



Modelling the radiative impacts of aerosol with a regional-scale air quality model

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Aerosols play an important role in the radiative balance of the atmosphere. They scatter or absorb radiation, depending on the aerosol composition, and determine cloud properties including albedo and lifetime. In addition, aerosols have an impact on human health and ecosystems; their concentrations at ground level are subject to legislation. The regional chemistry-transport model LOTOS-EUROS has a long tradition in performing emission scenario simulations for air quality and air quality forecasts. This model is now extended by a module that calculates the radiative impact of the aerosols, but without feedback to the meteorology. The advantage of this approach, as compared to the usual approach involving more complex coupled models of meteorology and atmospheric chemistry, is that LOTOS-EUROS is fast and is therefore very well suited to perform scenario simulations, which makes it very useful for policy support studies. We will discuss the approach to calculate the radiative properties of the modelled aerosol and compare with observations. To demonstrate the functioning of the system, the calculated impact of an emission scenario on radiation is shown.