

{rokbox title=|Scheme of the functioning of the analogues method. (b) Example of the JM1 cost function :: Image:

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Gabriel Jordà and Javier Soto-Navarro,2023. [An analogues-based forecasting system for Mediterranean marine-litter concentration.](#) O

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Abstract:In this work, we explore the performance of a statistical forecasting system for marine-litter concentration in the Mediterranean Sea. In particular, we assess the potential skills of a system based on the analogues method. The system uses a historical database of marine-litter concentration simulated by a high-resolution realistic model and is trained to identify meteorological situations in the past that are similar to the forecasted ones. Then, the corresponding marine-litter concentrations of the past analogue days are used to construct the marine-litter concentration forecast. Due to the scarcity of observations, the forecasting system has been validated against a synthetic reality (i.e., the outputs from a marine-litter-modeling system). Different approaches have been tested to refine the system, and the results show that using integral definitions for the similarity function, based on the history of the meteorological situation, improves the system performance. We also find that the system accuracy depends on the domain of application being better for larger regions. Also, the method performs well in capturing the spatial patterns but performs worse in capturing the temporal variability, especially the extreme values. Despite the inherent limitations of using a synthetic reality to validate the system, the results are promising, and the approach has potential to become a suitable cost-effective forecasting method for marine-litter concentration.

Keywords: