

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 natural, man-made and environmental risk
- enhancing community preparedness, response and recovery from the consequences of natural, man-made and environmental hazard events.

2009 Summer Institute



“Classroom in the Coach” – participants on the Summer Institutes field trip

The Centre held its annual Summer Institute on Emergency Management at the Wellington campus during 16-20 March 2009. This short course programme has been developed to provide a theoretical and practical introduction to selected topics relating to emergency management. Each course begins with an introduction and review of New Zealand and international research and practice. The topics were explored through a series of relevant case studies. The final session of each module provides a practical tools and guidance for turning the 'theory to practice'. Next years Summer Institute is set for 15-19 March 2010.

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

World Social Science Forum

Eight New Zealanders attended the World Social Science Forum in Bergen (May 10-12th 2009) - three associated with the Centre (Lesley Patterson, Caroline Orcheston (in the centre of the photo below) and David Johnston)

This was the first conference of its type, organised by International Social Science Council. The sessions were divided into plenary and parallel sessions throughout each of the two and a half days, with a range of subject streams across the major disciplines. The plenary sessions were focussed on broader concepts concerning social science; new challenges for social science from an historical perspective, context and definitions; social science and its contribution to policy-makers, politics and globalization, and climate change. Two sessions specially addressed disaster management issues. More details about his conference can be found on their website (<http://www.rokkan.uib.no/wssf/>).



Scientific Committee of the Integrated Research on Disaster Risk Programme (SC-IRDR)

The first meeting of the Steering Committee (SC) of the newly formed international program on Integrated Research on Disaster Risk (IRDR) was held at the University of Bergen coincident with the World Forum on Social Science Research, a large international scientific conference of social scientists. It was chaired by Prof. Gordon McBean and the Centre was represented by David Johnston. The primary sponsor, ICSU, has now been joined by the UN International Strategy for Disaster Risk (ISDR) and the International Social Science Council (ISSC) of UNESCO as co-sponsors. The purpose of the meeting was to begin development of an implementation plan for the strategy outlined in the report "A Science Plan For Integrated Research on Disaster Risk". A programme of activities is being developed and will be publicized in the coming months.



European Union Visit

Report to the EC-NZ JSTCC Meeting on EC-NZ Social Sciences Meeting held on May 14 2009
(compiled by Louise Munro).

The New Zealand government supported a delegation of seven senior social scientists from a range of discipline areas and research organisations to visit Brussels (see photo). The delegation met for an afternoon with representatives from the Science, Economy and Society Directorate of DG Research and a morning with COST representatives. The Commission meeting followed a mission to New Zealand in September 2008 by Dr Dimitri Corpakis, Head of Unit, Horizontal Aspects and Coordination in Directorate L, which promoted aspects of the European Commission supported research in this area to New Zealand.

The meeting was designed as a two-way exchange of information, which opened to some interactive discussion on areas of mutual interest to the parties. New Zealand social science is highly networked, outward-looking, and well connected to policy and industry. New Zealand social scientists are adept at creating value from their connections with other scholars. This way of operating in challenging interdisciplinary contexts signals the potential for New Zealand social scientists to contribute thinking in the context of the emerging FP8 strategy.



Photo: Richard le Heron (University of Auckland), Louise Munro (MORST), David Thorns (University of Canterbury), Nick Lewis (University of Auckland); Karla Falloon (MORST), Lesley Patterson (Massey University), Amanda Wolf (Victoria University), David Johnston (JCDR).

Some key points arising from the discussions:

- There is a lot of mutual interest in further engagement between New Zealand and European cooperation in the social sciences.
- The quality of NZ social science contributions can add value to EU research programmes in selected areas which will be described later.
- There is a resonance between the NZ social science trajectory and early thoughts on future European research in that there is potential to focus on 'Big Challenges'. Such challenges are likely to be of global interest, of relevance to NZ and be better understood by adding NZ contributions.
- There is potential to approach the New Zealand research environment as a site for comparative research, both across the social sciences and between the social sciences, the biophysical sciences (and sometimes humanities). New Zealand social sciences have innovative networks across institutions and are well connected to policy and industry, and also in embedding social science in biophysical science investigations.
- Similarly, New Zealand social scientists often study New Zealand phenomena that are of global interest such as migration and ethnic diversity, and due to the international nature of the academic space, are accomplished in making the general case from the specific study.
- There was interest in learning from New Zealand researchers approach to 'scale', for example how indicators can be both robust, and adapted for small areas/groups.
- Areas of intersection and potential collaboration include: climate change / resilience /severe events, technology and innovation, diversity, foresight, ethics, emergent leadership in the social sciences,

systematic social impact analysis, and indigenous knowledge (drawing from NZ Māori and Pasifika research).

- New Zealand social scientists are well-positioned to make very effective use of the many opportunities to connect with EU scientists, including European Commission project evaluations, International Research Staff Exchange Scheme (IRSES) and encouraging participation in COST actions as an entry into collaboration in EU project proposals but through various networking opportunities available through the internet and new ICTs.

There was agreement that the EC and New Zealand social scientists representatives could continue discussions through videoconferencing and potential further face-to-face meetings.

NZ communities to benefit from disaster collaboration

New Zealand communities will be better prepared for natural hazards, such as earthquakes, floods and climate change impacts, thanks to a partnership with a top United States disaster research centre. Massey University has signed a memorandum of understanding with the University of North Carolina (UNC) allowing its Wellington-based Joint Centre for Disaster Research to work with UNC's Centre for the Study of Natural Hazards and Disasters. Joint research, teaching, lesson sharing and scholarly exchange will take place.

Associate Professor Bruce Glavovic, newly appointed Associate Director of Massey's disaster research centre, says the partnership will enable New Zealand to learn from American hazard preparation and recovery experiences, including large-scale housing relocation and elevation projects following Hurricanes Fran and Floyd, and more recently Katrina.



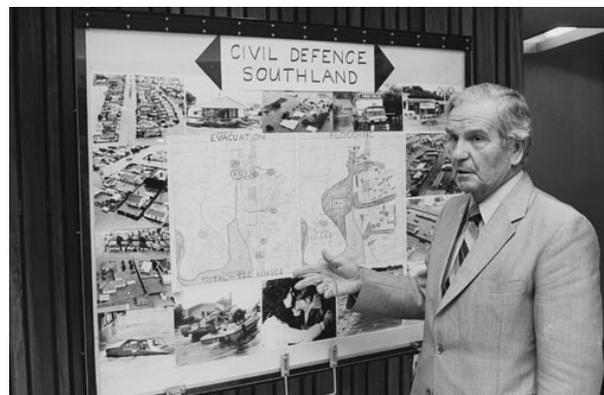
Future research collaboration is likely to include comparisons of disaster risk reduction and hazard mitigation planning measures used in the US and New Zealand, seeking a deeper understanding of the relationship between community resilience and hazard risk in this era of climate change, says Dr Glavovic.

The University of North Carolina at Chapel Hill ranks fifth among the nation's best public universities for the eighth consecutive year, according to US News & World Report magazine.

(Source: Massey Press Release)

Foundations of psychosocial support in emergency events - workshops update

Sarb Johal ran a series of nine workshops around NZ on behalf of the Ministry of Health for the emergency management sector, including Auckland, Wellington, Christchurch, Dunedin, Nelson, Gisborne, New Plymouth, Whangarei and Hamilton in March and April. The workshops, "Foundations of Psychosocial Support in Emergency Events" were aimed to orient people to the key psychological and social issues that emerge during and after disaster events, and to strategies to provide effective psychosocial support to promote recovery.



Workshop videos are available on YouTube (<http://www.youtube.com/nzpsych>) and can be also be subscribed to on iTunes (<http://nzpsych.blip.tv/rss/itunes>).

(Sarb will be delivering further workshops for the JCDR in early December 2009 – more details to follow).

