

Modelling the Hazard Footprint and Consequences of Lava Flows in an Urban Environment

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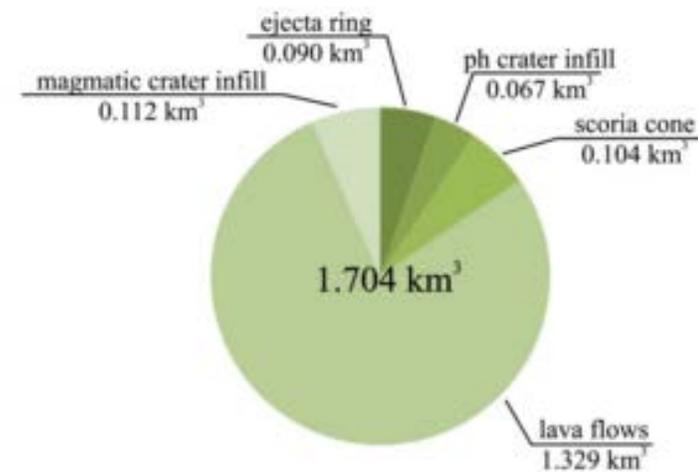


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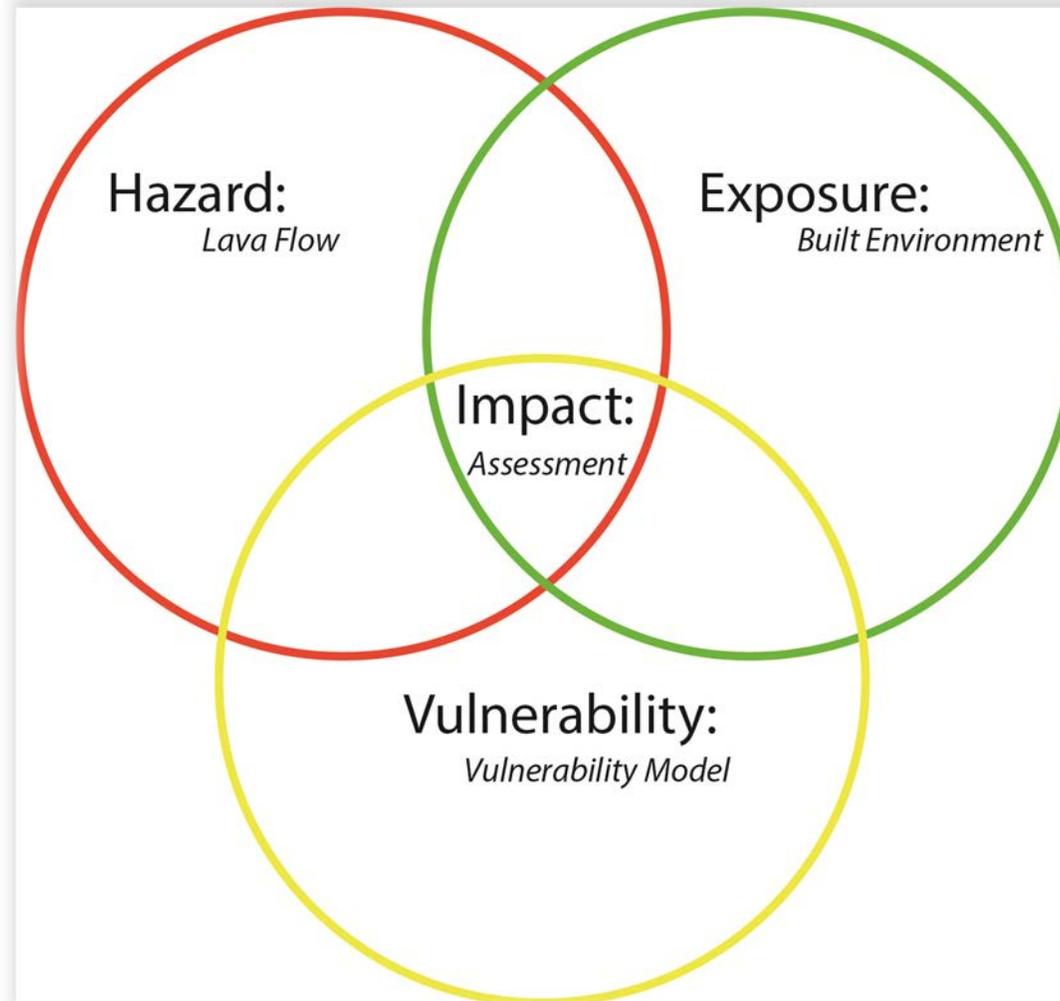
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Auckland Volcanic Field



Impact Assessment Framework



Objectives

How can Auckland best protect its built environment from lava flow inundation?

