



## **Sensitivity of ammonia concentrations to meteorology**

Carlijn Hendriks (1), Maria Quaade (1,2), Richard Kranenburg (1), Astrid Manders (1), and Martijn Schaap (1)  
(1) TNO, Climate, Air and Sustainability, Utrecht, Netherlands (astrid.manders@tno.nl), (2) Free University of Berlin, Berlin, Germany

Ammonia ( $\text{NH}_3$ ) is mainly released into the atmosphere due to agricultural activities. It is a species of concern as it causes eutrophication of ecosystems and the formation of aerosols (ammonium nitrate and ammonium sulfate). Peak concentrations are often reached during episodes in spring when fields are fertilized. The timing and extent of these episodes depend on meteorology and national regulations. In air quality modelling, often simple seasonal functions are used for the timing of  $\text{NH}_3$  emission. We present improvements in the time profile that take meteorology better into account. Livestock housing emissions were made temperature-dependent, and reported manure application events were correlated to meteorological variables (temperature, soil conditions) to develop a parameterization that can be used in a chemistry transport model. To verify the impact of a better parameterization on regional air quality simulations, the LOTOS-EUROS model was used and results were compared with measurements. Simulations for 2007-2011 showed a significant improvement in the temporal variability in comparison to measurements when a more accurate timing estimate is used. The direct impact on ammonia concentrations was larger than the impact on the secondary aerosols.