

## ***Interactive comment on “Lena River Delta formation during the Holocene” by D. Bolshiyarov et al.***

### **Anonymous Referee #2**

Received and published: 3 June 2014

General notes: As follows from the manuscript (MS), the author's main objective is to prove marine origin of the Lena River first terrace using age determinations of deltaic peat sections and pollen data. From my viewpoint, non-expressive data on terrestrial-originated plant microdebris look inconclusive at all for supporting such an idea. By contrast, data on forams, marine/freshwater microalgae or at least aquatic palynomorphs in pollen slides would be much more useful.

Presented curve of sea-level fluctuations and author's interpretation of the history of the Laptev Sea transgression contradict to the well-known concept supported by numerous data from the Laptev Sea shelf (Bauch et al., 2001; Polyakova et al., 2009 and ref. therein; Klyuvitkina and Bauch, 2005 and ref. therein; Taldenkova et al., 2005 and ref. therein).

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Specific notes: 1) p. 4088, in 15: Radiocarbon dates are reported throughout the text as uncalibrated ages. It is quite possible to do this using available software (for example, CALIB 4.3 calibration software (Stuiver et al., 1995) or free online version of CalPal-2007 program). Besides, this creates complexities when compared with other data from Laptev Sea region.

2) The authors should be more careful in the designation of sediment ages and must adhere uniformity. I counted seven ways of designation in the MS: Ka, yrs b.p., Kyr BP, yr, y. b.p. radiocarbon years and without any.

3) Fig.2, pollen diagram of 0904 section. (A) The authors should explain, why do they analyze only dated layers. It looks rather strange and atypical. Besides, the sampling interval is too large, which makes the diagram inexpressive at all. (B) Are spores of tropical fern *Osmunda* included in in situ spore complex, or are they interpreted as reworked? It is not clear from Fig.2. I suggest, first, to create a curve named “Reworked pollen and spores” and calculate their total percentage and, afterwards, to show details of reworked spectra on spore-pollen diagram. Taxonomic composition of the reworked part of the spectra could provide evidence in favor of marine origin of the Lena River terrace. Besides, changes in pollen concentration, especially reworked, which increases usually during periods of enhanced bottom abrasion coeval to transgressive phases need to be drawn too to confirm postulated marine influence on terrace formation.

4) Fig. 7. Laptev sea-level fluctuation during the Holocene. Presented curve covers only part of the Holocene (Mid-Late Holocene). I recommend changing figure caption.

5) Fig. 8. Paleo-reconstructions of the Lena Delta area. The first and the second scenarios (30000-40000 and 17000 yrs BP) go beyond the period indicated in MS title (Holocene) and must be excluded as well as the text on p.4102 (lines 20-30).

Technical corrections:

There are few small spelling mistakes in the text (see, for example, p. 4101, l.2 -

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submerged periodically; p.4108, l.32 - faculty of geography)

Please also note the supplement to this comment:

<http://www.biogeosciences-discuss.net/11/C2057/2014/bgd-11-C2057-2014-supplement.pdf>

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Interactive comment on Biogeosciences Discuss., 11, 4085, 2014.

**BGD**

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