

Interactive comment on “Erosive phenomena in the Kaulon archaeological site: origins and remedies” by Giuseppe Barbaro et al.

Anonymous Referee #1

Received and published: 7 March 2017

The manuscript entitled: “Erosive phenomena in the Kaulon archaeological site: origins and remedies” submitted by Barbaro et al. to Natural Hazards and Earth System Sciences provides an analysis of the shoreline changes occurring in the coast of Monasterace Marina (Calabria, Italy), proposes possible causes of erosion and describes the temporary and final solutions adopted to protect the Kaulon archaeological site that has been affected by beach and dune erosions during the winter 2013/2014 storms.

This manuscript is an extension of the article with a similar name already published [Barbaro, G., Foti, G., & Sicilia, C. L. (2016). Erosive Phenomena in the Proximity of Kaulon Archaeological Park: Origins and Remedies. *Procedia-Social and Behavioral Sciences*, 223, 714-719] that is not cited by the authors.

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In my opinion this manuscript has to be rejected as it does not improve the results already published and it does not meet the scientific requirements to be published in Natural Hazards and Earth System Sciences.

The manuscript presented here is much longer than the already published article but the largest part of the extension does not help in understanding the problem and is out of scope of the Natural Hazards and Earth System Sciences journal. The main weaknesses are given as follows:

1. The causes of erosion still remain unclear (see for instance the penultimate paragraph of the conclusion) and further work is needed. A possible reason for the lack of correlation between the historical evolution of the shoreline and the wave climate (or the computed sediment transport balance that is one of the new part of the manuscript) is the 5 year wide time window where the climate data have been averaged (for the period 1986-2001 and 2001-2006). This limitation has been pointed out in the already published article, not in the present manuscript. Another limitation is that there is no shoreline data for the period 2001-2006. The erosion observed between 2001 and 2008 could have occurred during the period 2006-2008. Furthermore, the strong erosion events occurring in winter 2013-2014, following which interventions have been necessities, are not included in the analysis.

2. Another new part of the manuscript is the description of the final solution (Section 8). However, similarly to the temporary solution (Section 7), only a brief description is given and the design is not rigorously justified. A strong weakness is that the design of these solutions is not related to the analysis previously performed to identify the causes of erosion (Section 5 and 6).

3. Some parts have been unnecessarily lengthened. The introduction is considerably lengthened but is mostly dedicated to generalities that are not related to the objectives of the manuscript and to introduce the coastal management strategies adopted in Calabria region that is out of scope of Natural Hazards and Earth System Sciences. A

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large part of the site description (Section 3) is not necessary.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., doi:10.5194/nhess-2016-399, 2017.

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