JSPS Fellowship Update

In April Sarb Johal travelled to Tokyo on April 6th for 25 days to take-up a JSPS Short-Term Fellowship in order develop new contacts in the area of psychosocial support after disaster events. Sarb's account of the visits follows.

"I was warmly welcomed at The National Institute of Mental Health by my host Dr Mitsuhiko Yamada and his team.

Highlights of the Fellowship included:

- Disaster Renovation and Human Renovation Institute: Situated in the "Happy Active Town" area in the city of Kobe, this is a fascinating living-museum documenting the experiences of the communities affected by the Great Hanshin-Awaji Earthquake of 1995. The depth of material stored here in different formats is astonishing and very accessible and well-presented. I was fortunate enough to have an English speaking volunteer Japanese guide accompany me around the museum, which helped me understand the exhibits much better as he was personally affected by the event.
- Hyogo Institute for Traumatic Stress: I met with Dr Kato, who was heavily involved in setting up the initial mental health response after the 1995 Great Hanshin-Awaji Earthquake, as well as with Dr Osawa who is involved in wider work of the Institute, including ongoing clinical support for those affected by the 1995 earthquake and training on psychological first aid and psychosocial support for mental health and other welfare services and agencies around Japan.
- United Nations Centre for Regional Development (UNCRD), and WHO Knowledge Centre: I met with Dr Ando and Ms Yoko Saito at the UNCRD, and they explained their involvement in disaster mitigation and relief projects throughout the Asia region. My meeting at the WHO Centre with the Director, Dr Jacob Kumaresan and Dr Jostacio Lapitan focused mainly on research investigating the impact of climate change upon health in urban settings. The Kobe WHO Centre also has the responsibility of coordinating World Health Day next year, the first time this has been coordinated outside WHO Headquarters in Geneva.
- National Institute of Mental Health, Tokyo: Dr Kim, Dr Suzuki, and others from the Adult Mental Health Department presented some of their work around the impact of disasters and subsequent efforts to provide psychosocial support. They presented data about recent earthquakes in Iwate and Niigata, as well as impressive data concerning the health impacts of the 1945 Nagasaki atomic bomb explosions.



In terms of the purpose of my Fellowship - developing knowledge and practice of psychosocial support in emergency events – this was a very successful visit for me. I was impressed by the level and depth of knowledge and expertise in this field of psychosocial support after disasters in Japan. Perhaps because there is a difference in the journals that we publish or read because of linguistic differences, I was unaware of much of the data and papers that we talked about during my interactions with members of the Department of Adult Mental Health at the National Institute of Mental Health. However, my understanding is that much good work is being done here which conforms to the highest international standards in terms of training and practice, as well as research. We have agreed to work more closely together to collaborate on future research projects, which is an excellent outcome to my Fellowship. I have also been added to the WHO Kobe Centre's list of global experts in this area, and I look forward to being able to make a meaningful contribution to their work.

The end of the Fellowship was most notable for being caught in a snowstorm in Hokkaido, turning on Japanese TV at 7am on Monday April 27th and watching the NZ Minister of Health and the Ministry of Health National Health Emergency Coordinator being dubbed into Japanese concerning the non-seasonal influenza A (H1N1) outbreak. It was around now that I realised it was time to go home."

Legal duties to develop disaster response capacity through staff training and emergency planning

Workplace training generally competes with other organisational activities for limited resources, even more so in depressed economic times, and disaster preparedness training tends to be seen as a low priority due to the infrequency of a disaster event – placing such training even further down the list. However, disasters, whether natural or human-made, are unlikely to be affected by an economic recession and it would be prudent to continue proactive training activities to ensure effective response in anticipation that one will occur with little warning.

From a legal compliance perspective, employers have a ‘duty of care’ responsibility for the safety of employees in the law of negligence at common law. In New Zealand, the Health and Safety in Employment Act 1992 and its 2002 amendment, defines hazards in a broad sense which includes ‘an event, occurrence, phenomenon, situation (whether arising or caused within or outside a place of work) that is an actual or potential cause or source of harm’ s.2(1) ‘Hazard’(a). The Act requires ‘a person who controls a place of work’ (and this includes the owner and other parties with a legal interest to be there such as a lessee) to ‘take all practicable steps’ to ensure that no hazard that is or arises in the place, harms people who are lawfully at work there AND customers and people in the vicinity. Although this duty has yet to be tested in relation to natural hazards; staff training, hazards information, and procedures for dealing with emergencies such as evacuation apply to this duty.



On going research on disaster preparedness by associates of the Centre, includes the work of Ruth Garside (photo above), principal academic staff member at the School of Business, Christchurch Polytechnic Institute of Technology (CPIT), who teaches industrial psychology, human resource management, and employment law on under-graduate and graduate programmes. Ruth has a particular interest in Health and Safety legislation and training. She recently contributed to the appeal of the resource consent relating to the effects of a Marine Education Centre proposed to be built on an exposed coastal site, south of Wellington city, and susceptible to tsunami risk. Ruth pointed out fundamental omissions in the development of a safe evacuation site in the resource application which the New Zealand Environment Court (on appeal) later concluded was a “prerequisite for an evacuation plan and possibly even for the granting of a consent”.

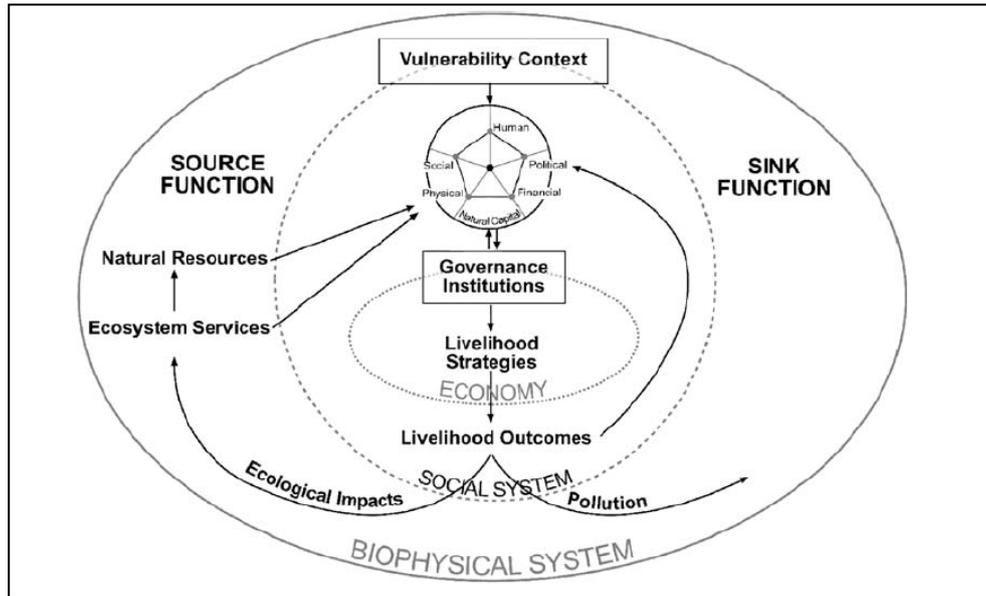
Ruth’s research interests as an educator and HR specialist are currently centred on business disaster and emergency planning (DEM), the efficacy of disaster response training and the problem of negative learning transfer specifically the influence of training design and delivery methods. She can be contacted at garsider@cpit.ac.nz

Sustainable coastal communities in the age of coastal storms: Reconceptualising coastal planning as ‘new’ naval Architecture

In a recently published article Bruce Glavovic explores issues around sustainable communities and coastal planning following the Katrina disaster. Hurricanes devastated the Gulf coast of the USA in 2005. Hurricane Katrina, in particular, highlighted the compelling need to build more sustainable and hazard resilient communities. Much can be learned from recovery efforts to rebuild the Gulf coast.

