VALIDATION OF THE PHOTOSTATIONARY-STATE OF NOX IN THE URBAN ATMOSPHERE IN JAPAN

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Photostationary-state (PSS) of NO-NO$_2$ exchange is a critical factor of the photochemistry in the troposphere. In this study, measurements were conducted in the urban atmosphere in summer to investigate the PSS of NOx in the source area. NO, NO$_2$, O$_3$, JNO$_2$ and RO$_2$s (total peroxy radicals) were measured simultaneously with 1-s temporal resolution. Such fast measurements realized the validation of the PSS of fast exchange reactions. PSS of NOx was examined with a new PSS coefficient including observed RO$_2$s. As a result, the NOx-PSS including RO$_2$s was confirmed reasonable except for a few inactive photochemical conditions. In this study, systematic deviation of the PSS coefficient from unity was not observed. Thus, only O$_3$ and RO$_2$s reaction could explain the NO oxidation. The combination of NOx and RO$_2$s measurements with the PSS method should be utilized to explore NOx chemistry further in various environments.