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Interactive comment on "Implementation of the Community Earth System Model (CESM1, version 1.2.1) as a new basemodel into version 2.50 of the MESSy framework" *by* A. J. G. Baumgaertner et al.

Anonymous Referee #2

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This paper describes the introduction of the CESM1 code as a new basemodel into the MESSy framework. This approach follows the MESSy design described before (Jöckel et al. 2005) and is relevant to both the CESM1 and MESSy communities in extending their modelling capabilities.

The authors have chosen the Global Electric Circuit (GEC) as well as surface/tropospheric hydroxyl (OH) and stratospheric ozone (O3) concentrations as examples to evaluate the CESM1/MESSy (CMAC) model, and the presented results from one-year simulations demonstrate good agreement of the three CMAC and one EMAC (ECHAM5/MESSy) results.

For readers familiar with EMAC the supplementary documentation provides a good overview of structure, changes, configuration and run process of CMAC, and a more detailed description of the new submodel VERTDIFF.

Specific remarks

The abstract would benefit from being shortened and streamlined slightly, e.g. l. 8-12 between "The SE dynamical core..." and "...future computing architectures." form an interesting exposition of the spectral element core, but seem to be rather explanatory than synoptic and would blend well with the introduction. Also, the CAM acronym, while defined later in the text, deserves to be explained in l. 5 where it is mentioned first.

The introduction mentions four MESSy layers, but names only three of them, and it would be convenient for a reader not familiar with the MESSy concept to maintain the order of BML - BMIL - SMIL - SMCL employed in section 2 and figure 1 below. Also, the terminology used seems to be established enough not to be characterised as "so-called".

Finally, while this reviewer agrees that using the Global Electric Circuit is certainly very elegant in integrating several variables into one, he feels that this approach is hardly unique and should not be named as such.

Typographical errors not listed already by Anonymous Referee #1

p. 6530, l. 18: CAM "performs" a time integration

p. 6533, l. 3: there "are" a number of setups

p. 6533, l. 22: are converted before and "" after the advection, remove "back"

p. 6535, l. 9: emissions are "from" the year 2000

Interactive comment on Geosci. Model Dev. Discuss., 8, 6523, 2015.