

Constraints on air quality model budgets of the sources and sinks of reactive trace gases

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One of the most valuable diagnostics from air quality models is spatially and seasonally detailed estimates of chemical deposition. These modeling tools enable us to estimate the impacts of emissions controls on acid deposition, or to predict how future emissions might govern reactive nitrogen deposition. Measurements of deposition present a valuable means of benchmarking the models' budget for specific tracers, and enforced consistency between predicted and observed deposition is often used to adjust model emissions. We will present some regional and global scale estimates of the roles of different reactive nitrogen species, their deposition in specific regions, and the constraints that measured deposition places on their sources. Further, since deposition is still fundamentally a notoriously difficult process to simulate reliably in air quality models, we will also consider the extent to which in situ or remote sensing measurements can compliment deposition observations for constraining both sources and sinks.

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