



DETERMINING VOLCANIC RISK IN AUCKLAND

Auckland is a vital link in New Zealand's economy and the city and surrounding region are internationally desirable places to work. However, Auckland sits on a volcanic field. The DEVORA research programme is aimed at a much-improved assessment of volcanic hazard and risk in the Auckland metropolitan area.

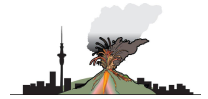
DEVORA Presentations

View a compilation of DEVORA-related research in the form of presentations.

(For use with Presentations)

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Below is a list of presentations for the DEVORA Annual Fora. Programmes and Presentations (when available) can be downloaded by clicking the link to the right (.zip file). Presentations are supplied as .ppt or .pdf copies. Some presentations are not available - these are indicated in the list below. For more information please contact us [here](#).

Forum 2019 (<i>2019 presentations have associated audio recordings included</i>).	<u>DOWNLOAD</u>
2019 DEVORA Forum Programme	
Richard Woods – Volcanic Modelling in RiskScape 2.0	
Dr Valerie van den Bos – Climate Change Since the Last Interglacial at Orakei Basin	
Benjamin Laeuchli (PhD) – Updates from the Onepoto Drill Core	
Dr Jenni Hopkins for Brenton Tozer (DEVORA Summer Scholarship Student) - Comparing the AVF with the South Auckland, Ngatutura, and Okete Volcanic Fields	
Dr Bruce Hayward - Highlights from the New AVF Field Guide	
Josiah Ensing (PhD) – Mapping Auckland’s Crustal Structure Using Ambient Noise	
Dr Jenni Hopkins – Coupled Eruptions in the AVF	
Sophia Tsang (PhD) – Modelling the Hazard Footprint and Consequences of Lava Flows in an Urban Environment	
Elaine Smid (PhD) – Gas Hazards: Volcanic Gas Emissions and Fluxes in Auckland Eruptions	Not Available
Prof James White – Big Bombs and Scoria-Fall Openers to a Multi-vent Eruption Shifting from Fountains with Fallout to Cratering with PDCs and Back; What Would Response to a Ubehebe Eruption Look Like in Auckland?	
Dr Natalia Deligne – Volcano Monitoring: Report on Novel Monitoring Techniques Workshop and Update on National Geohazards Monitoring Centre and GeoNet	
Nicole Allen (PhD) – Conceptual Multi-Volcanic Hazard Impact Assessment Framework Development	
Alec Wild (PhD) – Modelling AVF Spatial Population Exposure and Evacuation Clearance Times	Not Available
Boglarka Nemeth (PhD) – Geodiversity Mapping for Geoheritage and Environmental Sustainability	
Shaurya Sood (PhD) - Geotechnical Characterizations of Tephra Deposits for Reuse	
Dr Carol Stewart - Preparing for a Sustained Volcanic Degassing Episode in Auckland	
Sophia Tsang (PhD) - An Application-Based Framework for Selecting Lava Flow Models, with an Auckland Volcanic Field (New Zealand)	



