Volcanic eruptions are an important part of the global climate system. The volcanic induced climate effects are however very complex and cannot be explained with the radiation effect of the volcanic aerosol alone. The complexity of the climate response to a volcanic eruption is e.g. evident in the observed winter warming over the northern hemisphere continents as shown for at least 12 tropical eruptions between 1883-1992 by Robock and Mao (1992). The processes which lead to this winter warming pattern is at present not fully understood. Aim of the project is to advance our current understanding of the global-volcanism climate system by studying the impact of large tropical volcanic eruptions on atmospheric and ocean dynamics (Arctic Oscillation, El Nino, QBO) with an atmosphere and a coupled atmosphere-ocean model. For the studies a prescribed Pinatubo aerosol data set (Stenchikov et al, 1998) is implemented in ECHAMS which allows ensemble calculations for a well defined volcanic forcing with different vertical and horizontal resolution of the climate model.