

## ***Interactive comment on “The Pacific-Indian Ocean Associated Mode in CMIP5 Models” by Minghao Yang et al.***

**Anonymous Referee #1**

Received and published: 29 July 2019

I have reviewed the manuscript 'The Pacific-Indian Ocean Associated Mode in CMIP5 Models', by M. Yang et al. This manuscript discusses how the so-called Pacific-Indian Ocean Associated Mode is represented in CMIP5 models. But I do have a problem with this paper and even the topic. Based on the considerations below, I suggest to reject this manuscript.

Main points: 1. The only reference to the Pacific-Indian Ocean Associated Mode I can find is related to a few publications by the authors themselves. Essentially, what is meant by this Mode is the well known teleconnection between the Pacific (ENSO) and the Indian Ocean. Unfortunately, this study even fails to take the seasonality of this teleconnection into account. For example, in boreal winter the main mode of variability of the Indian ocean (the basin mode) is forced by ENSO, whereas in summer and

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autumn the response of the Indian Ocean to ENSO projects onto the IOD (which is the focus of this study). However, this seasonality is important but not addressed at all. For example, this basin mode can be seen in Fig. 1, whereas the IOD response may be identified in Fig. 6. To not consider this seasonality makes the study essentially useless.

2. The ad-hoc definition in Eqs. 1,2,3 is not good enough. The common Indo-Pacific mode should be identified by an EOF analysis.

3. There is no in-depth analysis as to why the models do or do not represent the mode. Section 4 is pure speculation. The fact that some models including carbon cycle simulate the mode slightly better does not prove anything, if not supported by a large number of models, or by dedicated experiments.

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Interactive comment on Ocean Sci. Discuss., <https://doi.org/10.5194/os-2019-30>, 2019.

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