Case Study	
Dr Natalia Deligne for Alana Weir (PhD) - Systemic Vulnerability of Infrastructure Networks to Volcanic Multi-Hazards	
Dr Natalia Deligne for Josh Hayes – Volcano Disaster Waste Management in Urban Environments	
Dr Richard Smith & Assoc Prof Jan Lindsay – Resilience to Nature’s Challenges: Overview	
Forum 2018	<u>DOWNLOAD</u>
2018 DEVORA Forum Programme	
Josiah Ensing (PhD) – Auckland’s Mantle & Crustal Structure from Recent Research	
Robert Pickle (PhD) – Crustal Strain Measurements via Geodesy: Evidence for Episodic Deformation	
Marco Brenna – Olivine Xenocryst Diffusion Reveals Rapid Monogenetic Basaltic Magma Ascent Following Complex Storage at Pupuke Maar, Auckland Volcanic Field, New Zealand	
Alisha Coote (PhD) – Ascent of Magmas Beneath Monogenetic Volcanoes in the Bay of Islands and Auckland	
Fee Arens (PhD) - Thermomechanical Modelling of Magma Ascent under Auckland: Testing the Short Unrest Hypothesis (Poster)	
Marco Brenna - Summary of Findings from Three Kings Volcano Research	
Carol Stewart - New International Volcanic Health Hazard Network (IVHHN) Products	Not Available. Please See the <u>IVHHN website</u>
Stuart Mead – Modelling Small Base Surges	
Shane Cronin – The Emergence of Rangitoto Recorded by Base-Surge Deposits	
Jenni Hopkins – Coupled Eruptions in the Auckland Volcanic Field	
James White – Ubehebe Craters – Multiple Vents, Scoria Falls & Maar Excavation Formed a Monogenetic Complex	
Art Jolly – Monitoring in a Noisy Auckland-Type Environment	
Richard Woods – Recent Advancements in Natural Hazard Risk Tool Development in New Zealand & Future Opportunities	
Graham Leonard & Natalia Deligne – Ambae, Vanuatu: Lessons in Impacts and Eruption Management for Auckland	
Josh Hayes (PhD) – Timber-Framed Building Damage from Tephra Fall: 2015 Calbuco Eruption, Chile	Not Available
Nicole Allen (PhD) – Quantitative Experimentation on Multi-Volcanic Hazard Impacts	
Josh Hayes (PhD) - AVF Eruption Scenario Updates (Poster)	
Snehalata Thakur (PhD) - Understanding Evacuation and Travel	



Behaviour Under Emergency Situations in Auckland (Poster)	
Natalia Deligne - Volcanic Impacts Study Group (VISG) Update (Posters)	Not Available – Please see VISG website for posters
Heather Craig - Probabilistic Risk Assessment for Agriculture and Tephra Fall (Poster)	
Robert Cardwell (PhD) – Modelling the Growth and Change of Auckland Land Use	
Boglarka Nemeth (PhD) – A Geoheritage Assessment Tool	Not Available
Jan Lindsay for Sophia Tsang (PhD) – How Communities Prepare for and Respond to Impending Lava Flows	
Alec Wild (PhD) – Development of a Decision-support Framework for Volcanic Crisis Management	
Mary Anne Thompson –Insight into How People Read and Make Decisions with Volcanic Hazard Maps	Not Available
Angela Doherty (Auckland Emergency Management) – Inter-Agency Communication Throughout the Disaster Cycle	
Russell Mitchell (NZ Police)– Mass Evacuation Planning for Tāmaki Makaurau	
Vivienne Bryner - Knowledge Transfer to Boost Auckland’s Resilience to Volcano-Triggered Events	
Liam Wotherspoon - Resilience to Nature’s Challenges (RNC) Infrastructure Research Update	
Suzanne Wilkinson - RNC Urban Resilience Research Updates	

Forum 2017

[DOWNLOAD](#)

2017 DEVORA Forum Programme	
Elaine Smid (PhD) – Characterising Magma Sources in the AVF	
Jenni Hopkins – AVF Age Sequencing - Our Current Understanding and Limitations	
James White – Dikes, Sills, & Magma Storage at Hopi Buttes: Implications for Initiation & Continuity of AVF Eruptions	Not Available
Brad Scott – A Basaltic Eruption Through a Crater Lake	Not Available
Megan Ferguson (MSc) - Using Pyroclastic Cooling Histories to Understand Dynamic Eruptions: Case Studies from the AVF	
Robert Pickle (PhD) - Results from the 2015-2017 Northern North Island Geodetic Campaign	Not Available
Josiah Ensing (PhD) - Borehole Seismometer Orientation using Ambient Noise	
Matt Hill - South Auckland Volcanic Field: Geomorphic mapping, borehole database updates and 3D geological modelling	Not Available
Sophia Tsang (PhD) – Thermal Gradients in Substrates Beneath Lava	



