

## ***Interactive comment on “The effect of atmospheric aerosol particles and clouds on Net Ecosystem Exchange in Amazonia” by G. G. Cirino et al.***

**Anonymous Referee #2**

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The effect of atmospheric aerosol particles and clouds on Net Ecosystem Exchange in Amazonia acp-2013-698 The manuscript presents results for an elegant analysis of the effects of clouds and seasonal aerosols from burning activities in radiation properties and the concomitant effects on the net exchange of CO<sub>2</sub> in two types of tropical forest in the Amazon. Although the results are not particularly novel or unique as it is noted from the cited literature, the authors make a good use of different techniques and analytical schemes to consolidate their story. I for example found of value the validation of the MODIS OAD product (MOD/MYD-04L2) against ground data and the demonstration of use to study surface processes such as NEE. Overall, I believe that the work represent a contribution to the iLEAPS initiative and fits in the scope of ACP/BG. However, two important arguments that can complement this manuscript would be related to the

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effect of the aerosols on totalized NEE values by seasons (wet vs dry, fire vs non fire season) or over the studied years (the data set is long enough to permit a discussion for interannual variability). Furthermore, the authors nicely present percentage changes in total and diffuse radiation and as aerosols play a role under different atmospheric conditions, but the net effect on total carbon gains is not discussed (i.e. potential effect on C budgets). This element is important because it can potentially widen the scope of the discussion since both forests have important differences on the seasonally and variability of NEE and an important contrast on land uses.

On the structure of the paper I would recommend some minor changes for clarity:

Page 28823L25 to Page 28824 L2. Please integrate these lines in section 2.2.1 but avoid redundancy Page 28824 Line 3 to 16. Please merge this information at the corresponding site description in sections 2.1.1. and 2.1.2 On section 2.2.1 Please present the information from Table 1 earlier so the reader can find the details presented in such table as the instrumentation and measurement details is presented in the text. Page 28829 L1 to 31. This paragraph are mostly results and not methods, please merge on section 3, considering a new numbering sequence for table 2.

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