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Comment

Interactive comment on “Search for the 531 day-period wobble signal in the polar motion based on EEMD” by H. Ding and W. B. Shen

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Received and published: 17 June 2015

Referee#3 ##### General comments:
This paper studied the 531 day-period wobble signal in the polar motion by using EEMD. The authors confirmed that EEMD is a helpful demodulation method, and can provide better analysis than tradition Fourier spectra analysis. After using EEMD, the 531 dW signals are found in IMF5 and IMF6, with different amplitudes and phases, and furthermore, the reasons why the 531 dW signal cannot be detected directly by using tradition spectra method after 1978 in the PM series are found. The paper is very well written and structured. The results are very interesting to readers. Therefore, I recommend accepting this paper for publication after the following minor points are addressed. Response: Dear Referee#2, Thank you very much for your support of

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our work and your valuable comments. According to your comments and suggestions, we revised the manuscript and added relevant explanations as you suggested. The responses point-to-point are provided in the sequel.

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Specific comments: 1. The authors may need to provide one figure to show all the IMFs decomposed by using EEMD. In this way, the readers may feel easier to understand the research.

Response: Thanks for you useful suggestions. We added a new Figure 2 as you suggested, and added some relevant expressions, see Lines 171.

2. On page 655, the authors declared that “By carefully examining Table 1 we can find that the amplitudes of the 531 dW in IMF6 clearly have some proportional relation with their corresponding amplitudes of CW, whereas the amplitudes of the 531 dW and CW in IMF5 have no obvious relationship”. But, it seems difficult to find the relationships in IMF6. The authors should make this part clearer.

Response: Thanks for you careful and useful comments. We found that we didn't clearly explain this. The relationship actually is between the amplitude of 531dW in IMF6 and the amplitude of CW in this IMF6's corresponding x- or y- component without using EEMD. The relationship is almost linear (considering the error bar). We modified those in the revised manuscript. See Lines 245-249.

3. In the figures, the authors presented the Phases for different IMFs. In my opinion, the authors may need to mention how to determine the Phases for different IMFs before showing the results.

Response: Thanks for you careful review. The amplitudes and phases of the IMFs are based on Discrete Fourier Transform; we added some explanations in the revised manuscript. See Line 168.

Technical corrections: 4. On page 654, the fifth line in the second paragraph, the

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authors start talking about Figs. 5 and 6. But after carefully reading, it should be Figs. 3 and 4, not Figs. 5 and 6. Response: Thanks for you careful review. We made corrections in the revised version.

5. Also in this paragraph, the authors discussed the results for different time periods. The first time period should be 1962-1977, not 1962-1978. Response: Thanks for you careful review. We made corrections in the whole text. See also the new Figure 3 and Table 3 in the revised version.

Please also note the supplement to this comment:

<http://www.nonlin-processes-geophys-discuss.net/2/C234/2015/npGD-2-C234-2015-supplement.pdf>

Interactive comment on Nonlin. Processes Geophys. Discuss., 2, 647, 2015.

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