

egusphere-2025-3604

The TIPMIP Earth system model experiment protocol: phase 1

Referee Comments & Author Responses – 25 June 2026

Dear Editor - Please find the reviewer comments and author response (in red) below.

Major revision

25 Jun 2026

Topic editor decision: Publish subject to technical corrections

by [Jinkyu Hong](#)

Public justification (visible to the public if the article is accepted and published):

Please check the comments in the Report #2:

Thank you for inviting me to review the paper: “The TIPMIP Earth system model experiment protocol: phase 1”. The authors have clearly worked hard to address the comments (both mine and those of the other two reviewers), and this is always appreciated, of course.

If I may make one final suggestion, it is to strengthen the Summary and Conclusions. I realise the paper is a “protocol” ESM/scenario description paper, but the results are of direct importance to society, not just the ESM-development community. This importance is especially true as Net Zero continues to be discussed at length, and it is notable in how it is mentioned at very high levels politically.

How about a couple of sentences something like: “Our TIPMIP simulations confirm that if emissions drop to zero, then, on average, there is no further global warming (e.g. Fig 3b, dotted and dashed lines). This would correspond to achieving “Net Zero”. However, we also note that there is some spread in warming trends about the zero trend line, depending on the particular ESM. For society to achieve Net Zero will involve substantial changes, some of which may be difficult to achieve. As such, there needs to be reassurance that Net Zero will achieve the intended consequence of no further warming. We suggest our simulations are particularly useful for further detailed investigation to identify the locations and processes that cause inter-ESM differences in warming levels after net emissions have dropped to zero.”

Otherwise, I continue to think that the paper is almost ready for publication.

Author response:

The following lines 781-786 have been added:

An initial analysis of the TIPMIP simulations shows that if CO₂ emissions drop to zero by GWL=2°C, averaged across participating models, global warming will cease. This corresponds to achieving “Net Zero”. If, on the other hand, net-zero emissions are not realized until GWL=4°C, our results suggest a continued, slow global warming for centuries thereafter, emphasizing the need (and benefits) of realizing Net Zero as rapidly as possible. The TIPMIP simulations will be extensively used to understand the mechanisms controlling the climate response after net zero emissions are reached, including the evolution of regional patterns of changes. In addition, the simulations will help in understanding the degree of climate reversibility at regional scales after a global warming overshoot, negative emissions and associated global cooling.

Lines 790-3 have been amended as follows:

The protocol **has now been run** by 12 ESMs, and a common set of diagnostics **is in the process of being published** on the Earth System Grid Federation (ESGF), initially following the CMIP6plus protocol and **subsequently** CMIP7. We envisage further developing the Tier 1 experiment protocol in the coming years as part of CMIP7.

[End of response]

Report #1

Submitted on 14 Jun 2026 Referee #2: Kirsten Zickfeld, kzickfel@sfu.ca	
Anonymous during peer-review:	Yes No
Anonymous in acknowledgements of published article: Yes No	
Checklist for reviewers	
1) Scientific significance Does the manuscript represent a substantial contribution to modelling science within the scope of this journal (substantial new concepts, ideas, or methods)?	Excellent Good Fair Poor
2) Scientific quality Are the scientific approach and applied methods valid? Are the results discussed in an appropriate and balanced way (consideration of related work, including appropriate references)? Do the models, technical advances and/or experiments described have the potential to perform calculations leading to significant scientific results?	Excellent Good Fair Poor
3) Scientific reproducibility To what extent is the modelling science reproducible? Is the description sufficiently complete and precise to allow	Excellent Good Fair Poor

reproduction of the science by fellow scientists (traceability of results)?	
4) Presentation quality Are the scientific results and conclusions presented in a clear, concise, and well structured way (number and quality of figures/tables, appropriate use of English language)? For final publication, the manuscript should be accepted as is accepted subject to technical corrections accepted subject to minor revisions reconsidered after major revisions rejected Were a revised manuscript to be sent for another round of reviews: I would be willing to review the revised manuscript. I would not be willing to review the revised manuscript. Suggestions for revision or reasons for rejection (visible to the public if the article is accepted and published) All my comments have been adequately addressed.	Excellent Good Fair Poor

Report #2

Submitted on 16 Jun 2026 Anonymous referee #1	
Anonymous during peer-review:	Yes No
Anonymous in acknowledgements of published article: Yes No	
Checklist for reviewers	

1) Scientific significance Does the manuscript represent a substantial contribution to modelling science within the scope of this journal (substantial new concepts, ideas, or methods)?	Excellent Good Fair Poor
2) Scientific quality Are the scientific approach and applied methods valid? Are the results discussed in an appropriate and balanced way (consideration of related work, including appropriate references)? Do the models, technical advances and/or experiments described have the potential to perform calculations leading to significant scientific results?	Excellent Good Fair Poor
3) Scientific reproducibility To what extent is the modelling science reproducible? Is the description sufficiently complete and precise to allow reproduction of the science by fellow scientists (traceability of results)?	Excellent Good Fair Poor
4) Presentation quality Are the scientific results and conclusions presented in a clear, concise, and well structured way (number and quality of figures/tables, appropriate use of English language)?	Excellent Good Fair Poor
For final publication, the manuscript should be accepted as is accepted subject to technical corrections accepted subject to minor revisions reconsidered after major revisions rejected	
Were a revised manuscript to be sent for another round of reviews: I would be willing to review the revised manuscript. I would not be willing to review the revised manuscript.	
Suggestions for revision or reasons for rejection (visible to the public if the article is accepted and published) Thank you for inviting me to review the paper: “The TIPMIP Earth system model experiment protocol: phase 1”. The authors have clearly worked hard to address the comments (both	

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