Personal observations and interviews with planners, academics and others involved in recovery efforts inform this analysis, which focuses on New Orleans. A conceptual framework is developed and principles and operational imperatives outlined to guide action for building sustainable, hazard-resilient communities. Such communities will remain elusive unless ‘business as usual’ is confronted by a transformational process of developmental planning. Sustainable, hazard-resilient coastal communities are founded upon robust ‘critical infrastructure’ that is secured by planning and decision-making processes that enable coastal

communities to build ‘layers of resilience’ to overcome ‘waves of adversity’. Planners need to take on a redefined role—as ‘new naval architects’—to design and build communities that are ‘sea-worthy’ in this age of coastal storms.



Opportunities for natural hazard risk reduction – perspectives from the state, market, and civil society

Continuing research by PhD student Wendy Saunders is exploring the relationships between the state, market, civil society and the natural, social, and economic environments. Land use planning is undertaken by three key sectors of a community – by the state (i.e. regional councils and territorial authorities), in that it sets policies and rules for development; the market, in that developers design developments within the constraints of the policies and rules set by the state; and civil society, whose interests are represented by elected officials on councils, and live in communities developed by the market under state regulations. Civil society is able to assert a certain amount of pressure on the market for more sustainable developments (i.e. eco-villages, energy efficient housing).

The figure below represents the key participants and power relationships in environmental planning. In this figure, three groups are represented in a triangular formation: civil society, the state, and the market. In the middle of the formation linking all three is land use plans and decisions, which are managed and administered by planners. Surrounding this triangle is the natural environment, which includes natural hazards, and incorporates sub-sets of the social and economic environments - all of which may be affected by natural hazard events. These concentric circles reflect a ‘strong sustainability’ perspective to reflect the inherent limits and finite character of natural systems within which social and economic systems are embedded.

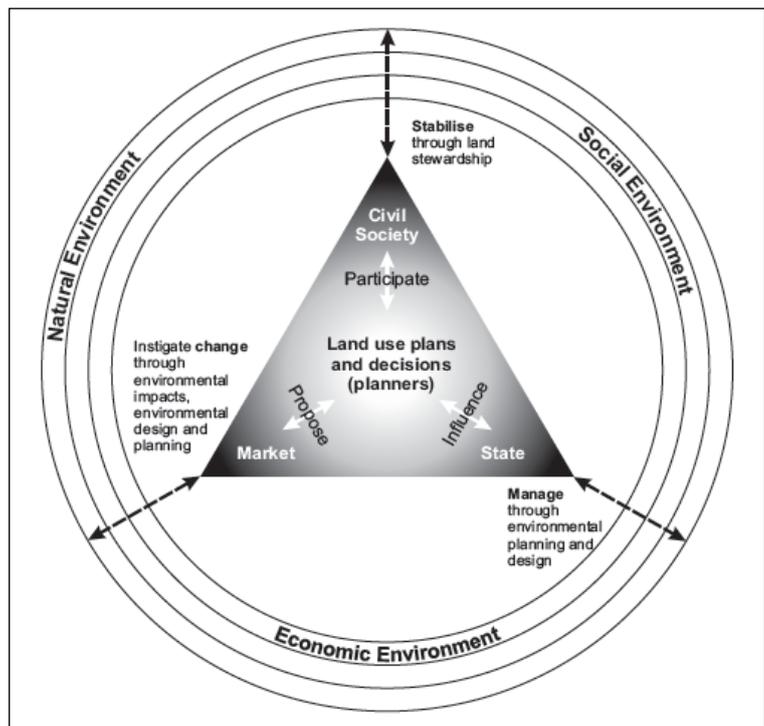


Figure 1: Participants and relationships in environmental planning and management, with the natural environment (Saunders & Glavovic, in prep)

Psychosocial impacts of quarantine during disease outbreaks and interventions that may help to relieve strain



A recently published paper in the New Zealand Medical Journal by Sarb Johal summarises the psychosocial consequences that may follow for patients and health care and other front-line workers when using quarantine controls. The threat of outbreak of infectious disease such as non-seasonal influenza A (H1N1), commonly referred to as Swine Flu, can provoke the implementation of public health control measures such as quarantine. Those affected by quarantine are likely to report distress due to fear and risk perceptions. This distress can be amplified in the face of unclear information and communication that is common in the initial period of disease outbreaks. The paper outlines recommendations for care of those in quarantine and those working with them, such as helping to identify stressors and normalising their impact as much as possible. This should take place at all levels of response, from public information and communication messages to individual face-to-face advice and support.

Reference: Johal, S.S. (2009). Psychosocial impacts of quarantine and interventions that may help to relieve strain. *New Zealand Medical Journal* 122:53-58

Framing effects on preparation intentions: Distinguishing actions and outcomes

Research just published by John McClure and colleagues aim to show whether positive or negative framing of preparation messages leads to higher intentions to prepare for earthquakes, and whether the more important component of the message is the framing of the preparation action or the framing of the outcome of not preparing. Four message conditions were created by crossing the framing of preparation actions (taking or not taking action) and the framing of outcomes (experiencing harm and avoiding harm in an earthquake). They were presented to 240 citizens in Wellington, who judged the general importance of preparation and specific preparation steps. The study finds that intentions to undertake both general and specific preparation were higher with negatively framed outcomes than positive outcomes. With specific actions, negative outcomes led to higher intentions to prepare when the action frame was positive (i.e. being well prepared).

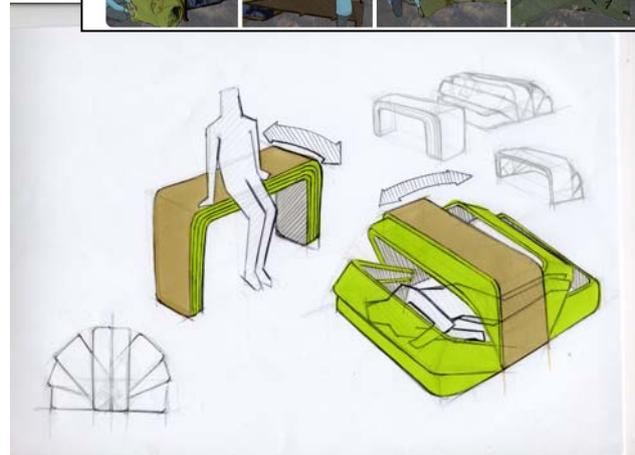
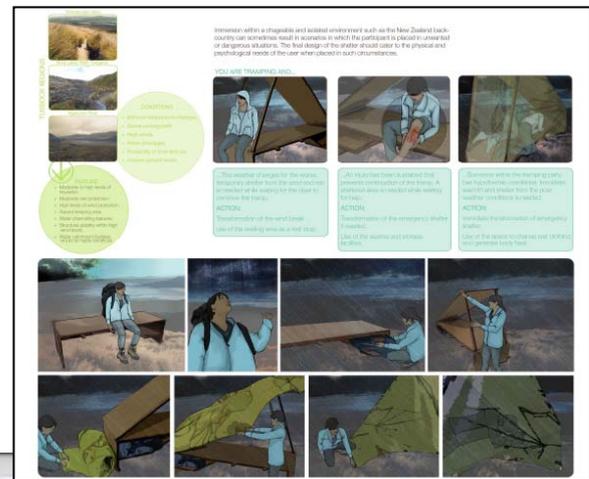


McClure, J., White, J., & Sibley, C. G. (2009). Framing effects on preparation intentions: Distinguishing actions and outcomes. *Disaster Prevention and Management*, 18, 187-199.

Contact: John McClure (John.McClure@vuw.ac.nz)

Design for Disasters

For a number of years Industrial Design students at Massey University, with input from the Centre have been undertaking projects looking at disaster products. A current project Caitlin Begg is in the process of designing is a transformable emergency shelter for within the New Zealand backcountry. These shelters will all need varying levels of insulation, wind and rain protection dependent on the environmental situation.



