

Welcome to the latest of the research updates from the Joint Centre for Disaster Research. The centre opened in December 2006 and is a joint venture between Massey University and GNS Science within the School of Psychology, based at the Massey University campus in Wellington.

The centre undertakes multi-disciplinary applied teaching and research aimed at:

- gaining a better understanding of the impacts of natural, man-made, and environmental disasters on communities;
- improving the way society manages risk;
- enhancing community preparedness, response to and recovery from the consequences of natural, man-made and environmental hazard events.



Participants on the 2014 Emergency Management Summer Institute “Classroom in the Coach” at Island Bay. Kim Wright explains the tsunami hazard zones. The next Emergency Management Summer Institute will be held 2-6 March 2015.

Visit our updated website: <http://disasters.massey.ac.nz/>

Navigating with the long view

In delivering this year's graduation speech, Sarb Johal challenges his classmates to remove their blinkers and broaden their horizons; Karlo Mila counsels them to harness a collective vision that can hold difference and diversity of perspective.



In my area of work, disaster management, there is this phenomenon that occurs during recovery. It is called building things. 'Thing' theory – it is actually called that – suggests that we build 'things' to demonstrate commitment and action. Some kind of benefit is presumed to flow from building the 'thing', only what we tend to see is money and energy flowing to areas, to people, outside the area that the thing was meant to help. That's not necessarily a bad thing, but it probably was not what we intended to do. We do this, time and again, disaster after disaster. We build things, if only to feel like we are doing something, anything, to help with the recovery.

But there is a problem with this approach. Investing in 'things' in an attempt to bring about rapid change and demonstrate our heartfelt commitment to action can actually fail to support long-term recovery. One of the issues we returned to time and time again in our journey through this year is the futility of short-term thinking, and also the difficulty in keeping the attention of a fast-information, fast-food consuming society on the longer view, the slower view, the view where many ideas might have to be held at the same time in order to develop really beneficial actions.

The pull to build a new 'thing' is a strong one. Yet we also know that in our small and dynamic nation, we may have too many 'things', all competing for limited resources of finances, talent, and indeed, attention. Perhaps a new 'thing' isn't what we need after all.

Perhaps the new 'thing' we need is here before us right now. Our task is to remove our blinkers, broaden our horizons. If we can climb high enough, we can see that the earth does indeed curve after all. There is more for us to discover, more than we know. It is waiting – it exists now – but it is yet to come into our awareness, our collective being. Perhaps what we can build best, is a small 'thing' to help us see this more clearly; a simple pair of spectacles.

If we stand tall, upon each other's shoulders, rock solid in our foundation, we may see both the shadow and the light, stretching into the far. When we look through our new spectacles, we can tell each other stories of our journey to these distant shores; different, divergent, wonderfully clashing tales, so at odds that perhaps we

start to wonder if we are looking through the same pair of spectacles after all.

But this pluralism is our strength. It is from this diversity, this tumultuous colliding and mixing of currents and all that this stirs up that essentially and paradoxically anchors us as Leadership NZ. As the winds of the North meet the seas of the South (something I'm familiar with in Wellington), as Te Ika ā Māui meets Te Wai Pounamu, we may see the full spectrum of life and its possibilities set out before us. We, as bespectacled leaders, can see these differences, hold these differences, tell stories about these differences and the options that they make available to us.

To be part of the solution, we as leaders can serve to increase our collective awareness of the complexity rather than the simplicity. We as leaders can explore that complex space; to voice the long view, instead of the short view. And one of the many things that I have learned in my first year in Leadership NZ is that seeking the consensus view does not always offer the best solution.

In the words of a fellow Leadership NZ traveller: "Leadership NZ is a place that holds difference – we have created a safe and challenging space to hold that difference, and to challenge us to look at what can come from truly celebrating diversity – diversity of experience, background, culture."

Perhaps this is what we as leaders can offer: A safe holding space that can broaden our collective vision, not narrow it. We can help to seed a more expansive vision taking in all at our periphery, rather than settle for a monocular, and somewhat short-sighted squint.

I'd like to finish with a quote from Joseph Campbell, who I've returned to time and time again throughout my year: "If you do follow your bliss, you put yourself on a track that has been there all the while, waiting for you, and the life that you ought to be living is the one you are living. When you can see that, you begin to meet people who are in the field of your bliss, and they open doors to you. I say follow your bliss and don't be afraid, and doors will open where you didn't know they were going to be."

Oh, and don't forget: you will see more trails, more people, and more open doors, if you wear your glasses. – Sarb Johal

News from the JCDR Team

Julia Becker has returned to GNS Science after a year on maternity leave.

Debra Ellis graduates in April with her PhD in Emergency Management. Her thesis was titled “Health sector emergency management roles in New Zealand” .

Thomas Huggins was invited to represent the Joint Centre for Disaster Research at a UKCDS-led workshop in Colombia called, ‘The Role of Science in Good Enough Disaster Risk Assessment’. This workshop was attended by representatives of: The Latin American Social Sciences Institute; DIFD; NOAA; ASEAN; the Colombia Geological Service; the World Meteorological Organisation; the Asian Disaster Preparedness Centre; Public Health England; the US National Centre for Atmospheric Research; The British Geological Survey; California State University; and the Joint Centre for Disaster Research. Thomas remains involved by co-authoring a working paper resulting from the work.

Bianca Jensen has joined the JCDR as the ANHM conference coordinator and as cover for **Heather Gunn** as Centre administrator during her leave in May-June.

Carol Stewart and **David Johnston** (photo right) were both invited speakers at the Force Health Protection Conference, Upper Hutt, 5 – 7 March 2014.

Sarb Johal graduated from the Leadership New Zealand programme. His graduation speak is on the opposite page (reprinted from Leadership New Zealand 2013 Yearbook).

Jane Rovins, former Executive Director of the IRDR IPO, is a visiting researcher at the JCDR for the next few months.



Cassie Kenney was invited by Governor Neil Abercrombie of Hawaii Chair: Presidential Taskforce on Climate Change and Resilience to participate in the Governor’s Resilient Hawaii Forum, Honolulu, Hawaii Convention Centre, USA, March 12, 2014.

Photo below: The GNS Science team at the Auckland Resilience Expo in March.



New research hub will focus on boosting resilience in our communities

A new International Centre of Excellence in Community Resilience was launched on 11 March 2014 in Wellington. The centre is a joint initiative between the Joint Centre for Disaster Research – funded by Massey University and GNS Science - and the Wellington Region Emergency Management Office (WREMO), established in 2012 to provide a more collaborative approach to Emergency Management.

“By bringing together emergency management science, experiences and learnings into one shared knowledge hub we can lift the resilience of the greater Wellington region and better prepare communities for the impact of future disasters,” says Group Chair, Nick Leggett.

“The new International Centre of Excellence in Community Resilience will provide cutting edge research into community resilience and will be a leader in the implementation of such research into practice to better equip our communities against major events.

Bruce Pepperell, WREMO’s manager, states that this is an exciting development. “The centre will also allow us to forge further international collaborations for knowledge exchange that will help improve Wellington’s and New Zealand’s resilience to future disasters.”



The core objectives of the International Centre of Excellence in Community Resilience are:

- To provide an evidence base for WREMO’s Community Resilience Strategy
- To create networks that share international good practice in community resilience
- To promote the Wellington region as a living laboratory for research and learning.

The new centre will enable regional, national and international scientific communities to collaborate and share research to build a foundation of knowledge and better understand the problems that need to be solved.

For more information on the International Centre of Excellence in Community Resilience visit www.getprepared.co.nz and for general information of an informative nature before, during, and after an emergency, www.facebook.com/WREMOnz

Natural risk seminar celebrates early career scientists

The World Social Science Fellows Seminar brought together 25 scientists from all over the world following their selection through a competitive process to attend. It was co-hosted by the Joint Centre for Disaster Research on Massey University's Wellington campus and the University of Canterbury in Christchurch over the week 8-14 December 2013. Guest speakers at the seminar included centre senior research fellow Dr Christine Kenney who gave a lecture on 'Māori Disaster management: An essential 'gaze' on risk reduction in Aotearoa'. Other guest lectures included an address by Professor of Psychology Richard Eiser from the University of Sheffield who explored how a recently published framework for response to natural hazards can be applied across scientific disciplines and within different cultures.

The seminar was co-sponsored by the World Social Science Fellows programme of the International Social Science Council (ISCC); the Risk Interpretation and Action working group of the Integrated Research on Disaster Risk (IRDR) programme; the IRDR International Centre of Excellence, Taipei; United Nations International Short Term Advisory Resources (UNISTAR); the international START Secretariat and the Royal Society of New Zealand.



Photo: World Social Science Fellows gather on the steps of Te Kuratini Marae on Massey University's Wellington campus.

Pacific Risk Management O'Hana (PRiMO) Conference, Honolulu 11-13 March, 2014

PRiMO is an international association of government institutions, NGOs and research centres located within the Pacific, whose work focuses on developing initiatives that reduce disaster-related risks and facilitate community resilience in response to natural hazards. Further to an invitation from the Deputy Director of the Pacific Disaster Centre, Christine Kenney presented the keynote address at the Pacific Risk Management O'Hana (Association) International Conference in Hawaii. Christine's keynote presentation used exemplars drawn from the 2005 Manawatu/Rangitikei Flooding disaster and the 2010/2011 Christchurch earthquakes, to illustrate the ways Māori cultural technologies facilitate disaster management and community resilience. The keynote was extremely well received and resulted in invitations to develop relationships with key



stakeholders in the United States, including an invitation from US State Governor Neil Abercrombie, to participate in the Governor's Resilient Hawaii Forum. There is considerable Federal interest in exploring how Indigenous disaster mitigation practices may be adapted to facilitate population and environmental resilience more broadly in response to natural disasters and climate change. Subsequent to participating in the Forum, Christine has been invited to contribute to the report that is being developed by the US Governors' Presidential Task Force on Climate Preparedness and Resilience.

