



Atmospheric Sulfur Cycle Simulated in The Global Model GOCART: Model Description and Global Properties

NASA Technical Reports Server (NTRS), et al., Mian Chin



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BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 34 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. The Georgia TechGoddard Global Ozone Chemistry Aerosol Radiation and Transport (GOCART) model is used to simulate the atmospheric sulfur cycle. The model uses the simulated meteorological data from the Goddard Earth Observing System Data Assimilation System (GEOS DAS). Global sulfur budgets from a 6-year simulation for SO₂, sulfate, dimethylsulfide (DMS), and methanesulfonic acid (MSA) are presented in this paper. In a normal year without major volcanic perturbations, about 20 of the sulfate precursor emission is from natural sources (biogenic and volcanic) and 80 is anthropogenic: the same sources contribute 339 and 67 respectively to the total sulfate burden. A sulfate production efficiency of 0.41 - 0.42 is estimated in the model, an efficiency which is defined as a ratio of the amount of sulfate produced to the total amount of SO₂ emitted and produced in the atmosphere. This value indicates that less than half of the SO₂ entering the atmosphere contributes to the sulfate production, the rest being removed by dry and wet depositions. In a simulation for 1990, we estimate a total sulfate production of 39 Tg S...



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