

Interactive comment on “The impact of sea-level rise on tidal characteristics around Australasia” by Alexander Harker et al.

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Additional comments on ‘The impact of sea-level rise on tidal characteristics around Australasia’ by Harker et al. (OSD)

I read this paper with interest and have a few comments additional to those of the two formal reviewers.

A first is the word Australasia in the title. Australasia means Australia, New Zealand and the west Pacific islands and (maybe) Papua New Guinea. But there is no discussion of New Zealand tides in the text, so at first I thought Australasia should be replaced by Australia. But then many of the figures even cut off the southern part of Australia. Why was that? So I think the title might be revisited.

C1

page 1, line 5 and 8 - there are mentions in the abstract and text of places that can be unfamiliar and so need qualifying e.g. on line 5 this should be Arafura Sea (between Australia and Papua New Guinea). On line 8 Papua should be Papua New Guinea I guess (Papua is a province of Indonesia which I think is not is what is meant). Some of these places are later pointed out in Figure 1 but the reader will not know them at this point.

22 - I don't understand why Woodworth (2017) is given here. It is not relevant to the sentence.

page 2, line 1 - the main peaks in extremes in most parts of the ocean, where there is a semidiurnal tide, are every 4.4 years or so from the perigean cycles in the moon's orbit. You get peaks in extremes every 18.6 years where there are diurnal tides. You could reference Haigh (JGR, 2011) for example or Pugh and Woodworth (2014) or Merrifield et al. (JGR, 2013).

10 - again I don't see why the Mawdsley reference is relevant to this sentence.

13-15 - you could reference the AR5 somewhere here.

23 - phenomena → phenomenon

24 - again, who knows where the Sahul shelf is?

26 - dissipation on a par with the Yellow Sea ..

page 5, eqs. 6 and 7 - these need reformatting

23 'Additional runs'. I think a few extra words are needed to clarify that these additional runs were not used.

page 6, Figure 2 - ok for amplitude. Is phase lag agreement worth showing?

para at line 11 - is it worth mentioning how long-period tides come into this?

20 - reword 'A comparison of the amplitudes of the constituents calculated ...'

C2

page 7, line 18 - I can see from the figure that the signs are often in agreement, I can't see the 'reproduces much of the in situ variability'. Needs explaining better.

page 8, line 3 - surely standard deviations should be standard errors?

... annual tidal estimates of M2. Stations with insignificant measured phase ...

section 3 - this seems to me to need a couple of introduction sentences to say that you will here in this section be testing SLR of 1,3,7 m for the modelling.

page 9, 13 - I don't see how the reader can relate to 10m change which is not shown, so add (not shown) to make it clear.

page 10, in Fig 5 caption and the y-annotation 'phase' should be 'phase lag' and it is Greenwich phase lag presumably.

line 2 - I think this should read:

.. movement of a virtual amphidromic point (an amphidrome over land) (see Fig. 5) .. to become real (i.e. amphidrome over the ocean) ...

page 11, line 1 of Figure 6 caption - .. model domain in the control run.

You should make clear which way the difference works.

Figure 7 - does the 200m refer to the control run bathymetry?

second sentence caption - I don't think is necessary.

line 5 - why south coast chopped off?

page 12, 1 and 2 - have JBG and VDG acronyms been defined?

13 - Eighty-Mile Beach

page 13, Figure 9 - you have FL-cntl and FL-NFL so it might help to have a third column of maps for NFL-cntl so the reader did not have to do mental arithmetic.

C3

line 13 - docile is an odd word. Just say K1 has a small amplitude (< ?? cm)

page 14, 4 - Figure 9c must be 9d

23 - reduce

page 15, 11 - in the amplitude

14-16 - I don't understand this sentence but anyway 'changes to changes' needs re-wording.

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C4