

**PA37) Assessment of DMS photochemistry at Jeju Island
During the Asian Dust-Storm Period of Spring
2001: Comparison of Model Simulations with Field
Observations**

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Abstract

This study examines the influence of long-range transport of dust particles and air pollutants on both local/regional DMS oxidation chemistry and the distribution of sulfur compounds at Jeju Island (33.17° N, 126.10° E) during the Asian dust-storm (ADS) period in April 2001. The atmospheric concentrations of these 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 DMS and CS₂ were higher during the ADS period than during the non-Asian-dust-storm (NADS) period. Conversely, a difference in SO₂ levels during the ADS period was not distinguishable from those measured during the NADS period. The diurnal variation pattern of DMS observed was largely different from that in the remote marine boundary layer. DMS loss by NO₃ in the atmospheric boundary layer was dominant due to significantly high NO_x levels influenced by the long-range transport of pollutants from East Asia to Jeju Island. The DMS maximum during the ADS period was observed in the late afternoon. The oceanic fluxes of DMS during the ADS and NADS periods were estimated to be 5.7±2.3 and 2.9 (+2.8/-1.5) mole m⁻² day⁻¹, respectively. The contribution of oxidized DMS to SO₂ levels at Jeju Island during the study period was found to be insignificant.

Key Words: DMS oxidation, Asian dust storm, ACE-Asia, Jeju Island, Budget