

Interactive comment on “Radiative-Convective Equilibrium Model Intercomparison Project” by Allison A. Wing et al.

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Apologies for the late post....

About a half dozen GFDL scientists, along with two GFDL post-docs, met to discuss the RCEMIP proposal and GFDL's potential participation using the FV3 dynamical core. This note outlines some of the thoughts and responses that came up.

There is a common interest here in developing a doubly-periodic, cloud-resolving RCE configuration of FV3 which uses our current ('AM4') comprehensive physics package and which would be suitable for RCEMIP. Motivations for this are diverse, however. Probably the most common motivation is to use RCE as an idealized testing ground, for use in (say) comparing microphysics schemes, or benchmarking low-resolution

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parameterized-convection simulations against high-resolution explicit convection simulations on the same domain. Note that these activities have little to do with RCEMIP as currently presented, though there is some mention (but little emphasis) in the manuscript on planar GCM configurations.

A second motivation for our development of FV3 RCE would be to assess how idiosyncratic our simulated, unaggregated RCE state is relative to other models. This falls nicely in line with the ‘robustness’ objective of RCEMIP (science objective #3), though (as other reviewers have pointed out) this objective seems to get de-emphasized in the paper. The authors may want to consider increasing their emphasis on it.

Convective self-aggregation seems to be a major focus of RCEMIP, and while there is some interest in aggregation here at GFDL, overall it is probably only a secondary concern. Thus, while interest in a suite of kilometer (or even sub-kilometer) small-domain RCE simulations is strong, interest in aggregated simulations (and especially the computation of secondary, aggregation-focused diagnostics) seems to be weaker.

As advocated for by Isaac and other reviewers, there is also interest here in using simplified (Kessler) microphysics in our RCE setup. Such a scheme already exists in development branches of our code.

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