For more information contact Caitlin Begg (caitlin_begg@hotmail.com)

Impacts and emergency response to the 12 June 2006 South Island snowstorm:

The June 2006 Canterbury snowstorm caused widespread impacts to the Canterbury region, resulting in a major regional emergency response. As the result of a large atmospheric depression moving across the South Island from the Tasman Sea, snowfall was experienced across much of the South Island on the evening of 11-12 June 2006. By the late morning of 12 June much of southern and central Canterbury was covered by a significant thickness of snow. Urban and rural communities across the region suffered widespread disruption of lifeline services, in some cases for extended periods. The greatest impacts were experienced in Ashburton, Mackenzie, Timaru and Waimate districts. There was particularly widespread and severe damage to electrical distribution networks due to the heavy weight of the dense, wet snowfall. Telecommunication services failed as batteries in exchanges were unable to sustain services once mains power was lost. Disruption of transportation networks by the snow for periods of a few hours to several days hindered the emergency response. The rural sector in particular was heavily impacted by loss of electrical power services and telecommunications for an extended period of time (up to 3 weeks in some areas). Livestock losses were minimal on most farms, although the loss of livestock condition resulted in a considerable reduction in many farms' productivity. Widespread damage occurred to fences, trees and some buildings.

To investigate the impacts of the June 2006 snowstorm and assess how responding agencies managed the event, a survey was sent to 92 individuals or organisations involved in the emergency response to the snowstorm approximately 12 months after the event. The survey aimed to record damage experienced as a result of the June snowstorm event, impacts on urban and rural communities, the effectiveness of organisations' response plans for the snowstorm event, warning and reaction to the snowstorm event, and what lessons can be learnt for dealing with future snowstorms. Refer to the project report for more details (available free on the centre website).

Wilson, T. M.; Johnston, D. M.; Paton, D.; Houghton, R. 2009. Impacts and emergency response to the 12 June 2006 South Island snowstorm: tabulated results of a survey of responding organisations in the Canterbury Region, GNS Science Report 2008/40 p.66

Pyroclastic Power

Volcanic eruptions produce unique, potentially severe, and often poorly-understood impacts on critical infrastructure. The central North Island of New Zealand is one of the most active volcanic regions on earth. This region, along with Mt Taranaki and the Auckland Volcanic Field, poses a significant risk to electrical distribution networks from volcanic ashfall hazards. During the 1995-96 eruptions of Ruapehu volcano, the high voltage distribution network suffered damage due to ash accumulation on insulators, which caused electrical flashovers to occur (Figure 1). Cleaning volcanic ash from the insulators was time-consuming and expensive.

Damage to electricity distribution networks has occurred during other volcanic eruptions. For instance, after the May 2008 eruption of Chaitén volcano in Chile (the largest eruption worldwide for almost two decades), many kilometres of the network suffered flashover damage following deposition of ashfall, and had to be cleaned and in some cases, replaced.

It is therefore important to determine the factors controlling flashover due to volcanic ash deposition in high-voltage transmission networks, to inform risk reduction planning. We have initiated a research programme at the University of Canterbury to investigate the vulnerability of electrical distribution systems to volcanic ashfall hazards. Johnny Wardman is undertaking this research as part of his M.Sc. studies in Hazard and Disaster Management, under the guidance of Professors Pat Bodger and Jim Cole, Associate Professor David Johnston, Tom Wilson and Dean Podolsky. The project will include ash resistance and adherence testing, using ashfall of varying grain size composition, compaction, attached solutes and moisture content, and testing insulators of varying design and composition.



Figure 1 Cleaning high voltage insulators during the 1995-1996 eruptions of Ruapehu volcano



Figure 2 33 kV insulator with significant ash adherence following the May 2008 Chaitén eruption, Futaleufu, Chile



Figure 3 33 kV insulator with flashover damage following the May 2008 Chaitén eruption, Futaleufu, Chile

Volcanic health hazard survey completed in Vanuatu

Story by Shane Cronin, Dean Podolsky and Heather Handley

During the first week of May, research affiliates of the Joint Centre for Disaster Research completed a rapid-response survey of drinking water affected by volcanic activity on the island of Ambrym in the archipelago of Vanuatu. The visit was undertaken to advise the World Health Organisation (WHO) and led by Associate Professor Shane Cronin of Volcanic Risk Solutions, at Massey University. Other members of the team included Dean Podolsky (University of Canterbury), and Heather Handley (Macquarie University), Yvon Georges (Baiap Health Center, Ambrym) and Pakoa Lawo Rarua (Vanuatu Ministry of Health, Port Vila).



Fig. 1: Dean Podolsky examines the condition and materials of a typical concrete water storage tank used for domestic water supply in west Ambrym villages.

The first goal of the trip was to determine if local drinking water supplies were at risk of contamination by ash, gas and acid rain from the ongoing eruptions of Marum and Benbow volcanoes. The drinking water is 90% sourced from rainfall collected from house roofs and stored in concrete, fibreglass or PVC tanks. In past eruptions (particularly 2005), up to 20 000 tonne/day SO₂ was released from this volcano, and water stored in tanks was contaminated by up to 10 times the WHO limits in ions such as Fluoride and Sulphate. A study carried out at the time by Rachel Allibone (nee Crimp) and Cronin had revealed up to a 60% prevalence of moderate-severe dental fluorosis (and hence implicit skeletal fluorosis) in children of some of the villages on Ambrym, directly related to long-term fluoride uptake in drinking water. The second aim of the mission was to determine the most cost-effective mitigation measures that could be applied to protect drinking water and food from the impacts of volcanism on Ambrym and other volcanic islands in Vanuatu.



Fig. 2: Heather Handley collecting water and rock samples within the intense gas plume near the summit of Ambrym.

Over 180 water samples from villages in the southwest of the island were taken, which is the area where prevailing winds maximize the volcanic impact. Freshly collected rain water contained between <0.2 to >2.5 ppm F in habited areas, and 5-10 ppm F near the volcanic vents; the variability depending on the juxtaposition of gas plume and localized rainfall. Stream and spring waters sourced from the central volcanic

plateau ranged between 2-3 ppm F and are used in some water supplies, notably the spring supplies remain at similar composition, irrespective of the level of volcanism. The village water tank samples contained between 1-2.3 ppm F, with little relationship of these values shown with pH or conductivity. The highest of these values exceed WHO threshold F limits for permanent water supplies (1.5 ppm F), and will contribute to chronic fluorosis in some of the population. They do not, however, indicate a serious acute health issue associated with this latest phase of activity. Local available measures of health impact were primarily pH, but our preliminary findings indicate that this is a poor indicator of volcanic contamination. The pH of tank supplies was more strongly influenced by the materials used in tank construction (lowest pH in PVC tanks, highest in freshly skimmed concrete), sanitary conditions and maintenance, organic contaminants and the type and condition of the catchment roofing material.

Concepts for mitigation measures include: (1) that the Vanuatu Ministry of Health develop and run, in conjunction with the Rural Water Supply Department and Geohazards Department, a public awareness campaign that addresses water security and quality issues on all currently active volcanic islands (Tanna, Ambrym, Paama, Epi and Ambae). This should highlight that volcanic impact is only one of the issues that needs to be addressed (our survey shows many other practices that may be more significant health issues than any volcanic threat, such as highly-sedimented tanks with high algal growth and poor covering and care of tanks and collection surfaces). This should also outline simple clear messages about how volcanically impacted water is not likely to generate acute health hazards if care is taken with water systems, and how it may be more hazardous to health to abandon volcanically impacted water for less secure alternatives. (2) That the variety of agencies involved in rural health, water supply and volcanic impact assessment (up to 6 separate agencies in Vanuatu) establish a protocol for a single set of tests for water quality across all agencies that includes pH PLUS conductivity and other easily measured field parameters such as chloride (which is a good indicator for volcanic gas input and can be measured in the field by portable devices). This should also include collection of other relevant environmental factors that impact on water chemistry/quality. (3) That all relevant VanGov agencies above establish a single protocol for a single set of information goes to local communities to avoid the current state of mixed message delivery. (4) That VanGov procure a set (or two) of field-ready instruments for assessment, response and monitoring of water quality in relation to volcanic activity. This could be achieved with a single multi-tester device that measures pH, conductivity, Cl and dissolved Oxygen (@ \$5k NZ) (5) The Province government responsible for Ambrym prioritize new rural water-supply and reticulation schemes on Ambrym that make use of ground-water resources to reduce dependency on roof-fed rainwater tanks during periods of high activity.