Photo: Dr Christine Kenney and Governor Neil Abercrombie of Hawaii

Emergency Management Free Online Course from the Joint Centre for Disaster Research, Massey University

Massey University has recently teamed up with the free online learning platform Open2Study, led by Open Universities Australia (OUA), to offer a suite of free Mass Online Open Courses (MOOCs). The Joint Centre for Disaster Research (JCDR) has developed and launched an Emergency Management introductory course on the Open2Study platform, as one of the first three MOOCs offered by Massey University. The new MOOC programme is one of the numerous international collaborative initiatives with which Massey and JCDR are involved.

This emergency management course is considered to be the first MOOC-based emergency management course in New Zealand and one of the very few of its kind internationally.

Supported by national and international case studies, this emergency management course will take students on a journey through the origins of risk management in the ancient world to new hazards and risk management approaches of the industrial era, as well as command and control models

introduced in the Cold War era to recently introduced “all-hazards” models and more contemporary “risk”-based approaches. Students will explore the rapidly growing and increasingly influential discipline through a study of real-world risk understanding, reduction, readiness, and response and recovery examples. Student learning is supported by real-time discussion forums and assessments, enabling students to extend what they learn through interaction with other students and to build and test their growing knowledge through readily accessible tests.

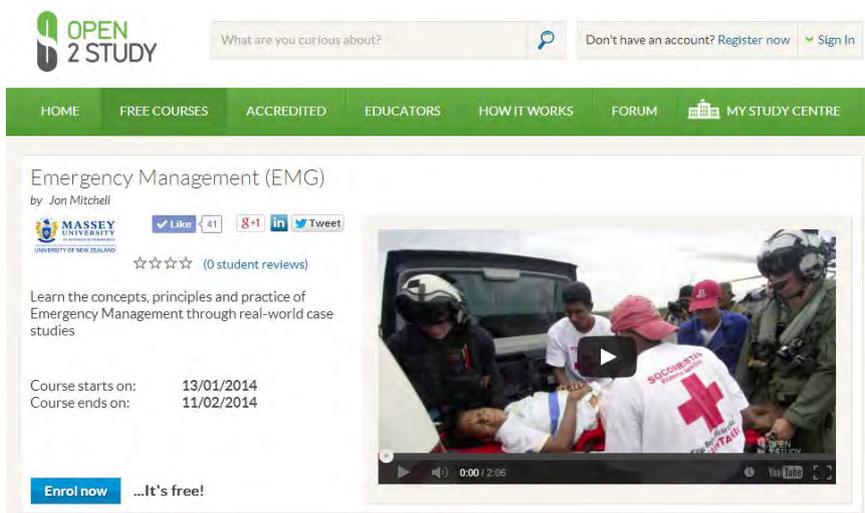
This course is expected to deliver students:

- 1) An understanding of the history of emergency management, including recent trends and changes
- 2) The essentials of contemporary emergency management
- 3) Fundamentals of risk analysis, reduction and mitigation
- 4) Basics of emergency response coordination
- 5) Theory, structure, processes and challenges of disaster recovery
- 6) The critical role of communities, of all sorts, in building resilience, readiness, response and recovery, and
- 7) An insight into actual emergency management experiences

After successful completion of the course students are expected to understand the concepts and principles of emergency management, and to have an appreciation of real-world application of emergency management.

One of New Zealand’s well-established emergency managers and educators, Jon Mitchell, is the course presenter, bringing his extensive experience and depth of study to add value to the course. Several subject matter experts from central and local government

agencies make cameo appearances, contributing to the practice-to-research-to-teaching-to-practice cycle that JCDR specialises in. The course was put together by the team of Jon Mitchell, Dr Raj Prasanna and Associate Prof. Sarb Johal at JCDR and produced by Open2Study in Australia.



The screenshot shows the Open2Study website interface. At the top, there is a search bar and navigation links for 'Register now' and 'Sign In'. Below the navigation bar, the course page for 'Emergency Management (EMG)' by Jon Mitchell is displayed. It features the Massey University logo, social media sharing options (Like, G+, LinkedIn, Tweet), and a video player showing emergency responders. The course details include the start and end dates (13/01/2014 to 11/02/2014) and an 'Enrol now' button.



The course is now open for its first enrolment cycle and started its content delivery in mid-January 2014. Similar to other Open2Study courses, the emergency management course consists of four modules, with each module comprising 10 contemporary emergency management topics with approximately 6-8mins of online content. At the end of the four week course, students who achieve an overall average of at least 60% for their assessments will receive a Certificate of Achievement. While this certificate is not a formal educational qualification, students may use it to demonstrate their interest and passion for the topic to potential employers, universities, and other educational institutions.

After its first cycle, as with other MOOCs, this course will be repeatedly offered throughout the year, providing flexible opportunities for students to enrol when it is most convenient for them. JCDR recommends this course not only for the students who are looking for careers in the emergency management sector, but for those who are already engaged in emergency management as volunteers, professionals, managers, or in governance roles who want to taste a much broader and holistic flavour of emergency management theory and practice.

For course enrolment please visit: <https://www.open2study.com/courses/emergency-management>

Communicating likelihoods and probabilities in forecasts of volcanic eruptions

The issuing of forecasts and warnings of natural hazard events, such as volcanic eruptions, earthquake aftershock sequences and extreme weather often involves the use of probabilistic terms, particularly when communicated by scientific advisory groups to key decision-makers, who can differ greatly in relative expertise and function in the decision making process. Recipients may also differ in their perception of relative importance of political and economic influences on interpretation.

Consequently, the interpretation of these probabilistic terms can vary greatly due to the framing of the statements, and whether verbal or numerical terms are used. We present a review from the psychology literature on how the framing of information influences communication of these probability terms. It is also unclear as to how people rate their perception of an event's likelihood throughout a time frame when a forecast time window is stated. Previous research has identified that, when presented with a



10 year time window forecast, participants viewed the likelihood of an event occurring 'today' as being of less than that in year 10. Here we show that this skew in perception also occurs for short-term time windows (under one week) that are of most relevance for emergency warnings. In addition, unlike the long-time window statements, the use of the phrasing "within the next..." instead of "in the next..." does not mitigate this skew, nor do we observe significant differences between the perceived likelihoods of scientists and non-scientists. This finding suggests that effects occurring due to the shorter time window may be 'masking' any differences in perception due to wording or career background observed for long-time window forecasts. These results have implications for scientific advice, warning forecasts, emergency management decision-making, and public information as any skew in perceived event likelihood towards the end of a forecast time window may result in an underestimate of the likelihood of an event occurring 'today' leading to potentially inappropriate action choices. We thus present some initial guidelines for communicating such eruption forecasts.

Doyle, E. E. H., McClure, J., Johnston, D. M., Paton, D. (2014). Communicating Likelihoods and Probabilities in Forecasts of Volcanic Eruptions. *Journal of Volcanology and Geothermal Research*. 272, 1-15

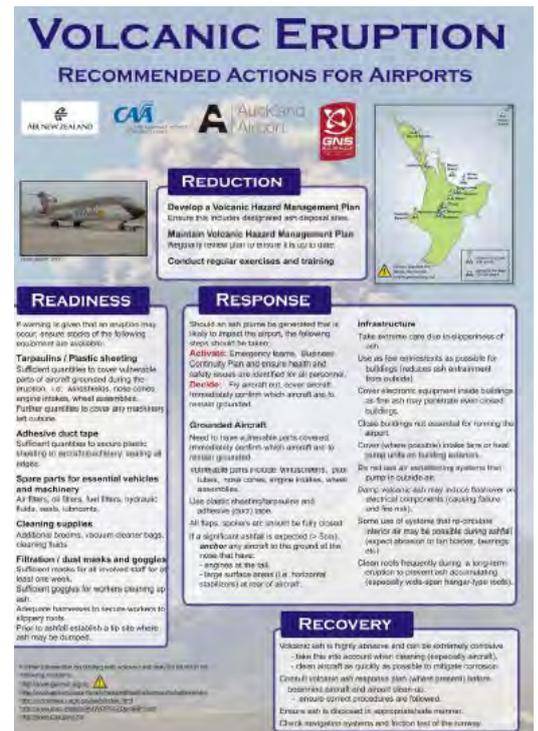
Contact for reprints: e.e.hudson-doyle@massey.ac.nz

New AELG website is up and running

The new AELG website is up and running at <http://www.aelg.org.nz/>.

