P11 Influence of water on the regional modeling of organic aerosol using a volatility basis set approach.

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The Volatility Basis Set (VBS) approach has been used for several years to represent the formation of organic aerosol from volatile and semi-volatile organic compounds emitted by burning carbon-based fuels. The evolution of organic aerosol can be controlled by a range of factors: from reaction rates for oxidation, through to branching ratios of products from these reactions, which have been widely investigated. It can also be influenced by the simultaneous co-condensation of water along with the organic compounds, increasing the absorptive mass and so further increasing the uptake of organic compounds. This process is not currently taken into account in most VBS schemes, but in this study we investigate it's importance to organic aerosol growth.

We use WRF-Chem v3.4.1, with CBM-Z chemistry and (8 section) MOSAIC aerosol. This includes a 9-bin VBS, modified to account for the effect of associated water in the calculation of the equilibration of semi-volatile organic compounds.

Organic aerosol formation is studied in two different regimes: biomass burning dominated Brazil, and anthropogenic dominated North-Western Europe. We investigate the interplay between co-equilibration of water and the oxidation rate of VBS compounds, to see what dependence there is on these in the predicted composition of the organic aerosol.