

Referee #2 Dr. Boris Ěupek, boris.tupek@luke.fi

Review of Wang et al. "Quantifying Soil Carbon Accumulation in Alaskan Terrestrial Ecosystems during the Last 15,000 Years"

General comments

Authors accounted for the required changes satisfactorily and the manuscript has improved. It is not clear if the long term variation in NPP is larger than the interannual NPP variation (Fig. 5). Please explain the reasons for the large NPP inter-annual variation. Is it annual variation in climate? One of the main findings is that vegetation distributions drives soil C. To me it seems that climate is driving vegetation distribution which determines soil C change. However, longterm vegetation distribution here is taken from maps produced for main periods of climatic change thus introducing large step wise changes. This is also interesting result. Consider reformulating.

Specific comments:

lines 32-34, reformulate, especially the origin of previous estimates is not obvious

lines 41-44 in abstract and lines 463-467 in conclusions are identical, reformulate or delete

lines 374-378 explain reasons for longterm variation and inter annual variation of NPP (Fig. 5).

Fig. 4 use same x axis; add a,b,c,d to the panels; Kenai gasfield mismatch?

Fig. 5 what is the reason for the large NPP inter-annual variation? add smoothed dashed line for highlighting the longterm changes ?

Fig.6 use same color codes as Fig. 5

Fig.7 use same color codes as Fig. 8?

Fig. 9 "the area of...0 km²" confusing/delete, divide SP and SBP peatlands?

Fig. 10 Peat C stock change. Specify that these are barplots to avoid confusion that peat C stock change is restricted to zero?

Fig. 13 use gray instead of cyan?