

Comments on First Order Draft of Chapter 2: Cross-cutting Guidance on GHG Emissions and Removals from Organic Soils in all Land-use Categories

I wish to express to the IPCC review team my considerable surprise, disappointment and dismay on reading the contents of this draft chapter which by my estimation and, I am certain also by that of other scientists working in this field, DOES NOT represent the current state of the art and level of understanding, particularly with reference to GHG emissions from tropical/subtropical organic soils. **THIS STATE OF AFFAIRS MUST BE RECTIFIED IN THE REVISION STAGE IF THE IPCC PROCESS IS TO REMAIN CREDIBLE AND TRANSPARENT.**

My comments are directed specifically at the emissions estimates for tropical peatlands since this is the area in which I have specific knowledge and expertise.

What particularly surprises me about the GHG emission estimates in this 2012 draft is that they appear to have changed in only a very minor way from those presented in 2006. And yet, over the last 6 years there have been significant advances in our understanding of GHG emissions from tropical peatlands, particularly those that have undergone land use change involving deforestation and/or drainage. A number of papers and reviews have been published in this intervening period which are omitted from this draft – this either indicates sloppy procedures at the drafting stage or, worse, proactive action by certain parties to exclude this information and to present a biased, myopic view on the scale of GHG emissions occurring as a result of rapid land use change on tropical peatlands, particularly in SE Asia.

My main comments concern the data presented in Table 2.1 (page 2.6).

This table presents CO₂ emission numbers for tropical/sub-tropical peatlands. These numbers appear to be UNCHANGED from the IPCC 2006 guidelines – i.e. they fail to take into account ANY of the recent published scientific literature. The Appendix to this chapter includes a statement that there is apparently limited data and a high degree of uncertainty surrounding data on GHG emissions from subtropical/tropical peatlands. This statement is the justification for the data presented in Table 2.1 – in particular, the emission values of 42.71 t CO₂ ha/yr for forest plantations (acacia) on tropical peatland and 19.18 t CO₂ ha/yr for oil palm plantations on tropical peatland. These values are **well below** the current values represented as being the state of the art knowledge of CO₂ emissions from drained tropical peatlands. I refer the authors of the review to recent publications by Couwenberg et al. (2010), Hooijer et al. (2010), Page et al. (2011), and more recent papers by Hooijer et al. (2011, 2012) and Jauhiainen et al. (2011, 2012) which are based on extensive field data collection. I would also like to bring to the reviewers attention several reviews of emissions from oil palm plantations for the EU (Marelli et al., 2011), for the International Council on Clean Transportation (Page et al., 2011), and for the Round Table for Sustainable Palm Oil (RSPO-PLWG, 2012). All of these papers and reviews which have appeared over the last three years are apparently either ignored by the IPCC. Moreover, less recent but supportive literature on carbon losses from drained subtropical peatlands is also omitted (e.g. Stephens et al., 1984, who studied peatlands in the Florida Everglades). These critical oversights are extremely difficult to understand, especially since the emissions values presented in this draft are anywhere between 2 and 3 times LOWER than values presented in the literature referred to above.

Having looked at the literature that IS cited in this draft there seems to be a biased and under-representative range of material presented all of which is based on limited and flawed evidence. The majority of studies of tropical peatland CO₂ emissions have used closed chamber methods (e.g. the oft-cited study by Melling et al. 2005). But none of these studies have been based on sufficient numbers of replicates over sufficient length of time to provide statistically robust flux values or uncertainty ranges. Furthermore, most have not addressed the quantification of CO₂ emissions arising solely from peat decomposition (i.e. excluding emissions arising from root respiration), although some of the data have been used subsequently for this purpose. More recent studies (e.g. Jauhiainen et al. 2012) have sought to overcome these problems by employing large numbers of point measurements across a long time series and across a range of field conditions; notably, this study was also able to separate autotrophic and heterotrophic emissions. This study arrived at much higher CO₂ emission values than those presented in the IPCC draft. One other method of deriving carbon loss values from peatlands, subsidence measurement, is capable of providing a time-integrated measure of the complete carbon balance of a drained peatland. Subsidence is a slow process, thus a key limitation of this approach and of several previous published studies is that subsidence data need to be collected over a long period (preferably a number of years, although larger numbers of measurements can compensate for shorter periods) and must be accompanied by accurate measurements of peat bulk density and carbon concentration. Hooijer et al. (2012) were able to accomplish this and showed conclusively that their estimates of carbon loss using this method were (a) in line with all previous studies of peatland subsidence from other regions of the world, taking into account higher tropical temperatures (and hence higher peatland decomposition rates) and (b) in line with an independent study using the closed chamber method carried out in the same peatland landscape (Jauhiainen et al., 2012).

A further important comment I wish to make on Table 2.1 is that the emission values presented for oil palm are much lower than those for acacia plantation. NO JUSTIFICATION for this difference is provided! Yet, deforestation and drainage impacts in these two types of plantation are very similar and therefore will likely yield similar greenhouse gas emissions with, if anything, higher emissions from oil palm plantations owing to the greater use of fertilisers to maintain crop productivity under this form of land use. None of these issues are touched upon in the draft, which is very surprising and a clear omission.

I call for the IPCC to undergo a thorough review of the basis for the GHG emissions estimates arising from different forms of land use on tropical and sub-tropical peatlands presented in this draft.

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