

Interactive comment on “A study of the role of wetlands in defining spatial patterns of near-surface (top 1 m) soil carbon in the Northern Latitudes” by E. M. Blyth et al.

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Received and published: 19 January 2015

The authors would like to thank the reviewer for their constructive comments. 1. The comments and cited literature mainly relate to the modelling and observations of peat establishment and accumulation – which is of course essential to the overall soil carbon modelling of the region. I have read with interest the papers suggested and learnt a lot! This paper however deals with the modelling within a climate model where the peat is assumed to be already established. The soil properties and so on are taken from data-sets which include current peat regions. Despite this, the currently used model for climate prediction was unable to diagnose the correct carbon stores and budgets

C8132

for the region, which is why we addressed the issue. This explains why we were not concerned with the data on the timing of peat establishment. 2. You are right to point out that several papers do indeed look at the spatial patterns of soil carbon to validate their models. I would like to soften the ‘ignore’ word! However, in the papers cited (again, I found them very interesting and I thank you for that. In particular I would like to include a reference to the paper describing DYPTOP in this paper), this is only done in a qualitative way. Perhaps an addition sentence highlighting these spatial analysis papers could be added in the following way: ‘Several papers have used the spatial patterns of soil carbon in a qualitative way to validate their models. In this paper, a new way to quantify the model evaluation with respect to the spatial pattern of soil carbon is introduced’ 3. We did not assume the soils were in equilibrium. As described in the paper, the model was brought to equilibrium with the early 20th century climate and then run forward in ‘transient mode’ for 100 years. Although this is not the absolute ideal way to explore the soil-carbon-climate interaction, but we felt it was adequate for exploring the relationship between the soil carbon balance and the spatial patterns of wetlands in the region.

Interactive comment on Biogeosciences Discuss., 11, 17967, 2014.

C8133