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Eddy covariance measurements of sea spray particles over the Atlantic Ocean

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Abstract. Most estimates of sea spray aerosol source functions have used indirect means to infer the rate of production as a function of wind speed. Only recently has the technology become available to make high frequency measurements of aerosol spectra suitable for direct eddy correlation determination of the sea spray particle flux. This was accomplished in this study by combining a newly developed fast aerosol particle counter with an ultrasonic anemometer which allowed for eddy covariance measurements of size-segregated particle fluxes. The aerosol instrument is the Compact Lightweight Aerosol Spectrometer Probe (CLASP) – capable of measuring 8-channel size spectra for mean radii between 0.15 and 3.5 µm at 10 Hz. The first successful measurements were made during the Waves, Air Sea Fluxes, Aerosol and Bubbles (WASFAB) field campaign in October 2005 in Duck (NC, USA). The method and initial results are presented and comparisons are made with recent sea spray source functions from the literature.

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