

## ***Interactive comment on* “Fluvial organic carbon fluxes from oil palm plantations on tropical peatland” *by Sarah Cook et al.***

### **Anonymous Referee #1**

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#### General comments:

This study provides a quantification of TOC fluxes from an oil palm plantation on tropical peatlands, as well as characterization of aromaticity and  $^{14}\text{C}$  content of DOC released from these plantations. Tropical peatlands have been massively converted to plantations. Their contribution to carbon export to surface water and to the ocean has been suggested by the handful studies existing in the area. Although not novel, this study is an important contribution to the literature since it provides quantification of TOC fluxes in the context of oil palm plantations. I therefore recommend publication after minor revisions.

#### Detailed comments:

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The authors measured both DOC and POC. This information is somehow lost as only the TOC fluxes are reported in the abstract and most of the figures. In the abstract, the percentage of DOC should be indicated instead of “TOC fluxes [. . .] were dominated by DOC”. The relative proportion of DOC and POC in the TOC flux should also be added in Figure 3.

Abstract:

The values of TOC flux reported in the abstract should be tempered by the fact that the study is based on a single year survey, strongly influenced by an el Niño event, and therefore lower discharge than usually observed.

Method:

Section 2.9: Specify the corer type you used.

Results:

Section 3.4 : is the correlation significant?

Discussion:

The discussion section on bulk density and carbon stocks is not clear. Since no carbon content were measured, it is difficult to discuss the carbon density values. The differences are only based on bulk density differences (higher in Sebungan). The link with higher TOC fluxes is not established. This section should be improved or removed from the manuscript.

Figures :

Figure 1 should be improved. A larger map of Borneo with the location of the site would be useful. On the detailed map, Lat/Long are not readable.

Table :

SE3 and SE4: There might be a mistake in the % of time water table was below -60 cm

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(0 % for the mean water table of -92 cm, and 90% for the mean water table of -52 cm)

#### References:

Some references cited in the text do not appear in the reference list (Jones et al., 2016, Gandois et al., 2014).

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