- *To compare case studies of urban lava flows overseas by extracting quantitative impact data where possible and collating information on mitigation measures where applicable*
- *To collect geochemical, rheological, and volumetric data from lava from the Auckland Volcanic Field to be used as constraints for analogue modelling and numerical simulations*
- *To determine how vulnerable human systems and structures are to lava flow invasion through laboratory modelling*
- *To simulate lava flow behavior in Auckland numerically for a series of eruption scenarios to determine their hazard footprints*
- *To undertake an impact assessment for the lava flow hazard footprints created in Objective 4*
- *To combine the above data to evaluate possible mitigation measures for lava flow hazard in Auckland*

Lava Flows Abroad



Volcano Videos, 2014



Williams & Moore, 1983

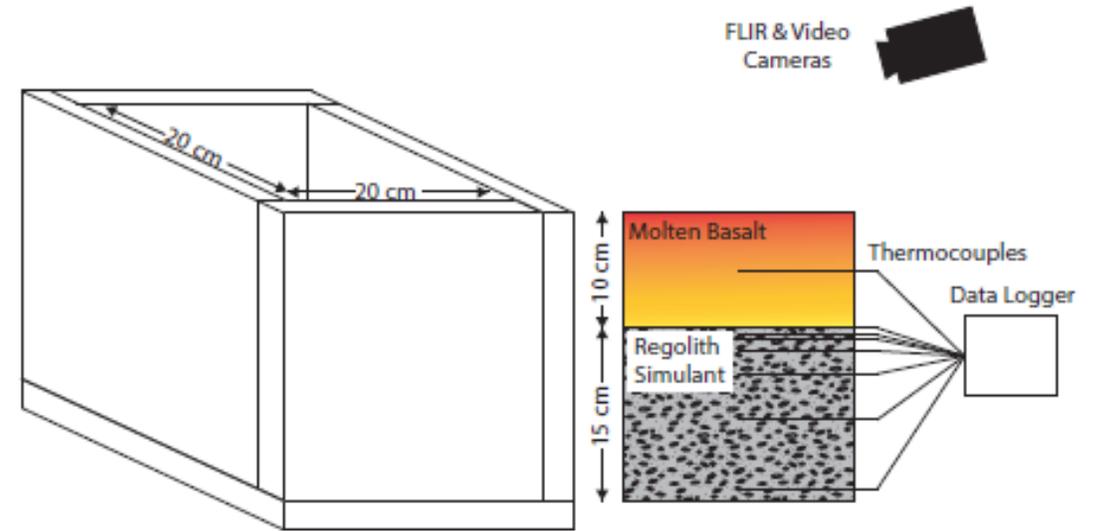
June 27th Lava Flow (Kīlauea, Hawaii)