To highlight some new documents that are available that haven't been on the old website or circulated by email:

- All Auckland Engineering Lifelines Project reports have been updated. (The changes that have been made from previous versions are recorded in the 'Document History' in section 1. <http://www.aelg.org.nz/document-library/critical-infrastructure-reports/>)
- Volcanic Impact posters information.
- The AELG and Lifeline Utility emergency contact lists have been updated. <http://managers.aelg.org.nz/contact-lists/>
- Updated critical sector maps for the telco and energy sectors (incorporating recently updated data). <http://managers.aelg.org.nz/infrastructure-hazard-data/>
- All of the content in the "current projects" page in the members area is new, including a draft project brief for the Hotspots project update and a draft MCDEM Capability Assessment tool for lifeline utilities <http://managers.aelg.org.nz/current-projects/>. Feedback before or at the next AELG meeting is welcome.
- Dates for 2014 AELG meetings are at <http://www.aelg.org.nz/events/upcoming-events/>



History of tsunami planning in New Zealand: 1960 to present

Tsunami awareness in New Zealand has evolved over the last 50 years since the 1960 Chilean tsunami, which struck New Zealand without official warning and caused significant damage, despite occurring at low tide (Photo below – Lyttleton 1960). From 1960 to 2004 various measures were put in place, such as



becoming part of the Pacific Tsunami Warning System, which led to improvements in official warning mechanisms. However, surveys in 2003 showed that public understanding of tsunami risk and correct warning-response action was limited. Following the 2004 Indian Ocean tsunami the New Zealand Government initiated an extensive review of national tsunami hazard, risk and preparedness. This review ranked tsunami risk to property potentially on par with that of earthquake and risk to life an order of magnitude greater. The Ministry of Civil Defence and Emergency Management (MCDEM) subsequently developed guidance for tsunami signage, development of evacuation zones, and dissemination of warnings. GNS Science has also produced guidance on

how to incorporate tsunami modelling into land use planning. These initiatives represent significant steps forward in our preparedness for future tsunami, but there is a considerable way to go to ensure adequate awareness and preparedness of individuals and communities.

Johnston, D., Saunders, W., Leonard, G., Beban, J., Wright, K., Fraser, S. (2014). History of tsunami planning in New Zealand: 1960 to present. In UHPH_14: Landscapes and ecologies of urban and planning history, Proceedings of the 12th conference of the Australasian Urban History / Planning History Group, edited by Morten Gjerde and Emina Petrović (Wellington: Australasian Urban History / Planning History Group and Victoria University of Wellington, 2014).

The conference proceedings are now published on-line via the Victoria University Centre for Building Performance Research [CBPR] website. <http://www.victoria.ac.nz/fad/research/uhp2014/conference-proceedings>

Tsunami awareness and preparedness in the Wellington Region

The east coast of New Zealand lies in close proximity to the Hikurangi subduction zone.

The last major tsunami to hit New Zealand, however, was the 1868 Peru-Chile tsunami, which caused substantial damage to the country's infrastructure. The recent disasters in the Indian Ocean regions, Samoa, and Japan have illustrated the importance of disaster planning and awareness to mitigate damage.

Wellington, the capital of New Zealand, lies on the south coast of the North Island and currently has developed an evacuation map suggesting various escape routes in the event of a tsunami. This map features the locations of the tsunami blue-line, which represents the maximum distance a tsunami will reach inland.

This report on tsunami awareness and preparedness in the Greater Wellington Region was prepared by a team of students from Worcester Polytechnic Institute (WPI). The purpose of the research was to design and test a pilot study to assess the awareness and preparedness of the Greater Wellington Region to the tsunami threat. The results of our research will contribute to the framework for a future, nation-wide study sponsored by GNS Science. Our research will also assist the Wellington Region Emergency Management Office (WREMO) to develop enhanced programs to improve emergency response.

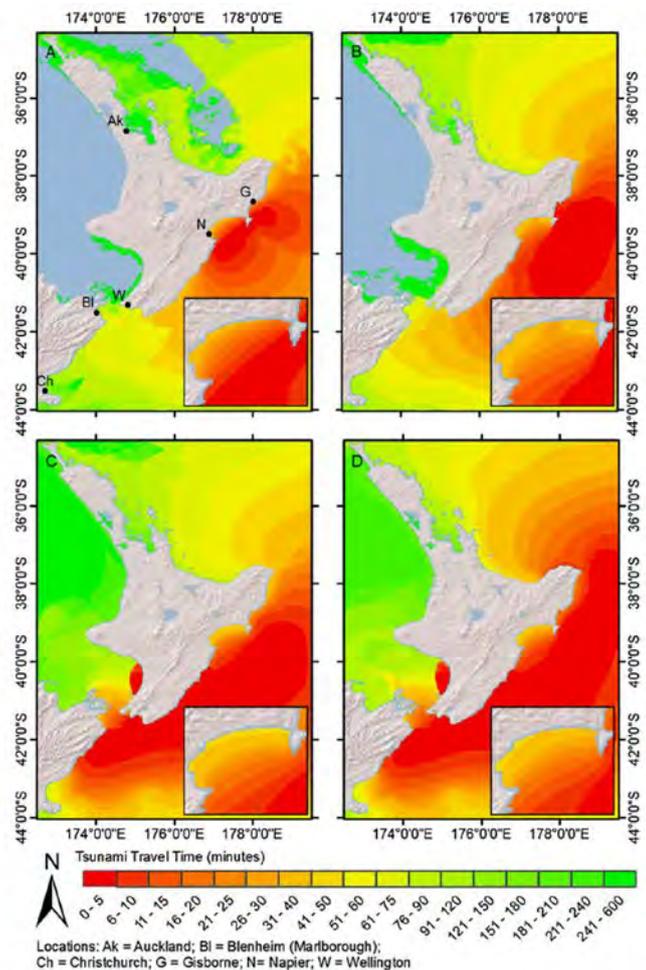
WREMO provides extensive information regarding earthquake and tsunami preparation on their website and through their "Get Ready Get Thru" public readiness programme. The city also utilises civil defence sirens to alert the public to potential tsunami. However, proper warning systems and evacuation plans are only as effective as residents are aware, willing, and able to adhere to them. Long or strong earthquakes occurring at the subduction zone and local fault lines can produce tsunami that can arrive in Wellington within minutes, which does not give local authorities enough time to utilise the warning system. Residents can learn that long or strong earthquakes can produce tsunami, and respond to the threat immediately, saving valuable time for evacuation.

Currie, C-S.; Enjamio, J.; Girardo, D. O.; Hensel, C.; Leonard, G. S.; Johnston, D. M. 2013. Tsunami Awareness and Preparedness in the Greater Wellington Region, GNS Science Report 2014/10. 83 p.

Inundation due to local tsunami at Napier

Deterministic analysis of local tsunami generated by subduction zone earthquakes demonstrates the potential for extensive inundation and building damage in Napier, New Zealand. This study presents the first high-resolution assessments of tsunami inundation in Napier based on full simulation from tsunami generation to inundation and demonstrates the potential variability of onshore impacts due to local earthquakes. In the most extreme scenario, rupture of the whole Hikurangi subduction margin, maximum onshore flow depth exceeds 8.0 m within 200 m of the shore and exceeds 5.0 m in the city centre, with high potential for major damage to buildings. Inundation due to single-segment or splay fault rupture is relatively limited despite the magnitudes of MW 7.8 and greater. There is approximately 30 min available for evacuation of the inundation zone following a local rupture, and inundation could reach a maximum extent of 4 km. The central city is inundated by up to three waves, and Napier Port could be inundated repeatedly for 12 h. These new data on potential flow depth, arrival time and flow kinematics provide valuable information for tsunami education, exposure analysis and evacuation planning.

Fraser, S.A., Power, W.L., Wang, X., Wallace, L., Mueller, C., Johnston, D.M. (2014). Inundation due to local tsunami at Napier, New Zealand. *Natural Hazards* 70: 415-445



Water needs and the availability of water in post-earthquake Wellington City, and the significance of social factors in determining community resilience

