

Interactive comment on “Single precision arithmetic in ECHAM radiation reduces runtime and energy consumption” by Alessandro Cotronei and Thomas Slawig

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We would like to thank the reviewer for the work and his/her comments. We have the following remarks corresponding to the two main points he/she stated in the interactive comments:

We understood the first point the reviewer made in the following way: We did not investigate how to replace those subroutines or code parts that still require double or even quadruple precision (mentioned in Section 5) by alternative code. This is completely correct; it was due to the scope of the third-party-funded project this investigation was conducted in. For the 2nd version of the manuscript, we now included some remarks

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that point this out, and mentioned it as an option for future work. This text was inserted at the beginning of Section 5 and in the conclusions.

GMDD

Interactive comment

Concerning the second point the reviewer made, we understood the following: We only validated the results of the whole model after changing the radiation to single precision. We never tested the two radiation versions (sp and dp) alone or in some kind of idealized configuration (e.g., in single atmospheric column configurations). This is also true, and we also agree that this would be a validation that would be much more exact. The reason or answer is similar to above: Also this was due to the scope of the third-party-funded project this investigation was conducted in, which was very much result-oriented regarding simulation runs for coupled models. We added remarks on this point directly in front of Subsection 6.1.1.

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