

## ***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.***

**Anonymous Referee #1**

Received and published: 14 July 2016

The paper of Puig et al. analysis in how far storms of different duration and magnitude contribute to medium-term morphological changes along the Gulf of Cadiz in SW Spain. Therefore, the authors combine wave data with remote sensing observations and compare the relationships of the individual components and parameters on a statistical basis. The methods appear sound. They conclude that in highly exposed sub regions within their study area, the observed shoreline changes can be explained by storms whereas in more sheltered areas, this relationship is less obvious and likely masked by anthropogenic activities.

The motivation behind the analysis is comprehensive and important regarding the large uncertainty with respect to future storm occurrences and strengths. The paper is in

C1

most parts well written and I have only a few comments and suggestions for improvements respectively.

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?

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

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).

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.

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

Technical comments:

Page 2, Line 10: Explain NOA and EA.

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