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Biogeosciences Discussions



# *Interactive comment on* "Molecular and radiocarbon constraints on sources and degradation of terrestrial organic carbon along the Kolyma paleoriver transect, East Siberian Sea" *by* J. E. Vonk et al.

**Anonymous Referee #2**

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The East Siberian Sea is one of the least studied areas in the Arctic Ocean, at the same time it is a region that plays a key role for terrestrial organic matter transformation and transport. The manuscript presents a nice combination of isotopic and biomarker data on SPM and surface sediment organic matter in the region building a strong case for the predominance of terrestrial derived particulate organic matter in the EES. The study also distinguishes the contribution of river derived organics from organic matter derived from coastal erosion. The key conclusion of the study is that

a major fraction of the eroded organic matter is deposited on the shelf and potentially preserved rather than degraded to CO2. âĂć The distinction between river derived and coastal erosion derived organic matter rests to a large degree on the choice of the 14C-age endmembers. I think that the major conclusions of the study are valid and pertinent but at the same time there is some room for variability if different endmembers are choosen. One key measurement that is missing from the study and would have answered important open questions is the 14C age of DIC. With this in hand the algal or marine endmember could have been better constrained. âĂć I also wondered if the study allows the authors to distinguish between erosion happening on the river banks and SPM coming from surface run off. I suspect that river SPM also transports a significant amount of eroded and old permafrost derived material to the Arctic coast. In summary I think this study represents an important contribution to the field and to our understanding of potential consequences of climate change in the Arctic Ocean. If the authors would like to add a couple of sentences to address the two points raised above I would appreciate it as a reader.

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Interactive comment on Biogeosciences Discuss., 7, 5191, 2010.