

Interactive comment on “Technical Note: Medium-term morphodynamics in an unprotected sandy beach of the Adriatic Sea” by M. Postacchini et al.

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We thank the Reviewer for her/his helpful comments, which will improve the clarity of our manuscript. An item-by-item reply follows (in bold) with the order given in the Reviewer’s revision.

RC: This preliminary analysis of medium-term dynamics of an unprotected barred beach is of interest because it focuses on the natural evolution of a system without human intervention. The paper is concise making it a pleasant length to read with relevant figures. There could be some additional information added in a couple of places. P1713 L24, is h the water depth at every cross-shore point representing the profile.

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AC: Yes, h is the water depth.

RC: P1714 L10-13, is the estimate of A obtained for every individual profile or a set of profiles representing the region of interest?

AC: The estimate of A has been performed for each analyzed profile, e.g. all 66 profiles shown in Fig. 1a.

RC: It’s hard to see the bars in Fig. 1d, I assume these are the 2D/3D features between -2 and -1m depth in Fig. 1a.

AC: Bars in Fig. 1d are highlighted by the foam of the breaking waves, in the nearshore area. We will underline this point in the revised paper.

RC: Introducing the site before the experimental data would seem a more logical order of sections.

AC: We will exchange them in the final paper.

RC: P1717, the relation between A and $D50$ is found. A statement about this agreement should be added to the conclusion.

AC: We agree with the Reviewer, thus some comments will be added in the conclusion section.

RC: When discussing the wave frequency (P1717) it would improve clarity to refer to the empty area as the blue outline and the full area of the orange area in the figures.

AC: We will do it.

RC: On P1718 L20, how can you be sure that it is a seaward migration rather than the formation of new bars offshore?

AC: We thank the Reviewer for her/his comment, that suggests a clearer explanation of our findings. The bar motion occurring between 2011 and 2012 is just an interpretation of the available data, and the certainty of such a seaward migra-

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tion can be only guaranteed, e.g., by a 24-hours video-monitoring system (now installed at the Senigallia harbor). However, as shown in fig. 2c, the location of the longest 2012 bar is between middle and outer 2011 bars, while small bars are found offshore. This, together with the analysis of cross-shore profiles (an example is shown in fig. 1c) and seabed variations (fig. 2c), suggests a general flattening of the beach, a smoothing of the inner bar and a reduction of inner and outer bars (see purple line vs green line in fig. 1c), rather than a new bar generation. Then, every year (2006 to 2013) the middle bar is longer and more stable than the inner and outer ones, hence such a bar was less affected by the erosion/flattening process between 2011-2012. Further, the bar displacement (~40m/year) is also in agreement with previous medium-term observations (e.g., Aagard et al. 2004).

RC: When describing the bar features refer to the bed elevation rather than the bed depth.

AC: We agree with the Reviewer that the bed elevation is a fundamental parameter. However, it has already been introduced as the bar height (H_{bar}), and used in fig. 3. Further, we prefer to keep the water depth over the bar crest (h_{cr}), since wave breaking and bar dynamics are strictly related to such a term.

RC: The Rotonda needs to be introduced in the description of the site as it impacts the beach evolution.

AC: We will do it.

RC: P1722, is the change in fetch or the elevated water level allowing waves to break closer to the coast the more important process during a surge?

AC: It is not the only important process, but it is the only important for the parameterization proposed for the bar dynamics, together with the wave height (e.g., Houser and Greenwood, 2005). A sentence will be added to better explain this

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point.

RC: Radar images could also be listed in the final sentence of the conclusions.

AC: We will do it.

RC: I would recommend a through proof read, checking the grammar and clarity of sentences paying attention to: P1712 L25/26, P1713 L2 L3 L5 L13, P1714 L4 10 L12, P1715 L1/2 L22, P1717 L2/3 L14 and P1718 L16. Below are a few suggestions for alternative text.

P1712, L1 – to beach protection

P1712, L6 – the region

P1712, L21/22 – the submerged beach. This is probably due to the presence of both the harbor

P1714, L15 – usually form on

P1715, L20 – The surveys cover the

P1718, L7 – seabed evolution

P1721 – between consecutive surveys

P1722 L4 – are associated with large surges

P1722 L19 – thus disturbing

Fig. 1 caption – What is the white area, the Rotonda

Fig. 2 caption – Sea bed evolution. Also describe what the dotted lines are (bar crests).

AC: We will check carefully the text as suggested by the Reviewer.

Interactive comment on Ocean Sci. Discuss., 12, 1711, 2015.

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