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***Interactive comment on* “Subsidence and carbon loss in drained tropical peatlands: reducing uncertainty and implications for CO₂ emission reduction options” by A. Hooijer et al.**

Anonymous Referee #3

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General Comments:

This paper presents data on peat subsidence, which is fairly impressive in terms of spatial scale and, combined with previously published data, forms the basis for an interesting long-term analysis of C loss from drained tropical peatlands. The attempt to distinguish between compaction, consolidation and oxidation is a key strength of this paper.

The authors have combined their available data in resourceful ways to come up with estimates of C loss rates. The downside to this is that some of the calculations seem byzantine, circular and hard to follow. I suggest further clarification and justification of

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the C-loss calculations, and possibly including in the sensitivity analysis an exploration of the ramifications of the assumptions made in these calculations.

Specific Comments:

Page 9324, Section 3.7: The logic was hard to follow. What I gathered was that the authors applied the 5-year subsidence rate from Acacia to oil palms for years 0-5, and the measured rates in year 18 from oil palms to years 5-18. This led to an estimate of 92% loss by oxidation in the oil palms. What was particularly confusing was that this value was then applied back to Acacia, rather than using the 75% figure which was derived directly from Acacia data. What was the rationale behind these assumptions, and what effect do they have on the calculations? (One obvious effect is that 75% is less than 92%. Is it assumed that compaction plays a smaller role in the long term and oxidation becomes more significant? Does the data support this?)

Section 3.8 and Figure 5: no p-values or sample size are given for these regressions, so the R² is hard to interpret.

Page 9329, lines 7-10: related to the previous comment, given the somewhat low R², is the intercept significantly different from zero? Assuming the relationship really doesn't go through the origin, the point about disturbance is well-taken. But this isn't visually obvious.

Interactive comment on Biogeosciences Discuss., 8, 9311, 2011.

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