Research Update

May 2008

Joint Centre for Disaster Research

GNS Science – Massey University, School of Psychology

Welcome to the third research update 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 on communities of natural, man-made, and environmental disasters
- 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.

Photo: In December the Centre hosted 18 PhD students who are researching various disaster research topics. Students were from Massey, Victoria, Canterbury, Lincoln and AUT. Organised by Julia Becker (from JCDR), the workshop provided an opportunity to discuss research topics, share ideas, and build networks. Another workshop is planned for December 2008.

From left to right: Graham Strickert, Gabi Hufschmidt , Wendy Saunders, James Hudson, Amy Stephenson, Julia Becker Ian de Terte, Caroline Orchiston, Tom Wilson, Heather Taylor, Dean Podolsky, Cécile Quesada, Debra Ellis

Visit our new website: http://disasters.massey.ac.nz/

Emergency Management and Social Science Workshop

Te Papa, Wellington, 6th December 2007

The past decade has seen substantial growth in social/behavioural hazard research in New Zealand and in the wider Australasian region. With an increased focus on sustainability and community resilience, there is a compelling need to deepen and extend our knowledge of and understanding about the social science dimension of disasters.

Future research would benefit from the alignment of strategic directions and focus, as gaps, overlaps and missed opportunities exist. Much can be gained by a more deliberate effort to share information and improve coordination within the field of social science disaster research, as well as between researchers, policy-makers and emergency management practitioners. To meet this need and explore this issue, representatives from government, social science researchers, funders and practitioners participated in a workshop held on 6 December 2007 at Te Papa in Wellington.

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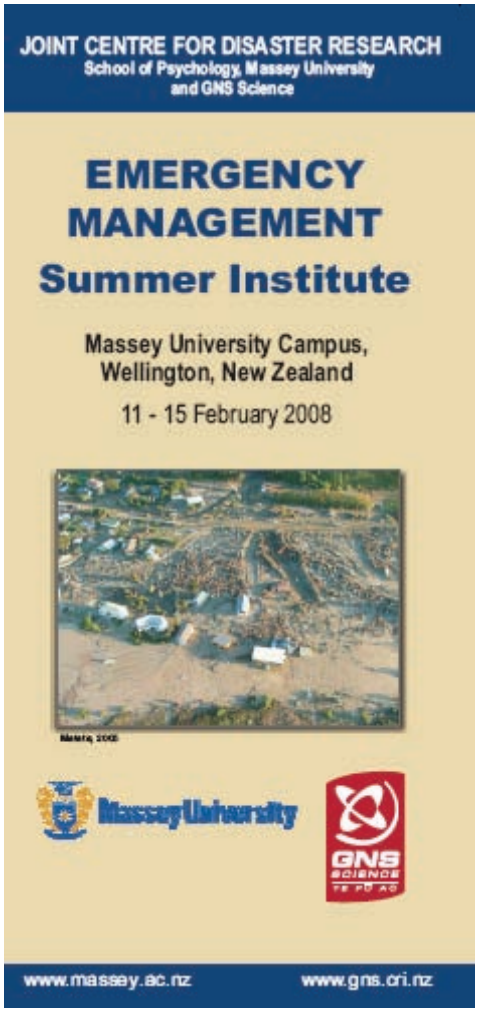
Summer Institute 2008

During the week of second week of February the Centre held its first Summer Institute. This was attended by 28 participants. The programme was developed to provide a theoretical and practical introduction to selected topics relating to emergency management. Each course began with an introduction and review of New Zealand and international research and practice. The topics were then explored through a series of relevant case studies. The final session of each module provided practical tools and guidance for turning the 'theory to practice'.



