

Interactive comment on “Using Eddy Covariance to Measure the Dependence of Air-Sea CO₂ Exchange Rate on Friction Velocity” by Sebastian Landwehr et al.

Anonymous Referee #3

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This paper is a careful reanalysis of the eddy covariance measurements of momentum and carbon dioxide fluxes from the Southern Ocean Surface Ocean Aerosol Production study (SOAP). Every aspect of motion correction and flow distortion on the means and fluxes is considered and appropriate corrections applied. The smooth dependence on wind speed, of the friction and mass transfer velocities, suggests that the corrections are accurate and complete. The slightly higher friction velocities than those from COARE 3.5 may be a fetch effect: COARE was open ocean while SOAP was shorter fetch corresponding to higher drag coefficients. The divergence from quadratic of the CO₂ mass transfer velocity above wind speed of 16 m/s has important repercussions for the global carbon budget and is the main scientific (rather than technical) product

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of this fine work.

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