Responses to editor comments (responses are in blue)

Thank you for your revisions; you seem to have satisfied most of the reviewers' concerns. There are just a couple more:

Response: Thanks for the suggestions, the manuscript was revised accordingly.

(1) This sentence is unclear: "Furthermore, the better RRM global climate is not warranted by retuning based on our EAMv1 RRM experience." I think it'd be better rewritten as, "Furthermore, based on our EAMv1 RRM experience, retuning does not guarantee improved global climate performance." Does that fit with the intended meaning?

Response: Yes, that is exactly what we meant. We adopted the revised sentence. Thanks.

(2) You discuss a number of advantages of the hybrid time-step strategy. Are there also any disadvantages? (Presumably there are, or else it would have always been used, right?) If so, please add some discussion of these.

Response: That is right. There are disadvantages of the hybrid time-step strategy, which are due to the poor scale-aware deep convection scheme and other cloud parameterizations. Although these disadvantages are not inherent to the RRM and will go away when scale-awared schemes are available, which are active research topics, they impose negative impacts on the RRM climate performance.

We added a more balanced discussion about the hybrid time-step strategy. The last paragraph of Section 2.1 now reads as the following:
“It is worthwhile noting that the hybrid timestep strategy is a practical choice before the scale-aware cloud parameterization becomes available. With the coarsened physics timestep, NARRM cannot take full advantage of resolved processes (e.g., updrafts) at 25 km because the dynamics at 25 km explicitly resolve greater vertical velocities relative to those at 100 km and hence have faster dynamical time-scales, which require the correspondingly shortened physics timestep to match the faster evolving instability. The time-truncation errors of the hybrid timestep method are large at 25 km as quantified by a moist bubble test (Herrington et al., 2019).”