



Sulfur injection and ash dispersion: A comparison between co-ignimbrite and Plinian eruptions

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It is believed that many of the past large volcanic eruptions were secondary so called co-ignimbrite eruptions that were forced over a large area instead of a point source as in the Plinian case. Previous modeling studies based on one-dimensional plume models assumed a similarity between Plinian and co-ignimbrite eruptions. We used the fully three-dimensional plume model ATHAM to investigate the dynamics and the resulting plume heights of co-ignimbrite and Plinian eruptions in an idealized setup. In contrast to Plinian plumes the co-ignimbrite plumes develop from multiple updrafts with profound impacts resulting in much reduced neutral buoyancy heights. Effects of this regime shift will be shown in a comparison between Plinian and co-ignimbrite eruptions for sulfur dioxide injection and ash dispersion.