Geophysical Research Abstracts
Vol. 14, EGU2012-9488, 2012
EGU General Assembly 2012

The Impact of Hawaiian Volcanoes on Climate

H. Pearce (1), K. Pringle (2), A. Schmidt (2), and K. S. Carslaw (2)

(1) Undergraduate Research and Leadership Scholar, School of Earth and Environment, University of Leeds LS2 9JT, United Kingdom, (2) Institute for Climate and Atmospheric Science, School of Earth and Environment, University of Leeds, Leeds LS2 9JT, United Kingdom

Kilauea Volcano in Hawaii has been effusively erupting sulphur dioxide from the summit and East Rift Zone since 1983. To investigate the impact of this volcanic SO_2 source on both the regional and global aerosol burden we have used a global aerosol model (GLOMAP) to simulate two eruption scenarios: the first is a control simulation in which no emission of SO_2 from Kilauea is permitted, the second is a perturbed simulation in which SO_2 emissions from Kilauea representative of the year 2005 are used. All other SO_2 emissions were left unperturbed and both simulations cover a 12 month period. Observations suggest that 2005 represents a year of above average SO_2 emission. We estimate that Kilauea volcano contributes to an increase in the total particle number (above 3nm in diameter) of up to 100cm^3 between 7 and 18km in altitude in the mid to low latitudes of the northern hemisphere. Increases in cloud condensation nuclei number concentration are localised to the 30 degrees in latitude around Kilauea, and to 3km in altitude. Outside of this area the impact on CCN is small.