SPARC Workshop SHARP2016

Stratospheric Water Vapour Simulated by EMAC including Volcanic Aerosol

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Stratospheric water vapor from transient simulations with the CCM EMAC with interactive aerosol and self-consistent QBO for the ENVISAT-period and the Pinatubo-period is presented. The model reproduces the tropical tape recorder well but is too dry by about 1ppmv compared to observations in the standard setup with 90 levels and horizontal resolution T42. There is a good correlation between temperature and water vapor in the lower tropical stratosphere. It is shown that the dry bias can be reduced by a vertical shift of the stratospheric model levels by about 200m. Major volcanic eruptions like Pinatubo cause a temporary increase of water vapor by raising the cold point temperature due to radiative heating. This presentation includes also some results on moistening by the Asian monsoon and on the sensitivity of stratospheric water vapor on convection parameterizations.