

A Climatology of Volcanic Stratospheric Aerosols Derived From 16 Years of SAGE II Measurements

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A climatology of stratospheric aerosols has been processed from SAGE II aerosol extinction profiles covering the time period October 1984 - March 2000. Using a regularized inversion method, we derived the particle number density, mode radius and width of a monomodal lognormal particle size distribution.

The extended temporal and latitudinal coverage of the SAGE II Experiment allows to dispose on a wide range of different volcanic situations, from a very low volcanism corresponding to background aerosol to very high volcanism following immediately major volcanic eruptions. We observe the evolution of the volcanic signature on the various aerosol parameters over large time, latitude and altitude scales. The consequences of several major eruption on the aerosol content and characteristics in the stratosphere is analyzed. In particular, the whole volcanism decay period following the Pinatubo eruption is observed during a decade. Also the evolution after other major eruptions (Ruiz, Kelut, and partly El Chichon) is studied. In this way, we were able to show that a very large volcanic eruption like the Pinatubo eruption can have severe impact on the aerosol characteristics, even after many years. Also the relative influence of volcanism with respect to other effects (QBO, seasonal effects) is studied as a function of the altitude and latitude.