

Review of the manuscript entitled:

*“Disentangling the effects of eutrophication and natural variability on macrobenthic communities across French coastal lagoons”*

This manuscript attempts to use macrobenthic invertebrates and environmental variables to disentangle natural and anthropogenic drivers of coastal lagoons across 29 systems in the Mediterranean region of France. General results include that lagoon hydro-morphology (connection to sea and lagoon surface which alter salinity and temperature), as well as habitat diversity (macrophyte morphotypes) being the primary drivers of macrofauna distribution. Anthropogenic stressors such as eutrophication resulting in hypoxia are superimposed on this natural instability altering species richness and diversity. Using these findings, the sensitivity of M-AMBI was assessed and it was found to be more sensitive to eutrophication than natural variability. Subsequent suggestions were made to make M-AMBI more applicable to coastal lagoons.

While the results are interesting, there are some concerns regarding inconsistencies and gaps in the data collated. They include but are not limited to:

- Line 191-194: Each estuary was only sampled once, with three replicates per station. Some larger estuaries had southern and northern stations. In addition, sampling occurred 3 years apart for some systems e.g. 2006 and 2009. This raises some concerns as this is sufficient time for significant changes to have occurred in macrobenthic communities as a result of other influences such as natural climatic variability.
- Line 209-214: It is uncertain whether the estimation of the Organic Matter Content for some sites is correct as these areas are at times between 285m and 707m from the actual sampling sites in a habitat known for its environmental variability.
- Line 214-217: Sediment particle size has been omitted from the analysis due to changing laboratory protocols. This is a concern as grain size is widely agreed to be a primary driver of the macrobenthos.

That being noted, this study is intended to be a widescale analysis to identify overarching trends. In these cases, it is extremely difficult to account for all discrepancies, and the authors have clearly described their study and been transparent with the data limitations, as such, I feel that the manuscript has some very interesting findings and should be published as is.