Interactive comment on "Imaging tropical peatlands in Indonesia using ground penetrating radar (GPR) and electrical resistivity imaging (ERI): implications for carbon stock estimates and peat soil characterization" *by* X. Comas et al.

Anonymous Referee #4

Received and published: 12 March 2015

General Comments:

This paper has explained the prospects of the use of ground penetrating radar (GPR) and electrical resistivity imaging (ERI) as an alternative approach of peat depth and peat carbon estimates as well as for characterization of other features of tropical peatland. I gathered have a clear picture of what this technology can do for peat depth estimate and it's a good enough information. This paper will be more powerful if the estimate of C stock is more clearly explained – what these two techniques can and can not do in terms of C stock estimate.

Specific Comments:

1. Title: I raised expectation that this technique can speed up the estimate of peat C stock, but I did not get satisfactory explanation on this aspect. Be more specific in the title.

2. Abstract, last sentence: Make a clearer statement whether with the absence of wood layers etc. this technology can provide a reliable estimate of peat C content and how close the estimate is compared to the analytical technique (peat sample analyses of bulk density and C content).

3. Introduction

Line 23: Indonesian peat area estimate is no longer 21 Mha (Wahyunto et al. 2003, 2004). Ritung et al. 2011 (in which Wahyunto is a coauthor) has made a new estimate of 14.9 Mha. This new estimate is used for national development agenda such as the moratorium map. Please check at http://bbsdlp.litbang.pertanian.go.id/index.php?option=com_phocadownload&view=category lahan-gambut-indonesia&Itemid=185

Page 194, line 12: Include the more recent papers such as Ballhorn et al. (2012).

Page 194, line 24-27, explain which source of uncertainty among area, depth and volume that can be tackled by the proposed techniques. Can these technique potentially be adapted to airborne observation for speeding and improving the quality of conventional peat distribution and depth mapping?

Page 195, line 7, "These peats accumulated at rapid rates. . .". Usually people refer to slow rate of formation under natural condition and rapid rate of decomposition under drained peat.

Page 196, line 25, be clear whether carbon content is the main objective. Otherwise remove the phrase between brackets. It raised lots of expectation.

Page 197, line 2: (related to the second objective, above) I would expect that this technology will improve the assessment of peat subsidence and below ground C stock change.

Page 197, line 26: "4-5 m of peat", do you mean "4-5 m deep peat"?

4. Methods

Page 199, line 4: "being 50-70 depending on peat type". Do you mean "being 50-70 times . . ."? Page 200, line 2: "particle size distribution"? Page 201, line 11-13: Either unclear or it involves grammatical problem. Page 202: No explanation about C content determination technique.

5. Table 2: Add a column of bulk density

6. Conclusions Make a clearer statement of what these technique can do about C content estimation, or clarify in the Introduction that it's not part of the objective.

———————————————

Interactive comment on Biogeosciences Discuss., 12, 191, 2015.