Vulnerability Modelling

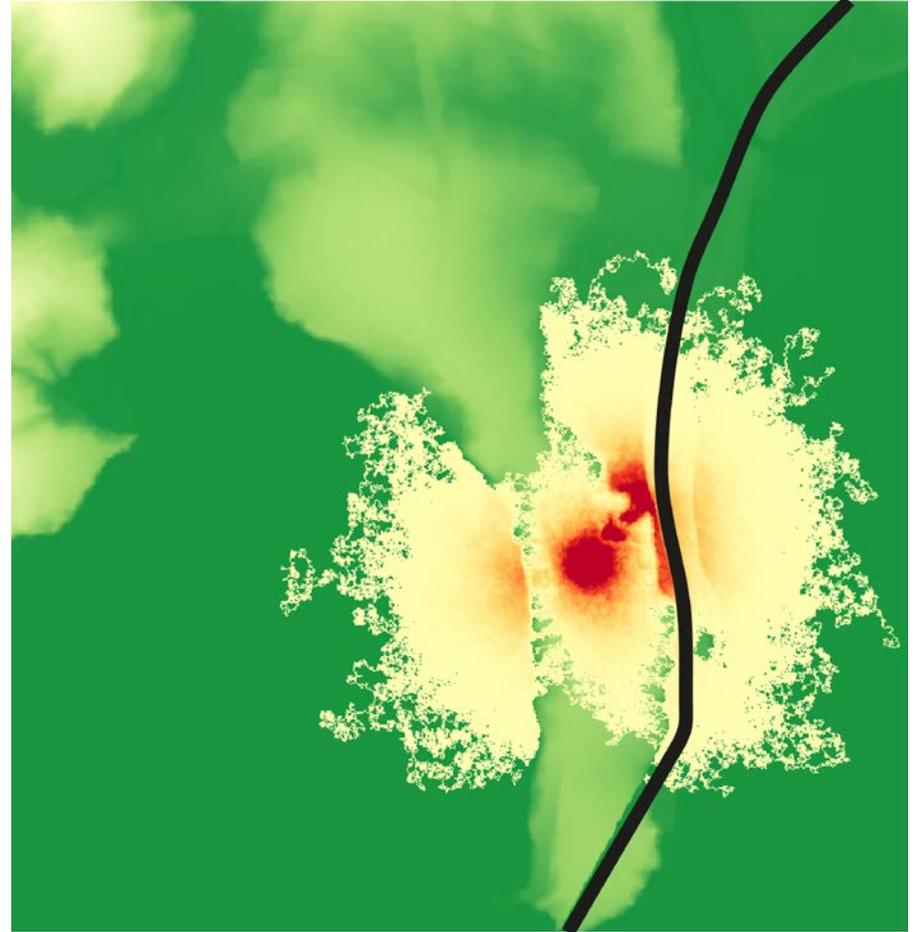
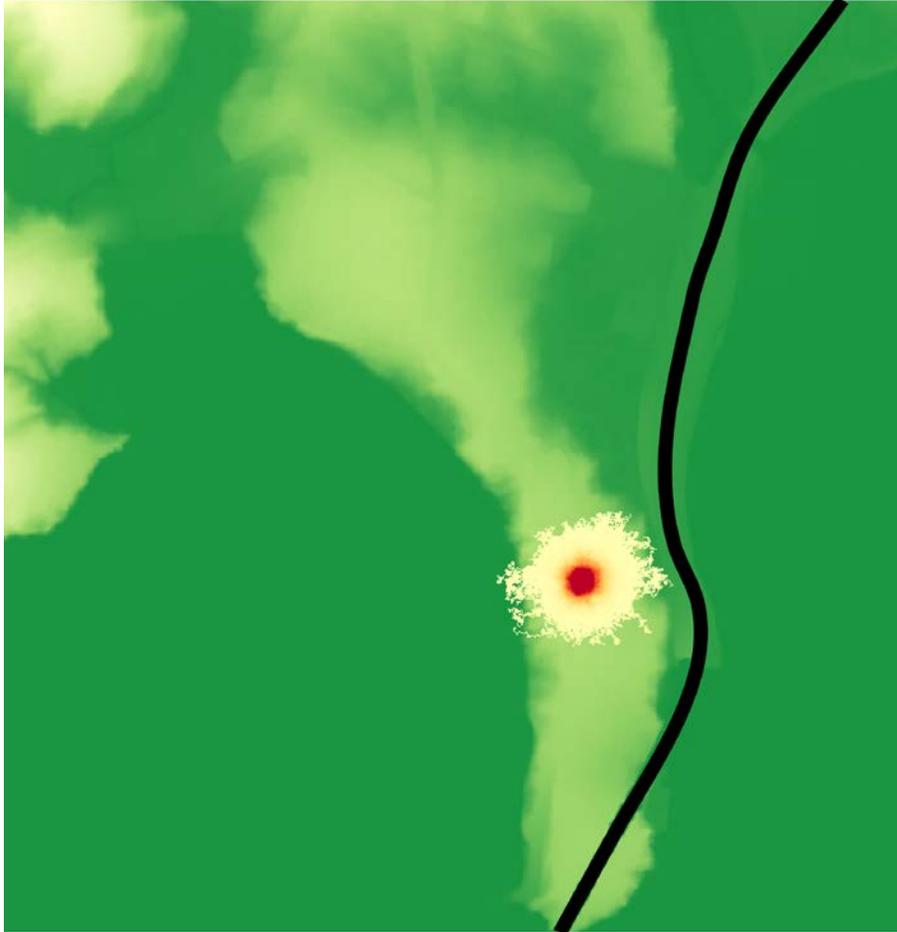


