

Dear Dr. Wing and Co-authors,

Thank you again for submitting the RCEMIP-II experiment description paper for potential publication in GMD. Since there is still time for community commentary and a dialogue between yourselves and the reviewers (and any community commentators), I want to take a brief moment to weigh in on the reviews already received. To start, I want to recognize and appreciate the amount of thought and effort that clearly went in to devising this experimental protocol, to testing it on SAM and CESM, and to writing this paper.

Both Anonymous Reviewers raise some potentially serious concerns about the mock-Walker simulations proposed: particularly about their ability to clarify the origins of intermodel differences in convective aggregation. In particular, Anonymous Reviewer #2 raises the broader question of why mock-Walker simulations were chosen as the experimental direction for RCEMIP-II. Based on my read of the paper, the justification for the focus on mock-Walker simulations comes from the following train of logic: (1) RCEMIP-I used homogenous SSTs (line 53), (2) RCEMIP-I analyses revealed large sensitivities to “convection, microphysics, turbulence, and dynamical cores” (lines 55-56), and (3) the second phase of RCEMIP specifies idealized, but more realistic SSTs (lines 57-59). An key line in this section (“sensitivities that may have been masked in other intercomparisons by dynamical constraints”, lines 56-57) suggests that the motivation for prescribed, heterogenous SSTs might be to trigger a dynamical circulation in the simulations that constrains the convective aggregation response. That said, I do think this motivation could use more clarification. Also, I want to highlight Anonymous Reviewer #2’s concern that there might be a wide variety in dynamical responses to the imposed SSTs that could make it more difficult to understand the variety of RCE states that models exhibit.

Since the GMD discussion period is still open, I am going to refrain from making a decision or a recommendation at this point. Rather, I would encourage you and your co-authors to take advantage of the open-discussion feature of GMD to interact with the reviewers. For example, it might help to clarify: the specific question(s) that this MIP intends to address, the process for deciding on which question(s) RCEMIP-II should address (e.g., did this stem from one or several RCEMIP group meetings?), and the logic for choosing mock-Walker simulations to address these questions. It might also be useful to invite others in the RCEMIP community to engage in the discussion here, since a MIP is only useful if multiple modeling groups commit to performing experiments for the MIP. You are also welcome to ask clarifying questions; I will encourage the reviewers to respond accordingly. If you would like more time in the discussion phase, please reach out and we can extend the discussion.

Alternatively, you are welcome to treat this as a more traditional peer-review process in which you wait for the GMD discussion to close and then provide a revised paper and a line-by-line response to the reviewer concerns. In that case, I would treat this as a ‘major revision’. That said, I suspect that some dialog may end up helping you and your co-authors come to a consensus with the reviewers about modifications to the RCEMIP-II protocol and/or paper that best answer the questions about model responses to RCE that you intend to address with this next phase of RCEMIP.

With Kind Regards, Travis A. O’Brien Pronouns: he/him

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