Another experiment started during the trip included installing metallic roofing samples of 5 different major types in three different villages around west Ambrym to determine the rate and process of corrosion sustained by the different materials. In addition, the team collected fresh lava and bomb samples from Marum volcano on Ambrym and Yasur volcano on Tanna for U-Th-Ra and Sr-Nd isotopic analysis of Vanuatu arc lavas. These mafic arc rocks provide Dr Handley with a great opportunity to investigate the timescales of magmatic processes and degassing characteristics of subduction-related volcanoes.

Design, implementation and evaluation of web-based integrated incident resource management system for decision support in EoCs

The threats of the 21st century of bioterrorism, natural disasters (like earthquakes, floods, tsunami, volcanic eruptions, cyclones and land sliding) are an unfortunate reality in the world. Being prepared to implement an integrated framework for state and local emergency managers and the aligning of resources to respond to threats must be a priority. Understanding the interdependencies between Incident Command System (ICS) in



an organizational model provides first responders a framework for coordinating the combination of Command, Operations, Planning, Logistics, and Finance/Administration. Research underway by PhD student Yasir Javed, of the Institute of Information and Mathematical Sciences Massey University, Auckland, is exploring the design, implementation and evaluation of a web based Integrated Incident Resource Management System (IIRMS) for decision support in Emergency Operation Centers (EOCs). The goal of web-based IIRMS will be to provide a common platform to different organizations involved in the emergency response for coordination and incident information management. Apart from this, it will provide some advice with information regarding the status of the resources to assist in resource allocation. Situation reports (Sitreps) related to all the agencies involved can be viewed at a single platform, and electronic Sitreps can easily be updated. At the same time this system can serve as tool for exercises, training, recording of incident response flow, and data flow simulations between the agencies involved in emergency response.

For more information contact Yasir Javed, Institute of Information and Mathematical Sciences Massey University, Auckland (y.javed @massey.ac.nz).

What happened in Greymouth on July 30th 2008?

A massive rainstorm caused widespread flooding from Canterbury to Northland in late July 2008. The depression that moved over New Zealand was as big as the Tasman Sea. The storm also brought extreme winds to some areas. Levin and Greymouth were some of the places that bore the brunt of gale force winds causing damage to more than 100 houses. What was special about Greymouth was the fact that the damage there was extremely localized. Given the scale of the storm one would have anticipated widespread damage, but the damage was mostly confined to the suburb of Cobden, Blaketown and a few locations in the centre of Greymouth.



This event was re-modelled by NIWA to find out why it was such a local phenomena. Initial results indicate that severe downslope winds generated by southeasterlies over the main divide combined with funnelling through the narrow gap in the topography at the mouth of the Grey river resulted in a very localised strip of wind speeds in the range of 140-160 km/h.

Additionally a survey has been undertaken to get detailed information about the impacts for individual households. Questions were asked about whether people felt well enough informed, how they behaved



during the event, what the long term effects were, etc. The impact assessment is part of a long-term commitment to establish a repository for socio-economic effects of Natural Hazards.

For further information, contact:
NIWA, Dr Mike Revell, 04 386 0328,
m.revell@niwa.co.nz or Dr Stefan Reese 04 386 0564,
s.reese@niwa.co.nz

A unique tsunami generator to model violent flows impact on the coast

Tsunami are very destructive waves caused by the rapid displacement of a large amount of water. They are commonly caused by marine earthquakes, but can also be caused by volcanic eruptions, landslides, underwater explosions and asteroid impacts. These waves are different from wind generated waves because their main restoring force is gravity, and therefore they can travel large distances without any significant loss of energy. In the deep ocean, an earthquake-generated tsunami will travel with quite small vertical displacements and very long wavelengths, but when it reaches coastal areas it shoals up dramatically and may reach a height of 10 metres or more. Tsunami often cause many deaths and can be very costly as they can damage or destroy coastal habitations, structures and vegetation. It is therefore necessary to understand tsunami and predict their impact on the shores of countries at risk, in order to build appropriate structures and establish efficient plans of action.

However, while the generation and propagation of a tsunami can be reasonably well modelled with numerical codes, the near-shore behaviour of the wave is much more complex and cannot be easily simplified. Experimental methods are the obvious answer to this problem, but existing physical modelling tools are not entirely adequate to reproduce the main characteristics of a tsunami. Firstly, the length of a

traditional paddle-generated solitary wave is limited by the maximum displacement of the paddle (paddle stroke). A realistic tsunami wavelength can be of the order of 100m or more at model scale, typical paddle strokes rarely exceed 10m. Secondly, it had been observed long before the 2004 disaster that before the arrival of a tsunami the sea may go out, uncovering a large area of the sea bed. However, existing experiments adopt solitary waves to simulate tsunami, but these waves by definition have no trough. Traditional methods therefore cannot reproduce this phenomenon. Finally, there has been little work on the impact of tsunami waves hitting structures compared to studies on wave runup. It is true to an extent that higher runup commonly



corresponds to greater damage, but this has not been confirmed experimentally. As tsunami velocity fields inland are still unknown, it is impossible to estimate accurately the associated dynamic forces. Guidelines have been recently determined for the design of tsunami resilient structures (report P646 , FEMA 2008), which mainly adopt empirical models with very conservative assumptions for a general worst case scenario tsunami form. However, the addition of more data, whether observational or experimental, is essential for a better understanding of tsunami impact onshore.



A collaboration between UCL and HRW (Hydraulics Research Wallingford, <http://www.hrwallingford.co.uk>) has been set up to address some of these issues and better our understanding of impact of tsunami on urban environments. Through this collaboration a new type of Tsunami Generator, for the physical simulation of scaled tsunami in the lab, has been designed, built and implemented.

The design of this device was inspired by a previous HRW tide generator. The working principle behind the tide generator was to extract and release a given volume of water in a tank using controlled pressure changes. The

principle of operation of the new generator remains the same but the speed of the overall system is greater, as tsunami wave lengths are shorter than tidal wave lengths.

Figures: Roof of the tank and propagation flume (top), flat area with instrumented buildings and nearshore wave gauges (bottom)

The Tsunami Generator tank is placed at one end of a 45m wave flume (see Figure 3). The wave generated propagates along a flat bottom and climbs up a beach with a slope of 1/20, and a flat inland area is used for inland flow measurements (with or without building models being present). This generation system allows for the creation of a trough (when the pressure in the tank is low) and the generation of a very long wave. These are unique features, and in particular, no other wave generator is capable of reproducing stable trough-lead long period waves.

At this stage, more data analysis remains to be done but the final results will give us a range of flow velocity patterns onshore, data illustrating how much the flow can be slowed down by obstacles, and a range of impact forces and quasi-static wave loads on bigger structures. In the future these loads will be used as numerical input for further structural analysis. So far, hydraulic modelling of tsunami waves has mainly focussed on runup and very little has been done on impact forces on structures. We are now able to address the main weaknesses of previous physical models for tsunami studies, and in the near future a new dataset of useful tsunami parameters for prevention and structural design will be available.

Editor's note: UCL and JCDR are developing collaborations in a number of areas.

