

## ***Interactive comment on “Observation on dominance of swells over wind-seas in the coastal waters of Gulf of Mannar, India” by M. M. Amrutha and V. Sanil Kumar***

### **Anonymous Referee #2**

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### **General comments (overall quality of the discussion paper)**

The paper describes the seasonal variation of different wave conditions (swell-dominated and wind-dominated) within the Gulf of Mannar. At times it is difficult to determine where previous cited papers by the same authors end and the current study begins. Given that much of the discussion focuses on the locally-generated wind waves and the swell waves, I find it strange that no detail is provided on the separation method. The authors simply state (P3, L31) that ‘[wind and swell waves] are separated to identify different wave components at the study location.’ This should be addressed. The study is motivated based on some of the adverse effects of swell waves, but the importance

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of the findings in this context should also be discussed.

### Specific comments (individual scientific questions/issues)

- P2, L6: Much of the discussion in this section uses the classification of Arena and Guedes Soares (2009). The authors may wish to move the citation of this paper to an earlier point in the section for clarity. Also, although their paper contains a discussion on nonlinear wave groups, any nonlinear effects seem to be neglected in the current study.
- P2, L9: The Gowthaman et al. (2013) paper provides observations relating to the seasonal dominance of swell and wind waves in the northern GoM. Given the relevance to the current study, I would have expected some further discussion/analysis on their findings. This is also important to clarify the specific advance to knowledge provided by the current study.
- P2, L10: Following on from the previous point, the 'lack of measurements' mentioned in this section seems to contradict the start of the next section (which uses measurements in this location). Which areas are well known, and which datasets have previously been published?
- P2, L17: A (Lagrangian) wave buoy will move with the waves, unlike an (Eulerian) wave staff. Some discussion of the effects of the buoy motion on the measured quantities would be useful here (see Longuet-Higgins, 1986 'Eulerian and Lagrangian aspects of surface waves' in JFM 173).
- P3, L4: The specific contribution by this paper is even less clear when it appears that all of their 'data and methods' material (a model comparison with measured data) has already been published in Amrutha et al. (2017).
- P4, L24: The comments about differences in wind and wave direction should be linked to the discussion of the relative water depth (and whether the waves were

in the 'deep' regime) in the following paragraph. The differences in these effects on wind and swell waves (if any) should also be discussed in detail.

### Technical corrections, suggestions and comments

A general comment is that the paper is made slightly more difficult to read by tense inconsistencies.

- P1, L7: This may be a style issue, but it would be best to begin the first sentence of the abstract with the active, rather than the passive, voice. This sentence could be better worded as 'Wind seas typically dominate over swell seas in coastal gulfs.'
- P1, L8: 'is used' should be 'are used' (this refers to the plural 'Waves').
- P1, L17: 'Gulf of Mannar' should be 'The Gulf of Mannar'.
- P1, L20: I'm not sure that 'implications' is the correct word here. Normally you would state what the implications are. It may be more appropriate to use 'effects' or 'impacts' in this sentence.
- P1, L21: The 'similar change' is ambiguous. Presumably, you are referring to the directionality of the waves.
- P1, L24: The values should be moved to after the respective 'monsoons' referred to.
- P1, L26: The word 'represent' may not be the best way to state this. Some suggestions are 'comprise' or 'consist of'.
- P1, L27: This sentence implies that wind waves dominate in all of these areas (coastal regions, bays and gulfs). Is this what the authors wish to say?

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- P2, L4: 'are with multiple peaks' should be re-worded as 'contain multiple peaks'.
- P2, L26: 'for frequency' should be 'for frequencies'.
- P2, L15: Again, this sentence could begin with the active voice: 'This study uses measurements of waves. . .'
- P3, L12: 'occur' should be 'occurred'.
- It would be useful if the radii of the wave roses presented in figure 4 were consistent for all subplots.
- P4, L14: 'Fifty three percentage' is not a common way to express percentages. This should simply be written as '53
- In the pdf of the manuscript discussed in this review, the first three paragraphs within Section 3.2 (Wave Spectra) were repeated. The repeated content should be removed.

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