

МОЙСЕЕНКО, МАЛИК

NUMERICAL INVERSION OF TOTAL ERUPTED MASS OF VOLCANIC ASH PARTICLES AND ITS HEIGHT DISTRIBUTION WITHIN ERUPTION CLOUD

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The article provides an algorithm for recovery of parameters of ash emissions (total volume and its height distribution) during explosive eruptions. The solution for the corresponding inverse task uses a multiple regression approach with minimal a prior information on the eruption dynamics. As an example, we consider a strong explosive event at Bezymianny Volcano, Kamchatka, on 24.12.2006. The estimations showed that the mass distribution for ash emission with heights was partially controlled by the emission of ash material inside the clouds from pyroclastic flows. This peculiarity was revealed as a bimodal distribution of the emission mass with maximums at the mid tropospheric and low stratospheric heights.

Keywords: volcanic ash, Bezymianny Volcano, atmospheric transportation, numerical modeling.