

Atmosphere-Ocean Exchange Research Theme

Air-sea exchange is a major activity within C-CAPS. Research focuses on the exchange of aerosols and various trace gases with the ocean surface. Activities include measurements at Mace Head and on various research vessels. At Mace Head, measurements include eddy-correlation measurements of aerosol number, CO₂, and ozone while gradient flux measurements include PM₁ aerosol chemical composition and ozone. A new met and water chemistry buoy is being deployed at Mace Head by the Marine Institute. This buoy will include the capability of measuring oceanic pCO₂, fluorescence (chlorophyll-a), currents, conductivity, SST, and dissolved oxygen. The deployment of the buoy will support a recently funded programme on Impacts of Increased Atmospheric CO₂ on Ocean Chemistry and Ecosystems

This activity fits well with SOLAS-Ireland activities (National Contact Person – Brian Ward). SOLAS-Ireland National Reports available from here ([link](#)).

Recent Publications

Ceburnis, D., C.D. O'Dowd, S.G. Jennings, M. C. Facchini, L. Emblico, S. Decesari, S. Fuzzi, J. Sakalys, Elucidation of production mechanisms of water soluble and insoluble organic carbon in marine air and associated gradient fluxes over the Northeast Atlantic, *Geophys. Res. Letts.* VOL. 35, L07804, doi:10.1029/2008GL033462,, 2008

Facchini, M.C., M. Rinaldi, S. Decesari, C. Carbone, E. Finessi, M. Mircea, S. Fuzzi, D. Ceburnis, R. Flanagan, E. D. Nilsson, G. de Leeuw, M. Martino, J. Woeltjen and C.D. O'Dowd, Primary submicron marine aerosol dominated by insoluble organic colloids and aggregates, in press, *Geophys. Res. Letts.*, 2008.

O'Dowd, C.D., & G. de Leeuw, Marine Aerosol Production: a review of the current knowledge,, *Phil. Trans. R. Soc. A*, doi:10.1098/rsta.2007.2043, 2007

Flanagan, R.J., M. Geever, and C.D. O'Dowd, Direct Measurements of New-Particle Fluxes in

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the Coastal Environment, Environmental Chemistry, 2, 256-259, doi:10.1071/EN05069, 2005

Geever, M., C.D. O'Dowd, S. van Ekeren, R. Flanagan, D. E. Nilsson, G. de Leeuw, Ü. Rannik, Sub-Micron Sea-Spray Fluxes, Geophys. Res. Letts., doi:10.1029/2005GL023081, 2005.