**Biogeosciences
Discussions**

Interactive
Comment

Interactive comment on "Implications of CO$_2$ pooling on δ^{13}C of ecosystem respiration and leaves in Amazonianforest" *by* A. C. de Araújo et al.

Anonymous Referee #2

Received and published: 22 January 2008

In this paper the natural variations in time and space of δ^{13}C values of leaves, atmospheric air and soil respiration have been studied along a topographical gradient at a site in Central Amazonia. The aims were to test the hypothesis that both the δ^{13}C of the leaf (δ^{13}C$_{leaf}$) and that of ecosystem respiration (δ^{13}C$_{Reco}$) are lower in the valley than on the plateau.

I find the work interesting and it is suitable for publication in Biogeosciences. However, the paper needs major revisions after which I recommend accepting the manuscript.

I have read the comments from referee #1 before I wrote down my comments and agree fully with this referee. Instead of repeating everything already mentioned by referee #1,

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Interactive Discussion

Discussion Paper

I have mostly supplemented the list of comments although some of them have already been mentioned.

General comments

I find the paper too long and in particular the results and discussion sections can be shortened. The results section is too detailed and hard to follow. Point out the most important results. The Figures as well as the symbols and texts in the Figures need to be larger. The most important results would stand out clearer if the number of Figures and Tables were reduced. For example Figures 1 and 8 could be removed.

When I first looked at some of the Figures I was confused by the use of the label $\delta^{13}C_{soil}$ for respiration. I suggest using $\delta^{13}C_{Rsoil}$ for soil respiration and $\delta^{13}C_{Reco}$ for ecosystem respiration. This would be more consistent with the label used for the corresponding CO_2-fluxes.

Abstract

Is the first paragraph meant to be an introduction or are the results presented already in the beginning? The abstract does not provide a clear statement of the aims and/or hypotheses of the study. I suggest the authors to be more specific in the presentation of the results and to explain the relevance or importance of the findings.

Material and methods P4464 last paragraph. What is HDPE?

Results

P4472 The 2002 campaigns, are results from this necessary to include? They do not seem to contribute with much new information?

P4476 The good correlation between C_i/C_a and Δleaf (R^2 is probably 1.0). Is this because the two parameters are derived from the same data? I agree with the concerns brought up by referee #1 on Fig. 8 and Δleaf and I also suggest the authors to omit this part.

Text connected to Table 5. Due to that the number of objects in each regression is only

three and the resulting uncertainty in the estimates are probably large, I suggest the authors to point at similarities not to stress the differences in time lag and $b_{y,x}$. The regressions in this Table, are they based on the same data as in Fig. 7? If so this could be informed in the legend.

Figure 3. Add the line showing the δ^{13}C of the tropospheric background to all graphs to the left and the line showing the corresponding [CO_2] to the right. This will make it easier for the reader.

Figure 5. The combination of the upper two graphs with the lower two is confusing. This is probably because the x-axes are different. Either separate into two different Figures or place the soil data (c and d) to the right in the two upper graphs (a and b). Change the label on the y-axis to δ^{13}C ($^0/_{00}$) and draw lines between the δ^{13}C$_{Reco}$-data points to make it easier for the reader.

Discussion
P4477 It is unclear to me what is meant in the sentence beginning with "Because leaf conductance..."

P4478-79 Most of the section 5.2 is repetition of results I suggest to move these two pages completely to the results.

P4481-82 Due to the very few data points in the regression analyses do not stress the differences in time lag and slope.

Interactive comment on Biogeosciences Discuss., 4, 4459, 2007.