

## 9種の再解析データにおける大規模火山噴火に対する全球気候応答 Global response to the major volcanic eruptions in 9 reanalysis datasets

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The global climate response to the eruptions of Mount Agung in 1963, El Chichón in 1982 and Mount Pinatubo in 1991 is investigated using 9 reanalysis datasets (ERA-40, ERA-Interim, JRA-25/JCDAS, JRA-55, MERRA, NCEP/NCAR, NCEP/DOE, NCEP-CFSR, and 20CR). Multiple linear regression is applied to the zonal and monthly mean time series of key dynamical variables by considering the components of linear trends, seasonal variations, the Quasi-Biennial Oscillation (QBO), solar cycle, and El Niño Southern Oscillation (ENSO). The residuals are used to define the volcanic signals. Latitude-altitude distributions of the volcanic signals and of the regression coefficients are compared and discussed among the different reanalyses. In response to the Mount Pinatubo eruption most reanalyses show statistically significant negative and positive temperature anomalies in the tropical troposphere and in the tropical lower stratosphere, respectively. The signals are similar for the El Chichón eruption, with a statistically insignificant tropospheric response. The response to the Mount Agung eruption is asymmetric about the equator with significant warming in the Southern Hemisphere midlatitude upper troposphere to lower stratosphere. This work is a contribution to the SPARC Reanalysis Intercomparison Project (S-RIP).

キーワード: 火山噴火, 気候, 再解析, 成層圏, 対流圏  
Keywords: volcanic eruption, climate, reanalysis, stratosphere, troposphere