



## **Simultaneous measurements of HONO and NO<sub>2</sub> at a rural site in Northern China by IBBCEAS**

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HONO arose the interests for its photolysis is an important source of OH radical. However, its source, especially the daytime source is still unclear. With high primary pollutants and aerosol concentrations, the characteristics of air pollutions in China can be expected to be sometimes quite different from the one observed in developed countries. HONO shows high level not only in urban areas but also in rural areas in China.

The temporal behavior of HONO and NO<sub>2</sub> was investigated at a rural site in Wangdu, Hebei Province, China, by using incoherent broadband cavity-enhanced absorption spectroscopy (IBBCEAS) during the CAREBEIJING-NCP Campaign from June 26<sup>th</sup> to July 9<sup>th</sup> 2014. The concentrations of HONO and NO<sub>2</sub> measured by IBBCEAS were compared with a LOPAP (Long Path Absorption Photometer) instrument and a commercial NO<sub>x</sub> analyzer (Thermo 42i), and the results showed the well correlations for the correlation coefficient (R<sup>2</sup>) of HONO and NO<sub>2</sub> were up to 0.878 and 0.989, respectively. During the measurements, the daytime rapid variations of HONO were found. The peak values of HONO at around noon even unexpected exceed 3ppb and the unknown daytime HONO source strength (PM) reached up to 14 ppb/h, while the concentrations of NO<sub>2</sub> were very low (< 5ppb) and the peaks of HONO/NO<sub>2</sub> even exceed 100%, which were different from the previous field observations. The possible formations were discussed in this paper, the so high value of daytime HONO could not be explained by the known direct emissions or reactions related to NO<sub>2</sub> and might come from soils much possible or the other unknown sources.