

Study of DMS Cycle in Regional Climate Model: Emission Fluxes and Oxidations

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Abstract

The ICTP regional Climate-Chemistry model (RegCM-Chem) coupled with full gas- phase chemistry module to study the emissions and chemical transformation of Dimethyl sulfide (CH_3SCH_3) (DMS) from open water surfaces. On regional scale, DMS oxidation chemistry forms integral components of simulating sulfur cycle. The mechanism describing the atmospheric oxidation of DMS is highly complex and involves many reactions. The gas-phase module in RegCM-Chem based on the KPP mechanisms. Simulating the complex chemistry of DMS oxidation places a high computational burden on regional model. Further more, the DMS oxidation mechanism is fraught with many uncertainties, including both unknown reactions and unmeasured rate constants. RegCM-Chem is able to capture the main spatial and temporal distribution of DMS and SO_2 on regional scale.