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## ***Interactive comment on “Direct and indirect metabolic CO<sub>2</sub> release by humanity” by Y. T. Prairie and C. M. Duarte***

### **Anonymous Referee #3**

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The paper by Prairie and Duarte uses a logical approach to estimate the per capita and total emissions of carbon dioxide by Homo sapiens and their domesticated animals today (Table 1) and during the past couple of centuries (Figure 1). Compared to fossil fuel combustion (~7 PgC/yr), the resulting human metabolic release (3.1 PgC/yr) impressive, although not surprising considering that humans use about 4% of terrestrial NPP (Vitousek et al. 1986), which would amount to emissions of about 2 PgC/yr, given recent estimates of terrestrial NPP (~50 PgC/yr e.g., Field et al. 1998). [NB: the 40% human use of NPP often attributed to Vitousek et al. 1986, also includes NPP in human dominated systems and NPP that is lost (but not used) by human activities]

The danger in the paper by Prairie and Duarte is, in their absence of their clear warning not to do so, policy makers may well argue that it is the inexorable increase in human

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numbers, rather than our use of fossil fuels, that causes a large part of the current rise in atmospheric carbon dioxide. This is certainly not the case, as the human consumption of food comes from lands that would harbor a natural level of NPP, most of which (>99%; Schlesinger 1990) would decompose and return to the atmosphere as carbon dioxide in the absence of human harvest. Also, domesticated animals have arisen much at the expense of large flocks and herds of native animals that have been reduced, and the carbon that is respired by domestic animals would certainly decompose on a short-time scale in the absence of their grazing. By considering the activities of humans without thinking of how carbon atoms would flow in the absence of humans, Prairie and Duarte make the same mistake they accuse of others (p. 1785, lines 15ff). The paper does not alter the basic fact that we are the only species that purposely mines or extracts fossil carbon from the Earth's crust and brings it back to the Earth's surface (atmosphere). Through our agricultural activities (beyond their uses of fossil fuel), we may alter the pathways of carbon flow, but not likely significantly the total flow of carbon from the biosphere each year.

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Interactive comment on Biogeosciences Discuss., 3, 1781, 2006.

**BGD**

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