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Interactive comment on "Contribution of storms to shoreline changes in mesotidal dissipative beaches. Case study in the Gulf of Cadiz (SW Spain)" *by* M. Puig et al.

M. Puig et al.

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Dear Referee #1,

The manuscript has been revised according to your suggestions and comments. The following is an item-by-item answer to each comment, which has been pasted in to provide a direct response to each of them.

Page 3, Lines 11-14: It is difficult to see why the northern part of section 1 is sheltered from storm waves whereas the southern part is exposed. Maybe you can provide some field photographs for this and the remaining sections?

The low exposure of the northern part of section 1 (Behavioural Pattern 1) to storm

waves is due to its different coastline orientation (WNW-ESE) with respect to the central and southern parts of the section. This is clearly seen in Figure 1; however, lines 12-13 in Page 3 have been modified, and the following sentence has been added to clarify the content:

The northern part, which presents WNW-ESE orientation (Figure 1), is relatively protected from storm waves as they approach mainly from western-southwestern directions (Figure 2) refracting around Rota headland. We consider that including field photographs would not be convenient, as there are a total of nine behavioural patterns with different extents, so it would be necessary to include a considerable amount of photos. The manuscript already has three figures to present the studied sections: Figure 1 is the location map of the study area and the analysed sites and Figures 6 and 7 are aerial photographs of each section. We strongly believe that these three figures are enough to show the characteristics of the study area.

Page 4, Lines 22-23: What are the measurement and hindcast durations for the wave buoy and HIPOCAS respectively?

The following sentence has been added to show the duration of wave record:

The duration of the data considered in the hindcast database of the HIPOCAS project is between 1958 and 2001, and that of the coastal wave buoy of Cadiz is between 2002 and 2010.

Page 6, Line 20: A recent publication, which deals with rates of shoreline change and how they are influenced by the geomorphic timescales under consideration, comes from Mann, Bayliss-Smith and Westphal (2016, Journal of Coastal Research). Though they focus on reef islands, the underlying issue is surely the same (see also on Page 14, Lines 4-7).

This is an interesting publication that has been added into the revised manuscript to indicate the importance of the temporal perspective in the shoreline change accuracy.

Page 6, Line 28: Such weighting factors always carry artificial boundaries during the calculation with them as it excludes the detection of a morphodynamics feedback related to earlier storms. However, I acknowledge that this difficulty cannot easily be overcome and I think the present study defines their weighing factors in a comprehensive manner.

We completely agree with the referee, and as acknowledged, the inclusion of feedback for earlier storms is out of the scope of this work.

Table 2: Please provide the shoreline uncertainties for each data set and how these have been calculated.

Done

Technical comments:

Page 2, Line 10: Explain NOA and EA. Done

Missing spaces: Page 2, Lines 14, 26 Page 8, Line 4 Page 11, Lines 1, 2, 3. Done

We strongly believe that the above changes have greatly improved the original manuscript, and we hope that the revised manuscript will be suitable for publication in Natural Hazards and Earth System Sciences. Thank you very much.

Yours sincerely,

Maria Puig

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