

General Comments: Review of Biogeosciences Discussions manuscript (MS No.: bg-2011-62) entitled 'Carbon isotopes and lipid biomarker investigation of sources, transport and degradation of terrestrial organic matter in the Buor-Khaya Bay, SE Laptev Sea' by Karlsson, Charkin, Dudarev, I. Semiletov, J. E. Vonk, L. Sánchez-García, A. Andersson, and Ö. Gustafsson.

During the last couple of years, Gustafsson's group has published a substantial number of papers focusing on the remobilization of terrestrial organic carbon in the Arctic region. This manuscript by Karlsson et al. set out to study the fate of the terrestrial organic carbon transported by the Lena river and coastal erosion in the Buor-Khaya Bay area. In general, the manuscript is well written and the figures are clear and well presented. The methods used are appropriate and the data presented is of very high quality. The results could have major consequences for our understanding of carbon cycling processes in the Arctic region due to climate warming. Therefore, the work will be of significant interest to everybody interested in processes and consequences of land-ocean interaction in the Arctic region (as well as other areas of the globe), particularly those modelling global climate warming effects. To summarize, I think that this manuscript is clearly of interest for the readers of Biogeosciences. It is one of the best manuscripts I have read recently and it was a pleasure to review it. Well done!

Specific comments: The whole manuscript contains a large number of errors in relation to the references. This needs to be corrected. It is for instance not clear which of the two papers published by van Dongen et al in 2008 are 2008 a and b and this is the same for the papers published by Vonk et al in 2010, Semiletov in 1999 and Mayer in 1994. In addition, in the text it is often not clear which paper the authors refer to. Again using van Dongen et al 2008 as an example a number of times in the manuscript (e.g. page 3466 line 13, page 3473 line 20, 3475 line 25 and page 3478 lines 4, 16 and 19) it is not clear if it is the van Dongen et al 2008a or b publication the authors refer to. I am also missing quite a few references such as the references to Semiletov et al. 2005, Macdonald et al. 2006 and Grigoryev 2000.

Page 3489 Table 1 Why is there no  $\delta^{13}\text{C}$  value reported for the surface water sample 50?

Technical corrections:

Section 3.2 and rest of the manuscript. POC and SOC in  $\delta^{13}\text{C}$ -POC and  $\delta^{13}\text{C}$ -SOC should be in subscript as is in the figure captions of figures 2 and 3. Idem for the  $\Delta^{14}\text{C}$  values reported in section 3.3

Page 3492 '(H)MW/LMW' should be '(H) HMW/LMW'

Page 3496 in line with the information given about the chain length of the *n*-alkanoic acids, the same information should be given about the HMW *n*-alkanes.

Supplementary information tables S1, S2, S3 and S4 it should be made clear that D-C24 or D-C20 are the internal standards added.