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Assessing capability & capacity to prepare for and respond to a disaster

Ongoing research by Michele Daly and colleagues is exploring methodologies for assessing capability and capacity amongst Emergency Management Groups. In 2006, following a significant number of emergency events around the world and within New

Zealand, the Auckland Region CDEM Group (the Group) turned its attention to its own current capability and capacity to prepare for and respond to a disaster, and worked with Michele and her team to undertake an assessment. The Group particularly wanted to consider: 1) the adequacy of its resources in terms of quantity and suitability of personnel; 2) equipment, facilities and finances; 3) the effectiveness of cooperation and coordination arrangements across civil defence emergency management agencies in relation to multi agency planning, education, training and exercising; 3) 'Command and control' aspects, including leadership, and the



ability of the various Emergency Operation Centres to remain operative in a declared emergency for a prolonged period. Since the completion of that project, research has extended the methodology to an evaluation of risk reduction activities across local authorities.

For more information contact Michele Daly (md@kestrel.co.nz). In 2009 Michele joined the Centre as a Senior Tutor in Emergency Management.

Links with RiskScape

What is RiskScape?

RiskScape, a joint venture between GNS Science & NIWA, is an easy-to-use multi-hazard risk analysis tool. It converts hazard exposure information into the likely impacts for a region, for example, damage and replacement costs, casualties, economic losses, disruption, and number of people affected. The main goal is to develop and implement a decision-support tool that readily compares the likely consequences of multiple hazards on a region.

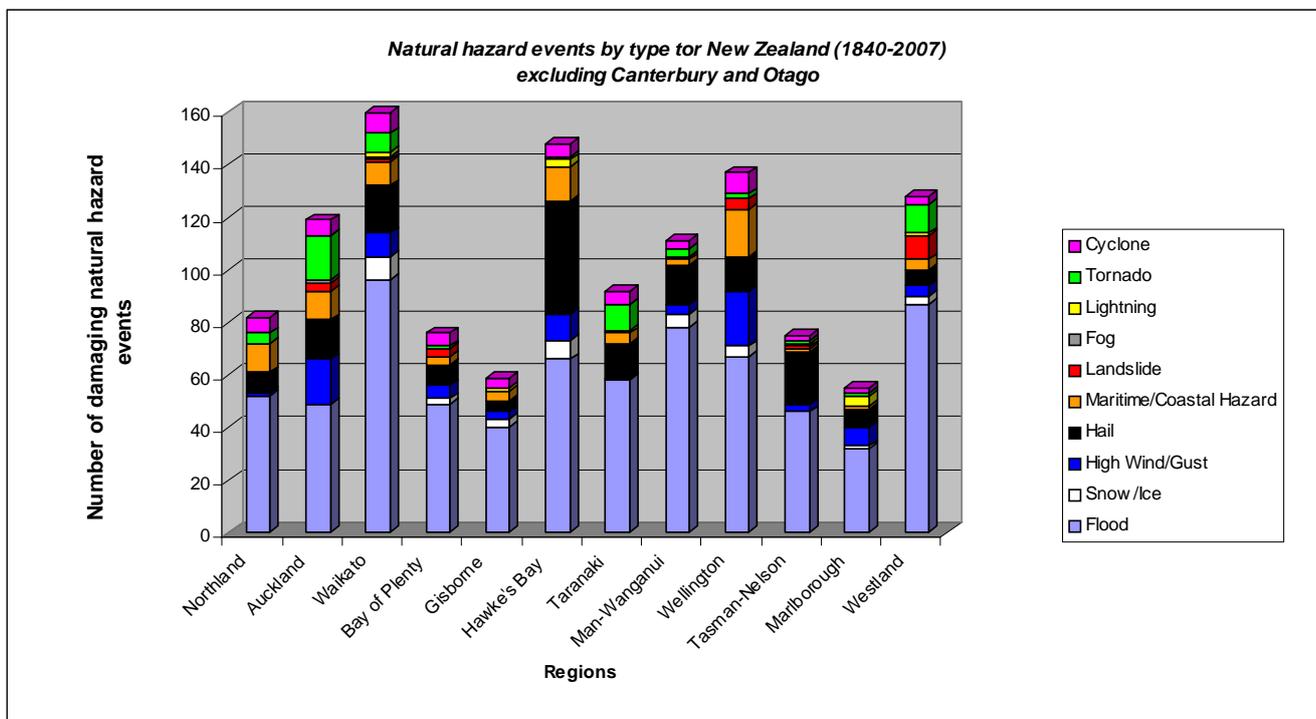
By quantifying the consequences across the same portfolio of communities and associated assets (buildings and infrastructure), RiskScape conveniently provides information to prioritize risk-reduction measures and a more informed response as an event unfolds. A range of consequences (or risk) can be quantified, such as direct damage and replacement costs, casualties, number of people that may need evacuation or medical assistance and indirect effects such as disruption of transport and tourism. These impacts and losses can then be compared across several hazards.

The Regional RiskScape system is being developed so it is flexible enough to operate across an internet or intranet link or as a stand-alone station basis. Although a web based system will usually be running in parallel.

<http://riskscape.org.nz/home>

Historic weather events

There is no single repository for information on the impacts and costs of past extreme weather events in New Zealand. The data is held in a wide range of disparate records and sources. The collation and analysis of such information, is of significant value in better understanding how events impact our society. As part of the joint venture RiskScape project NIWA is developing such a historic database as a searchable facility for the public and researchers to use. The aim is to provide a database that allows a comprehensible analysis of historical extreme weather events in terms of their impacts, damages and physical characteristics, from the two perspectives: hazard types and regions.



The information has been sourced from a wide range of national and regional sources, including the National Library of New Zealand, microfilm newspaper archives from the Alexandra Turnbull Library, archives of various councils, the Insurance Council of New Zealand, the Meteorological Society of New Zealand and MetService.

The web interface is currently under development and will provide the user with basic GIS functionality to graphically represent the geographical distribution of the extreme weather events. It will also allow the visualization of the data and search results as trends over time or as comparison between different hazard types and regions. The database should be accessible to the public by July 2010.



For further information, contact:
NIWA, Dr Rob Bell, 07 856 1742, r.bell@niwa.co.nz



RiskScape user based development: A climate change and natural hazard information integration platform

By Shona van Zijll de Jong and Stefan Reese

RiskScape's output will illustrate a paradigm shift in the next five years. The first step has been to develop a multihazard loss estimation model for environmental hazards. Soon, we will engage with the important question: what *value and benefits can technical geospatial interoperability standards bring to RiskScape?*

We seek to initiate a discussion about the threefold research path that may allow RiskScape to position itself to bring important benefits to New Zealand. This threefold path includes the following: 1) the formal sciences that advance tools such as GIS, remote sensing and modelling; 2) natural sciences which use these tools to understand geospatial phenomena; 3) creation of some leverage for society to ensure that public dollars are spent on creating data that, through Open Access, becomes a shared resource. We provide a preliminary overview of some challenges likely to be encountered: challenges specific to providing climate change and socio-economic data analysis services and outputs as we collect, analyse and report on users' priorities, data requirements, and users' feedback on the current software development.