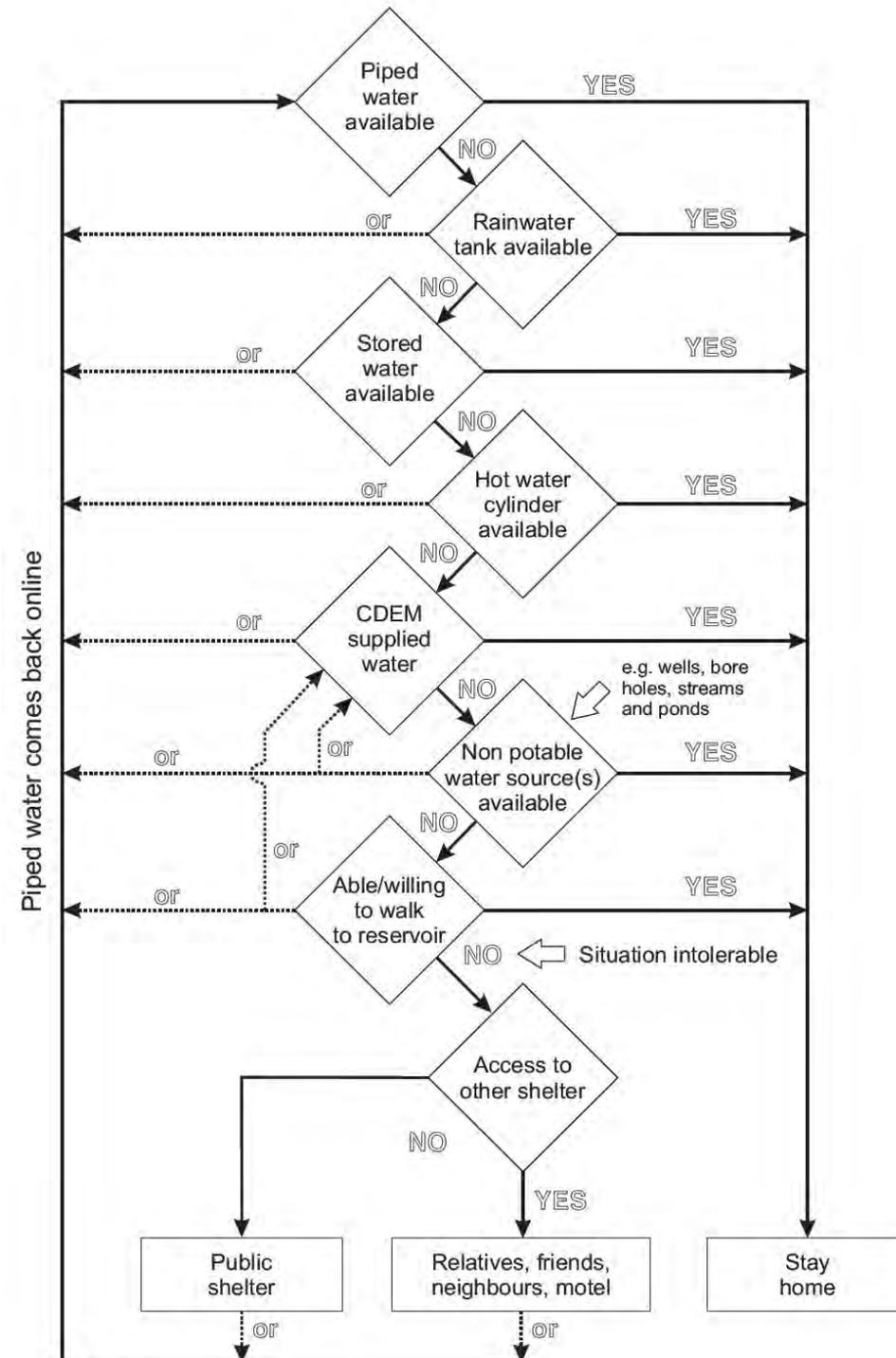
A future Wellington Fault event is expected to generate a magnitude 7.5 earthquake. The direct and indirect impacts of this event are expected to cause wide and extensive damage to buildings, infrastructure and lifelines and result in the loss of life and injury. The security of the water supply and the availability of alternatives is an important consideration as the bulk-supply pipelines cross the Wellington Fault in several places. It is expected that following a Wellington Fault earthquake, there will be water shortages in

Wellington City. The availability of water will in the short-term be critical to ensuring people's survival, and in the long term their health and wellbeing.

In this context, we address the following questions in this report:

1. How much water do people require to survive and function?
2. How much water is available in Wellington City in the absence of the bulk supply?
3. How will people deal with the unavailability of piped water to their households?

If people's homes are rendered structurally inhabitable we envisage that most people will remain in their home at least in the short-term. These households will likely use the closest and most easily accessible sources of water first. As the alternative water sources framework we have developed highlights, the first-used resources will likely include rainwater, stored water and cylinder water. However, the order in which these resources are used may vary as in some instances non-potable



sources may be easier to obtain than some other alternatives. We predict that people will only walk to reservoirs to collect water in bottles as a last resort.

The three scenarios presented in this study (best, intermediate and worst case) for the availability of alternative water sources following a Wellington Fault earthquake provide some insight into how long water

may last in the absence of the bulk supply. Using available data about stored water, cylinder water, and reservoir water, we found that on average, households have available between 60-94 days of water at the emergency level (6.0 L/p/d) and 18-28 days at the functional level (20.0 L/p/d). The minimum number of days any individual has water for is 0-17 days at the emergency level and 0-5 days at the functional level.

The main implications from this research for emergency management planning in Wellington City are:

Greater emphasis should be placed on raising awareness and encouraging households to store at least 6.0 L/p/d for three days to cater for their consumption and hygiene requirements.

Given the importance of reservoirs in the provision of water post-earthquake, there is a need to ensure that appropriate measures are put in place to ensure that reservoirs survive and retain their existing water capacities following a Wellington Fault event. If people are unwilling to collect and carry water from reservoirs to



their homes over an extended period of time, greater demand may be placed on evacuation centres.

Alternative sources of water such as non-potable sources, desalination units/plants and rain water collection tanks should be examined in order to increase the security of supply and to cater for post-earthquake demand.

Beban, J. G.; Doody, B. J.; Wright, K. C.; Cousins, W. J.; Becker J. S. 2013. Water needs and the availability of water in post-earthquake Wellington City, and the significance of social factors in determining community resilience, GNS Science Report 2013/15. 54 p.

The use of Emergency Operations Centres in local government emergency management



This paper presents exploratory research into how local government Emergency Operations Centres (EOCs) are used during emergency management preparedness activities, through a questionnaire survey of 48 organisations from New Zealand, Canada, and USA. Analysis was framed by defining effective emergency management as a person-environment fit process in which both person (competence, response management system) and environment (e.g., need for multi-agency response, decision making about complex, evolving emergencies) characteristics should be modelled in training. Each organisation was unique in their approach and the extent their EOC was active during training. Training tended to focus on implementing the structural model (e.g., CIMS) and less on developing the competencies necessary for people to operate effectively at a tactical or coordinating level of emergency management. There was recognition of a need to further develop approaches to training, with 63% of organisations stating that they would like more guidance and advice in emergency management training.

Sinclair, H., Doyle, E., Johnston, D., Paton, D. (2013). The use of Emergency Operations Centres in local government emergency management. *International Journal of Emergency Management* 9: 205-228.

The 2009 New Zealand West Coast ShakeOut: Improving earthquake preparedness in a region of high seismic risk

New Zealand is geologically active and has a significant earthquake risk resulting from its position astride the Pacific-Australian plate boundary. The Alpine Fault transects 495 km of the South Island, west of the Southern Alps. It produces large (ca. M8) earthquakes, and is late in its average earthquake cycle. Recent studies have shown that the West Coast would suffer extensive damage and isolation in the event of a large earthquake. Current levels of organisational, business, and community awareness and preparedness in terms of dealing with the outcomes of a future major earthquake are considered less than optimum. The 2009 ShakeOut exercise was an opportunity for West Coast Civil Defence organisations to assess the status quo and to plan for increasing resilience, and therefore improve physical and economic recovery outcomes. The exercise was based on the Californian ShakeOut event, and despite many differences in the geography and population density, comparisons between the West Coast ShakeOut and California ShakeOut registration data show very similar participation profiles.

Orchiston, C., Manuel, C., Coomer, M., Becker, J., Johnston, D. (2013). The 2009 New Zealand West Coast ShakeOut: Improving earthquake preparedness in a region of high seismic risk. *Australasian Journal of Disaster & Trauma Studies* 2013-2: 55-61

New Zealand ShakeOut Observation Evaluation Report



The New Zealand ShakeOut, organised by the Ministry of Civil Defence and Emergency Management (MCDEM), was the largest earthquake drill in the history of the country. Over 1.3 million participants registered to participate in the drill via the ShakeOut website. The drill was held on 26 September 2012 at 9:26 a.m., and participants were asked to 'drop, cover and hold' in response to a potential earthquake. In addition to the drill, other relevant activities were also promoted as part of the ShakeOut including undertaking preparedness activities for earthquakes, and emergency response planning and exercising.

A programme of evaluation was undertaken to determine how effective the ShakeOut drill was at engaging people about what to do during an earthquake. One of the streams of research within this evaluation was having volunteer observers make notes about how people participated in the drill. More than 5,000 observer forms were completed and collected in the month following the drill. Another of the evaluation streams involved surveys undertaken with schools about their participation in ShakeOut. This report provides an initial summary of the findings of the observer forms, and a summary of participation in ShakeOut by schools. In terms of the observer forms it was found that there was a high level of participation in ShakeOut, especially by workplaces, suggesting that workplaces provide an important outlet for public education activities regarding earthquakes and disasters in general. Over 60% of people seen by the observers actively participated in the actions of 'drop, cover hold'. Of those that didn't participate, disability and age were reported to have been factors preventing participation. In terms of regional involvement, Wellington had the largest proportion of observer forms returned, followed by Auckland. Several provincial centres (e.g. Nelson, Timaru) also returned good numbers of observer sheets. In terms of the school survey, initial results show a very high level of participation by schools in the ShakeOut drill, high assessment of performance for 'drop, cover and hold' for the drill, and significant use of ShakeOut resources by schools (91%).

McBride, S. K.; Becker, J. M.; Coomer, M. A.; Tipler, K.; Johnston, D. M. 2014. New Zealand ShakeOut Observation Evaluation Report: A summary of initial findings, GNS Science Report 2013/61 41 p.

Review of natural hazard provisions in regional policy statements, territorial plans, and CDEM group plans

There is currently a heightened awareness of natural hazards in New Zealand, which is reflected in the Government identifying that the Resource Management Act 1991 requires several changes to better recognise natural hazards and their associated risk. This includes prioritising natural hazard risk as a matter of national importance. It is therefore timely to assess how natural hazard provisions are currently incorporated into regional policy statements, territorial land use plans, and civil defence emergency management group plans. This report provides an overview of the methodology used to assess plans representing 94 authorities (11 regional councils, 67 territorial authorities (i.e., unitary, city and district), and 16 Civil Defence Emergency Management Groups); and the tabulated data results from the assessment of the plans. This is the first study that examines every Regional Policy Statement, territorial authority plan and CDEM Group plan in the New Zealand, with a total of 99 plans being assessed.

