



Observation of NO₃ radicals by LP-DOAS during CAREBEIJING 2014

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NO₃ radical is a significant species during night, affecting the formation of secondary organic aerosol (SOA) in night. It is also the most pivotal oxidation in night, involved in the removal process of NO_x and VOCs, which is directly related to atmosphere cleanliness. During the CAREBEIJING field campaign (June 5 - July 10, 2014), NO₃ radical was measured with a long path differential optical absorption spectroscopy (LP-DOAS) at Wangdu Site (38.68°N; 115.18°E) in the north of China. In this poster, the principle and fitting analyses of LPDOAS were presented; a retrieval example and a time series of NO₃ radicals' concentration with good continuity were showed. The detection limit (1σ) of NO₃ with 3.4km optical path is 3.4ppt. The observed mean NO₃ mixing ratios were 21 ppt. Under the assumption of steady state, the NO₃ production rates were calculated averaging at 1.013ppb/h. The calculated NO₃ lifetime has an average of 102.6 s. The correlation between the NO₃ mixing ratio and its production rates is about 0.78, which indicates the importance of direct sinks. However, the slope of the logarithmic correlation between NO₃ lifetime and NO₂ mixing ratio is -0.44, revealing the removal of NO₃ is not strongly dependent on the indirect loss process herein.