

Interactive comment on “Dynamics of riverine CO₂ in the Yangtze River fluvial network and their implications for carbon evasion” by Lishan Ran et al.

Anonymous Referee #2

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This manuscript detailing long-term patterns of pCO₂ and alkalinity in the Yangtze River is generally well-written and includes strong methodology and data. The work will be of general interest as the authors have clearly shown the relevance of this carbon component in the framework of the larger carbon cycle. My main concern with this manuscript is the overly broad interpretations of underlying processes. The very simple correlations between water chemistry and discharge with alkalinity and pCO₂ certainly point towards specific processes, but the authors do not dig too deeply into these relationships. Therefore, many of the conclusions, and a fair bit of the discussion is overly speculative. I would like to see a more formal set of questions and hypotheses that could be evaluated with the data available. I believe further evaluations and rationale

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will be needed to sort out the interesting pattern of stable pCO₂ across a range of discharges in the mainstem (Figure 5b). The discussion of in-stream processes vs. tributary dilution and terrestrial CO₂ sources is at present too speculative (lines 295-316).

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