Assessing the planning regime in New Zealand to the year 2000, Ericksen, et al. (2003), undertook a review of the quality of plans produced by local and regional councils in New Zealand. This review assessed 16 regional policy statements, and plans from 34 district councils (Berke, Crawford, Dixon, & Ericksen, 1999), against eight general criteria (i.e., it was not specific to natural hazards). Since this review of plans, there have been several changes to the

New Zealand legislation that address natural hazards (e.g., Civil Defence Emergency Management Act, Resource Management Act 1991 (RMA), Local Government Act 2002 and Building Act 2004). Further legislative changes in relation to the management of natural hazards under the RMA are also proposed (Ministry for the Environment, 2013a, 2013b). There is also a heightened awareness of natural hazards and their consequences as a result of a number of national and international natural hazard events (e.g., 2004 Lower North Island floods; 2004 Boxing Day tsunami, 2010–11 Canterbury earthquake

sequence, and 2011 Japan tsunami). In addition to these changes and events, the RMA requires land use plans and regional policy statements to be reviewed and revised every ten years to ensure they are responding to community, environmental and economic development needs. As more than ten years has passed since the Ericksen, et al. (2003) study, many Councils have developed their second generation land use plans and regional policy statements. As such, the land use plans and regional policy statements reviewed in this study will be different to those reviewed in Ericksen, et al. (2003). Since the development of the first generation plans, a number of resources have been developed to assist planners in the New Zealand planning context to incorporate natural hazards into land use planning (e.g., Ministry for the Environment, 2008a, 2008b; Ministry for the Environment, 2008c, 2008d, 2008e, 2010a, 2010b; Ramsay, Gibberd, Dahm, & Bell, 2012; Saunders, Beban, & Kilvington, 2013; Saunders & Berryman, 2012; Saunders & Glassey, 2007; Saunders, Prasetya, & Leonard, 2011). The availability of this reference material, combined with an increased awareness of natural hazards and their associated consequences, may have resulted in changes to how natural hazards are addressed within land use plans and regional policy statements.

Given the above factors, it is timely to assess how natural hazard provisions are currently incorporated into regional policy statements (RPS), territorial authority (TA) plans (i.e., city, district, and unitary plans), and civil defence emergency management (CDEM) group plans. CDEM Group plans are included under the CDEM Act, and reduction issues (i.e., avoidance and mitigation under the Resource Management Act 1991 (RMA)) need to be consistent with the RPS and TA plans (Saunders, Forsyth, Johnston, & Becker, 2007). The relationship between reduction under the CDEM Act and the RMA is also highlighted in the Ministry for Civil Defence Emergency Management's (MCDEM) National Strategy (MCDEM, 2008). The results of the project will provide base line data for how natural hazard provisions are currently included, which will



allow for future comparisons of natural hazard provisions (e.g., x years after RMA reforms). Undertaking this assessment provides a valuable opportunity to learn how the plans can be improved (Berke & Godschalk, 2009). This report provides an overview of the methodology used to assess natural hazard provisions in plans representing 94 authorities (11 regional councils, 67 territorial authorities (i.e., unitary, city and district), and 16 CDEM Groups); and presents the tabulated data results from the assessment of the plans. This is the first study that examines every RPS, TA plan and CDEM Group Plan in New Zealand, with a total of 99 plans being assessed across 94 authorities. This discrepancy in the number of authorities versus plans is due to some authorities (e.g., Marlborough District) having more than one plan for the region, while in other districts there are combined plans (e.g., Masterton, Carterton and South Wairarapa have a combined plan), and so are only counted once.

This report forms Part 1 of a four part project, as shown in Figure above1. The purpose of the project is to assist in answering the question: How is the purpose of the RMA being achieved for natural hazards? Following on from this data report, a subsequent report will be produced which presents the analysis of the tabulated data results, which are provided in Section 3. The objective of Part 2 is to determine best practice in local government plans in assessing and managing natural hazards to meet the purpose of the RMA. This will be achieved by identifying and analysing 10 plans (i.e., 2 x RPS, 3 x district plans, 3 x proposed district plans, 2 x unitary plans) for examples of good planning practice in regards to natural hazards. Part 3 will involve an analysis of councils' capability and capacity, in order to determine how a national instrument (e.g., National Policy Statement (NPS) or National Environmental Standard (NES)) could be developed, if it were deemed necessary, to meet the needs of councils, while meeting the purpose of the RMA. Part 4 will be integrating the findings from Parts 1–3 into a comprehensive report that provides an overview of the state of land use planning for natural hazards.

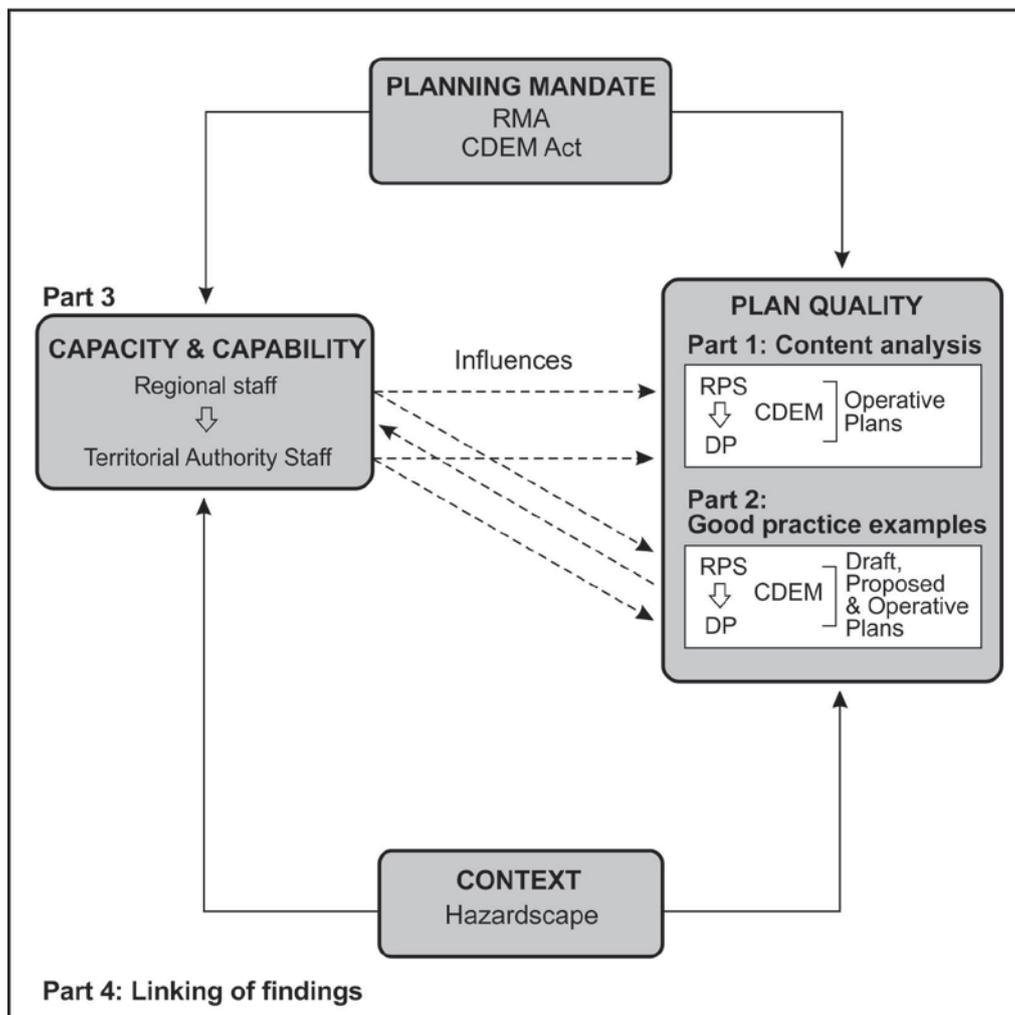


Figure above1 Framework for project, linking mandate, plan quality, capacity, capability, context, and influences (adapted from Berke, et al., 1999, p. 647)

Saunders, W. S. A.; Ruske, M. 2014. Tabulated results from review of natural hazard provisions in regional policy statements, territorial plans, and CDEM group plans, *GNS Science Report 2014/04*. 92 p.

Classroom responses of New Zealand school teachers following the 2011 Christchurch earthquake

Following a damaging magnitude 6.3 earthquake in Christchurch, New Zealand on February 22, 2011, an unprecedented number of displaced school children were enrolled temporarily or permanently in new schools throughout New Zealand. This study utilised accounts from primary school teachers in New Zealand, derived from focus groups scheduled in March and April 2011 for an evaluation of a disaster preparedness teaching resource, to examine how these disasters impacted individuals and schools outside of Christchurch.



The educators' focus group accounts provide an illustration of classroom responses including providing emotional support to displaced children, informal classroom discussions, curricular responses, addressing disaster rumours, and information seeking through peers. Some recommendations are provided on ways to support teachers' important roles in disaster recovery, including targeting evidence-based guidance and teaching resources to schools enrolling displaced children, dispelling disaster rumours through schools and facilitating peer mentoring among teachers. An overarching lesson is that communities would benefit from teachers being better equipped to provide emotional support and responsive disaster education to children after disasters.

