



## **Response to the eruption of Mount Pinatubo in relation to climate sensitivity in the CMIP3 models**

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The radiative flux perturbations and subsequent temperature responses in relation to the eruption of Mount Pinatubo in 1991 are studied in the ten CMIP3 GCMs that include a parameterization of volcanic aerosol. The models display a somewhat larger and more extended radiative perturbation than suggested by satellite observations, but in general the agreement between models and observations is fair.

The time scale representing the delay between radiative perturbation and temperature is determined by the delayed ocean response, and is estimated to be centered around 5 months in the models.

The size of the radiative perturbation caused by the volcanic eruption is correlated to the equilibrium climate sensitivity in the models, more sensitive models having a larger perturbation. This relation is valid with the exception of one outlying model.

Similarly, the ratio between the integrated temperature perturbation and the integrated radiative perturbation is correlated to the model climate sensitivity, more sensitive models having a larger ratio, except for the one outlying model. Making use of the relation between this ratio and climate sensitivity in the models to estimate the climate sensitivity corresponding to the observed value of the same ratio, results in an estimate of the equilibrium climate sensitivity just above 3 K.