Referee comment on "Post-flooding disturbance recovery promotes carbon capture in riparian zones" by Yihong Zhu et al., Biogeosciences Discuss., https://doi.org/10.5194/bg-2022-175-RC1, 2022

This study evaluates how carbon fluxes of river riparian areas seasonally respond to flooding by investigating the CO2 and dissolved carbon fluxes during pre- and post-flooding seasons. The methods were generally well established and results were generally well discussed. In particular, authors discussed how vegetation and the post-flooding change of riparian vegetation species and richness affect/determines net carbon fluxes in river riparian areas. I think this could be a valuable contribution to this area.

One thing that might be ambiguous to audience is that authors use terms like “pre-flooding”, “flooding” and “post-flooding” to describe their measurements in different seasons. This might be a bit misleading because floods often refer to short-term events. Considering authors evaluated these carbon fluxes on a seasonal base, I’d suggest authors changes these expressions to pre-flooding seasons, flooding seasons and post-flooding seasons instead.

I have only a few minor comments on the rest of the manuscript. See below,

Line 174: in different seasons
Line 175: we first reviewed the diel cycle.

Line 176: change “the terrestrial area” to “riparian soils” or “riparian area”, same below.

Line 183: “terrestrial area with vegetation” to “riparian area with vegetation”

Line 200-203: the sentence repeat line 186-188. Consider delete one of them.

Line 241: is the water-air carbon flux (Fig. 2b).

Line 285-286: no need to capitalize first letters.

Line 313: needs further analysis.

Line 332: the riparian zone thus has ...