Flows: A Laboratory Approach	
Boglarka Nemeth (PhD) – From Quantifying Geoheritage Values to Geoconservation Objectives in the AVF	
Peter Crossley – 3D Scanning Auckland’s Lava Caves	Not Available
Josh Hayes (PhD) – AVF Eruption Scenarios Update & Preliminary Findings from the Calbuco Eruption Impact Assessment	
Carol Stewart – Mangere Bridge Eruption Scenario--Impacts on the City's Water and Wastewater Infrastructure	
Tom Wilson – Impacts of Volcanic Hazards on Ground Transportation: Key Lessons for Infrastructure	
Prakash Ranjitkar/Seosamh Costello – Planning for Transportation Resilience in the National Science Challenge	
Kate Kenedi - Overview of the Auckland Eruption SIM & Future Plans	
Nicole Allen (PhD) - Multi-volcanic Hazard Impact Assessment for Residential Buildings in the Auckland Volcanic Field	
Alec Wild (PhD) - When and Where Should an Evacuation be Called in a Volcanic Eruption? A Cost-Benefit Analysis Approach	
Mujaddad Afzal (PhD) - Assessing the Resilience of an Urban Road Network	Not Available

Forum 2016

[DOWNLOAD](#)

2016 DEVORA Forum Programme	
Christian Timm (for Jenni Hopkins) – Crustal Contamination in Auckland Magmas	
Valerie van den Bos (PhD) – Drilling 100,000+ Years into History at Orakei Basin	
Josiah Ensing (PhD) - Using Ambient Noise to “See” into Auckland’s Crust	
Tracy Howe - The New Zealand Geotechnical Database: A National Resource	
Sirini de Silva (Honours) - Reconstructing the Eruption History of Puketutu Volcano	
Caitlin Slabbert (MSc) - New Insights into AVF Eruption Styles Using Proximal to Medial Pyroclastic Fall	
Sophia Tsang (PhD) - Lava Flow Hazard Footprint in Auckland & An Update on David Rhodes’ Research on Lava Flow Rheology	
Brad Scott – Are Auckland’s Volcanoes Up to Anything?	
Caleb Gasston (MSc) – Using Geophysical Techniques and 3D Modelling to Expose Buried Faults in Auckland	
Robert Pickle (PhD) – New Results from Ongoing Geodetic Surveys of the Hauraki Rift	
Rebecca Fitzgerald (PhD) – Summary of Ballistics Workshop &	



Ballistics Research Update	
Thomas Wilson – Overview of the Volcanic Hazard Assessment for Site Evaluation Prepared for the International Atomic Energy Agency -- Potential Applications in New Zealand	Not Available
Natalia Deligne – RiskScape Update	
Josh Hayes (PhD) – Developing Eruption Scenarios for the Auckland Volcanic Field	
Daniel Blake (PhD) – Impacts of Volcanic Ash on Surface Transportation Networks: Synthesis of Laboratory; Findings	
Seethal Sivarajan (PhD) - Remediation and Recovery Techniques for Volcanic Ash-Affected Pasture Soils of New Zealand	
Mary Anne Thompson - More Than Meets the Eye: Insights into Volcanic Hazard Map Design and Communication	Not Available
Jan Lindsay - The Creation of AVF “Fact Sheets”	Not Available
Kate Kenedi - Introducing the Hazard Hub @ University of Auckland	Not Available

Forum 2015

[DOWNLOAD](#)

2015 DEVORA Forum Programme	
Phil Shane – Long history for Rangitoto volcano revealed by drilling	Not Available
Graham Leonard for Jenni Hopkins – Tephrostratigraphy in the AVF	
Elaine Smid - AVF Mantle Sources and Magma Ascent Rates	
David Rhodé - Determination of Lava Flow Rheology within the AVF	
Marco Brenna - Three Kings Volcano, AVF: Current work	
Tracy Howe - Introduction to the Auckland Geotechnical Database	
Kate Kenedi - Recent Findings from the Rangitoto Seismic Station	
Josiah Ensing - A Velocity Model of Auckland’s Subsurface	Not Available
Robert Pickle - Characterising the Hauraki Rift from Geophysical Investigations	Not Available
Natalia Deligne – RiskScape Update	
Rebecca Fitzgerald – Lessons from Japan: Ballistics Hazards	Not Available
Carol Stewart – Lessons from Hawai’i: Vog and Lava Flow Hazards	Not Available
Shane Cronin – Lessons for Auckland from Tonga’s Newest Volcano	
Graham Leonard – Impacts Database Development	
Tom Wilson/Natalia Deligne – AVF Hazards and Impacts Scenarios	
Daniel Blake – VATLab Update: Ash and Road Transportation	
Tom Wilson - Overview of New Zealand’s UNISDR Global Assessment of Risk (GAR15) contribution	Not Available
Mary Anne Thompson - Building a Better Hazard Map: A Transdisciplinary Approach	
George Williams - Ballistic Cannon Fragility Experiments	
Caitlin Slabbert - Volcanic Eruption Scenario Development for the AVF	Not Available
Tom Wilson – Integration of DEVORA Impact and Vulnerability	



