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Biogeosciences Discussions

Interactive comment on "East Siberian Sea, an arctic region of very high biogeochemical activity" *by* L. G. Anderson et al.

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We thank both reviewers for valuable and constructive comments which we all have seriously considered. With regards to the general comments we have;

recalculated the deficit, giving an estimate of primary production, using the specific data for each station. Comparisons with other AO shelf seas are included,

the section on methane has been shortened and rewritten with a focus on interpretation of the data collected in 2008,.

figure improvements are in progress according to suggestions.

Regarding the comments on technical and other minor issues only the ones where

clarification is needed are addressed below. For the comments that are not addressed we have made the changes according to suggestions by the reviewers.

Reviewer #1

P144,L15-17. The reviewer has misinterpreted our text and thus the sentence has been rewritten to make it clear that it is the TA at S=0 that is compared.

P1144, L20-22 and P1144,L22-23. Text has been rewritten to both clarify the issue of conservative TA and limitations of calcification relative to primary production. The argument is based on that calcification will decrease TA concentration by twice that of DIC but deviation from the mixing line is substantially greater for DIC than TA.

P1145,L1. DIC deficit has been defined as the difference from saturation with atmospheric pCO2, but with constant S, T and TA.

P1148,L5-6. The minimum oxygen and pH are found at the same stations, but the maximum phosphate is slightly further to the north. The difference is not large, but significant.

P1150,L4. We have included "product", so it now reads "solubility product", which is the right chemical nomenclature for this constant.

We have chosen to keep figure 5 as it gives a more direct information on the relations of T and S.

Reviewer #2

We are grateful to the detailed suggestions of this reviewer on how to change the text and this has been followed.

Pg. 1140, line 3: Regarding the addition of an arrow in Fig. 1, we suspect a misunderstanding based on the figure legend, as we cannot find a missing arrow. Therefore we have changed it to: Map of the East Siberian Sea with illustration of the Siberian Costal Current following the coast to the east and the inflow of low salinity water from

the Laptev Sea (LS) to the northwest of the ESS and the inflow of water from the Chukchi Sea (CS) to the northeast of the ESS.

Pg 1141, line 23: Unfortunately we do not have a reference to the nutrient analysis, but have included a web page where information regarding the analysis can be found.

Pg. 1443, line 28. The warming close to the coastline is also impacted by sediment warming, but as the reviewer rightly note this is not the main reason for the high temperatures. Hence this statement has been deleted.

Interactive comment on Biogeosciences Discuss., 8, 1137, 2011.