

Interactive comment on “El Niño–Southern Oscillation (ENSO) event reduces CO₂ uptake of an Indonesian oil palm plantation” by Christian Stiegler et al.

Anonymous Referee #1

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Overall, this is a well written manuscript with some interesting insights. Not only the in-situ observations, the authors also use a multi linear regression model in this study. The authors aim to investigate the impacts of ENSO events on an oil palm plantation from the aspects of CO₂, water and energy exchange. The manuscript contains a clear and concise title. However, I do feel the information are overloaded in the manuscript in which the readers may find it difficult to explicitly articulate the key points. The authors also discussed the response of oil palm (NEE) to drought and haze conditions solely on the productivity aspect. It is however not clear about the relative contribution of GPP to the NEE. I find it is a bit misleading – was the ecosystem respiration also affected by drought and haze? There are in fact several publications on the effect of ENSO events

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on the ecosystem productivity either in oil palm plantation, forest or other ecosystems. However, I did not see the authors discussed or compared their results with that of the published findings. It is also interesting to note that oil palm plantation was a net sink of CO₂ during the ENSO year. Please find the specific comments below.

Page 2 line 17: The life cycle of oil palm is about 25 years.

I see NEE is first written on Page 3 line 2 in the manuscript, please define NEE or what does NEE stand for.

Page 3 line 26: The superscript should be put for -1 (2235 mm yr⁻¹).

Page 3 line 25-26: I don't understand the use of climatic data from the meteorological station. If it is to show longer term data, then it is probably necessary to compare meteorological data from the site and that of the station even though they are only 29 km apart. This is to show that the longer term data is relevant to the site.

Page 3 line 30: The superscript should be put for m² m⁻².

Page 3 line 30: The LAI was very low for the palm age. Could this be due to the large gaps because of palm leaning?

Page 4 line 13: The superscript should be put for . . . m s⁻¹.

Page 8 line 6-9: The monthly oil palm yield does not make sense as the values are extremely high. Annual fresh fruit bunch yield can rarely achieve more than 40 t/ha on average.

Page 9 line 16: The word 'NDH+' should be 'NHD+'.

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