

Interactive comment on “Characterisation of extreme events waves in marine ecosystems: the case of Mediterranean Sea” by Valeria Di Biagio et al.

Anonymous Referee #2

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The manuscript “Characterisation of extreme events waves in marine ecosystems: the case of Mediterranean Sea” describes a new method to characterize extreme events bases upon simulated chlorophyll concentrations for the period 1994-2012. Using a cluster analysis applied to a set of indices that define the occurrence of extreme events waves, different ecosystem regimes were defined. In my opinion, the manuscript is very interesting and deserves publication in Biogeosciences after minor to moderate revisions. In detail: 1) The language should be checked by a native English speaking person. There are several typos that should be removed. For instance in line 270 there is a reference to Fig. 9 that does not exist. 2) The method uses surfaces chlorophyll concentrations averaged over the uppermost 10 m and does not consider vertical pro-

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files. Please discuss why subsurface blooms do not play a role. 3) It is discussed but I am still worried about the stability of the identified regimes using different thresholds. You showed that the clustering of the mean values of the indices do not change much. However, are there changes in the spatial distribution of the regimes shown by Figure 6? 4) In Section 4 and the Appendix, ecosystem dynamics characterizing some of the regimes are discussed. However, some clusters lack any dynamical explanation and might be rather artificial. It would increase the scientific value of the manuscript if you could discuss these clusters more in detail as you have done it for NWM in the Appendix. 5) In the abstract you mentioned that “There is a growing interest about events that can affect ecosystem functions and services in a changing climate”. However, is the method suitable for following the temporal shifts in the regimes without any discontinuities? I suggest that you split the period in half and that you use the cluster analysis for both periods. By this, the impact of trends in some of the indices on the spatial distribution of the regimes might be investigated and compared with observed changes.

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