



Contribution of volcanic forcing to the initiation of the Black Death Epidemic

Henry Fell (1), James Baldini (1), and Ben Dodds (2)

(1) Department of Earth Sciences, Durham University, Durham, United Kingdom (h.g.fell@durham.ac.uk), (2) Department of History, Durham University, Durham, United Kingdom (benjamin.dodds@durham.ac.uk)

The 14th Century plague epidemic, commonly termed the Black Death, coincided with the tumultuous climatic shift from the relative stability of the Medieval Climate Anomaly (MCA) to the initiation of the Little Ice Age (LIA). Plague is predominantly a vector borne disease that is spread through the transmission of the *Yersinia pestis* bacteria. This bacterium may have originated in the rodent populations of the Tibetan Plateau and later spread rapidly westward through Eurasia after vector transmission to humans. Several studies have determined that Asian rodent and vector populations are highly sensitive to climatic perturbations. The Samalas eruption of 1257 was the largest injection of aerosols in the Common Era and therefore probably had a significant climatic effect. Through a range of proxy records across Eurasia we reconstruct the climate for the period immediately preceding the outbreak of plague. This study investigates the interaction between the Samalas eruption of 1257, the climatic response to the event and the potential effect on the initiation of the Black Death epidemic which shaped population and culture across Eurasia for centuries.