

Interactive comment on “Attenuation of concentration fluctuations of water vapor and other trace gases in turbulent tube flow” by W. J. Massman and A. Ibrom

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This paper addresses the very important problem of attenuation of scalar fluctuations in closed-path eddy covariance systems. Over the last few years new laser technologies have emerged that will permit eddy covariance measurements of isotopic fluxes of CO₂ and H₂O (i.e. ¹³CO₂, C¹⁶O₂, C¹⁸O₁₆O, H₂¹⁶O, H₂¹⁸O, etc). A potential deleterious effect of attenuation on closed-path eddy covariance isotopic flux measurements is a kinetic-type fractionation resulting in a phase shift between the heavier and lighter isotope pairs. This effect is expected to be very small for CO₂, but potentially more important for water vapor.

Could the new model, presented in this paper, be used to investigate the importance of this fractionation effect for water vapor in laminar and turbulent flow?

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