

Interactive comment on “CO₂ budgeting at the regional scale using a Lagrangian experimental strategy and meso-scale modeling” by C. Sarrat et al.

C. Sarrat et al.

Received and published: 29 September 2008

Dear Referee,

We would like to thank you for your constructive remarks and suggestions that helped us to improve the paper, especially for the discussion and conclusion sections. We tried as much as possible to take into account your suggestions. All your comments are now introduced in the revised text or in the figure legend. Two figures have been added as a response to the two referees comments.

Concerning your remarks (1) and (2):

S1828

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



We tried to expand the discussion on uncertainties in the three carbon budgeting methods. It is very difficult to assess all the errors in the three methods since we are considering only one day of experiment.

Concerning the estimation related to observations only, we are thinking that the Lagrangian method, because of its ability to integrate in time and space the CO₂ exchanges, reduces the errors.

Considering all the uncertainties, it appears to the authors that the up-scaling surface fluxes method is more uncertain than the Lagrangian one. However, as you stated, surface flux observations are really important to validate the meso-scale model which appears has the best tool to compute the budget. The large consistencies between observation and modelisation give a rather high degree of confidence to the meso-scale model.

Point 3: the respective role of the 2 aircraft has been clarified (section 2.1) and a new figure added, as required, showing the 2 aircraft trajectories as well as the balloon one, and the 2 budget boxes.

Point 4: The figure mentioned here doesn't represent a comparison between the model and the observations vertical profile, but the observed CO₂ in the ABL at two different moments.

The Figure 10 (previously Figure 8) has been redrawn, the missing data don't appear now.

Interactive comment on Biogeosciences Discuss., 5, 2931, 2008.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)