

Measurements of Volatile Organic Compounds at the summit of Mount Tai, in June 2006

Shungo Kato[1]; Jeeranut Suthawaree[1]; Yoshizumi Kajii[2]; Hajime Akimoto[3]; Yugo Kanaya[3]; Zifa Wang[4]

[1] Tokyo Metropolitan University; [2] Urban Environmental Sciences, Tokyo Metro. Univ.; [3] FRCGC/JAMSTEC; [4] IAP/CAS

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Volatile organic compounds (VOC) were measured during Mt. Tai intensive campaign held on June in 2006. Ambient air was sampled at the weather station located at the top of Mt. Tai (35.26N, 117.11E, 1534m a.s.l.) into the canisters which inner surface was coated for stable storage of sampled air. Air was sampled once a day during daytime (14:30). A few nighttime samples were also taken, and total 30 samples were collected. After sending the canisters to Japan, the air was analyzed by GC-FID (HP6890) and GC-MS (HP5973).

Relatively long-lived species in the atmosphere (ethane, acetylene, benzene, etc.) showed similar concentration variation. Relatively short-lived species in the atmosphere were observed as low concentration, indicating that the observed air was aged. The observatory was not influenced by very local pollution, and the observed air can be regarded as general air in this area. Biogenic species (isoprene, terpenes) were observed several ppt, and it was influenced by local biogenic emission.

Comparison between daytime and nighttime data showed that all of VOCs became lower during nighttime. The top of the mountain was in the boundary layer during daytime and above the boundary layer during nighttime. When comparing the background data observed at Moshiri in Japan, the nighttime data at Mt. Tai was similar VOC concentration level. On the other hand, daytime data of ethane, acetylene, and benzene was similar concentration level to those in Tokyo urban area. But general VOC in urban air (propane, butane, pentane, toluene) was much lower in Mt. Tai than urban area. Methylchloride and benzene was relatively high concentration and their ratio to carbon monoxide was similar to the ratio from biomass burning. The emission from burning of agricultural waste would be influenced to the observed data at Mt. Tai.