Johnson, V.A. & Ronan, K.R. (2014). Classroom responses of New Zealand school teachers following the 2011 Christchurch earthquake. *Natural Hazards*. DOI: 10.1007/s11069-014-1053-3.

To explore the challenges for general practitioners (GPs) following the 2010/2011 Canterbury earthquakes

This study explores the challenges for general practitioners (GPs) following the 2010/2011 Canterbury earthquakes and describes how these were met. The qualitative study used semi-structured interviews with eight GPs from the Christchurch area exploring their experiences. The interviews revealed that the GPs faced a range of challenges both in the immediate aftermath of the earthquakes and in the following months. These included dealing with an increased and changed workload, and managing personal concerns. The GPs reflected on their coping behaviour and how their professional practice had changed as a result. All GPs reported significant increases in workload, raising questions about the need for coordination of locum support. GPs often found themselves working outside their area of accustomed expertise especially in relation to patients needing financial aid. GPs identified a number of coping behaviours though some only in hindsight. Greater awareness of self-care strategies would benefit GPs responding to disasters



Johal S, Mounsey Z, Tuohy R, Johnston D. Coping with Disaster: General Practitioners' Perspectives on the Impact of the Canterbury Earthquakes. *PLOS Currents Disasters*. 2014 Apr 2. Edition 1. doi: 10.1371/currents.dis.cf4c8fa61b9f4535b878c48eca87ed5d.

The **DE**termining **VO**lcanic Risk in Auckland (**DEVORA**) project



What is DEVORA?

DEtermining **VO**lcanic Risk in Auckland (DEVORA) is a multi-agency, multi-disciplinary collaborative research programme initiated in 2008. The project is divided into three successive themes, each building on the previous, with an overall aim of improving the volcanic hazard outlook and risk assessment for Auckland. The findings have the potential to improve business decision-making and risk management, as well as make Auckland a safer place.

Why is this project important?

The city of Auckland is built on the potentially active Auckland Volcanic Field. It is also vulnerable to ash fall from other North Island volcanoes. As Auckland provides over 1/3 of the nation's gross domestic product, is a major transport and economic hub, and is home to over 1.5 million people, a volcanic eruption would place the nation's economy and the city's infrastructure and population at risk.

What are we doing?

Scientists, emergency managers, economists, and other experts and stakeholders across New Zealand are working together to create an integrated risk model summarising the answers to three major questions:

Why is the AVF where it is?: We are gathering data to explain how, why, and how often magma moves to the surface in the Auckland Volcanic Field.

What happens when the volcanoes erupt?: We are studying past eruptions (timing, size, location, volcanic deposits) to recognise patterns and to identify the biggest threats to Auckland from future eruptions.

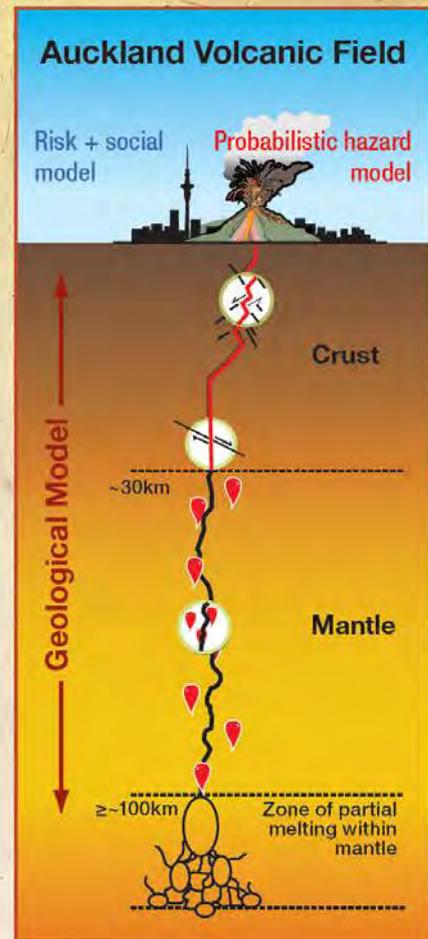
What are the potential impacts?: We are compiling information on Auckland's built and social environment and combining it with the answers to the questions above to describe how an eruption would affect Auckland and the rest of New Zealand. This will result in a tool that will help emergency managers make life-saving decisions before, during, and after an eruption.

Want to know more?

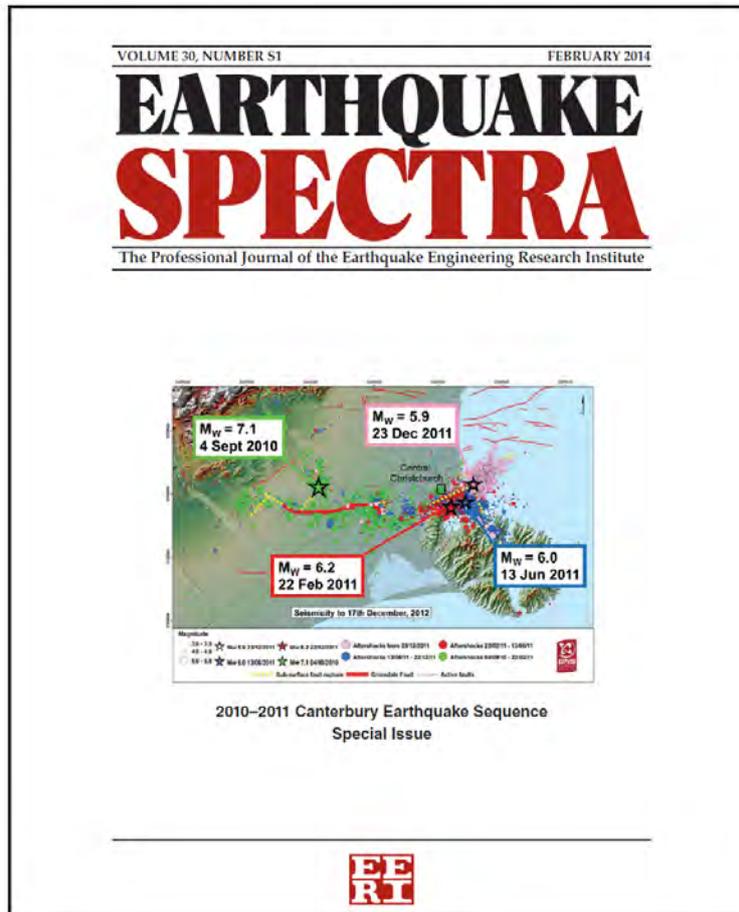
Please visit our website: <http://tiny.cc/devora>, or contact the project leaders:

Jan Lindsay, j.lindsay@auckland.ac.nz

Graham Leonard, g.leonard@gns.cri.nz



2010-2011 Canterbury Earthquake Sequence Special Issue of Earthquake Spectra



2010-2011 Canterbury Earthquake Sequence Special Issue of Earthquake Spectra: \$50

The February 2014 special issue of *Earthquake Spectra* is devoted to the 2010–2011 Canterbury, New Zealand, earthquake sequence. The widespread damage to buildings and lifelines from relatively low-magnitude earthquakes raises important questions about the risk to urban centers around the world from unmapped faults. The similarity of historical and modern construction practices with other developed countries means the damage to the built environment in Christchurch is relevant to potential infrastructure damage in many parts of the world, including the United States, given similar earthquake shaking. This special issue of *Earthquake Spectra* represents the collaborative effort of the Earthquake Engineering Research Institute (EERI) and the New Zealand Society for Earthquake Engineering (NZSEE); guest editors from both organizations coordinated the review of 26 papers exploring all aspects of the earthquake sequence.

Pre-Order Now in the EERI Knowledge Center and Online Store:

<https://www.eeri.org/products-page/past-issues/es-30s1-the-2010-2011-canterbury-earthquake-sequence-special-issue/>



Earthquake Engineering Research Institute | 499 14th Street, Suite 220, Oakland, CA 94612-1934 USA
phone: 510-451-0905 | fax: 510-451-5411 | email: eeri@eeri.org | www.eeri.org

Teaching and outreach

Staff and associates of the Centre currently contribute to elements of the Graduate Diploma in Emergency Management and MA, MPhil and PhDs in Psychology, Emergency Management and other related disciplines. The Centre also plans to work with other organisations in the provision of training within the CDEM sectors. A series of Emergency Management short courses are organised by the centre in summer and spring.

Graduate students – linked to the Centre

Massey University

Sara McBride (PhD student, School of Psychology, Massey University)

“The Canterbury Tales: Learnings from the Canterbury Earthquake Sequence in New Zealand to design successful public education campaigns to increase community resilience for low risk and high impact areas in Washington State, United States of America”

Tom Huggins (PhD student, School of Psychology, Massey University)

“Optimising Visual Solutions for Complex Strategic Scenarios”

James Hudson (PhD student, School of Psychology and Te mata o te Tau, Massey University)

“The Quantification of Iwi Development: A Framework for Iwi Development & Resilience”

Stuart Fraser (PhD student, School of Psychology, Massey University)

“The potential for using mid to high-rise buildings as vertical evacuation structures in near-source earthquake and tsunami events”

John Lindsay (PhD student, School of Psychology, Massey University)

“Maximising participatory planning in emergency management: implications for professional practice”

Robyn Tuohy (PhD student, School of Psychology, Massey University)

“Disaster preparedness of older adults in New Zealand”

Sally Potter (PhD student, School of Psychology, Massey University)

“Effective management of a volcanic crisis at New Zealand calderas”

Vicki Johnson (PhD student, School of Psychology, Massey University)

“Evaluating disaster education programs for children”

Karlene Tripler (PhD student, School of Psychology, Massey University)

“Emergency management in New Zealand primary schools”

Maureen Mooney (PhD student, School of Psychology, Massey University)

“Childhood and caregiver post-disaster recovery following Canterbury earthquakes of 2010 and 2011”

Gavin Treadgold (Masters student, School of Psychology, Massey University)

“Information management for post-disaster building assessment”

Sylvia Tapuke (Masters student, School of Psychology, Massey University)

“Ways in which waiata may be showcased as culturally relevant tools for facilitating disaster risk perception, management and recovery”

Paul Schneider (PhD student, Institute of Development Studies School of People, Environment and Planning, Massey University)

“The human face of climate change: Adaptation in a vulnerable coastal community context”

Other partners

Abi Beatson (PhD student Victoria University)

“New media, information sharing and crisis mapping: an analysis of new Media Based Information Sharing Practices during the Christchurch Earthquakes”.

