

Interactive comment on “A century of sea level data and the UK’s 2013/14 storm surges: an assessment of extremes and clustering using the Newlyn tide gauge record” by M. P. Wadey et al.

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Dear Reviewer,

Thank you for your comments. Below we address each in turn.

"Specific questions: 1) The clustering presented is said to be significant, and while some example are given (e.g. P2005 L2) I agree with a previous comment in this discussion (see the post by J. Williams) regarding whether the statistical significance could be more strongly indicated to show that we would not expect to see this by chance."

C939

We agree with your comment and point you to our response to J Williams. We do think this is an important area of further work, which requires a much more detailed and robust statistical approach, beyond the simple method we applied here. This is something we are currently working on, and hope to publish in a follow on paper over the coming year. We have added several sentences to the paper to better highlight the limitations of our study in this regard.

"2) Figure 5 is useful for inferring visually the mechanisms that might be behind the results presented (as stated P 2008 L 24), and attempts have been made to describe anomalies (e.g. P2009 L17). Is it possible to go further and provide an analysis that clearly demonstrates the strength / significance of the relationship between the NAO / tidal modulations and the clustering observed for instance?"

We agree, and following your advice have strengthened this component in the paper by expanding the paragraphs in the discussion section and by adding correlation coefficients, with 95% confidence levels in Table 5. The low correlation values suggest, as we explained, that across the entire century, the NAO is not clearly linked to the number of extreme events per season. At least in the manner that we have categorised them, which, as we reiterate, is largely aimed at timescales and event magnitudes of interest to flood management and coastal impacts. Also, because, by definition, there is relative few extreme events, the sample to obtain a meaningful correlation is small. We have also added a few sentences in Section 5, making reference to a paper by Betts et al (2004). This demonstrates that severe surge events in this region are more caused by individual storm characteristics rather than the NAO being a definitive factor.

"Technical comments: P2001 L16 - 'Directly' P2008 L25 - 'why a certain season...' P2009 L17- 'and the exceptional number of...'"

Thanks for spotting these. We have corrected them.

All the best,

C940

Matthew, Ivan and Jenny

Interactive comment on Ocean Sci. Discuss., 11, 1995, 2014.

C941