Comments to the Author:

Dear authors

thanks for this revised version. This makes your MS an important contribution to BG. Before sending your manuscript for publication, please address this final comment:

« Assuming the water surface area remained constant (i.e., no significant seasonal fluctuations), the spring and autumn CO2 effluxes were summed to 246 million mol and the summer CO2 efflux was -208 million mol (Table 1). These added up to an annual net CO2 efflux of 38 million mol (or 0.05×1010 g C) with great uncertainties due largely to the spatial variation between the sandy and loess subcatchment reservoirs in spring (Table 1). When added with the river efflux estimate, the catchment total CO2 efflux was (3.7±0.6)×1010 g C in the year 2015."

In accordance with Dr Hemingway comments, insert here the idea that statistically, such small residual flux calculated as the difference between two large numbers with great uncertainties is probably not different from zero. The reservoir annual CO2 flux is closed to balanced and accounts for less than x% of total CO2 outgassing, mostly by rivers.

Thanks for submitting your work to BG

with best regards,

Gwenaël Abril

Dear Dr. Gwenaël Abril,

Many thanks for your comments on our manuscript. Based on your suggestion, we have corrected the manuscript. Now it reads “Assuming the water surface area remained constant (i.e., no significant seasonal fluctuations), the spring and autumn CO_2 effluxes were summed to 246 million mol and the summer CO_2 efflux was -208 million mol (Table 1). These added up to an annual net CO_2 efflux of 38±280 million mol (or 0.05×10^{10} g C), which is statistically indistinguishable from zero due largely to the spatial variation between the sandy and loess subcatchment reservoirs in spring (Table 1). When added with the river efflux estimate, the catchment total CO_2 efflux was $(3.7\pm0.6)\times10^{10}$ g C in the year 2015, of which the reservoir CO_2 efflux accounted for less than 1.4%.”

We greatly appreciate your and the three reviewers’ valuable comments which have significantly improved our manuscript. Thanks a lot for accepting our manuscript for publication in BG.

Best regards
Lishan, on behalf of all co-authors