

## Review

The paper titled "Micronekton Indicators Evolution Based on Biophysically Defined Provinces" by Alberne et al. examines the evolution of micronekton indicators across biophysically defined provinces over a 25-year period, from 1998 to 2023.

This study offers a dynamic, long-term analysis of micronekton provinces, providing quantitative insights into surface area and latitude trends while presenting direct evidence of climate-driven shifts in marine ecosystems. It builds upon previous research by offering a more precise, time-resolved, and geographically validated understanding of micronekton variability.

By focusing on two key indicators—surface area trends and average latitude shifts—this study highlights metrics that could serve as future Ocean Monitoring Indicators. Its straightforward and impactful contribution makes it highly relevant for the OSR.

My primary concern is that this paper heavily relies on the work by Alberne et al. (2024), which is still under review and not yet publicly available. Additionally, no reference to this paper is provided, leaving significant gaps in the current contribution. Without the publication of Alberne et al. (2024), too many critical questions remain unanswered.

Therefore, unless Alberne et al. (2024, under review) is officially published, I must recommend rejecting this submission. However, given the relatively long publication process for OSR9, this contribution could be accepted on the condition that the referenced paper is published before the final release of OSR9.

Furthermore, I suggest revisions, and the authors should provide a copy of Alberne et al. (2024, under review) alongside their revisions to allow for a thorough evaluation of the current submission.

## Major comments

1) It remains completely unclear how the 27 provinces are obtained. I suggest that authors will provide more information about the determination of 27 provinces in Materials and Methods section. Otherwise, the paper cannot be read as stand alone paper.

2) The manuscript will benefit if more in-depth discussion in comparison to the works by (Reygondeau et al., 2012), (Sutton et al., 2017), (Costello et al., 2017), (Elizondo et al., 2021), (Proud et al., 2017), (Ariza et al., 2022) is provided.

## Detailed comments

L172-174 The following statement is too general “Seasonal variability can be observed with the latitudinal shifts of the horizontal boundaries, as well as regional seasonal phenomena or isolated phenomena like ENSO events.” Without any hints on what to look from the video, it requires detailed analysis of the video itself by readers.

Section 3.4 More appropriate title is Sensitivity analysis instead of Uncertainty. Text of the section should be adjusted accordingly.