

### Climate Change Research Theme

Climate Change on the regional scale is quantified using regional scale climate models such as HIRLAM (High Resolution Limited Area Model) and REMOTE (Regional Model with Tracer extension). Recent research using HIRLAM, in collaboration with Met Eireann, has focused on quantification of changes in storminess over the North Atlantic resulting from increases in sea-surface temperature resulting from global warming.

REMOTE contains full atmospheric composition schemes (aerosol-cloud-chemistry interactions) to evaluate the effect of atmospheric composition on climate change. The chemical scheme is based on RADM2 and the aerosol scheme is based on M7. Recent papers are listed below. For further information contact Colin O'Dowd.

#### Recent Publications

Rosenfeld, D., U. Lohmann, G.B. Raga, C.D. O'Dowd, M. Kulmala, S. Fuzzi, a. Reissell, M.O. Andreae, Flood or Drought: How Do Aerosols Affect Precipitation?, *Science*, 321, 1309-1213, 2008

Langmann, B., S. Varghese, E. Marmer, E. Vignati, J. Wilson, P. Stier and C. O'Dowd, Aerosol distribution over Europe: A model evaluation study with detailed aerosol microphysics, *Atmos. Chem. Phys.*, 8, 1591–1607, 2008.

O'Dowd, C.D., B. Langmann, S. Varghese, C. Scannell, D. Ceburnis, and M. C. Facchini., A Combined Organic-Inorganic Sea-Spray Source Function, *Geophys. Res. Letts.*, 35, L01801, doi:10.1029/2007GL030331, 2008.

Semmler, S. Varghese, R. McGrath, P. Nolan, S. Wang, P. Lynch, C. O'Dowd, Regional climate simulations of North Atlantic cyclones: changes in frequency and intensity in a climate change scenario, *Climate Res.*, 36: 1–16, doi: 10.3354/cr00732, 2008.

Semmler, S. Varghese, R. McGrath, P. Nolan, S. Wang, P. Lynch, C. O'Dowd, Influence of an increased sea surface temperature on North Atlantic cyclones, *J. Geophys. Res.*, D02107, doi/2006JD008213, 2008.