Gill Scrymgeour (PhD student, University of Tasmania)
“Creating a resilient nursing workforce to the effects of large scale natural disasters within healthcare facilities within the South Pacific”

Brenda Mackie (PhD student, School of Social and Political Sciences, University of Canterbury)
“Risk Communication, Perception and Warning Fatigue: the Australian Bushfires”

Nate Baird (MSc student, Department of Geological Sciences, University of Canterbury)
“What is the optimal short-term forecast ashfall hazard map?”

Heather Craig (PhD student, Department of Geological Sciences, University of Canterbury)
“Volcanic ash impacts to agriculture”

Sarah Beaven (PhD student, Department of Geological Sciences, University of Canterbury)
“Science and operational response partnerships after the Canterbury Earthquakes: a model facilitating research and operational collaboration”

Daniel Blake (PhD student, Department of Geological Sciences, University of Canterbury)
“Ground Transportation fragility to Volcanic Hazards in Auckland”

Josh Hayes (MSc student, Department of Geological Sciences, University of Canterbury)
“Pyroclastic Deposit Clean Up in Auckland: a geospatial risk assessment”

Daniel Hill (MSc student, Department of Geological Sciences, University of Canterbury)
“Temporary Power Generation Vulnerability to Volcanic Ash Fall Hazards”

Emily Lambie (MSc student, Department of Geological Sciences, University of Canterbury)
“Human behaviour during strong earthquake shaking: CCTV analysis”

Tom Robinson (PhD student, Department of Geological Sciences, University of Canterbury)
“Planning for a Great Alpine fault earthquake: consequences for the South Island, New Zealand”

Shaun Williams (PhD student, Department of Geological Sciences, University of Canterbury)
“Tsunami Hazards, Samoa Islands: Palaeo-tsunami investigation, numerical source modelling and risk implications”

Grant Wilson (PhD student, Department of Geological Sciences, University of Canterbury)
“Critical Infrastructure Fragility to Volcanic Hazards in Auckland”

Katherine Yates (MSc student, Department of Geological Sciences, University of Canterbury)
“Geotechnical Risk Assessment response to seismic hazards in hilly terrain”

Daniel Hogg (PhD student, Department of Geography, University of Canterbury)
“Geographic variations in natural disaster impacts and spatial links to non-injury related health outcomes”

Vivienne Bryner (PhD student, Centre for Science Communication & Geology, University of Otago)
“Communication of geoscience knowledge to achieve disaster risk reduction”

Mary Anne Thompson (PhD student, School of Environment, University of Auckland)
“The interface between probabilistic hazard and risk assessment and volcanic risk and crisis management”

Mel Irons (PhD student, School of Psychology, University of Tasmania)
“The role of social media and crowdsourcing in facilitating spontaneous volunteerism and community-led crisis communication, response and recovery”.

Katelyn Rossiter (PhD student, School of Environment, University of Auckland)
“Natural Disasters Risk Reduction Using Social Media: Development of An Evidence- Community Engagement Model”.

New publications

- Beban, J. G.; Doody, B. J.; Wright, K. C.; Cousins, W. J.; Becker J. S. 2013. Water needs and the availability of water in post-earthquake Wellington City, and the significance of social factors in determining community resilience, GNS Science Report 2013/15. 54 p.
- Becker, J. S., Paton, D., Johnston, D. M., Ronan, K. R. (in press). Societal influences on earthquake information meaning-making and household preparedness. *International Journal of Mass Emergencies and Disasters*: in press.
- Currie, C-S.; Enjamio, J.; Girardo, D. O.; Hensel, C.; Leonard, G. S.; Johnston, D. M. 2013. Tsunami Awareness and Preparedness in the Greater Wellington Region, GNS Science Report 2014/10. 83 p.
- Doyle, E. E. H., McClure, J., Johnston, D. M., Paton, D. (2014). Communicating Likelihoods and Probabilities in Forecasts of Volcanic Eruptions. *Journal of Volcanology and Geothermal Research*. 272, 1-15
- Fraser, S.A., Power, W.L., Wang, X., Wallace, L., Mueller, C., Johnston, D.M. (2014). Inundation due to local tsunami at Napier, New Zealand. *Natural Hazards* 70: 415-445
- Johal S., Mounsey Z., Tuohy R., Johnston D. (2014). Coping with Disaster: General Practitioners' Perspectives on the Impact of the Canterbury Earthquakes. *PLOS Currents Disasters*. 2014 Apr 2. Edition 1. doi: 10.1371/currents.dis.cf4c8fa61b9f4535b878c48eca87ed5d.
- Johnson, V.A. & Ronan, K.R. (2014). Classroom responses of New Zealand school teachers following the 2011 Christchurch earthquake. *Natural Hazards*. DOI: 10.1007/s11069-014-1053-3.
- Johnson, V.A., Kevin R. Ronan, K.R., Johnston, D.M., Peace, R. (in press). Evaluations of disaster education programs for children: A methodological review. *International Journal of Disaster Risk Reduction*
- Johnson, V.A., Kevin R. Ronan, K.R., Johnston, D.M., Peace, R. (in press). Implementing disaster preparedness education in New Zealand primary schools. *Disaster Prevention and Management*.
- Johnston, D., Standring, S., Ronan, K., Lindell, M., Wilson, T., Cousins, J., Aldridge, E., Ardagh, M., Deely, J., Jensen, S., Kirsch, T., Bissell, R. (2014 in press). The 2010/2011 Canterbury Earthquakes: context and cause of injury. *Natural Hazards*
- Johnston, D., Standring, S., Ronan, K., (in press 2014) Children's understanding of natural hazards in Christchurch: reflecting on a 2003 study. *Australian Journal of Emergency Management* 29: 66.
- Johnston, D., Wilson, T., Kenedi, K., Lindsay, J., Runge, M. (2013) Preliminary earthquake impact assessment for a future seismic swarm near Al-Madinah. Book of Extended Abstracts, Vorsisa Scientific meeting, King Abdulaziz University, Jeddah, Kingdom of Saudi Arabia, p. 113-117.
- Johnston, D., Saunders, W., Leonard, G., Beban, J., Wright, K., Fraser, S. (2014). History of tsunami planning in New Zealand: 1960 to present. In UHPH_14: Landscapes and ecologies of urban and planning history, Proceedings of the 12th conference of the Australasian Urban History / Planning History Group, edited by Morten Gjerde and Emina Petrović (Wellington: Australasian Urban History / Planning History Group and Victoria University of Wellington, 2014).
- Mackie, B (2013). 'Warning Fatigue - Myth or Misunderstanding: Insights from the Australian Bushfires'. *Canadian Risk & Hazards Network*, 5 (1), pp. 51-55.
- Orchiston, C., Manuel, C., Coomer, M., Becker, J., Johnston, D. (2013). The 2009 New Zealand West Coast ShakeOut: Improving earthquake preparedness in a region of high seismic risk. *Australasian Journal of Disaster & Trauma Studies* 2013-2: 55-61
- McBride, S. K.; Becker, J. M.; Coomer, M. A.; Tipler, K.; Johnston, D. M. 2014. New Zealand ShakeOut Observation Evaluation Report: A summary of initial findings, GNS Science Report 2013/61 41 p.