2009-2016 Horizon Scanning - Envisioning Benefits and Challenges of RiskScape

Benefits		Challenges	
<p>Improved ability to encode climate change and natural hazard data in RiskScape Model.</p> <p>More efficient scientific debate and accelerated pace of scientific discovery</p> <p>Improved opportunities for cross-disciplinary and longitudinal studies</p> <p>Improved ability to discover spatial relationships.</p> <p>Improved societal and institutional return on investment of research dollars.</p> <p>Improved ability of research funding institutions to do due diligence and policy development.</p> <p>Improved data publish/search capabilities.</p> <p>More data is available, enabling more efficient assessment of data. Researchers looking for previously collected data will know where to look i.e. data collected by an climate change scientist may include hydrometeorological readings that would be valuable to a land use planner.</p> <p>Improved opportunities to collaboratively plan data collection/publishing efforts.</p> <p>Geospatial interoperability standards are intended to remove barriers, such as technical incompatibilities. In the New Zealand context, data should become a leveraged public asset –to assist in imagining innovative spatial relationships that may broaden scope of research and deepen analysis.</p>	<p>Improved verifiability of results, e.g. Climate science</p> <p>Improved ability to re-use or repurpose data for new research questions, reducing redundant data collection. Data is a resource that could be used with other data in more comprehensive studies (decision support efforts or multidisciplinary and longitudinal projects)</p> <p>Improved rigor and transparency regarding data collection methods, processing methods and data semantics.</p> <p>Improved ability to characterize and have useful unification of many kinds of observations, such as observations that yield a term rather than a number.</p> <p>Improved ability to “fuse” in-situ measurements with data from scanning sensors.</p> <p>Improved ability to re-use or repurpose data for new research questions, reducing redundant data collection. Opportunities for value-added data enhancement will be created, as data can be re-used and/or collected with the intention of serving multiple research purposes. Data owners – those who may charge for use of the data - provide more useful and saleable products. The public - and those who fund scientific research – will benefit, bringing a greater return in terms of the general application and use of science..</p> <p>Improved opportunities to collaboratively plan data collection/publishing efforts.</p> <p>Improved rigor and transparency regarding data collection methods, processing methods and data semantics. The processing chain is transparent. Generally agreed upon conventions for describing data and methods (such as data reduction) contribute to clarity and rigor.</p>	<p>Barriers, such as technical incompatibilities hinder development of technical interoperability</p> <p>Managing an analysis portal accessed by all users, with different output requirements, with different levels of technical expertise</p> <p>Difficulties encountered meeting wide spectrum of users’ interests and needs</p> <p>Developing business planning capability e.g. capacity for short term compromises i.e. reconcile user needs with provider capabilities?</p> <p>Managing semantic variety – managing communication breakdown, and barriers among different disciplines, professions or individual researcher</p>	<p>Time, effort and resources invested in ongoing discussions to support Government, Academia, industry, organisations data providers and individual’s data requirements</p> <p>Developing useful information models – and data products</p> <p>Working with a wide spectrum of users, typically in the context of public policy -typically constrained by small budgets allocated to environmental hazard management.</p> <p>RiskScape budget constraints</p>

Teaching and Outreach

Staff and associates of the centre currently contribute to elements of the Graduate Diploma in Emergency Services 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 will be organised by the centre for the summer of 2010.

Graduate Students – linked to the Centre

Debra Ellis (PhD student, School of Psychology, Massey University)
“Health sector emergency management roles in New Zealand”

Julia Becker (PhD student, School of Psychology, Massey University)
“Increasing Community Resilience: Understanding how individuals make meaning of hazard information and how this relates to preparing for hazards”

Wendy Saunders (PhD student with School of People, Environment & Planning, Massey University)
“Effective land-use planning for natural hazard management”

Ian de Terte (PhD student, School of Psychology, Massey University)
“Resilience and the prevention of work related traumatic stress: testing an ecological model”

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”

Heather Taylor (PhD student, School of Psychology, Massey University)
“Children in Disasters: Children's Experiences of Flooding in Surakarta, Indonesia”

Chris Raine (PhD student, School of Psychology, Massey University)
“Complexities of volunteerism associated with New Zealand Emergency Management”

Yasir Javed (PhD student, Institute of Information and Mathematical Sciences, Massey University)
“Design, Implementation and Evaluation of Web-based Integrated Incident Resource Management System for decision support in Emergency Operation Centres”

Robyn Tuohy (MSc student, School of Psychology, Massey University)
“Older people’s experiences of the Kaitia flood evacuation: a narrative study with the residents of two communities.”

Erle Busby (MSc student, School of Psychology, Massey University)
“Flood Recovery Management: A comparative benefit analysis between CIMS and ECM using an examination of the Eastern Bay of Plenty Flood event of July 2004 recovery process as a case study.”

Jeremy Gibbons (MSc student, School of Psychology, Massey University)
“An integrated approach to emergency management training.”

Steve Glassey (MSc student, School of Psychology, Massey University)
“Shooting them is not the answer. How New Zealand can enhance its emergency planning to protect domestic animals during disasters?.”

Abdur Rehman Cheema (PhD student, Institute of Development Studies School of People, Environment and Planning, Massey University)
“Role of good governance in addressing vulnerabilities in disaster management in Pakistan”

Shabana Khan (PhD student, School of Geography, Environment and Earth Sciences, Victoria University of Wellington).
“A geographical analysis of the hazardscape of Wellington region: influences on intra-regional response.”

Rosalind Houghton (Victoria University PhD student – Department of Sociology and Social Policy)
“Domestic Violence following natural hazard events in New Zealand”

David McIvor (University of Tasmania PhD student – School of Psychology)
“Means-end Chain Modelling of Natural Hazard Preparedness.”

Tom Wilson (University of Canterbury PhD student – Department of Geological Sciences)
“Vulnerability of New Zealand’s pastoral farming systems and rural communities to volcanic hazards.”

Dean Podolsky (University of Canterbury PhD student – Department of Geological Sciences)
“Time-variant multi-hazard and risk communication analysis of the northern Whakatane District, Bay of Plenty, New Zealand”

Monica Gowan (University of Canterbury PhD student – Health Sciences Centre)

“Self-management of disaster risk and uncertainty: evaluating a personal health-based wellness paradigm for building disaster resistance.”

Scott Barnard (University of Canterbury PhD student – Department of Geological Sciences)
“A quantitative analysis of the vulnerability of components of infrastructure to volcanic ash.”

Laura Jardine-Coom (Masters student, Geography Department, University of Canterbury)
“Exploring Kaitiakitanga and Hazard Management in Aotearoa New Zealand.”

Jennifer DuBois (University of Canterbury PhD student – Department of Geological Sciences)
“The plausibility of a submarine landslide generated tsunami at Kaikoura Canyon.”

Johnny Wardman (University of Canterbury MSc student – Department of Geological Sciences)
“Quantitative analysis of “flashover” potential for high voltage transmission equipment exposed to volcanic ash.”

Caroline Orchiston (Departments of Tourism and Geology PhD student, University of Otago)
“Tourism and earthquakes in the zone of the Alpine Fault: risk perceptions and business resilience in the tourism industry”

Kelvin Zuo (Department of Civil and Environmental Engineering PhD student, University of Auckland) “Procurement and contractual framework for disaster reconstruction.”

Alice Yan Chang (Department of Civil and Environmental Engineering PhD student, University of Auckland)
“Resourcing for post-disaster reconstruction.”

John Hewitt (Department of Civil and Environmental Engineering PhD student, University of Auckland) “Understand priority reconstruction needs of a community during response and recover stage.”

James Rotimi (Department of Civil and Environmental Engineering PhD student, University of Auckland) “Legislation post-disaster”.

Fei Ying (Department of Civil and Environmental Engineering PhD student, University of Auckland) “Applying decision analysis in seismic mitigation implementation”

Temitope Egbelakin (Department of Civil and Environmental Engineering PhD student, University of Auckland)
“Incentives and motivators to enhance seismic retrofit implementation.”

Mohammad Reza Zare (Department of Civil and Environmental Engineering PhD student, University of Auckland)
“Earthquake effects on wastewater systems with particular emphasis on pipelines.”

Tingting Liu (Department of Civil and Environmental Engineering PhD student, University of Auckland) “Managing government exposure to public-private partnerships project risk.”

Naseem Ali (Department of Civil and Environmental Engineering PhD student, University of Auckland) “Dispute resolution.”

New Publications

Becker, J. (2009). ShakeOut: Lessons for New Zealand. *Impact* 33:6-7

Becker, J.S., Johnston, D.M., Paton, D., Ronan, K. (in press). Community resilience to earthquakes: Understanding how individuals make meaning of hazard information, and how this relates to preparing for hazards. *Proceedings of the 2006 New Zealand Society for Earthquake Engineering Conference*, 3-5 April, Christchurch, New Zealand, Paper No. 4, 8p.

Becker, J., Saunders, W., Hopkins, L., Wright, K. (2008). Planning for community recovery and restoration before disaster strikes. *Proceedings of the 21st EAROPH World Congress and Mayors' Caucus, Himeji & Awaji, Hyogo, Japan*, 21-24 October 2008, 10p.

