The FALL3D Ash Cloud Dispersion Model and its Implementation at the Buenos Aires VAAC

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Airborne volcanic ash and aerosols threat aerial navigation and affect the quality of air at medium to large distances downwind from the volcano. Airplane re-routing and airport disruption carry important socioeconomic consequences at regional and national levels. Models to forecast volcanic ash clouds constitute, together with satellite imagery, a valuable predictive tool during a crisis. FALL3D is an Eulerian ash cloud dispersion model based on the advection-diffusion-sedimentation equation. The model runs at any scale, from regional to global. The dispersion model is off-line coupled with global (e.g. GFS, NMM-b) and mesoscalar (e.g. NMM-b, WRF, ETA) meteorological models and with re-analysis datasets. FALL3D has been recently installed at the Buenos Aires VAAC, depending on the Argentinean National Meteorological Service (SMN). In this presentation we summarize the characteristics of the model and its implementation at the VAAC, including the different domains, the meteorological forecast inputs (ETA or GFS) and the scenarios assumed for some critical volcanoes (Chaitén, Llaima, Lascar, etc.). Pre-defined scenarios are necessary to give an early first order prediction when data is poor or unavailable. This is particularly critical in Central Andes, were most active volcanoes are located in remote areas with poor or inexistent monitoring.

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