

## ***Interactive comment on “High Resolution Model Intercomparison Project (HighResMIP)” by R. J. Haarsma et al.***

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There is an inconsistency in the suggested GHG forcing (concentrations) between the historical and future run. For the historical run it is suggested to use the new data for CMIP6 but for the future run it will be the old RCP8.5 scenario from CMIP5 (Table 1 and 2). This inconsistency causes two problems:

1) It is more difficult to have a model version that can handle both the old and new forcing datasets at the same time. It would be pretty easy if it would be just a textfile that changes when going from CMIP5 to CMIP6 forcing, but this is not the case. For CMIP6 it is recommended that the models use monthly varying zonal distributions or at least separate GHG concentrations in the two hemispheres (see <http://www.climate-energy-college.net/search/content/cmip6>). For CMIP5 on the other hand only global

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annual means have been prescribed. Implementing both options for 1-d and 3-d forcing is not impossible yet certainly nothing positive.

2) How consistent are the CMIP5 and CMIP6 forcings? I can imagine that there will be a change in GHG concentrations if the new CMIP6 data are used until 2014, and the old data afterwards. We cannot tell because the future GHG emissions aren't available at this stage, but I am pretty sure that the creators of the dataset will check that historical and future scenarios of the CMIP6 datasets match, but I doubt that they check if historical from CMIP6 and future from CMIP5 datasets fit well together.

I would suggest that the GHG forcing is kept consistent across the historical and future simulations (as it is to be done in any other MIP). Either we take the CMIP6 GHG forcing for both phases (preferentially), or the old RCP8.5 from CMIP5, but not a blend of the two.

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