Becker, J.S., Saunders, W.S.A, Robertson, C.M., Leonard, G.S., Johnston, D.M. (2009). A review of options for incorporating volcanic hazards into land use planning in New Zealand. *The Australasian Journal of Disaster and Trauma Studies*.

- Glavovic, B. (2008). Sustainable coast communities in the age of coastal storms: Reconceptualising coastal planning as 'new; naval architecture. *Journal of Coastal Conservation* 12:125-134.
- Johal, S.S. (2009). Psychosocial impacts of quarantine and interventions that may help to relieve strain. *New Zealand Medical Journal* 122:53-58
- Johnston, D.M., Becker, J.S., Saunders, W., Wright, K., Coomer, M., Leonard, G.S., Paton, D. (2009). Surviving Future Disasters in New Zealand. *Proceedings of the 2009 New Zealand Society for Earthquake Engineering Conference*, 3-5 April, Christchurch, New Zealand, Paper No. 2, 5p.
- Johnston, D.M., Finnis, K., Becker, J.S., Leonard, G.S., Saunders, W., Wright, K., Paton, D., Ronan, K. (2009). Building Community Resilience Through Community-based Education Programmes. *Proceedings of the 2009 New Zealand Society for Earthquake Engineering Conference*, 3-5 April, Christchurch, New Zealand, Paper No. 56, 4p.
- Johnston, D.; Leonard, G.; Becker, J.; Saunders, W.; Gowan, M. 2009. Evaluating warning and disaster response capacity in the tourism sector in Long Beach and Ocean Shores, Washington, USA, *GNS Science Report* 2009/10. 10 p.
- Kaye G., Cole, J., King, A., Johnston, D. (2009). Comparison of risk from pyroclastic density current hazards to critical infrastructure in mammoth Lakes, California, USA, from a new Inyo craters rhyolite dike eruption versus a dacitic dome eruption on Mammoth Mountain. *Natural Hazards* 49:541-563.
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- McClure, J., White, J., & Sibley, C. G. (2009). Framing effects on preparation intentions: Distinguishing actions and outcomes. *Disaster Prevention and Management*, 18, 187-199.
- Paton, D., Violanti, J.M., Burke, K. & Gherke, A. (2009). Traumatic Stress in Police Officers: A career length assessment from recruitment to retirement. Springfield, Ill., Charles C. Thomas
- Paton, D. (2009). Community sustainability and natural hazard resilience: All-hazard and cross-cultural issues in disaster resilience. *The International Journal of Environmental, Cultural, Economic & Social Sustainability*, 5, 345-356,
- Paton, D. (2009). Exploring the Important Connotations and Contents of Disaster Prevention Literacy: How to determine them? 2nd International Conference on Education for Disaster Prevention. Douliou, Taiwan. May 14-15th.
- Saunders, W., Becker, J., Glassey, P. (2008). Active fault and landslide guidelines for planners. Proceedings of the 21st EAROPH World Congress and Mayors' Caucus, Himeji & Awaji, Hyogo, Japan, 21-24 October 2008, 11p.
- Saunders, W. (2009). A framework for integrating land use planning and EM for effective natural risk reduction in New Zealand. *IAEM Bulletin* 26(5): 21-22.
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- Wilson, T., Daly, M., & Johnston, D. (2009) Review of impacts of volcanic ash on electricity distribution systems, broadcasting and communication networks. Auckland Engineering Lifelines Group. *Auckland Regional Council Technical Publication* No.051, 79p.

VAT LAB

VOLCANIC ASH TESTING LABORATORY



VAT LAB is a consortium of research organisations investigating the impact of volcanic ash fall on infrastructure.

what
we do

Volcanic Impact Assessment
Infrastructure Vulnerability Assessment
Critical Component Testing

volcanic
ash

Volcanic Ash can be:

very fine grained
highly abrasive
corrosive
conductive



activities

Volcanic Impact Assessments:

Alaska (1996), Argentina (2008; 2009), Chile (2008; 2009), Ecuador (2004; 2005), Iceland (2008), Indonesia (2006), Japan (2001; 2007), New Zealand (1995–1996), Philippines (2001; 2007), Vanuatu (2000–2009)

Completed research projects of critical components:

Vulnerability of computers to volcanic ash ingestion
Vulnerability of air conditioning units to ashfall
Vulnerability of water pumps to volcanic ash ingestion

Current research projects:

Vulnerability of high-voltage electrical distribution systems
Infrastructure performance following the 2008 Chaiten eruption, Chile & Argentina
Vulnerability of water supply systems in Vanuatu
Volcanic mitigation measures in Alaska

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Massey University



THE UNIVERSITY OF AUCKLAND
NEW ZEALAND





Volcanic Ash Web Site Review & Contributions

Your expertise is needed

In 2004 several partner organisations launched the Volcanic Ash Web site (<http://volcanoes.usgs.gov/ash/>) as a way to provide information about the widespread effects of ash and recommended actions for people to prevent damage to buildings, vehicles, agriculture, infrastructure, and lifelines. With additional ash fall events around the world in the past 5 years, new information about recommended strategies and case studies are needed to update and improve the usefulness of the Web site. If you have information about effective ways to minimize the effects of ash, photographs of the effects of ash and people taking preventative action, and knowledge of case studies please contact the Ash Web Team (ash@usgs.gov). Through your local and regional contacts and networks, expertise, support and contributions, the Ash Web site can be significantly improved to help us all deal with future volcanic ash falls.

We plan to revise the Web site beginning in October 2009 based largely on contributions of new material. Please send new information, recommended strategies for dealing with ash, ideas, photographs, and comments to us by the end of September 2009.



<http://volcanoes.usgs.gov/ash/>

Children, Families and Disasters

Speakers from the United States, United Kingdom, Australia and New Zealand

Speakers include:

- ◆ Dr Lori Peek, Colorado State University
- ◆ Dr Maureen Fordham, University of Northumbria at Newcastle
- ◆ Dr David Johnston, Massey University
- ◆ Briony Towers, University of Tasmania
- ◆ Rosalind Houghton, Victoria University
- ◆ More speakers to be confirmed.



Aim of the Workshop:

- ◆ To give participants an overview of what current research and practice shows us in terms of the needs and strengths of these two diverse groups in disasters
- ◆ To initiate some discussion on what can be done at a practitioner level to meet these needs and harness the strengths.

When: Friday July 31st 2009
Where: Icon Theatre, Te Papa
Cost: \$90 per person (incl. GST)

9am–4pm
Lunch Provided



3rd Australasian Hazards Management Workshop Series 2009



**Novotel Melbourne on Collins
Melbourne 5 – 7 August 2009**

www.hazards-education.org/ahmc/2009

Health Emergency Management Spring Institute

**Joint Centre for Disaster Research,
School of Psychology, Massey University**

3rd – 4th December 2009
Massey University Campus
Wellington
New Zealand

Health emergency management planning

Day 1 – Thursday 3 December 2009

Foundations of psychosocial support for emergency management

Day 2 – Friday 4 December 2009

[More details will be available in August 2009](#)

Emergency Management Summer Institute

Joint Centre for Disaster Research,
School of Psychology, Massey University

15th – 19th March 2010
Massey University Campus
Wellington
New Zealand

Emergency management planning

Day 1 – Monday 15 March 2010

Developing effective all-hazard warning systems

Day 2 - Tuesday 16 March 2010

Evacuation planning and welfare

Day 3 – Wednesday 17 March 2010

Classroom in the Coach

Day 4 – Thursday 18 March 2010

The role of public education, community engagement and public participation in building resilient communities

Day 5 – Friday 19 March 2010

[More details will be available in October 2009](#)

The 4th Australasian Hazards Management Conference,
Te Papa, Wellington 10-13 August 2010

More details available in October 2009

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 (Room T27N). However, the centre will draw 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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