

Interactive comment on “The generic MESSy submodel TENDENCY (v1.0) for process-based analyses in Earth System Models” by R. Eichinger and P. Jöckel

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Reply to RC C416, Anonymous

Thank you very much for your valuable comments and questions. Our answers are:

1. Yes, TENDENCY could indeed be used for such studies. The relevance of solar activity can for instance be investigated by comparing the radiation tendencies of
C527

two model simulations, one with and one without variations in solar activity. The level of detail that can be investigated with TENDENCY is only limited by the specific process formulations: if the process submodel calculates various contributions, they can be examined individually with TENDENCY.

We will add a paragraph at the end of Section 5, about possibilities and the limitations of further studies. Thank you for this advice. About the limitations, please also refer to our answer to question 4 from the other referee (C396).

2. Yes, some of the points are repetitive, though very brief. However, the mentioned point is very important for the motivation of the development and hence we think it should be kept.
Other redundancies are included for the sake of readability of the manuscript. Specific points can be discussed about, though.
3. The namelist discussion is not only a pure description of the parameters, but is always in context with explanations of TENDENCY. Moving it to the supplement would hence increase the redundancy of the manuscript. Since this paragraph is not too long, we would like to keep it for easier understandability.
4. To our knowledge, there are no such tools available in other model systems, however, we cannot tell for every model. Commonly users hard-code quick, error-prone solutions, mostly if specific process tendencies are desired.
5. This is a very good point, we forgot to include this. We will add it in Section 2 and in the Summary.