

Review Hieronymous. The sea level simulator

This paper describes a simple statistical tool that combines trends in mean sea level and extremes for planning purposes.

The paper is reasonably easy to access but requires here and there a bit more context to ensure proper use of the simulator. Below some suggestions for change which are all easy to accommodate in my view.

Line 73. A more conceptual introduction to the simulator is needed. You can not expect the reader to be familiar with Hieronymous 2021 and Hieronymous 2023.

Line 75. From the blue sky you start to discuss the parallelization aspects of the simulator. It is good to mention them somewhere in the paper, but not right at the start. In the end, being used to using large models, I don't think the parallelization is critical for the users to decide whether they use the tool or not. So please move backward in the paper or to an appendix.

Line 86 define what a planning period is.

Line 95 Explain in more detail how mean sea level is combined with extreme information this can be done in various ways. A paragraph of discussion is needed. In the literature a lot of studies on extreme sea level have long discussion whether a GEV or Pareto distribution should be used and whether joined variability issues should be treated and which peak threshold are to be used and what declustering of the data. This is relevant to discuss as for many applications the GEV is maybe not the best strategy, so make the reader aware or better, but demanding expand the tool in this direction.

Line 98 please rephrase "is goes"

Line 115. If I understand correctly the GEV itself is not changing over time due to the climate change itself. Probably the only thing you can do, but likely to be incorrect as well. Most climate variables change in the mean and in the pdf. So you at least have to create awareness among your readers of this point.

Line 141 you have to mention that SSP scenarios don't have a probability in their definition, but you implicitly use a probability that they are equally likely if I understand correctly, this is not how they are defined

Line 164 rephrase ones?

Line 195 That seems a trivial discussion. It is always correct in the extremes. At  $t=0$  the trend is zero so extremes rule. If  $t$  goes to infinity SLR goes to extreme large values at least for high scenarios and the trend will rule. Explain this better in forehand and than show your examples where results are a mixture and both components might be important.

Figure 5 and others add units of the vertical scale (1/yr)?