

## ***Interactive comment on “Altered sub-seasonal predictability of Community Atmosphere Model 5 (CAM5) in CESM 1.2.1 by the choices of dynamical core” by Ha-Rim Kim et al.***

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In this work, the authors intend to compare the impact on sub-seasonal forecast derived from the use of two different dynamical cores for CESM. This is what they claim; however, the development of the manuscript diverges from this goal. There are several main problems with the current version of this work.

- Lack of clarity in the storyline along the manuscript: The authors mix in the discussion very different issues, without reaching a clear conclusion on the impact of the dynamical core on the different results of predictability. And, as they acknowledge in the text, they are great. These issues involve the dynamical cores, the role of the orography or

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uncertainties in the Arctic region. In the last part of the manuscript, the discussion on the Arctic gets a lot of focus. This is done at the expense of the discussion of the impact on sub-seasonal predictability.

- Lack of interpretation of the results: Mostly, the manuscript presents the results without a profound analysis of the potential reasons for them.
- Too many uncertainties involved and not well explained: The authors acknowledge the need to use different topographic schemes because of the different cores. To overcome this problem, they perform several simulations with diverse topography. However, its impact on the results obtained is barely discussed.
- In the manuscript, only two fields are analysed: surface temperature and the eddy momentum flux. In work on sub-seasonal predictability for the boreal hemisphere, I would expect that the analysis of variables and fields was more complete. As an example, patterns such as the Arctic Oscillation play a fundamental role, and nothing is said in the manuscript about it.

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