

Foley, J.A., K. Taylor, S. Ghan (1991). Planktonic dimethylsulfide and cloud albedo - an estimate of the feedback response. *Climatic Change* 18, 1-15.

Abstract: Partial control of climate by the biosphere may be possible through a chain of processes that ultimately links marine plankton production of dimethylsulfide (DMS) with changes in cloud albedo (Charlson et al., 1987). Changes in cloud optical properties can have profound impacts on atmospheric radiation transfer and, hence, the surface environment. In this study, we have developed a simple model that incorporates empirically based parameterizations to account for the biological control of cloud droplet concentration in a first attempt to estimate the strength of the DMS-cloud albedo feedback mechanism. We find that the feedback reduces the global climatic response to imposed perturbations in solar insolation by less than 7%. Likewise, it modifies the strength of other feedbacks affecting surface insolation over oceans by roughly the same amount. This suggests that the DMS-cloud albedo mechanism will be unable to substantially reduce climate sensitivity, although these results should be confirmed with less idealized models when more is known about the net production of DMS by the marine biosphere and its relation to aerosol/cloud microphysics and climate.