

***Interactive comment on “Temporal energy partitions of Florida extreme sea level events as a function of Atlantic multidecadal oscillation” by J. Park et al.***

**Anonymous Referee #1**

Received and published: 6 April 2010

This paper looks at how much energy in sea level heights is partitioned into different frequency bands during extreme events. It also looks at event duration and relative event energy (in effect an integral of the duration of high levels).

The justifications for the paper are stated to be that extreme sea level events are understudied compared to mean sea level variations, and that different methods are needed to study extremes. (I agree with both of these remarks.) In this particular paper, they look at the partitioning differences between warm and cold AWP/AMO phases and use data from 2 US tide gauge stations to attempt to spot any differences.

The results are a bit inconclusive, suggesting a relatively greater cascade of energy into

C112

more 'dynamic' timescales during storms under AMO warm conditions at one station, but not so at the other. So, my first impression was, where was the research finding in this work justifying a paper? However, I realise that AMO warm/cold phase differences are a matter of great interest in the meteorological and ocean communities so even a null result might be of interest for a publication. I remain a bit puzzled though why this OS paper was planned when its results (null or otherwise) could have been included in their own very recent Park et al Journal of Waterways paper.

However, given the discussion paper model that Ocean Science uses, this discussion paper is now accessible on the web and I have no reason for suspecting that the work is not valid technically, null results or not. But personally I would have combined their two papers.

I have some detailed remarks, many minor:

Most references in the text are given with first name only e.g. Bindoff on line 6 of the Introduction should be Bindoff et al. Many other examples.

Non-Americans may know where Key West is but I suspect not Pensacola. A map might help. (There is one in Park et al 2010). Why were these two stations chosen anyway, and not one on the Atlantic coast of Florida?

page 502, line 7 - 'nearly static to dynamic timescales' is meteorological jargon. Suggest you say something normal in brackets like 'into shorter timescales'

502, 8 - sentence 'Extreme events ...'. I am not sure this is necessarily true. Should this read perhaps 'might be consistent'?

503, 4 - event duration. A recent paper that does that is Haigh et al (Continental Shelf Research)

line 14 - I don't like words like 'remarkably'

line 26 - 'such a link'. You mean the link discussed by Park et al?

C113

504,4 - AWP and storm activity

line 12 - this needs a reference to Park et al 2010 again

line 25 - what do you mean by 'standard'? In particular does the standard set include annual and semiannual terms which could be decimetres?

next line - 'natural' is also odd. The surges being discussed here are also natural. You mean 'astronomical' or similar.

page 505, 3 - so why the present paper?

line 5 - the AMO index

page 507 - I know the timescales for W1 etc. are in Table 2 but it will help if the text says increasing timescale W1-7

508, line 19 - centred at the peak

next line - the comma should be the end of the sentence

pages 510-511 etc. I was struck by how often the word 'suggest' was used and 'consistent with'. All rather hand-waving. It occurred to me that what is needed is for the same analysis to be made on surge model output.

Table 1 - explain the 'Water Level' column somewhere.

I am familiar with general aspects of wavelets but cannot claim to be an expert, so please explain why in Table 2 the 'smooth' V7 has a shorter timescale than the 'detail' W7?

Figure 1 caption - what is the '60' top-left?

What does 'event time' mean? It is referred to in the text but is it time from the start of something?

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C114