Programme

Day 1 Emergency management planning: lessons from recent and historic events

Day 2 Developing effective all-hazard warning systems

Day 3 The role of public education, community engagement and public participation in building resilient communities

Day 4 Introduction to health emergency management

Day 5 Community response and recovery

Next year's course is planned for mid March 2009

Current Research Updates

The role of non-governmental organisations (NGOs) in long-term recovery from disaster

PhD research by Heather Taylor commenced in November 2007 with a study of international non-governmental organizations (NGOs) involved in natural disaster management activities during the post-event recovery and rehabilitation stage. Several case studies in Indonesia will be used to examine if there are universal characteristics or qualities that a community may possess and can draw upon to better cope with and adapt to life after the disaster, and how NGOs can use their activities to enhance the community's innate abilities to recovery and rebuild following the event.

A natural disaster event, such as an earthquake, will push the affected population well beyond its normal capacity to function. Even the formal emergency response of national and international bodies can be overwhelmed by the magnitude of the event. As a consequence, the resiliency of the affected population becomes quite important. A society's capability to draw on its individual, collective and institutional resources and competencies to cope with, adapt to and develop from the demands, challenges and changes encountered during and after the disaster becomes a measure of its resiliency, or its adaptive capacity (Paton, 2008).

International NGOs arrive after the natural disaster event to assist the local population by providing basic necessities such as food, water, shelter and medical services. As the initial emergency phase comes to an end, the recovery effort begins and some NGOs remain to assist. During this time, NGOs must quickly identify how to direct their assistance and often limited resources, while drawing upon the community's own ability to recover and re-establish itself in order to not create dependencies or negative social impacts. They are faced with the task of carrying out their programs in ways that are culturally sensitive, weighing up community ownership and traditional knowledge with the value of external technical knowledge. Successful, or effective, intervention has been described as that which empowers communities, is supportive and allows for self-driven ideas. Experience has shown that knowledge of the local culture and effective processes of consultation with the community are key components of an effective program. However, it often becomes the case that the international NGOs are from a different culture and are unfamiliar with the culture that they are entering into.

To address this problem, this research seeks to determine if there are traits that are universal, transcending cultures, which make people more adaptable and able to recover from a disaster. If these traits do exist and can be identified, an agency could use them to focus its attention on a community with a lower adaptive capacity rather than on one that will be able to recover more easily on its own. The end product of the research would have the potential to complement NGO planning and delivery in several ways. For example, by providing a contingency analysis framework (e.g., that indicates how cultural, ethnic, resilience, etc factors interact), its research could offer NGOs a way to rapidly tailor their work to best suit the needs of affected communities and/or identifying where limited NGO resources should best be deployed.

Contact Details: Heather Taylor (htaylor.uni.massey@gmail.com)

Emergency Management in Schools: a survey in Wellington

Maureen Coomer (GNS Science) and David Johnston recently completed research project assessing the level of EM education and preparedness in Wellington, Hutt Valley, Porirua, and Kapiti Coast schools. The study, in collaboration with local Emergency Management (EM) organisations, looked at current EM teaching and exercises within schools to assess the resources available, and how resources are used. The survey received responses from 101 Wellington schools.

The survey results show that most schools are aware of preparedness issues, and of raising awareness in staff and students.

Key results include:

- The vast majority of schools (86%) have Emergency Management (EM) education in their curriculum. Lack of time and resources were the two most common reasons given for not teaching EM. The majority of schools (87%) reported teaching EM to the whole school, but 13% reported targeting certain year levels – this suggests that some children may have many years at school without any EM education.

- Schools report the most common resource used as library resources (74%). Other resources used include: Internet (66%), What's the Plan Stan (63%), Civil Defence/Emergency Management (62%). Forty percent of schools report using Ministry of Education resources, with the least used resource being textbooks (25%).

- Most schools reported discussing EM procedures with their students, and 67% report providing follow up activities. Caregiver participation was reported by 67% of schools, with 25% of schools reporting linking EM programmes to other community initiatives.

- Most schools seek information from EM staff, with 83% happy with resources provided, and 72% of schools having EM professionals participate in EM teaching.