- Mackie, B. (2013) (in press). 'Propaganda: Power and Persuasion'. [Review of the book Propaganda: Power and Persuasion, by David Welch], Media International Australia Incorporating Culture and Policy: quarterly journal of media research and resources.
- Mackie, B., McLennan, J. & Wright, L. (2013). 'Community Understanding and Awareness of Bushfire Safety: January 2013 Bushfires'. Report, Bushfire Cooperative Bushfire Centre, Melbourne.
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- Paton, D. & McClure, J. (2013). Preparing for Disaster: Building household and community capacity. Springfield, Ill., Charles C. Thomas.
- Paton, D. & Tedim, F. (2013). Enhancing forest fires preparedness in Portugal: Integrating community engagement and risk management. *Planet@Risk*, 1, 44-52.
- Ronan, K. R. (2014). Solving wicked problems linked to disasters, risk and uncertainty: Children are truly our future. *Australian Journal of Emergency Management*: in press.
- Saunders, W. S. A.; Ruske, M. 2014. Tabulated results from review of natural hazard provisions in regional policy statements, territorial plans, and CDEM group plans, *GNS Science Report 2014/04*. 92 p.
- Sinclair, H., Doyle, E., Johnston, D., Paton, D. (2013). The use of Emergency Operations Centres in local government emergency management. *International Journal of Emergency Management* 9: 205-228.
- Stapleton, B. & Ronan, K.R. (2012). Evaluation of Australian Red Cross' Psychosocial Response to the Queensland Floods 2010-2011 and Cyclone Yasi. Australian Red Cross: Brisbane.
- Sword-Daniels, V., Wilson, T. M., Sargeant, S., Rossetto, T., Twigg, J., Johnston, D. M., Loughlin, S. C., Cole, P. D. (in press). Consequences of long-term volcanic activity for essential services in Montserrat: challenges, adaptations and resilience. *Geological Society Special Publication, The Eruption of Soufriere Hills Volcano, Montserrat*.
- Tuohy, R., Stephens, C., & Johnston, D. (2014). Qualitative research can improve understandings about disaster preparedness for independent older adults in the community. *Disaster Prevention and Management* (in press).
- Webb, M. & Ronan, K.R. (2014). Interactive hazards education program in a low SES community : A quasi-experimental pilot study. *Risk Analysis*: in press.
- Yang, L. Prasanna, R., King, M. (2014). GDIA: Eliciting Information Requirements in Emergency First Response, *Requirements Engineering*, 1-18, ISSN: 0947-3602. DOI: 10.1007/s00766-014-0202-2.

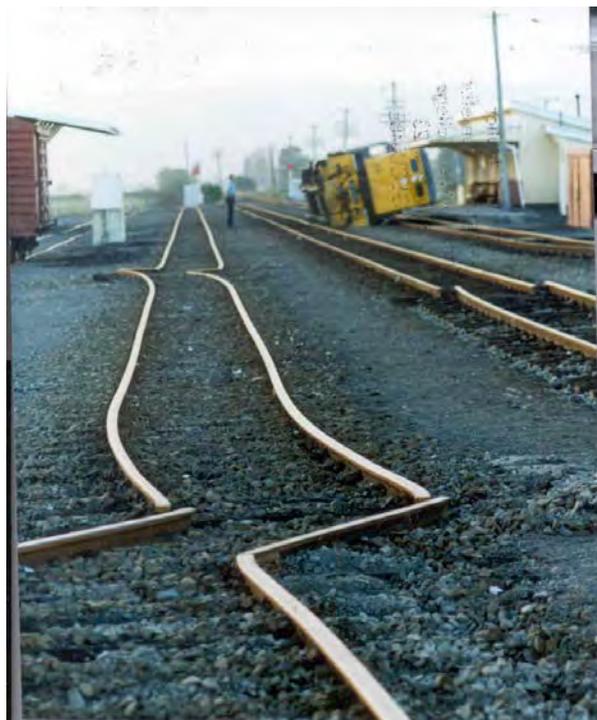


Photo: Edgecumbe in 1987.

Upcoming Events



The banner for the IRDR Conference 2014 features a globe icon on the left with the text "INTEGRATED DISASTER RISK SCIENCE: A TOOL FOR SUSTAINABILITY" and "IRDR CONFERENCE 2014 BEIJING, CHINA". On the right, a calendar for June 2014 shows dates 8 and 9 highlighted in red. A red diagonal banner in the top right corner says "SAVE THE DATE". Below the main text is a wide image of a city at sunset. At the bottom left is the IRDR logo and website "www.irdrinternational.org". At the bottom right is a row of partner logos including ICSU, ISSC, ISDR, and others.

JUNE 2014						
SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

NAVIGATING OUR FUTURE **Addressing risk and building resilience** **5-7 August 2014** **Viaduct Events Centre, Auckland**

Mark it in the diary now and join us at New Zealand's leading environmental conference!

Our future is looking increasingly uncertain. The impacts of climate are starting to challenge our primary productive base including farming and fishing. Sea level rise, coupled with more extreme weather events, is threatening our coastal towns and cities. Growing interest in deep sea exploration and mining is creating new potentially catastrophic risks for our marine realm. And the risk of losing much of our biodiversity heritage is growing, despite our best efforts to protect it.

Internationally, New Zealand's environmental performance is coming under increasing scrutiny, and we face growing reputational risks as an exporter, food producer and member of the global community. Biosecurity risks are ever-present.

This conference will focus on how New Zealand can successfully navigate through this challenging environment to build a resilient, prosperous and sustainable future. What challenges will we face in coming decades? What policy settings do we need now to address them? Are reforms to the RMA and EEZ legislation heading us in the right direction? Are our environmental institutions up to scratch? Are we managing economic risks well enough?

Registration available late February.

We'll keep you updated via email. Please check the conference website for updates.

www.edsconference.com

3rd International Conference on Urban Disaster Reduction

“Sustainable Disaster Recovery: Addressing Risks and Uncertainty”

September 28 - October 1, 2014
Hotel Boulderado, Boulder, Colorado, USA

The 3rd International Conference on Urban Disaster Reduction (3ICUDR) builds on an established practice of international collaboration and knowledge-sharing after disaster events in Japan, US, and Taiwan. In this third conference, New Zealand joins the three collaborating countries. The mission of the conference is to develop, integrate and promote new knowledge and best practices in sustainable disaster recovery, with a particular emphasis on urban environments.

Call for Abstracts

Abstracts are solicited on topics related to disaster recovery and urban disaster reduction. Reviewers will be looking for abstracts that take bold steps in describing new strategies and ways of thinking to significantly reduce potential casualties, damage, and disruption from future disasters, and create safe, resilient, and adaptive communities, regions, and nations. Young scholars are encouraged to present emerging research.

Papers that bridge the knowledge gaps between research and practice are particularly welcome.

Broad topic areas may include, but are not limited to:

- Unique challenges and opportunities for recovery in urban environments
- New theorizing of sustainable recovery across local, regional, and national contexts
- Comparisons and contrasts of sustainability measures used in recovery across the four countries
- Influences on and effects of recovery outcomes (political, economic, cultural, organizational, and environmental)
- Differential vulnerability and capacity in sustainable disaster recovery
- Recovery planning and implementation under uncertainty
- Linkages between disaster recovery and other stages of disaster, such as mitigation or adaptation
- Public and private investment for resilient infrastructure
- Recovery planning for emerging crises that do not adhere to our current understandings of disaster
- Resolving conflicts between sustainable recovery and post disaster risk management

Abstract Requirements:

Abstracts should be 1 page single-spaced and be submitted through the conference's online system at: <https://www.eeri.org/cohost/registration/3icudr-abstract-submission>

SUBMISSION DEADLINE: MAY 1, 2014

Notification of Acceptance will be given in June 2014.

Accepted presenters will be required to submit a 4-5 page, single-spaced paper by **August 15th, 2014**.

A limited number of travel grants will be available for young researchers and practitioners.

For more information about the call for abstracts or the conference, visit <http://3icudr.org>

Sponsoring Organizations

The 3ICUDR is being organized by the Earthquake Engineering Research Institute with funding from the Japan Foundation Center for Global Partnership.



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2014 annual conference of the Sociological Association of Aotearoa New Zealand

4-5 December 2014, Christchurch

“The social impact of the Canterbury earthquakes”

Dear friends and colleagues, welcome to the 2014 SAANZ annual conference. This SAANZ conference has a Groundhog Day feel to it – four years ago we were in the middle of organising the 2010 conference when

plans were derailed by the beginning of the Canterbury earthquakes. We are now back in the position to offer you a conference that, we hope, will give you an opportunity to share your work with others yet also enable you to engage with the social consequences of our city's quake experiences. While the call for papers is a general one, the keynotes are leaders in the field of disaster sociology. Given the particular context for the

conference – taking place in a rebuilding city where accommodation and transport are heavily utilised by rebuild workers, we have kept conference registration costs as low as possible. To encourage you to book early, abstract submissions and registration details are available from the 1st May, 2014. We will process abstracts as soon as possible to facilitate your planning.

Conference team: Ruth McManus (co-ordinator), Rochelle Bloy, Denise Forbes, Lyndon Fraser, Mike Grimshaw, Alison Loveridge, Greg Newbold, Anne Scott, Tiina Vares.

Conference email: saanz2014conference@canterbury.ac.nz



7th Australasian Natural Hazards Management Conference 2014

Building a Resilient Nation

Call for papers
(due 1 June 2014)

Photo: G. Hancock, GNS Science

Te Papa, Wellington, New Zealand
23–24 September, 2014

Optional Workshops 22, 25 & 26 September 2014

The conference will provide a forum to discuss the integration of hazard information into effective risk management, including:

- Applying hazard information to best practice planning
- Developing effective warning systems
- Improved response and recovery from events
- Creating resilient communities through integrating science into practice

Our target audience is: Emergency managers, planners, risk assessors, asset and utility managers, natural hazards researchers and scientists.

KEY DATES:	October 2013	Call for papers, workshops and trade displays
	April 2014	Registration details on the web and printed final circular available
	1 June 2014	Revised deadline for abstract submissions
	1 July 2014	Confirmation of programme
	23–24 September 2014	Conference and workshops

Contact: ahmc@hazards-education.org
www.hazardseducation.org/conference

Location

The centre is part of the School of Psychology, in the College of Humanities & Social Sciences. The centre Director, staff and students are based at the Massey University campus in Wellington (Building T20). However, the centre draws on staff from other Massey campuses, GNS Science and other collaborating organisations. Visits to the centre are welcomed but by appointment only please.



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