

Interactive comment on “Dissolved inorganic carbon export from carbonate and silicate catchments estimated from carbonate chemistry and $\delta^{13}\text{C}_{\text{DIC}}$ ” by W. J. Shin et al.

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I think this is a significant scientific contribution, clearly written manuscript and deserves publication. I think it would benefit from some moderate and minor revision.

I think the conclusion that attribute the variability of $\delta^{13}\text{C}_{\text{DIC}}$ of the silicate spring to CO_2 degassing needs to be back up from other evidence (Line 12, Page 1807 – Line 5, Page 1808) or other controlling mechanism needs to be sought. CO_2 degassing commonly occurs under open-system conditions along stream flows, which is quite different in the studied silicate spring setting that locates at the bottom of the sandstone cliff. Authors argue that the slope of the regression line between $\delta^{13}\text{C}_{\text{DIC}}$ and pCO_2

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agreeing with the increasing rate of $\delta^{13}\text{C}$ -DIC expected for CO_2 degassing (Doctor et al., 2008) suggests the effect of CO_2 degassing in the silicate spring. In my opinion, however, authors need to provide a discussion for the reason why the magnitude of degassing varies seasonally even though it maintains a closed system. It seems that the correlation between $\delta^{13}\text{C}$ -DIC and pCO_2 can also be explained with the mixing between atmospheric CO_2 ($\delta^{13}\text{C}$ -DIC of rainwater) and soil CO_2 as indicated in the Figure 4a. Low $\delta^{13}\text{C}$ -DIC of summer season with enhanced microbial activity supports this possibility. In section 4.3 (line 23 – 25, page 1809), authors attribute the seasonal variability of $\delta^{13}\text{C}$ -DIC in the silicate spring water to the effect of soil-derived CO_2 . In this view, sections 4.1 and 4.3 conflict each other for the cause of correlation between $\delta^{13}\text{C}$ -DIC and pCO_2 .

Doctor et al. (2008) is not listed in the reference list. Also note that it is published in 2008 not in 2007.

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