- All schools except one reported undertaking earthquake drills and evacuations, with the majority 87%), having evacuation exercises each term. All schools, except two, report staff awareness of supervision arrangements in the event of a disaster, and 84% of schools report discussing these arrangements with parents. Ninety percent of schools report discussing personal preparedness with their staff. The majority of schools (73%) report having some emergency supplies stored for staff and students in the event of a disaster. A number of other arrangements were listed, for example MOUs with local shops or access to a local Marae.

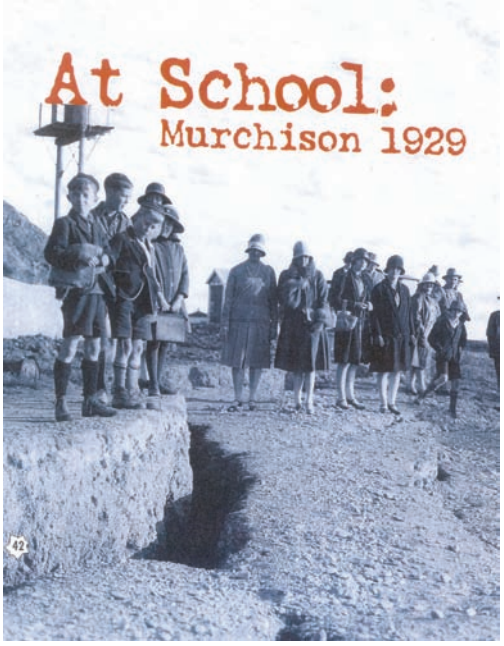
Children and their families are vulnerable to the effects of hazard events. Educating children to be aware of and prepared for a hazard event has the flow on effect of educating their families and the wider community. Whilst most schools in the Wellington Region have some physical preparedness measures in place, educating for preparedness at every school will improve children's and families coping abilities both during and in the aftermath of a hazard event.

A copy of the report is available on the Centre's web site or by emailing Maureen Coomer (m.coomer@gns.cri.nz).

School Journal project

The New Zealand School Journal celebrates 100 years in print in 2007. Over the summer period, Mr Gary Marshall searched all copies of the journals identifying stories, poems and non-fiction accounts of New Zealand natural disasters. Gary's work was the first phase of the "Disaster Narratives in School Journals" project. Project leader Dr Lesley Patterson and Dr Aril Bell (from the School of People, Environment and Planning) are intending to analyse the stories and identify changes and continuities in the ways disaster stories have been told.

For more information contact Lesley Patterson (L.Patterson@massey.ac.nz)



H a l l e l u j a h
we sang
as the shake began
as the books fell out
and the bricks began to move.

It was a song
we sang only at school.
Too rude to sing at home.
A secret joke
with teacher
and his guitar.

And then the bang!
We stopped
but couldn't stand,
holding on
as the world tilted
on one end
and then the other.

We couldn't sing
as the books fell out
and the bricks began to move.
Through the window
I could see
rocks catapult
from the tops
to smash the trees below
and bury them.
I ran
to put my back against the door,
and called the children to me,
my sisters and my brothers
and the others.
Teacher tripped.
His guitar was in one hand.
We dragged him by his leg.

Outside
we stood
to see the world collapsing
at our feet.
The ground opened
with jets of mud
and gravel.
The tank stand fell
and our horses lay
with their legs in the air.

Hold hands
said the teacher
and huddle close together
so we don't go down a crack.
And we sang
H a l l e l u j a h
I'm a bum
because we knew it,
and we laughed
as the world came to pieces
around us,
and we could only see each other
as our school fell down
and the mountains slid
and the roar of the fall
was silenced by our fear.

