



## ***Interactive comment on “Parallel computing efficiency of SWAN” by Christo Rautenbach et al.***

### **Anonymous Referee #2**

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General Comments: The manuscript is nicely written with extensive reference to research articles and the authors clearly identifies 4 research questions which will be covered in the paper.

Scientific Comments: 1. However reading through the manuscript, missing the discussion over the scalability as shown in Figure 1c which would help about answering to the research question 4) What is the scalability of a rectangular grid, SWAN set-up?

2. Further as mentioned on Line 169 quote "The scalability is presented via three performance metrics: the efficiency, speed-up ratio and the timesaving ratio" would like that authors touch upon all the scalability for all these metrics and not only speed-up ratio?

3. Further, in line 66, it is mentioned quote “Here we build on the case study of Gense-

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berger & Donners using results produced in the present study for southern Africa..” but to me it seems that the present study discussion is more and more comparing the results of current study to study of Genseberger & Donners - to me as mentioned earlier are of different domain. If this is not correct, please explain in Methodology and Background accordingly.

4. To make this research article self standing – please include the case study domain of southern Africa figure here (instead of referring to the - model configuration can be found in (Rautenbach, et al., 2020 (a)) and (Rautenbach, et al., 2020 (b))). Also figure of case study of Genseberger & Donners can be included here to make understanding of the results and discussion clear to readers. Later , unless as pointed out in point 3 above.

5. Please include a table/figure in the Conclusion part to make conclusion more obvious and readable to the users. Refer “A hybrid SWAN version for fast and efficient practical wave modelling, Genseberger & Donners, (2020) paper section 4.2 to see what I mean by including a table to compare between OpenMP / MPI different metrics and/or with current study with the study of Genseberger & Donners.

6. Can authors make the connection between Zafari, Larsson, & Tillenius, (2019) study of shallow water with the current study of SWAN Model clear. There is reference made to "gcc" - but current study "Methodology and Background" does not include details of this current study being run on gcc except what is mentioned in lines 124-128. The reason for this comment is that seems that authors are hinting to gcc but no further references or discussion on this in later sections. Maybe I am missing something here?

Technical Corrections:

Line 55: SLOSH : Sea, Lake, and Overland Surges from Hurricanes. (though SLOSH can be NOAA official storm surge forecasting model - but this is not the official full name) Line 58 : Mexican golf : I think here the Gulf of Mexico is being referred. Line 103: ration should be changed to ratio. Line 126: gcc should be changed to gcc. Line

156 : 16 nodes (16 × 25 threads) should be changed to 16 nodes (16 × 24 threads)  
Line 157 : 64 nodes (16 × 24 threads) should be changed to 64 nodes (64 × 24 threads)

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Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2020-314>, 2020.

**GMDD**

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