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Room:301B

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Modify of Tephra2 and a test run using the 1986 eruption of Izu-Oshima volcano

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Tephra2 is a simulation program based on the advection diffusion model of Suzuki, 1985; Macedonio et al, 1988, and developed as a tool for probabilistic hazard modelling (Connor et al., 2001; Bondadonna et al., 2005). This code characterizes the plume using a vertical column model and application of inversion techniques show the code's potential in reconstructing ancient eruptions. In previous studies, column reconstruction seemed to successfully model the simple vertical plume of the 1992 eruption of Cerro Negro, Nicaragua (Connor and Connor, 2006); however, the model failed to uniquely constrain the column height for a larger eruption, the 2450 BP eruption of Pululagua, Ecuador. This discrepancy reflects that tephra fallout during the most energetic eruptions takes place from the base of a horizontally spreading umbrella cloud as shown in studies based on the gravity current models rather than randomly from the uprising column. We have modified the Tephra2 code to include fallout from the umbrella cloud. We also implement the Suzuki function to calculate the probability of particle release as a function of height. In the presentation, application to the 1986 Izu-Oshima eruption will be shown as a test case.

Keywords: Tephra2, volcanic ash, simulation, advection diffusion model, Izu Oshima volcano, volcanic plume