

Geosci. Model Dev. Discuss., author comment AC2  
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## Reply on RC2

Sergey Kravtsov et al.

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Author comment on "The Moist Quasi-Geostrophic Coupled Model: MQ-GCM 2.0" by  
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We greatly appreciate the positive comments of the reviewer and hope ourselves that this model will be useful. Brief replies to detailed comments are included below. We will also rectify these points in the revised version of the paper to be submitted shortly.

1. We'll change the notation to  $k=1,2,3$  or place a bar on top of the righthand side of  $k=1,3$  to indicate that the equations apply for each value of  $k$ , from 1 to 3.
2. The term is mainly included for numerical stability.
3. We will rephrase this paragraph in the revised version of the paper to clarify. We run 6 simulations, each 130-yr long, and analyze the final 100-yr time series of each. 3 of these simulations use the new version of the dry model, and the other 3 - the model with moist dynamics included. We run the simulations for each model to provide a preliminary assessment of the differences between the different versions of the model. Within the three simulations for either dry or moist version of the model, the first one - that we call "control" - is without SST feedback on AMBL wind speed; this is how the previous version of QGCM has been set up. The other two simulations include this feedback: "fully coupled" version includes full two-way feedback between the ocean and atmosphere, whereas in the "partially coupled" version the ocean only "sees" the Ekman pumping rates it would experience in the absence of the SST-dependent wind stress (but the APBL responds in the same way as in the fully coupled run) - please see eq. (26) and the associated discussion.
4. Section 5 documents key characteristics of the new model versions described in sections 1-4. Section 6 provides an outlook. In the upcoming revised version, we plan to introduce a few introductory sentences to each section to avoid confusion.