Geoscientific

Model Development

Discussions

GMDD

Interactive

comment

Interactive comment on "A Modular Arbitrary-Order Ocean-Atmosphere Model: MAOOAM v1.0" *by* Lesley De Cruz et al.

Anonymous Referee #1

General Comments: A paper titled "Modular Arbitrary-Order Ocean-Atmosphere Model: MAOOAM v1.0 " was proposed by Lesley De Cruz, Jonathan Demaeyer, and Stéphane Vannitsem.âĂÍ

The paper presents a new version of the VDDG model (Vannitsem et al., 2015) that allow considering an arbitrary number of modes into which dynamics may be expanded. The model was named "Modular Arbitrary-Order Ocean-Atmosphere Model" (MAOOAM) and it really seems a promising tool to investigate unresolved issues of the climate modelling. The authors analysed the dependence of the model dynamics on the truncation showing the behavior of the coupled low-frequency variability when the number of modes is increased. They finally proposed an optimal configuration for a tractable and meaningful analysis of the dynamics.

[Printer-friendly version](#)

[Discussion paper](#)

I think the paper is very well written. Clear, concise, incisive and the text include an appropriate number of references. Thus, I would only suggest a number of minor adjustments that, in my opinion, would improve this nice reading.

Specific Comments:

P = page; L = line;

- The section Introduction is clear as well as the presentation of the numerical treatments that is accompanied by a necessary Appendix that I think is never cited in the text; this could help the reader.

- At P1-L24: an acronym has not been declared (please check author guide if reference you provided is enough).

- At P2-L30: could you explain the origin of the values (found in table 1) you have used for interfacial friction and why they have the same value? Thank you.

- At P6-L6-10: You could reformulate the paragraph, which gives fragmented information. I would not use the word "similar"; you could briefly explain why you use Heun method. You could inform the reader about any available parallelized version somewhere else (e.g. conclusions).

- P6-L24-25: I feel it is not necessary to state this point here. - P8-L7: beta in equation 22 was not defined, please verify if it would be necessary in this context.

- P8-L19-21: what you state in this sentence could be better-understood weather you assign the same range to y-axis for all figures (at least for those that are more comparable).

- P8-L22: could you add reference or be more specific on such feature of the LFV of the NAO?

- P8-L29-30: this aspect is very interesting and it is a pity to find it sparse along the text. Why not to write a more comprehensive brief paragraph in Conclusions, stating

potential further experiments that might unveil the reason of such feature?

- P9-L28: You use the word "version" to indicate both, this new MAOOAM v1.0 versus the previous VDDG and each configuration of the model that is defined in Table 2. Am I right? I will use version in the first case and configuration in the second one.

- P9-L15-17: I think you could avoid this sentence here in two ways: by introducing MAOOAM as part of an existing model hierarchy in Introduction or by saying this in Conclusion.

- P10-L1-23: I think you could improve this part of Conclusion in order to make it clearer.

Thank you

Interactive comment on Geosci. Model Dev. Discuss., doi:10.5194/gmd-2016-59, 2016.