



Coastal Measurements of Oceanic Ozone Deposition by Eddy Covariance

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Dry deposition of tropospheric ozone is an important part of the global ozone budget, yet the underlying processes which control it – particularly to the oceans – are poorly understood. As such, models differ widely in their approaches and deposition estimates. There are only a few observational studies of oceanic ozone fluxes, and these report notably disparate values. Iodide and dissolved organic carbon are acknowledged to chemically enhance oceanic deposition, but a lack of direct observations limits our ability to understand the detailed processes.

Here we report recent ozone flux measurements made using the eddy covariance method with sensitive detection based on the chemiluminescent of O₃ with NO at the Penlee Point Atmospheric Observatory on the south coast of the UK. Simultaneous samples of the Sea-Surface Microlayer were also collected near the footprint area to allow for quantification of iodide and dissolved organic carbon concentrations.

Measured deposition velocities were 0.014 – 0.132 cm s⁻¹ (10th – 90th percentile), which are at the higher end of recent values reported for the open ocean, but similar to reported coastal values. In this presentation we will discuss the flux observations, the major contributions to their uncertainty, and how they compare with predictions.