Research	
Josh Hayes – Clean Up and Recovery Planning	
Forum 2014	<u>DOWNLOAD</u>
2014 DEVORA Forum Programme	
Jenni Hopkins – Tephra-volcano correlation and implications for age order and field evolution	
Tamzin Linnell – Evolution of Rangitoto volcano: insights from a 150 m drill core	
Kate Lewis Kenedi – Subsurface Auckland investigations, including first data from the Rangitoto borehole seismometer	
Emily Kawabata – Posterior age-order arrangement distributions via a statistical tephra attenuation model	
Javier Agustin-Flores – The effect of substrate on eruption style in the AVF: implications for base surge hazard	
Natalia Deligne – Summary of hazard models and eruption scenarios for RiskScape	
Grant Wilson – DEVORA's volcanic risk assessment for Auckland	
Josh Hayes – Ash clean-up in Auckland	
Mary Anne Thompson – How hazard map design affects hazard perception: lessons for communication	
Daniel Blake – Modelling an Emergency Evacuation in Auckland & Impacts of Volcanic Hazards on Surface Transportation	
Jan Lindsay - How Low Does It Go? DEVORA Field Note Summary	Not Available
Elaine Smid - The Volatile Life of Auckland Magmas: Sources and Ascent Rates in the Auckland Volcanic Field	Not Available
Josiah Ensing - Monitoring Volcanic Activity in Auckland using Ambient Seismic Noise	Not Available
Rebecca Fitzgerald - The application of a 3D ballistic trajectory model to assessments of ballistic hazard at Upper Te Maari Crater, Tongariro	Not Available
Forum 2013 (<i>please contact DEVORA for more information regarding this forum</i>)	<u>DOWNLOAD</u>
2013 DEVORA Forum Programme	
Forum 2012	<u>DOWNLOAD</u>
2012 DEVORA Forum Programme	
Lucy McGee – Dissection of a monogenetic volcano: elucidating mantle melting conditions in the AVF	
Phil Shane – Longevity of activity at Rangitoto volcano	Not Available
Javier Agustin Flores – Are small basaltic eruptions of the past reliable	



indicators of future volcanic scenarios? The case of the phreatomagmatic eruption of Maungataketake volcano	
Gabor Kereszturi – Towards a quantitative hazard analysis of the Auckland Volcanic Field – Importance of physical, volcanological, and environmental data	
Emily Kawabata – Modelling tephra deposition from basaltic volcanoes	
Carol Stewart – Ash Impacts: Lessons learned from the 2011 Puyehue-Cordón Caulle (Chile) and 2012 Tongariro eruptions	
Mary Anne Thompson – Improving the efficiency of AVF hazard maps through participatory mapping with civil authority stakeholders	
Grant Wilson – Physical fragility function development for Auckland’s built environment	
Natalia Deligne – DEVORA and Riskscape	

