

Interactive comment on “Shelf–Basin interaction along the Laptev — East Siberian Seas” by Leif G. Anderson et al.

Anonymous Referee #3

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General comments

The ms is interesting, although very descriptive: some biogeochemical transformations which take place in the shallow continental shelf seas of Siberia are investigated. The ms provides useful information in order to improve the knowledge on the dynamics of shelf water, from the East Siberian Sea and assess their sources. I suggest the publication of the ms after a minor revision.

In the introduction (P.2 L.8) the authors state: “here we assess data collected in 2014” Unclear sentence is this an objective? In this case this should be reformulated. The relevance of the objectives and of the results obtained could be better stated and evidenced in the introduction and conclusion. The effect of the variations in sea-ice coverage, one of the main objectives, is not considered in the conclusion.

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The methods used are appropriate. When describing the sediment core subsampling the authors should specify the thickness of the subsamples where the biogenic Si where analyzed. In the text $\mu\text{mol kg}^{-1}$ is used for O_2 concentration but in figure 5 $\mu\text{mol L}^{-1}$ is used for AOU. Please uniform the units used throughout the ms. The transient tracers Sulphur Hexafluoride is used in this work to investigate the ventilation states of the different water masses but Overall it is unclear which benefit are derived by SF6 analysis with respect to O_2 , as no water mass age is derived.

For SF6 “ppt” is used as a measure units but is unclear, the authors should use International System of Units and anyway clearly indicate if the concentration is expressed on a volume basis. Is there any significant negative correlation between SF6 and AOU?

Specific comments

P.4 L.9 The precision for onboard measurements was $\pm 0.02 \text{ fmol/kg}$ for SF6 and $\pm 0.02 \text{ pmol/kg}$ for CFC-12: If CFC were analyzed together with SF6 why this data are not presented and discussed?

P. 7. L. 16. Please clarify “indicating that this water has had its signature coloured by hypoxic conditions.”

Fig. 2 Most of the capital letter are in white, a few are in black please uniform.

Fig. 3. The pH index is not readable

Fig. 4. Biogenic Silica is expressed as % dwt? This could be specified,

Fig. 11. The percentage is representing annual data and not monthly data as stated in the caption.

Fig. 12. the strongest gradients in silicates and SF6 are closest to the shelf. Is unclear how the reader can verify this statement, as the sampling stations are not identifiable in the profiles-

Fig. 13. green arrows are not sufficiently evident

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