

Rebuttal

“HESS Opinions: Reflecting and acting on the social aspects of modeling”

We would like to thank the reviewers for their encouraging response, and for their help with settling the final details. Below we shortly respond to the minor issues raised. Besides, we have included one more suggestion in Section 7, as we recently came across a toolbox to stimulate critical social sciences literacy. This is added as a last point to the section.

Reviewer 1

The revision has resulted in a considerable improvement of the manuscript. I do not have additional comments apart from a number of suggestions to further improve Figure 1.

The left side refers to ‘Model results’. This is somewhat unbalanced as it is a model ‘output’ while the ‘Modeller’ on the right side is a model ‘input’. My suggestion is to replace ‘Model results’ by ‘Stakeholders’ (specific persons from the Society that are linked to a particular model), influencing model building just like the ‘Modeller’ on the right side influences model building (specific persons from the Modelling community linked to a particular model).

Also, consider adding an arrow in the orange part from ‘Model’ to ‘Modeling community’ (just like the smaller arrow ‘Models have societal and ethical consequences’ but from left to right) referring to the feedback of models to the modeling community. This feedback involves model outputs (from which the community improves/changes understanding), model concepts (advancement of understanding of processes within the community) as well as model software (the modelling community tends to stick to tools (and thus concepts) that have been used by others). This line of reasoning is also described in Section 3 (Arg. 1).

The figure could be connected more explicitly to the main text. The blue circles refer to Arg. 1 (Section 3), the orange ones to Arg. 2 (Section 3), while the smaller pointer at the bottom (‘Models have societal...’) refers to Arg. 3. The argument numbers could be given in the figure or in the caption while in Section 3 please consider referring to the Figure.

We have incorporated the majority of the suggestions. We agree that ‘model output’ was not in balance with ‘modeler’, and have reformulated it, as suggested by the reviewer, to ‘stakeholders’. We tested including an arrow from ‘model’ back to ‘modeling community’ – as we agree with the reasoning of the reviewer that this feedback loop exists - but realized that this required quite some extra explanation in the text. Therefore, we have decided to leave it out in the final figure. We have included a more elaborate caption, referring to the arguments, and have included more references to the figure in the main text.

Reviewer 2

I congratulate the authors on their revised manuscript. These are great improvements, and I found the story line very convincing and well-argued. Their points are now well supported with examples and literature, and I believe this comment will be an important contribution for the modelling community. I hope it will be read extensively and thank the authors for their thorough revisions.

I only noticed a few minor typos that could be changed before publication.

L145ff – the “already present in and around hydrological modeling” is very similar to the next sentences “already embedded in hydrological modeling can”. This feels a bit doubled. Maybe the sentence can be combined.

L256 – the positionality is in section 2 not 3

L364 – missing space after ter Horst (2025)

We would like to thank the reviewer for these suggestions, which have all been incorporated in the text of the manuscript.

On behalf of all co-authors,

Lieke Melsen