **Anonymous Referee #1**

Received and published: 1 July 2016

#### **\*General comments**

The manuscript describes the model ACE v.1 (Astronomical Component Estimation, version 1), consisting on a linear sum of time-varying sinusoidal components with pre-set frequencies and with amplitudes described by low-order polynomials. The presentation is clear, concise, and scientifically sound. The depicted parametric approach can be relevant not only in cyclostratigraphy but also in the wider context of general time series analysis. Therefore in my opinion the manuscript can be published after some minor revisions.

#### **\*Specific comments**

My main concern in the proposed approach is the lack of any measure of uncertainty associated with the estimation procedure. Error bars for the parameters estimated by

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linear least squares should be easily obtainable, and included in the derived instantaneous amplitude and frequency results.

Fig. 1 (b) - the role of the "frame" in the figure is not clear

Fig. 3 (G) - the width of the line representing 41 kyr is not consistent

\*Technical corrections

Page 5, line 26: principle

Page 10, line 30: maybe rephrase, the sentence is not clear ("Using the estimated instantaneous frequencies age model is derived")

Page 11, line 1: siganl

Page 13, line 29: tracing off

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Interactive comment on Geosci. Model Dev. Discuss., doi:10.5194/gmd-2016-104, 2016.

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