Leicester Kyle

From NZ School Journal 1996 (2), pp 42-43

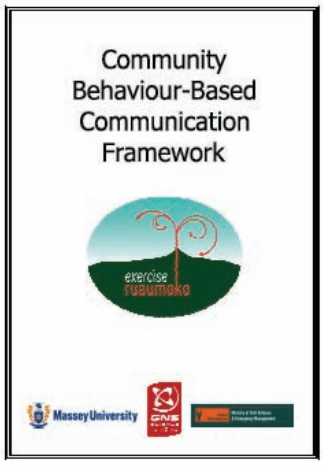
Intermediate schools earthquake and tsunami study

Dr Ruth Tarrant from the JCDR has recently begun a study of intermediate school children's understanding of and anxieties about earthquakes and tsunamis in the Wellington region. The objective of the study is to design an intervention aimed to develop children's problem-solving and emotion-focused ability to respond effectively in the event of a significant earthquake or tsunami, and to reduce any unrealistic anxieties the children may have concerning earthquakes and tsunamis. The geography and geology of the Wellington area means that a significant earthquake or tsunami is a potential risk for the area, and from research conducted to date it appears there are few structured programmes designed to prepare school children to cope in the event of a significant earthquake or tsunami.

The study will be conducted in two parts. The first part gathers baseline data concerning children's perceptions and anxieties about earthquakes and tsunamis; the second part will concern the development of a short intervention programme to be delivered to schools. The intervention will be developed on the basis of children's needs as they are identified in the survey-material, and from best practice material recommended by Civil Defence/Emergency Management, and from previous school interventions for civil emergencies that have been suggested as effective through follow-up studies. As demonstrated in previous research, it is expected that children's education about earthquakes and tsunamis, and children's readiness to cope in a significant event will have a positive impact on family awareness and the family's preparation and readiness to cope in such an event.

For more information contact Ruth Tarrant (R.A.Tarrant@massey.ac.nz)

Researching the response to an Auckland volcanic eruption



As part of the national emergency management Exercise Ruaumoko, Kim Wright, Jan Lindsay (University of Auckland), Graham Leonard and David Johnston worked with MCDEM to develop a survey of public understanding of volcanic risk in Auckland. The survey was undertaken between 3 and 6 March and involved interviews with residents and visitors. In addition David and Graham assisted with the development of a community behaviour-based communication framework to help public information staff frame messages in an escalating volcanic crisis.

A copy of this document is available on the Centre web site.

Self-management of disaster risk and uncertainty: Evaluating a preventive health approach for building resistance to disaster

One of the great challenges facing humanity today is how to manage profound and rapid change. Disasters are especially potent agents of change, with the power to create multiple and overlapping crises. Developing a successful coping response within populations is critical because adverse mental health outcomes from disaster (e.g., anxiety; trauma; adjustment disorders, depression or other emotional sequellae) increase morbidity, mortality and suffering and adversely impact civil society at all levels.

PhD research by Monica Gowan, from University of Canterbury, Health Sciences Centre and working with the Centre, aims to help prevent and minimise disaster trauma through self-management of behavioral health. Her project will examine critical intrinsic motivators for disaster preparedness and assess their value as targets for intervention design. The study will involve a quantitative baseline survey of psychosocial motivational factors, followed by a pilot intervention examining the value of preventive health and wellness strategies for increasing the motivation to prepare. This motivational focus is consistent with work by Ronan and Johnston (2005), who advocate a holistic disaster resilience model that takes into account social and psychological factors.

Her research will combine health sciences and disaster management perspectives in an interdisciplinary approach toward building mental health resistance to disaster. The aim is to uncover mechanisms that not only decrease individual suffering, but also support the development of competent populations that can individually cope with a disaster enough to remain functional, and consequently contribute to the restoration of community function.

Wellington will be the focus area for this research because of its earthquake and tsunami risk. The study involves a questionnaire that will be administered to 2000 randomly selected adults to determine the association between attitudinal strengths and coping skills and preparedness activity, and if the presence of these positive attitudes and behaviors is associated with a higher quality of life. Based on the survey findings and results of the statistical data analysis, we plan to develop and test a pilot intervention (educational/informational outreach) with a small group (25-50) of survey participants to determine the value of health-based preparedness messages and messengers.

