

Nitrous acid (HNO₂) - Concentration Measurements and Estimation of Dry Deposition over Grassland in Eastern Germany

A guest contribution to PHOTO-OXIDANTS: DISTRIBUTIONS AND TRENDS

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Measurements of nitrous acid (HNO₂) and nitric acid (HNO₃) was carried out over grassland in Germany at the field research station in Melpitz (near Torgau, 12°, 56' E, 51°,32' N, altitude 86 m) (Spindler *et al.*, 1997, Brüggemann and Spindler, 1997). Concentration measurement of trace gases (O₃, NO_x, SO₂) and micrometeorological data (*e.g.* wind, dry and wet bulb temperature as profile, radiations and precipitation) was simultaneous available. HNO₂ concentrations was determined using a wet annular denuder system (Oms *et al.*, 1996). HNO₂ can be formed by recombination of the radicals OH and NO, by the heterogeneous reaction of NO and NO₂ in the presence of water and can be also the product of a disproportionation of NO₂ and water to HNO₂ and HNO₃. In the morning nitrous acid can photolyze rapidly to release OH and NO. This process is an important source of early-morning OH radicals starting photochemical processes.

The present study describes the sampling by the wet annular denuder system and the measurement by ion chromatography. For 1995 annual and seasonal HNO₂ concentrations were determined. By examples of daily courses of HNO₂ concentration in combination with courses of other trace gases and micrometeorological parameters hints for different sources and sinks of HNO₂ are discussed. Dry deposition velocity is estimated using HNO₂ measurements in two levels above ground (gradient technique).

References

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