



EGUsphere, referee comment RC2
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Comment on egusphere-2022-198

Anonymous Referee #2

Referee comment on "DSCIM-Coastal v1.1: An Open-Source Modeling Platform for Global Impacts of Sea Level Rise" by Nicholas Depsky et al., EGU Sphere,
<https://doi.org/10.5194/egusphere-2022-198-RC2>, 2022

The manuscript by Depsky et al. developed a global, Python-based coastal impact modelling framework. The provision of an open-source modelling platform/coastal impact framework is a significant advancement for the research community. The work undertaken is methodological sound and addresses a topic of scientific significance. Further, the paper is overall well written. However, I believe that certain aspects need to be clarified before the paper can be published. (Note: I am not an expert on the economic estimations/calculations and can't evaluate those parts in depth)

First, I was trying to get the model running on my PC, but did not manage to install the model. I believe that a user description would be helpful (e.g. how to install the model; how to run the model e.g. the command one should use to start the model, how can updated data be incorporated/run by the model and so on). As the main advancement of the model is the transparent and open-source provision of the data and code, the authors should try to make it as easy as possible for other scientists to get the model running. Due to the difficulties in setting up the model – I am currently not able to evaluate the code and data provided within the manuscript. Further, I was wondering if the intention of the platform is also to regularly update data if new e.g. elevation data become available (Line 36/37 and Line 101/102). If so - how are the authors planning to update the data?

Second, I wonder if it is always necessary to point out how Diaz (2016) calculates certain parameters. It may be less confusing for readers to focus mainly on the new model version. I think it is very important to mention what is new in the paper, but I find it a bit confusing and overwhelming in parts.

Third, it is not clear from the manuscript how coastal flooding is calculated. I guess the authors used a bathtub method, but this should be clarified in the manuscript.

Minor comments:

It would be helpful to have a graph that gives an overview of the different modules within the model and input data.

Line 72: What is meant by high-resolution here?

Line 86: The DIVA modelling framework is published under the INSERT LICENSE. The code and data are available in the (protected) DIVA repository:
<https://gitlab.com/daniel.lincke.globalclimateforum.org/diva>

Line 138: Subheading title: 'The Data-driven Spatial Climate Impact Model Coastal Impacts Architecture' Is there a little mistake? It reads a bit strange to me.

Line 153: A table of the datasets that are included in Sliders and the references would be helpful for readers

Line 155: Would it make sense to also include the new IPCC SLR scenarios (AR6)?

Line 188: How are people spatially relocated to an unaffected area within the model?

Line 255: What are the baseline costs?

Line 265: 'VSL-valued' – What does VSL stand for?

Line 267: Small typo: double 'of'

Line 275: Some more detail on how the height of adaptation measures is influenced/calculated would be interesting here.

Line 327: DIVA assumes a homogenous population per elevation increment and segment

Section '2.5 Physical Model Inputs in SLIDERS': It might be useful to have this section first to understand the data model/structure better.

Line 350ff: Why did you use 50km (and not e.g. 20km)? What is the reasoning behind it? If one thinks about adaptation units a homogenous segmentation might not be the best solution as parameters as population density, coastal geomorphology changes quite rapidly. For a global application, one must make simplifications, but I wonder how the authors come up with a 50km segmentation.

Section Elevation: Might be good to include several DEMs (in the long run) as the model results are very sensitive to variations in input data (e.g. see Hinkel et al. 2021)

Section 2.74: the FLOPROS database by Scussolini et al., 2016 is a first collection of current protection levels. Might be good to mention here.

Line 545-545: This part is not clear to me. Could you please support the argument with references and explain your correction/improvement more precisely?

Figure 6, lowest panel: What is shown by the grey color (local sea level)?

References:

Hinkel, J., Feyen, L., Hemer, M., Le Cozannet, G., Lincke, D., Marcos, M., et al. (2021). Uncertainty and bias in global to regional scale assessments of current and future coastal flood risk. *Earth's Future*, 9, e2020EF001882. <https://doi.org/10.1029/2020EF001882>

Scussolini, P., Aerts, J. C. J. H., Jongman, B., Bouwer, L. M., Winsemius, H. C., de Moel, H., & Ward, P. J. (2016). FLOPROS: An evolving global database of flood protection standards. *Natural Hazards and Earth System Sciences*, 16, 1049–1061. <https://doi.org/10.5194/nhess-16-1049-2016>