

## ***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 CO<sub>2</sub> and H<sub>2</sub>O (i.e. <sup>13</sup>CO<sub>2</sub>, C<sup>16</sup>O<sub>2</sub>, C<sup>18</sup>O<sub>16</sub>O, H<sub>2</sub><sup>16</sup>O, H<sub>2</sub><sup>18</sup>O, 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 CO<sub>2</sub>, but potentially more important for water vapor.

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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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