

Geosci. Model Dev. Discuss., referee comment RC2
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Comment on gmd-2021-192

Anonymous Referee #2

Referee comment on "Globally consistent assessment of economic impacts of wildfires in CLIMADA v2.2" by Samuel Lüthi et al., Geosci. Model Dev. Discuss.,
<https://doi.org/10.5194/gmd-2021-192-RC2>, 2021

This paper introduces a new model which can be used to estimate economic impacts due to wildfire damage, using an existing framework for natural hazard impacts, CLIMADA. The assessment of risk in CLIMADA is based on the three standard components of hazard, exposure and vulnerability, and the authors here extend this framework to fires by using active fire data from FIRMS, population and night-light data to inform economic exposure, and impact data from EM-DAT to calibrate the model. The model seems to perform well relative to other impacts, and also relative to the uncertainty in the available economic damage data estimates.

My main comment is that the assessment of the model performing well is based on being within one and two orders of magnitude compared with official estimates of economic loss, which seems like a wide margin. However, the authors do point out that this is in line with impact models for other natural hazards, including appropriate citations, and that a similar level of uncertainty is attributed to the reported figures themselves, which is a satisfactory explanation.

The other comment I would like to make is that in the second case study, the model estimate is very far from the reported estimate, which is reflective of a number of events that sit well outside of the one and even two orders of magnitude shown in figure 1. Again this is discussed within the text, but I think it is important for any potential users to note that there can be large differences between the modelled result and actual value of losses, for a number of reasons, which it would be useful to make clear in any guidance notes attached to the CLIMADA site (perhaps pointing to this paper).

I only have a few very minor suggestions to make to improve the text:

Lines 48 – 52: It would be clearer to specify all section numbers 2 to 5 for each part of the

manuscript within this summary, rather than picking out a few

Line 100: 'such assumptions are commonly used' – I would suggest adding some references here

Line 180: The 4km resolution model was chosen for the case studies. I can see the logic of this, but I think it would be useful to give a short explanation here for why 4km was chosen when the results show that the 1km model performs better

Overall I believe model presented in this paper is an important, novel and relevant advance in the field of economic impact assessment of fires. I found the paper to be well structured and written, presenting a sound scientific methodology and clear results. The discussion of uncertainty is excellent. The methods and assumptions are valid and clear, and the results and relevant literature cited within the paper support this. The availability and open access of the model is also excellent. I would recommend publication.