Monica has undergraduate and master's degrees in geology (Gustavus Adolphus College, USA, and Western Washington University, USA, respectively). She has worked extensively as a consultant in natural hazards assessment and holds licenses to practise geology in Washington State and Oregon, USA. She has also earned a postgraduate certificate in public health preparedness, response and recovery from the University of Minnesota and has been employed as a senior-level research coordinator for Mayo Clinic College of Medicine in Minnesota, U.S.A. Her PhD supervisors are Ray Kirk, University of Canterbury Health Sciences Centre, David Johnston, Massey/GNS Joint Centre for Disaster Research, and Kevin Ronan, Department of Social and Behavioural Sciences, Central Queensland University.

For more information contact Monica Gowan (monica.gowan@canterbury.ac.nz)

Domestic violence following natural hazard events in New Zealand

After the July 2004 floods in Whakatane, much media and public interest was directed to the farmers who were recovering from the devastation and how they would put their lives back together in terms of their material possessions. Very little attention was given to the social costs occurring behind the scenes of this disaster. A lone article in the New Zealand Herald reported that domestic violence callouts had doubled in Whakatane, for Women's Refuge and Victim Support, but this was based on anecdotal evidence and no substantive research has been undertaken. This was the only reporting done on the issue and no follow-up pieces appeared.

Following on from this, a case study undertaken on the Whakatane flooding (photos below) and its impact on domestic violence agencies in 2005 confirmed such an increase. On top of this, the increase was found to affect a much wider group of agencies than just Women's Refuge and Victim Support. It also showed the increase was a much longer and more complex issue than expected. Stemming from the findings in Whakatane, the decision was made to perform a systematic evaluation of multiple events to find if an increase in reported domestic violence was an issue that required policy considerations or if Whakatane was a special case scenario.

Ros Houghton's PhD, at Victoria University, is looking at five differing communities after Civil Defence emergencies in the last five years – Timaru, Masterton, Palmerston North/Feilding, Lower Hutt, and Whakatane. The data was gathered through the collection of relevant statistics from domestic violence agencies in the months before and after the event; interviews with agency representatives (both domestic violence and Civil Defence); and interviews with women who sought the services of Women's Refuge after the event. This will provide a clear description of the event and its impact on domestic violence rates, as well as some quantitative backing for the picture produced. This research is the first of its kind, as no other research has ever looked at multiple events for comparison and contrast, so will mean New Zealand is the world leader in this area.

There has been a recent small emergence in overseas literature into domestic violence increases after natural hazards, which comes in conjunction with a more general rise in gender considerations for natural hazard events. Despite evidence emerging, emergency management planning and policy rarely incorporates gender considerations and often will opt for a 'gender neutral' approach, which is in effect gender-blind, not neutral and leads to inequities between males and females post disaster. This study will address whether emergency management planning and policy is, and can be, gender-neutral in New Zealand, or whether the particular circumstances require a policy that incorporates the different ways in which the two genders experience natural hazard events, particularly in terms of domestic violence.

For more information contact Ros Houghton (Ros.Houghton@vuw.ac.nz)

Waves of adversity, layers of resilience: Lessons for building sustainable, hazard-resilient communities

The consequences of living in hazard-prone areas were brought home by graphic television coverage of Hurricane Katrina, which devastated the Gulf coast of the USA in 2005. Much can be learned from subsequent rebuilding and recovery efforts. Ongoing research by Associate Professor Bruce Glavovic, the EQC Fellow in Natural Hazards Planning, in the School of People, Environment & Planning is looking at the Katrina experience, focusing attention on recovery challenges and opportunities in New Orleans.

Sustainable, hazard-resilient coastal communities are founded upon robust critical infrastructure (including ecological, political, social, livelihood and physical dimensions) that is secured by planning and decision-making processes that enable coastal communities to build layers of resilience to overcome waves of adversity. In this age of coastal storms, planning needs to be reinvented as 'new' naval architecture to help build sea-worthy coastal communities.

