

## ***Interactive comment on “Global ocean biomes: mean and temporal variability” by A. R. Fay and G. A. McKinley***

### **Anonymous Referee #1**

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Ocean provinces are useful to aggregate data for further analysis. In the present paper the authors develop a new set of ocean provinces but they deliberately ignore coastal areas. Yet, coastal areas are important in marine biogeochemistry, and are “hot spots” of primary production, CO<sub>2</sub> fluxes, DMS fluxes, CH<sub>4</sub> fluxes, etc. . . Hence, the proposed ocean provinces are of limited use, and do not cover the "global" ocean as stated in the title.

The authors show that there are inter-annual variations in limits (and surface) of the provinces, yet, they do not explore the reasons of this inter-annual variations. Is this related to ENSO ?

Graphical comparison with other ocean province classifications (Reygondeau,

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Longhurst) could have been useful.

In principle, a figure should be understood from the figure legend alone, without having to read the ms. The figures in the present ms do not achieve this: from legends of Figs 1 & 2 it is not possible to understand the difference between “core” and “mean”, what the abbreviations stand for, what do the white areas stand for.

The map of biomes was present in Fig. 1 of Fay & McKinly (2013) and methodology to discriminate the biomes also presented in the material and methods of the same paper. It is unclear what is the aim of the present ms.

#### References

Fay, A. R., and G. A. McKinley (2013), Global trends in surface ocean pCO<sub>2</sub> from in situ data, *Global Biogeochem. Cycles*, 27, 541–557, doi:10.1002/gbc.20051

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