

Comment on “Dissolved oxygen as indicator of multiple drivers of the marine ecosystem: the Southern Adriatic Sea case study”

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General Comments

The manuscript investigates the interannual variability of dissolved oxygen (DO) over the last 23 years driven by multiple mechanisms (atmospheric, circulatory, and biological processes) in the southern Adriatic Sea. The aim is to demonstrate the importance of DO as indicator of current changes and environmental status.

The study is based on modelled and observational data from the Copernicus Marine Service: the biogeochemical reanalysis for the Mediterranean Sea covering the 1999-2021 period and BGC-Argo float measurements for the 2014-2020 period. DO estimated by BGC-Argo floats are used to bias-correct the modelled DO along the entire reanalysis time series using a quantile mapping technique.

The bias-corrected reanalysis signal is then decomposed using EOF analysis. Then a correlation analysis between the first four EOF temporal modes of variability and key drivers allows evaluating the relative importance of the different drivers to explain DO variability. Finally, year 2021 is compared to the 1999-2020 climatology to identify the main contributor(s) in 2021.

The authors have responded seriously and thoroughly to the first phase of the review. The unclear points have been reworked and clarified. They answered all questions carefully. The study is now complete and detailed.

This is a very interesting study which has multiple interests in the context of actual changes. And DO is a good candidate to detect and monitor changes.