

ベトナムホーチミンの異常なオゾン濃度変動の原因解明

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Research in the cause of abnormal daily variation of ozone concentration in Ho Chi Minh City, Vietnam (¹*Graduate School of Sustainable System Sciences, Osaka Metropolitan University*, ²*Faculty of Environmental Sciences, Vietnam National University-Ho Chi Minh City*) ○ Norimichi Takenaka,¹ Yusuke Fujii,¹ Hien To Thi²

As a result of measuring the concentration of pollutants in the air with automatic measuring instruments from 2012 to 2014 in Ho Chi Minh City, Vietnam, abnormal fluctuations only in the ozone concentration during the rainy season were observed. The reason for this is expected to be due to HONO because HONO is one of the main sources of OH radical. HONO is formed mainly by the reaction of NO₂ with water on the particle surface. The concentration of PM_{2.5} is extremely high, and this is a major air pollution problem in Ho Chi Minh City. In fact, when we measured the HONO concentration using the filter pack method in Ho Chi Minh City, it is found that the HONO concentration itself was higher than that in Osaka, and the ratio of HONO/NO₂ was the highest among those measured in the world. Therefore, it was assumed that HONO is efficiently generated from NO₂ due to the high humidity and high PM_{2.5} concentration during the rainy season in Ho Chi Minh. It is speculated that the abnormal fluctuations in ozone concentration during the rainy season were due to a combination of several factors, including high humidity during the rainy season, and HONO being easily dissolved in water.

Keywords : Ozone concentration variation, Gaseous nitrous acid , PM_{2.5}, Nitrogen dioxide, Ammonia

ベトナムホーチミンで 2012 年から 2014 年にかけて大気中の種々の汚染物質濃度を自動測定器で測定した結果、雨期のオゾン濃度変動だけ異常な変動を観測した。その原因として、HONO の関与が推測された。HONO は、OH ラジカルの主発生源の 1 つであるためであり、粒子表面上で NO₂ と水との反応により生成される経路がその大きな発生源であると報告されている。また、PM_{2.5} の濃度は極めて高く、これがホーチミン市の大気汚染の大きな問題となっている。実際に、ホーチミン市でフィルターパック法で HONO 濃度を測定したところ、HONO 濃度自体も大阪よりも高く、さらに NO₂ との比は HONO/NO₂ は世界で報告されている中でも最も高い値を示した。従って、ホーチミンの雨期の高湿度と高い PM_{2.5} 濃度により、効率よく NO₂ から HONO が生成していると推定された。雨期は湿度も高く、HONO は水に溶解しやすいなど、いくつかの要因が重なったために、雨期のオゾン濃度は異常な変動を示したものと推察した。