

Interactive comment on “Insights from year-long measurements of air-water CH₄ and CO₂ exchange in a coastal environment” by Mingxi Yang et al.

Yang

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Dear Nilsson et al.

Thanks a lot for your comment. We were not aware of the Nilsson et al. 2018 paper, and we are very glad that you undertook a close examination of the potential effect of water vapor on the Licor CO₂ fluxes. It is indeed interesting that you did not observe a large difference in CO₂ flux between the open path Li7500 and the dried closed path Li7200 on average at your land site and the Baltic Sea site, in contrast to previous oceanic studies. In light of this, we agree to remove the following sentence from the BGD paper.

"Unfortunately the open-path sensors utilized at Oĳstergarnsholm and Punta Morro

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(LI-7500, LI-COR Biosciences) could well be affected by CO₂-H₂O spectral interference (Blomquist et al. 2014; Landwehr et al. 2014; Butterworth and Else, 2018), likely resulting in biased fluxes under conditions of significant latent heat flux."

Out of scientific interest, your paper suggests that the insensitivity in CO₂ fluxes at these sites towards H₂O could be due to the low abundance of sea spray, and the use of the variance in relative signal strength index (RSSI) effectively removes any spurious fluxes. Figure 3 and Figure A1 in your paper clearly illustrate that the dried and undried CO₂ fluxes strongly diverge when variance in RSSI >1e-3. What do you think causes the variability in RSSI in the dried Licors (presumably not water droplets or sea spray)? Are previous gas exchange studies from Ostergarnsholm also filtered with this same RSSI threshold? We are happy to continue this discussion offline, as it is unrelated to the current BGD paper.

Sincerely,

Mingxi Yang

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