

Interactive comment on “The biogeophysical climatic impacts of anthropogenic land use change during the Holocene” by M. C. Smith et al.

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Thank you very much for taking the time and trouble to review our manuscript and for your helpful comments.

Our response to your query on our choice of the KK10 land use reconstruction over that of HYDE 3.1 is as follows:

Early agriculture was much less efficient than agriculture today with tracts of land left fallow for years. It is estimated that per capita land use for agriculture during the industrial age is about 0.2–0.3 ha per person (Williams (1990), Grubler (1994)) but was more like 3ha per person in Neolithic times (e.g. Gregg, 1988). There have been many technological advances since the advent of agriculture from selective breeding of crops and

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animals to fertilisers and more efficient tools. KK10 makes some allowance for these technological changes and therefore allocates more agricultural land to feed each head of population earlier in the Holocene than it does in the early industrial period. This we believe is probably more realistic than constant per capita land use although of course there are still uncertainties in the data. With the Hyde data the land use changes are less than with KK10 particularly in the earlier time slices. The same pattern of climate change is seen but later and on a reduced scale.

The references will be added to the abstract as you suggest.

Interactive comment on Clim. Past Discuss., 11, 4601, 2015.

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11, C2748–C2749, 2015

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