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Observation of HONO in Changzhou

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Gaseous nitrous acid (HONO) is one of the sources of atmospheric hydroxyl radicals, which has an important influence on the increase of atmospheric oxidation. In addition to the first emission and the homogeneous reaction of OH+NO in the gas phase, the heterogeneous reaction of NO_2 on various surfaces is considered to be the source of HONO.
During the period of observation in the Yangtze River Delta on June 2015, we apply the LOng Path Absorption Photometer (LOPAP) to measure the HONO concentration at Changzhou site. With the information of NOX, aerosol physics, properties and meteorological conditions obtained from the same period, we analyzed the source of HONO at night.
In the case of June 4th, 5th, and 15th at night, the concentration of HONO reached the highest value during the observation period $\sim$3.0 ppb. Except for these three days, HONO mean concentration generally in about 1-2 ppb, the HONO/NO_2 range during the period of observation is 0.32%$\sim$10.9%, within the domestic and foreign observation in the clean zone values, the average of values is 4.23%, within the general scope of 0.5% $\sim$ 5%. The results between HONO concentration and PM10 and PM2.5 at night show uncorrelated coefficient of R=0.186 and R=0.2108 respectively. The source apportionment showed high contribution from local combustion process of fossil fuels during the observation period and the heterogeneous reaction on the surface of the aerosol at night needs further study.