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From emissions to surface layer fluxes: Effect of chemical degradation

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Reactive trace gases emitted from the soil or vegetation undergo chemical degradation while transported by the turbulence in the planetary boundary layer. As our canopy scale flux measurements of such gases are generally conducted above a more or less dense vegetation canopies, the chemical degradation affects the link between the emission and the fluxes measured. Thus the chemical degradation has to be taken into account when downscaling the fluxes of the more reactive compounds measured above vegetation canopies. A modified stochastic Lagrangian transport model was used to study the effect of chemistry on the measurements of the fluxes of reactive trace gases. Various scenarios with different reactivities, canopy structures and emission distributions were studied to give a picture of the effect of chemistry on the flux measurements of different trace gases.