Dietterich et al., 2014

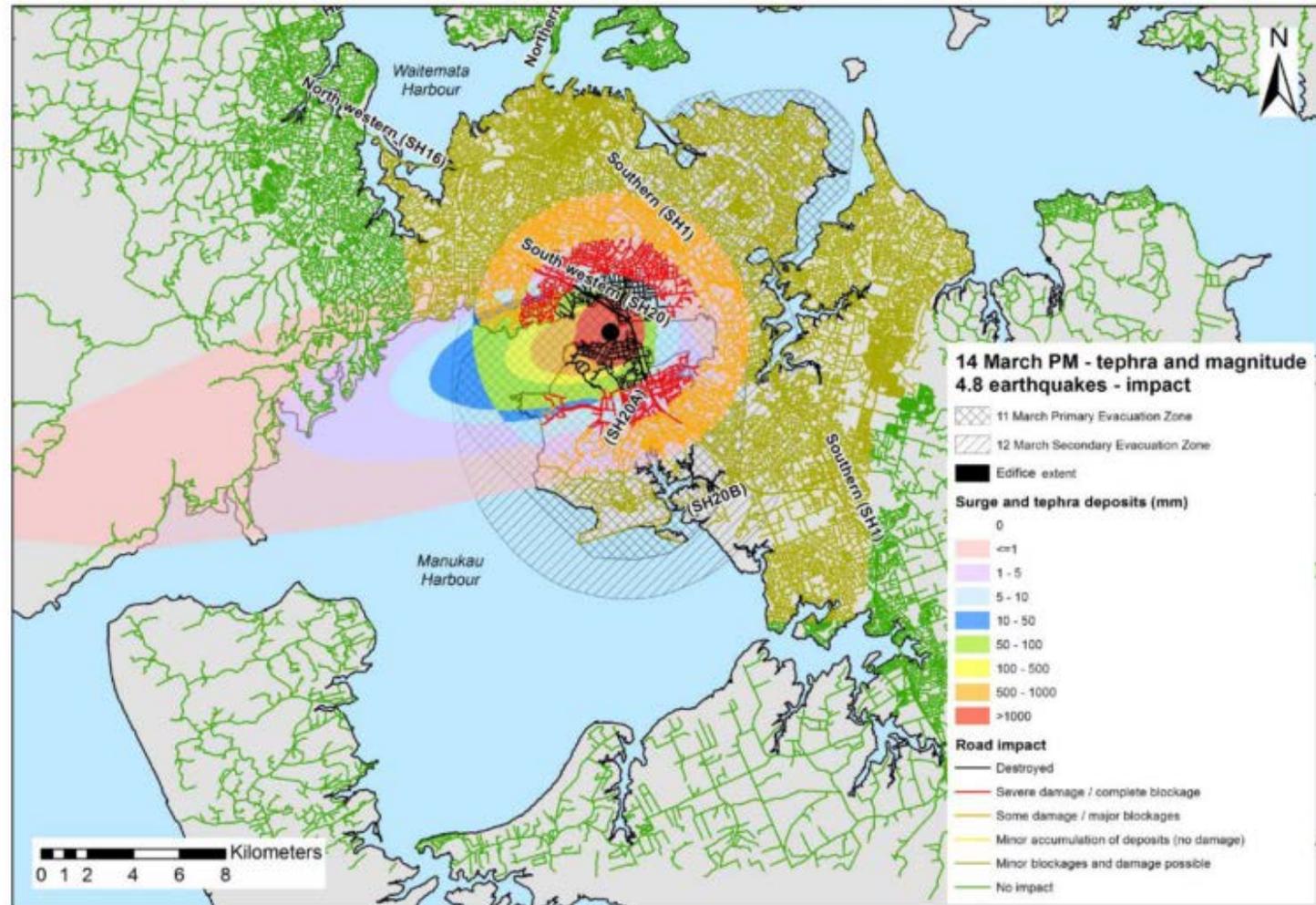


Rumpf, 2014

Methods: Numerical Model



Methods: Impact Assessment



Mitigation Abroad



Barberi et al., 1993





Thank you.

Photo by George Williams