

# ***Interactive comment on “Parametric sensitivity and uncertainty analysis of dimethylsulfide oxidation in the remote marine boundary layer” by D. D. Lucas and R. G. Prinn***

## **Anonymous Referee #1**

Received and published: 14 October 2004

The paper of Lucas and Green is of sufficient originality and interest to merit publication in ACP journal. It presents interesting results regarding how important are the main sources of uncertainties in the complex process of understanding and interpretation of DMS oxidation mechanism in the atmosphere.

This is a computationally based study that gives convincing evidence for its importance in identifying the key parameters in systems with complex and uncertain chemistry.

Personally I think that the used analytical methods are well described by the authors and as well adequately explained. However, the missing points have been already taken into account within other Interactive Comments so hopefully Author Comments reply will answer these questions. Overall, the presentation is clear and the main con-

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clusions seem to be well justified.

As it is already known how chemical process involving aerosols can affect the Earth's radiative balance and the oxidative state of the troposphere, stress should be here done in order that the authors will better underline how important is DMS atmospheric oxidation role in controlling the levels of aerosol in the marine boundary layer. The importance of some DMS oxidation formed species (primary and secondary) such as SO<sub>2</sub> and H<sub>2</sub>SO<sub>4</sub> in aerosols formation should be as well better underlined in order to even more convince on the importance of the performed study and analysis.

In Section 2.1.1 statements by the authors should be made even clearer in order to underline how previous laboratory studies really contribute at clarifying the oxidation mechanism of atmospheric DMS (Atkinson et al., 1984; Hatakeyama and Akimoto, 1983; Hynes et al., 1986).

Atkinson, R.; Pitts, J.N.; Aschmann, S.M. (1984), Tropospheric reactions of dimethyl sulphide with NO<sub>3</sub> and OH radicals, *Journal of Physical Chemistry* 88, 1584-1587

Hatakeyama, S.; Izumi, K., Akimoto, H. (1985), Yield of SO<sub>2</sub> and formation of aerosol in the photo-oxidation of DMS under atmospheric conditions, *Atmospheric Environment* 19, 135-141

Hynes, A.J.; Wine, P.H.; Semmes, D.H. (1986), Kinetics and mechanism of OH reactions with organic sulphides, *Journal of Physical Chemistry* 90, 4148-4156

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Interactive comment on *Atmos. Chem. Phys. Discuss.*, 4, 6379, 2004.

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