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Biogeosciences
Discussions

Interactive comment on "Drivers and impact of the seasonal variability of the organic carbon offshore transport in the Canary Upwelling System" *by* Giulia Bonino, Elisa Lovecchio, et al.

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This study presents the results from the numerical model for the Canary Upwelling System coupled with a NPZD ecosystem model. The results highlight the rapid offshore transport caused by the filaments with slower but long reaching eddy fluxes. Also, their analyses revealed that the stronger seasonality in the offshore carbon flux in the northern sub region compared to the central sub region. The manuscript is well-written with a number of typos. Therefore, in my opinion, the manuscript should be published after some revisions considering the following points.

The major issues Although the authors mentioned several reasons of the less season-

ality in the central sub region, such as the convergence of CC and CUC, and the Cape Blanc filament, the dominant mechanism of this is not clearly written in the conclusion and abstract in the manuscript. I think that the novel finding of this paper is the seasonality variation along the latitude. Therefore, it is important to convey the concise and clear statement for the mechanism, which drives the seasonality variations both in the abstract and the conclusion.

The manuscript includes many sentences without referring any figures, which would make many readers to have difficulty to follow the arguments.

Specific Comments

L12 "every season season" Remove one of "season"s.

L34 "Frischknecht et al." Publication year is missing.

L55 "N)," Remove a parenthesis.

L107 "17âŰęN to 24.5âŰęN]" Remove "]".

L108 "This correspond to" should be "This corresponds to"

L199 "In every season the filament flux is dominated by a negative (and therefore offshore-directed) Corg flux, with only a minor contribution to the onshore Corg recirculation." Why is the filament flux dominated only by offshore flux, despite that the filament has offshoreward and onshoreward currents on its northern and southern parts, respectively?

L247 "In Winter and spring. . ." Uncapitalize "W".

L306 "offhore" should be "offshore".

L339 "and Total upwelling" "T" should be lowercase.

L340 "the ratio between offshore transport at 100 km offshore and NCP in the first 100 km from the coast is higher in the CSR in all seasons" Is it the ratio of offshore transport

at 100 km offshore to NCP in the first 100 km from the coast, or the other way around?

L342 “. . .results more pronounced along. . .” Pronounced effects?

L342 “NRS” Is it “NSR”?

L345 A comma is needed after “In the NSR”.

Fig. 11 caption “m3s-1” Numbers should be uppercase.

L355 “Even thought” should be “Even though”. “NCP flux”. Is it flux or production rate?

L359 “still strong in winter (0.22 Sv)” It’s better to refer Fig. 10.

L380 “model is agrees” should be “model agrees”.

L386 “HAGEN, 2001” is all capital. Is it okay?

L406 “CanCS” This appears here at the first time in the paper without any definition.

L414 “in the annual mean the CanUS” Remove “the” in front of CanUS.

L416 “This excess heterotrophy is fueled by the lateral redistribution of Corg in the offshore and alongshore directions combined with the shoaling of the mixed layer depth in the warm seasons, . . .” Before this sentence, the authors mentioned the effects of deepening of the mixed layer, not shoaling. Do you mean that the shoaling of the mixed layer prevents the Corg from being diffused up?

L441 “We refer the reader to (Lovecchio et al., 2017, 2018) for a discussion. . .” should be “We refer the reader to Lovecchio et al., (2017, 2018) for a discussion”.

L457 “This delay is smaller than a season only in the nearshore range covered by the intense filament transport.” Do you mean that “This delay is typically shorter than one season only in the nearshore range covered by the intense filament transport.”?

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