

Interactive comment on “Variations in return value estimate of ocean surface waves – a study based on measured buoy data” by T. Muhammed Naseef and V. Sanil Kumar

Anonymous Referee #2

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This paper provides an extreme value analysis of the significant wave height (Hs) in a buoy of India spanning for 8 years (2008-2016). It includes a detail comparison on the estimation of return levels using different extreme distributions (GEV vs GPD) and maxima selection (block maxima and peak over threshold), a set of statistical test to analyze threshold selection and model fit, and a sensitivity analysis considering different spanning periods. The analysis is performed to the total Hs, Wind Sea and swell, and, in the temporary scale they consider the annual and seasonal wave climate. The paper carries out a detailed but conventional analysis of extreme wave climate comparing different methods and tools. The main drawback is that the analysis is performed to an 8-year record of data, which is a very short period of time to analyze extreme behavior.

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I miss a discussion about that in the manuscript and comments/references/analysis of interannual and decadal variability which can influence wave climate in such short periods of time. I find very cheeky and uncertain to obtain 100-year return levels extrapolating from an 8-year record. Besides nothing is told about the influence of water depth (9 m) that can also condition the extreme wave climate. For me it is not clear if the aim of the paper is to show a statistical analysis with a set of test, tools and comparisons or if it tries to provide useful information and knowledge about the extreme wave climate in India. In the first case, although a complete EVA is posed, I do not consider it in the cutting edge. In the second case (which I consider the really interesting thing for the NHES topics), I consider the use of an 8-year record buoy not appropriate for providing conclusions about extreme wave climate. I encourage the authors to carry out a similar analysis over a longer record buoy, satellite or reanalysis data. Extra explanations about how Wind Sea and swell are considered, the influence of water depth, influence of wave direction in wind sea and swell, or interannual variability in the area should be considered. I recommend that the manuscript only be considered for publication after major revision.

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