

The Determining Volcanic Risk in Auckland (DEVORA) project: source to surface, scientists to society

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The monogenetic, potentially active Auckland Volcanic Field (AVF) has produced approximately 55 volcanoes over the past 250,000 years. Though the likelihood of another event occurring in any given year is low, the associated risk is very high, as Auckland is New Zealand's most populated and economically critical city. Moreover, ash fall from central North Island volcanoes could threaten Auckland's health, lifelines, and economy. The seven-year, multidisciplinary DEtermining VOlcanic Risk in Auckland (DEVORA) project began in 2008 with the major aims to 1) characterise the AVF in a Geological Model, 2) summarise the subsequent long-term volcanic hazards from eruption and ash fall events in a Probabilistic Hazard Model, and 3) assess the quantitative risk, build a risk reduction framework for emergency managers, and describe the economic and social effects of an AVF eruption on Auckland and the rest of New Zealand in a Risk and Social Model. Fostering linkages between civil defence authorities, lifeline organisations, physical and social scientists, and the public has been a crucial part of DEVORA's workplan since its inception. Five years of research in the Geology and Probabilistic Hazard themes has emphasised the need for early emergency management and lifeline involvement in the project; AVF eruptions and distal ash fall events occur more frequently and their hazards are potentially more devastating than previously thought. Mock eruption exercises demonstrate how valuable these established relationships will be when faced with the immediate deadlines and intense pressures of a potential eruption. Throughout the project, workshops, field trips, public talks, museum collaborations, school visits, research forums, and reciprocal, open lines of communication between scientists and end users have created a strong, cohesive, engaged community for DEVORA scientists to draw upon as the project concludes and Auckland prepares for the next AVF eruption.