

Interactive comment on “Projected sea level rise and changes in extreme storm surge and wave events during the 21st century in the region of Singapore” by H. Cannaby et al.

Anonymous Referee #2

Received and published: 15 January 2016

General comments:

The paper “Projected sea level rise and changes in extreme storm surge and wave events during the 21st century in the region of Singapore” by H. Cannaby, M. D. Palmer, T. Howard, L. Bricheno, D. Calvert, J. Krijnen, R. Wood, J. Tinker, C. Bunney, J. Harle, A. Saulter, C. O’Neill, C. Bellingham, and J. Lowe examines the local sea level rise projected during the 21st century and what changes might occur to the frequency and strength of extreme wave events and storm surges in the vicinity of Singapore. The analysis is well constructed, and thought was given to the numerous uncertainties and the effects of other forcings and potential causes of relative sea level change to the

C1467

Singaporean coastline. While I think it could be useful to cite a general, overall range of sea level possible from all of the potential causes of extreme relative sea level events in this region (only one quantitative number is suggested in the paper in the discussion), it is perhaps beyond the scope of the paper. Suggesting a possible number might give political entities some information that they can consider when planning future infrastructure and protective measures. Nevertheless, the paper is a fine attempt at quantifying future changes in this specific local region, and should be published after a few, mostly technical, corrections have been made.

Specific comments:

p. 2958, line 14: “during the northwest monsoon” - you meant the northeast monsoon, per p. 2957, line 27?

p. 2961, lines 21-22: when is the central estimate based on the median, and when isn’t it?

p. 2962, lines 4-5: specifically Greenland and Antarctic ice dynamics, which should be stated at least here once for clarity

p. 2964, lines 1-2: Is there any way that you can add to this sentence so that it is a bit more accessible (i.e., so that the data consequences of this choice are more clear) to those who are not familiar with this particular regional model?

p. 2968, lines 7-8: Was any testing done to see if changes to the shape within a given simulation’s GEV distribution were small?

p. 2969, lines 25-26: Does this not also suggest that the interannual variability for extreme water levels has not changed very much over the projected 130 years? This should also be explicitly mentioned.

p. 2974, lines 7-11: This is the estimation for a possible upper limit on the changes in local sea level which I mentioned in the general comments. It is a citation from another source, but I wonder if it might be good to include a high estimate of possible

C1468

(maybe at the 90% level) sea level change plus storm or wave events, in order to put a number on what could be expected by 2100 in order to plan protection measures and infrastructure. Making such an estimate is not something which I believe you must do for the paper to be publishable; it's merely a suggestion.

----- Reference errors:

p. 2957, lines 9-10: Christensen et al., 2013 should be Church et al. 2013 line 11: Allen et al. 2010 and Penduff et al. 2010 are not in the References line 24: Maren, 2012 not in the References

p. 2963, line 19: Madec, 2008 not in the References

p. 2967, line 16: Huerta and Bruno, 2007 (not just Huerta) lines 16-17: Kotz and Nadarajah, 2000 line 17: Méndez et al., 2007,2008

Some correction suggestions:

p. 2964, line 4: "For the case of the 4 GCM-forced simulations," (add a comma) lines 24-25: "In order to allow calculation of skew surge, an..." (add a comma after 'surge')

p. 2965, line 25: "Three-hourly wind data were..." (not 'was')

p. 2969, line 7: This is the next new figure referenced after Fig. 3 on p. 2960. The next numbered Fig. should be Fig. 4 (which is referenced in the following major section). Renummer and reorder the figures; this way you won't get yelled at later by the editing department.

p. 2969, line 17: 18-yr (or 18-year) line 18: I would reword "like-for-like" as "fair". Also, insert a comma after "comparison". line 20: 130-yr

p. 2970, line 18: "state of the art" I'm not fond of quotes or the use of the term 'so-called' when qualifying something. It can sound like you don't believe it is true, or that

C1469

you are quoting an unnamed person. Also, this adjective is itself sometimes criticized. I would suggest removing the entire thing, as it isn't really needed to make the point.

p. 2971, line 25: comma after 'timescale' and 'pathway'

p. 2972, line 17: comma after '77%' line 28: comma after 'simulations' p. 2975, line 26: change comma after 'activity' to a semicolon

Interactive comment on Ocean Sci. Discuss., 12, 2955, 2015.

C1470