

Author Comments to Referee #2 (Major Revision)

Major Revision on “Tidal flood area mapping fronts the climate change scenarios: case study in a tropical estuary of Brazilian semiarid” by Araújo et al.

Dear Referee #2 (Major Revision),

We do appreciate your constructive, thoughtful, careful, and helpful comments and suggestions. After careful discussions and analyses, we finished the preparation of responses to you. If there are any new comments or suggestions, please let us know.

In this document, we respond to the comments received point by point.

We hope to have finished this stage, and we are hopeful with the acceptance of this publication.

Best Regards,
Paulo Victor N Araújo and coauthors

Response to Comments:

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Referee #2:(1) To my question if the reduction level is the lowest astronomical (LAT) tide used as common reference datum for navigation maps the authors answered No, but they explanation they provide ‘RL is level that corresponds to the 30 average of low tides of syzygy’, suggest that the RL is a chart datum estimation similar to LAR or to the mean lower low water (MLLW) used by the US Navy. The importance here is to provide to the reader an idea of the reduction level is.

Authors’ reply: OK, perfect! We accepted and add in the manuscript, in line 87 (page 3)... “The RL is a chart datum estimation similar to LAR or to the mean lower low water (MLLW) used by the US Navy”.

Referee #2: (2) To my question if the IBGE is a climate change scenario they replied Yes but the text provided in the document ‘The latter, result of reports on data from IBGE tidal network’ suggest that IBGE projection is not a climate change scenario but the measured sea level change in the region. Both can be used but the IBGE data is a completely different estimation for sea level rise for the year 2100. It is not a better estimator it is a simple linear projection of the past measurement.

Authors’ reply: Correct, we agree! The IBGE is a simple linear projection based on data variation obtained by tidal gauge. Modified in manuscript, in line 207 (page 7) for “The IBGE scenario is result from a simple linear projection based on data variation obtained by tidal gauge, while IPCC scenarios are results from modelling robust of sea level projection under face climate change”.

Referee #2: (3) The line 207: 'In all rate of sea level rise in scenarios used, are from robust modelling of sea level projection under face climate change ' is grammatically incorrect and should be changed.

Authors' reply: We accepted and modified in manuscript for "The IBGE scenario is result from a simple linear projection based on data variation obtained by tidal gauge, while IPCC scenarios are results from modelling robust of sea level projection under face climate change".

Referee #2: (4) As for the use of a return period statistics to the Astronomical tide I am still not convinced. The only uncertainty about the astronomical tide in the future is not the maximum level but the timing of the astronomical tide related with the meteorological tide. Also, as it can be observed in Figure 5B the fitting applied (linear) is not a good explanation for the data that, as expected, present a level of the maximum tidal levels after the 5 years return period value. A combined extreme value analysis of the total level (astronomical+meteorological) has a purpose.

Authors' reply: In fact, the referee's logical reasoning is well-founded and extremely acceptable. However, the principle of working with the tidal return period is to show that the tides with a 20-year return period (which are much smaller than the maximum heights and are more likely to occur) result in a representative flood hazard zone in study area. That is, to highlight the flood hazard that are commonly occurring in the region. So, we decided to stick with the initial strategy.

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