

## PF1) Assessment of Photochemistry of OH and NO<sub>3</sub> at Jeju Island During Asian Dust-Storm Period of the Spring 2001

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### Abstract

This study examines the influence of long-range transport of dust particles and air pollutants on photochemistry of OH and NO<sub>3</sub> at Jeju Island (33.17° N, 126.10° E) during the Asian dust-storm (ADS) period in April 2001. The atmospheric concentrations of criteria pollutants (O<sub>3</sub>, NO<sub>2</sub>, CO) and sulfur species were measured at a ground station on Jeju Island, Korea as part of the ACE-Asia intensive operation. Three ADS events were observed during the periods of 10-12, 13-14, and 25-26 April, respectively. The concentrations of the criteria pollutants (i.e., O<sub>3</sub>, NO<sub>2</sub>, and SO<sub>2</sub>) were not significantly different from those during the non-Asian-dust-storm (NADS) period. Average OH and NO<sub>3</sub> levels at Jeju Island during the study period (ADS and NADS) were estimated to be  $4-10 \times 10^5$  molecules cm<sup>-3</sup> and 2-4 pptv, respectively. Two main sources of OH radical were the primary production from the reaction of water vapor (H<sub>2</sub>O) and O(1D) radicals and the reaction of HO<sub>2</sub> with NO. CO was a dominant sink of OH during the ADS period; whereas NO<sub>2</sub> was the most important during the NADS period. For NO<sub>3</sub> radical, a reaction of NO<sub>2</sub> with O<sub>3</sub> was the most important atmospheric source; while N<sub>2</sub>O<sub>5</sub> uptake on dust particles was the most dominant sink during the ADS period.

**Key Words:** OH, NO<sub>3</sub>, Asian dust storm, ACE-Asia, Jeju Island