



Untangling the influence of air mass origin on trace gas measurements using the NAME dispersion model

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The NAME atmospheric dispersion model has been used to track the air arriving at trace gas measurement stations in the UK and at the Cape Verde Observatory in the Atlantic Ocean. In order to understand episodic changes and seasonal and inter-annual trends in trace gases at long term observatories, tracking the origin of the air masses is vital. This is of particular importance to sites that receive a variety of different influences (e.g. marine, recent emissions and aged emissions) so that any changes in trace gases can be attributed to a change in air mass type arriving at the site. Using the NAME dispersion model, a series of footprints of air mass influence (10 days backwards in time) are created and used to derive a geographical sector influence and from that a trajectory type is derived for every 3 hour period in the trace gas timeseries. This has been done for 3 years of the Cape Verde station timeseries and for the Weybourne Atmospheric Observatory on the North Sea and also for central London for very recent influences.

Trace gas levels and ratios during the various periods of different air mass type have been compared for the Cape Verde Observatory and this shows which species are most affected by long range transport from America or Europe or which species are transported from Saharan African during dust episodes. This helps us to understand source-receptor relationships and the role of long range transport to this marine boundary layer site.