

## Particle fallout from an eruption column (2) - evaluation of reproducibility

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One of the major sources of error in tephra fall simulation is considered to be the source term, which depicts amount of particle release as a function of height in eruption column. The source term has been assumed to be linear or modeled using relationship between particle size and plume velocity (Suzuki function); however, no direct observation of the source term has been reported. The author has tried to obtain source term of the 1986 Izu-Oshima B eruption based on inversion technique using a tephra simulation code named Tephra2. Here the reproducibility of the inversion is evaluated.

In this study, two methods are applied to evaluate reproducibility. One is validation using a dummy source term. In this method, a dummy source term is given and tephra loads on each observation point is calculated using Tephra2. Based on the calculated loads, the source term is inversely calculated and compared with the originally given source term.

The other method is jackknifing. In this method, source terms are calculated using dataset in which a single observation is deleted one by one. The calculated source term is called as pseudo-value and the estimated source term is defined as an average of the pseudo-values. The error of the source term is also defined as a standard deviation of the pseudo-values.

In the 1986 Izu-Oshima B eruption, range of reproducible height changes as a function of grain size; 0-7 km for -3 phi particles and 0-4 km for 0 phi particles. The errors of obtained source parameter was limited; less than 10 % in the most cases.

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