Forum 2011

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2011 DEVORA Forum Programme	
Lucy McGee – Monogenetic, but not monotonous: basaltic eruptions in the AVF	
Marco Brenna – A genetic model for basaltic volcanic fields, Jeju Island, Korea: implications for the AVF	
Bernhard Spörli – Crustal rocks mined by the St Heliers volcanoes	
Nicolas Le Corvec – The Auckland Volcanic Field – a basaltic volcanic field showing random behaviour?	
Jan Lindsay – Are there hidden faults in Auckland?	Not Available
Bruce Hayward – 51, 52, 53 ... who's counting?	Not Available
Mark Bebbington – Update (2011.4.beta) to the AVF spatio-temporal model	
Aleksandra Zawalna-Geer – New insights into frequency of ash falls impacting the Auckland region in the Holocene	Not Available
Elaine Smid – Preliminary soil gas CO ₂ monitoring in the AVF	
Javier Augustin-Flores – The basis for a hydrogeological model for the Auckland area	
Gabor Kereszturi – Lava flows of the Auckland Volcanic Field (New Zealand)	
Tom Wilson – Surges in the substrate – applications of Ground Penetrating Radar to detect base surge deposits	Not Available
Garry McDonald – Economic Futures: the economic impacts of an eruption in the AVF	
Tom Wilson – Volcanic impacts and infrastructure fragility – towards quantitative risk assessment	
Carol Stewart – There’s ash in the water, what are we going to do?	
Fei Ying – Critical infrastructure – fire service building inventory	



capture	
Shane Cronin – New insights into monogenetic eruptions – implications for volcanic emergency planning scenarios	Not Available
Tom Wilson – Vulnerability of high voltage transmission systems to tephra fall: from the field to the lab	Not Available
Nicholas Pondard – Quantitative risk assessment for lifelines and local government	

Forum 2010

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2010 DEVORA Forum Programme	
Karoly Nemeth— Some Peculiarities of Maar Eruptions – the Anatolian Experience and their Implication to AVF	
Marco Brenna—The Influence of Magma Plumbing Complexity on Intraplate Low-Volume Eruptions	
Ian Smith--A New Perspective on What Triggers Auckland Eruptions	
John Cassidy—The Auckland Volcanic Field, New Zealand: Geophysical Evidence for Structural and Spatio-temporal Relationships	Not Available
Bruce Hayward--Auckland's 50th Volcano - Buried Under the University Med School	
Tracy Howe—Uses and Applications of the DEVORA Borehole Database	
Graham Leonard—New Ages for the Auckland Volcanic Field	
Aleksandra Zawalna-Geer—Micro-tephra Studies on Auckland Lake Sediments: Implications for the Interpretation of Eruption Frequencies	
Mark Bebbington—Event Dating and Spatio-temporal Hazard Estimation in the AVF	
Shane Cronin—Developing Scenarios for New Volcanic Events in the AVF	
Jan Lindsay—Challenges of Monitoring Distributed Volcanic Fields Such as the AVF	
Emma Hudson-Doyle—Investigating the Provision of Science Advice for Emergency Management Decisions	
Warwick Smith—Probabilistic Risk Assessment in Auckland Using the RiskScape Methodology	
Gill Jolly - Probabilistic Hazard and Risk Methodology	

Forum 2009

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2009 DEVORA Forum Programme	
Dating Auckland's volcanoes – Jan Lindsay (University of Auckland)	
Magmatic processes in the Auckland Volcanic Field - Lucy McGee (University of Auckland)	



Insights into the Korean Jeju monogenetic plumbing system from geochemistry - Marco Brenna (Massey University)	
Structural controls on monogenetic basaltic volcanism and implications for the Auckland Volcanic Field - Nicolas Le Corvec (University of Auckland)	
Evaluating tephrochronology in the Auckland Volcanic Field for cryptotephra studies - Ola Zawalna-Geer (University of Auckland)	
External control and style of magma fragmentation of phreatomagmatic explosive eruptions and implications for understanding Auckland's volcanoes - Karoly Nemeth (Massey University)	
Eruption (re-)ordering and clustering in the Auckland Volcanic Field - Mark Bebbington (Massey University)	
Applying probabilistic eruption forecasting methodologies between volcanoes - Armando Rodado (Massey University)	
Review of risk and social data for the Auckland Volcanic Field – Michele Daly (Beca)GIS-based mass-evacuation planning for Auckland – Erik Tomsen (University of Auckland)	
Combining probabilistic hazard assessment results with cost-benefit analysis to aid decision making in a volcanic crisis – Laura Sandri (INGV, Italy)	
Update on critical building and infrastructure inventories for Auckland – Michele Daly (Beca)	
Forum 2008	<u>DOWNLOAD</u>
2008 DEVORA and VISG Forum Programme	