

Interactive comment on “Influence of winds on temporally varying short and long period gravity waves in the near shore regions of Eastern Arabian Sea” by J. Glejin et al.

Anonymous Referee #2

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This manuscript considers seasonal and annual variations in waves “controlled by the local wind system such as sea breeze and land breeze” along with remotely-generated long-period waves. This is based on observed waves at one site along the west coast of India, and NCEP winds.

Most of the concepts in this manuscript derive from earlier work and the results here provide examples rather than new knowledge (apart from the wave regime at the specific location). Therefore I think that it will not much interest readers who are not concerned with this particular coastal sector. Unfortunately also the “Results and Discussion” does not really discuss the findings in relation to previous work. This further limits

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clarity as to what is really new here. Ocean Science is a European Journal aimed at a world-wide audience and there needs to be enough of interest for that audience.

There is also much that is unclear or apparently self-contradictory within the manuscript, as indicated in the following detailed comments.

Abstract, page 3022 line 15. I do not think “wave induced wind regime” should appear in the Abstract; it is misleading without explanation (page 3024 line 2) for which there is no space. This is a technical term which does NOT mean that the waves are causing the wind.

Abstract, page 3022 line 15, also page 3028 line 19. Better “reflects” than “indicates”.

Introduction Page 3023 line 20. As the Shamal winds blow from the NW then better to omit “blowing”. The meteorological convention (which seems to be followed previously in this paragraph) is that (for example) “westerly” means “from the west”. But including “blowing” confuses this.

Page 3024, lines 2-3. Reference should be made to the definition of inverse wave age later in section 2.

Section 2, page 3024, line 18. Are the latitude and longitude really known to within 30 mm?

Section 3 Page 3027 lines 3-5. “Maximum mean wave period is found between 06:00–09:00UTC (Fig. 3) due to the strong land breeze over the region.” This seems misleading to me. Actually this time of maximum wave period seems to be when the wind sea in Figure 2 is a minimum, which is not what the reader would expect from “due to the strong land breeze”. I suppose that minimum wind sea means that the longer period of the swell has more effect on the mean wave period. Perhaps the authors mean this but they don’t make it clear.

Page 3027 lines 5-6. Two things are needed to “co-occur”. One is the maximum sea breeze. What is the other (minimum wave period? decrease of wave period?)

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Page 3027 lines 7-8. The time lag seems to be longer pre-monsoon than post-monsoon.

Page 3027 lines 20-21. What is meant by “both are dependent on each other.”?

Page 3027 lines 23-25. I do not understand this calculation. If it is during the monsoon season (like the previous paragraph) there is no detectable variation in wave period in figure 3 to make a calculation. Perhaps the authors need to say what individual sequences of half-hourly wave records are they looking at to take a maximum and minimum wave period.

Section 3.2 Page 3028 lines 6-7. “the dominance of swells and wind seas (Fig. 6b)”
The relevance of this is unclear, and wind seas are not dominant during the monsoon.

Page 3028 line 18. Both pre-monsoon seasons?

Page 3028 line 27. “distribution of 0.15 (Fig. 6)” does not make sense. What has value 0.15 during the typical pre and post monsoon season? Are 2010 and 2011 not typical? In what way?

Pages 3028 line 25 to 3029 line 1. You seem to be saying that, compared with a typical pre and post monsoon season without cyclones (is that typical?) 2010 and 2011 have more occurrences of inverse wave age in $(-0.2, 0)$ and greater than 0.15. Is that what you mean? Then presumably fewer occurrences in $(0, 0.15)$.

Page 3029 lines 5-6. “That indicates the dominance of swells in the Arabian Sea propagating against the seasonal winds, not a locally generated wind-sea.” This contradicts figure 2 for pre and post monsoon.

Section 3.3.1, page 3030, line 10. In fact the total wave period is always less than 8 s (fig.3).

Section 3.3.2, page 3030, lines 23-24. “shifts the peak period (T_p) toward the intermediate range of 8–13 s”. Only “towards”, see comment on section 3.3.1.

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Section 3.3.3, page 3031, lines 6-7. “The long period waves are a minimum during the southwest monsoon season due to the dominance of SW swells in the energy spectrum”. “due to” implies that somehow the SW swells are suppressing the long-period waves. Please explain.

Section 3.4 Page 3031, line 13. The spectral energy and direction do not “influence” the nearshore wave climate, they represent it. Page 3031 line 23. “15–17 May” presumably refers to an “event” in 2010 or 2011. Which?

Conclusions Page 3034, line 3. It should be said that this is one event in 2011. Line 5, better “. . these waves . .”

Table 2 would be better with maximum wave height alongside significant wave height. However, very little use is made of maximum wave height and it might be omitted.

Figure 1 caption. “metres” (spelling)

Figure 2. This would be better if the wave-height axis started at zero.

Figure 3. This would be better if the wave-period axis started at zero. The wave periods during the monsoon in figure 3 are not consistent with the spectra in figure 9.

Figure 4. Why is the wind speed always shown as less than 4 m/s when the text (page 3023 line 21) states “Average wind speed during the SW monsoon is 9.7m/s”.

Figures 5, 7. The direction arrows seem to be short where the wind speed is small. This makes the direction difficult to see and is unnecessary since the shading shows wind speed. Since white arrows are used it would be better if the wind speed shading is not too pale anywhere (by choice of scale). The writing is squashed left-right and so hard to read.

Figure 9. The spectral energy plots need to be viewed with much magnification to see the colours as on the scale.

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