

Dear Dalei,

Thank you for the clarification and additional information that we have repeated below.

*The 2nd reviewer stated that*

*“I note that the authors have largely rejected my suggestions to improve the manuscript, making only some light editing in response to comments. Personally I am unpersuaded by their response to my first substantive comment - that this paper is premature given underlying papers providing details on component modules are unpublished, making it difficult for reviewers (or readers if published) to evaluate the overall model. This is an editorial call though so I defer to editorial judgement on this and journal policy. I do note that underlying code is available in the zenodo repository, so I guess all code, equations, calibration data etc are available for inspection for an interested reader.”*

*Please carefully consider all the comments from the 2nd reviewer in the first round review and clearly state why the suggestions/comments are rejected.*

In the first round of review, Reviewer #1 wrote the following, which appears to be the source of the comment highlighted to us in red:

*Firstly, I note that evaluating the model as presented is challenging because only high-level information on model components is presented. Details of functional forms, parameters, and calibration for individual model components are referenced to other papers that are, in most case, still unpublished. Given these components may well change as part of that publication process, and because, until publication, these important details are unavailable for review, it seems it might be appropriate to wait on publication of the full model until those processes are finalized. I believe this is an editorial decision.*

We had written in reply to Reviewer #1 in our response letter the following...

*We respectfully disagree with the referee on this point. Publishing more detailed papers that outline the entirety of the equations for this entirely new model requires a paper like this. This paper discusses the philosophy and broad approach of FRIDA, as well as its validation, and calibration procedures – all of which those authors need a citation for. As a research team we decided the best way to break this chicken-and-egg problem was to produce a broad overview paper, demonstrating the approach under which FRIDA was developed so that authors publishing on specific portions of FRIDA can have an organizing framework they could write within while not having to repeat large sections of this paper in each of those papers. To produce an entire detailed documentation of FRIDA in a single paper would necessitate a paper of prohibitive length. Although, we have made direct reference to the full source code of the model in the first sentence of Section 2 where we introduce FRIDA.*

*“FRIDA is a global model that focuses on closing the system-wide feedback loops (processes) that cut across the climate and human systems (see Schoenberg et al., (2025) for model source code).”*

We understand how important open access and reproducibility is. To that end we have developed and released the FRIDA model as open source under the MIT license since its inception. The model is hosted here: <https://github.com/metno/WorldTransFRIDA> on GitHub, and the specific version 2.1 has been hosted on Zenodo here: <https://zenodo.org/records/15310860>. We have also made available all simulation data here: <https://zenodo.org/records/15396799> including all source code necessary to generate that data here: <https://github.com/BenjaminBlanz/WorldTransFrida-Uncertainty>. We remain firm in our belief that it would require a single paper of prohibitive length and complexity to publish a full listing of all model equations and their documentation. We have the ability to produce an Appendix that contains a table listing every equation, and its units. This table contains over 3000 equations and is hundreds of pages long. Likewise, we view the entirety of Section 3 as documentation for how the model works. If there are specific places where you feel we need to add more detail, or specifics to make the work more broadly understood we would be happy to oblige. In addition, we have changed the title of the paper to make clear that this paper is an overview of the model as was suggested.

An overview of FRIDA v2.1: A feedback-based, fully coupled, global integrated assessment model of climate and humans

All of the key formulations, parameters, and their documentation will be published in this collection that this paper is part of (see for example this published paper: <https://doi.org/10.5194/gmd-18-5997-2025>). We still feel strongly that this paper needs to come first for the reasons we stated in our original review response.

Thank you.