

Abstract

Explosive volcanic eruptions affect climate by injecting gases and aerosol particles into the troposphere and stratosphere. Only if the eruption cloud is rich in SO₂ will the eruption produce a long-lived aerosol cloud, in response to the sulfate aerosols that form over the next few weeks. The eruption of Oldoinyo Lengai Tanzania, July 2007 and March 2008, injected pollutants into the atmosphere with potential impacts on the air quality and climate over East Africa. This work simulated the spatial and temporal distribution of the volcanic gases and particulate matter emitted after the eruption. The Hybrid Single-Particle Lagrangian Integrated Trajectory (HYSPLIT) model, which is a complete system for computing simple air parcel trajectories to complex dispersion and deposition simulations, was used for the analysis. The dispersion of pollutant was calculated by assuming either puff or particle dispersion. The results indicated that the effluents were largely spread and eventually deposited around northern Tanzania and along the Kenya - Tanzania border. A relatively small concentration of pollutants was transported to Lake Victoria within 48 hours.