

## 2.152 A Comprehensive Test of the Recent Proposed HONO Sources in Field Measurements at Rural North China Plain .

Early Career Scientist

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#### Abstract:

As HONO photolysis is an important source of OH radicals, apportionment of the ambient HONO sources is necessary to better understand atmospheric oxidation. It was found in summer 2014 in the Wangdu campaign (a rural site in North China Plain) that the importance of the various HONO sources changed according to the variable atmospheric and surface conditions, even within the same site. Using current literature parameterizations for the different processes, NO<sub>2</sub> heterogeneous conversion, NO<sub>2</sub> photoenhanced conversion, photolysis of adsorbed nitric acid and particulate nitrate and direct emissions from soil were all included in a box model. The simulation results reproduced the observed HONO production rates during noontime in general. Using existing parameterizations of the uptake coefficient, NO<sub>2</sub> photoenhanced conversion, photolysis of particulate nitrate are the two major mechanisms of HONO formation, which accounted for 16% and 53% respectively. Soil emission is an important HONO source on fertilized days that accounted for 80% of simulation HONO during noontime. For some of the biomass burning periods, the NO<sub>2</sub> heterogeneous conversion to HONO were promoted significantly while the others not. In addition, the contributions from the other proposed production channels for HONO can be neglected for the conditions in Wangdu in general.