

Investigating tephra loads leading to roof collapse

Tephra fallout (ejected particles of all sizes) from volcanic plumes can lead to significant additional loading on roofs and collapse can occur when tephra is just 10-20 cm thick.

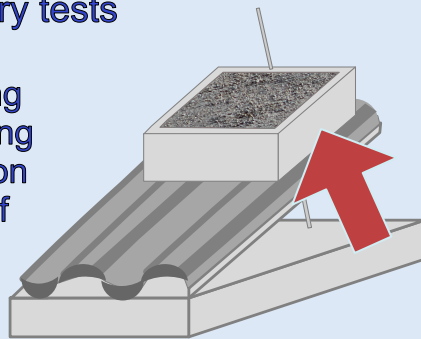
Buildings are often designed to withstand snow loading and this project is testing whether a similar approach, following the Structural Eurocode standards, could be used for tephra loading.



Methods

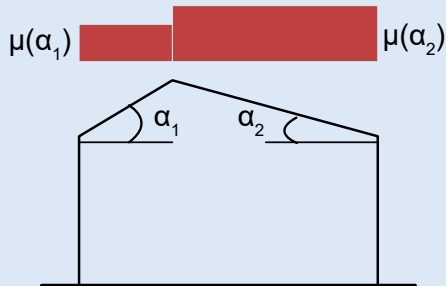
Laboratory tests

Investigating tephra sliding behaviour on various roof materials



Adapting the snow load Eurocode

Identifying roof shape coefficients (μ) for tephra loading



Ascension Island case study

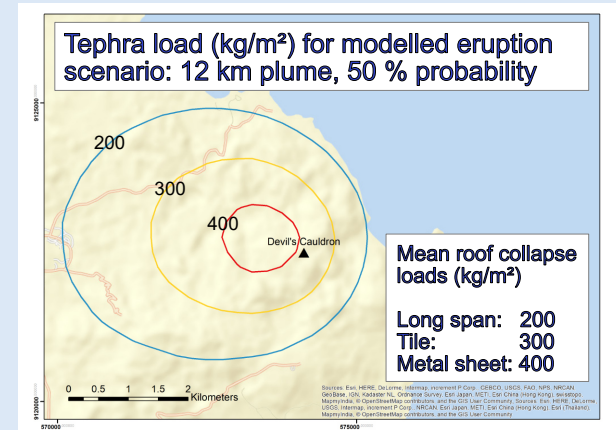


Eruption scenario modelling

Building surveys on Ascension



Roof material: Tile
Roof pitch: 30
Roof type:



Outcomes

- Roof vulnerability assessment to be shared with Ascension Island Government
- Roof shape coefficients to be used in designing roofs to withstand tephra fall
- Methodology applicable to other volcanic areas to identify buildings at risk of roof collapse