

We thank Reviewer #2 again for the careful review and constructive comments, which helped improve the clarity of the manuscript.

I thank the author for their replies and the modifications done on the manuscript. I find this version clearer. Especially the methodological complementarity between the EOF and MEOF approaches which is better framed in the method. I think this contribution should be accepted after considering the following technical comments:

Author's reply: *Thanks.*

The authors did not understand my former comment on the naming of the regimes. I do understand their difference and how they are highlighted here. I remain confused by the naming convention: The first one is referred to as annual variability or annual cycle while secondary EOF modes (especially of CHL and PP) are too of an annual periodicity (i.e. coming back with a one year period) but were named targeting the underlying process: Deep-water formation and spring bloom variability. This regime is sometimes referred to as the term basin scale annual variability which I judge more adequate.

Author's reply: *We thank the reviewer for the clarification. We agree that the previous terminology could be confusing because the secondary EOF modes also exhibit a recurrent annual periodicity. We therefore revised the nomenclature to emphasize the different spatial scales represented by the two modes of variability. The first mode describes the dominant variability occurring at the scale of the entire Mediterranean basin and has therefore been renamed "Basin-scale Annual Variability". The second mode captures variability at the sub-basin scale and has been renamed "Sub-basin Seasonal Variability: Spring Bloom and Deep-Water Formation".*

The colormap of mode spatial patterns have been changed to Blue_White_Red diverging colormap. This change helps better connect the author's description of the spatial patterns as described within the introduction. The white color band is well centered on zero in figures 5 ; 8a and d ; B3 d, e and f and nicely display when regions are in phase opposition. However, this colormap is misused in Fig. 3, 7, 8bec and B3abc. In these panels, the white band is not centered on zero and prevents the reader from visually identifying when the Mediterranean Sea is fully positively dependent on a mode. In such cases the colormap should be of only one color (e.g., blue_white when negative and white_red when positive). This change would help to better visualize when modes are in phase over the full basin.

Author's reply: *We revised the affected figures by replacing the diverging colour scale with white-red colour scales for positive-only patterns and blue-white colour scales for negative-only patterns, thereby improving the visual interpretation of basin-wide phase coherence.*

I find the summary and conclusion section unnecessarily long and would recommend cutting most of the content especially between lines 786-805 and 810-817, keeping only a brief presentation of the modes without redescribing how they change in respect to each variable. These regimes are already described thoroughly beforehand in the result section and effectively summarized from line 824 to 829.

Author's reply: *We substantially shortened this part of the manuscript retaining only the key scientific messages and referring readers to the Results section for the detailed interpretation.*

Some double checks are needed in the citations : e.g., Chisholm, 1992 instead of Chisholm et al., 1992 (a shallow and highly turbid system (Katlane et al., 2011)) at line 160 + I could not find this reference in the bibliography

Author's reply: Done