

# Thomas Aubry

University of Exeter

*'Modelling explosive volcanic eruptions from proximal hazards to global climate disruption'*

**Mon, 6th March 2023 @ 14h**

onsite: ENS Lyon, Amphi L

online: <https://ent-services.ens-lyon.fr/entVisio/quickjoin.php?hash=1ea8ef1a76ba97ba5cf6a56f612b3c6630a14aa834e4214de9d43488cf00e352&meetingID=10113>

Explosive volcanic eruptions have critical impacts on our environment and societies including local-regional scale devastation from pyroclastic flows and tephra fallout, regional-continental scale air pollution and airspace shutdown, and global-scale cooling of Earth's surface. I will give an overview of my research and how it contributes to understanding and managing these impacts. First, I will discuss how volcanic plume modelling informed by laboratory experiments and observational databases constrain the conditions under which volcanic columns collapse and form devastating pyroclastic flows, and the height at which they inject material into the atmosphere. Plume height is particularly critical to forecasting the short- and long-range dispersion of volcanic ash and gas, and their lifetime in the atmosphere. Second, I will use numerical models ranging from simple box models to full-blown Earth System Models with interactive stratospheric aerosols to discuss how volcanic eruptions have affected our climate over the last 2500 years, and how global warming will be affected by future eruptions. Last, I will bring together volcanic plume, aerosol and climate modelling to interrogate how ongoing climate change driven by anthropogenic activities will affect the life cycle of volcanic stratospheric aerosols, and whether we should expect more or less volcanic cooling as Earth warms.