Geophysical Research Abstracts
Vol. 19, EGU2017-17436, 2017
EGU General Assembly 2017


# Observation of Vertical Column Density of NO_2 and SO_2 by A New Mobile Two optical paths Differential Optical Absorption Spectroscopy Technique

Zhaokun Hu (1,2), Ang Li* (1), Pinhua Xie (1), Fengcheng Wu (1), and Jin Xu (1)

(1) Key Laboratory of Environment Optics and Technology, Anhui Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, Hefei 230031, China, (2) Science Island Branch of Graduate School, University of Science and Technology of China, Hefei 230026,China;

The mobile differential optical absorption spectroscopy(DOAS) instrument collected the zenith scattered light in the UV or visible region and it was used to derive the vertical column density of trace gases above the measurement route. However, the slant column density is retrieved instead of vertical column density recently, which results in emission flux computing error. A new mobile multi light DOAS system was deployed, which set two angle telescopes(90°, 30°) to receive the scattered light respectively ,and set two shutters to switch the optical path quickly in the mobile platform. The slant column density in two different viewing directions were detected, and combined with the geometric approximation, the vertical column density of trace gas was obtained. The new system had high sensitivity and low uncertainty. A test experiment was performed in Huairou, Beijing using the new system. The distribution information of $NO_2$ and $SO_2$ vertical column density along the route was derived.