For more information contact Bruce (B.Glavovic@massey.ac.nz)

Older people's experiences of the Kaitaia flood evacuation: a narrative study with the residents of two communities.

The need for disaster planning among vulnerable groups such as older people is an area that has been under-researched. Hurricane Katrina and the subsequent analysis of its effects have highlighted the need for disaster preparedness and responses to improve outcomes for this vulnerable older population.

There is a need for research to learn more about older people's experiences in a disaster situation. This is the focus of a Masters thesis project by Robyn Tuohy (Massey University, School of Psychology). Her qualitative research will focus on older people's experiences of the Kaitaia flood evacuation in July 2007. Among those who were evacuated were two different communities of older people. They differed in their living arrangements and levels of independence; one group resided in a rest home, and the other group lived independently within in a cluster of pensioner flats.

Robyn's research will contribute towards increasing knowledge around how older people accounted for and coped with a flood and emergency evacuation; and will further inform emergency management, community planners, social services and emergency response personnel about the needs of older people in a disaster.

For more information contact Robyn Tuohy (2e@paradise.net.nz)

The 1991 eruption of Hudson Volcano – study tour

In late January and early February 2008 research associates of the centre, Tom Wilson, Jim Cole, Carol Stewart, and David Dewar undertook three-week study tour of southern regions of Chile and Argentina affected by the 1991 eruption of Hudson Volcano. The trip was supported by GNS Science, Massey University, University of Canterbury, Ministry of Agriculture and Forestry, and the Earthquake Commission. The full report will be completed by mid-2008. Fieldwork was undertaken to assess the short and long term impacts of the 1991 eruption, with particular emphasis on the impacts on farms, water supplies and other infrastructure, and on rural communities.

Specific areas of interest were as follows:

- Impacts on pastures and the success of soil rehabilitation strategies in both the short and long-term;
- Impacts on livestock on both short and long-term timescales;
- Farm abandonment and factors affecting decisions;
- Impacts on rural water supplies and electrical supply networks;
- The use of supplementary feeds;
- Any provision of aid from government and/or non-governmental organisations;
- Identification of any areas suffering permanent physical or socioeconomic impacts from the eruption;
- An investigation of the relationship between severity of impacts and depth of ashfall;
- A comparison of the agronomic performance of the region impacted by ashfall in comparison to regions outside this zone;
- Factors helping or hindering recovery of agricultural regions; and
- Lessons for New Zealand agriculture and rural communities.

Abandoned homestead in the Río Ibáñez valley that has suffered partial roof collapse, 1993 (S. Weaver)

For further information and a copy of the trip report contact Tom Wilson (tmw42@student.canterbury.ac.nz)

Continued from page 2

Workshop on Emergency Management and Social Science Disaster Research in New Zealand

The main issues

A number of important issues were identified, mainly related to what can best be described as the 'SSD research-practice gap'. The challenge is to ensure that research is appreciated by users and that research outputs are relevant, accessible and effectively integrated into practice.

The main problem identified was poor communication between researchers and other groups; and the need to make sure that research is relevant and that research findings are more readily accessible. Practitioners and users often have difficulty accessing and understanding research findings, and their needs and priorities are frequently not taken into account by researchers. Various reasons were suggested for these problems, including inadequate appreciation of the value of research by the EM policy and practitioner community; inadequate understanding by researchers about the context, constraints and needs of practitioners; and the different priorities, time frames and incentives for practice and research. Increased attention needs to be focused on the longer-term social consequences of disasters; and SSDR needs to be more effectively linked with other social science research endeavours.

Another major issue concerns inadequate public and practitioner understanding about how EM policy and legislation fit together; and what can be done to more effectively address gaps, overlaps and other shortcomings, including improving coordination between and within agencies and regions.

A version of the workshop proceedings is available from the website (http://disasters.massey.ac.nz/)

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 are to be organised by the centre, as part of a summer school. More details of the summer school will be available in August 2008.

Graduate Students – linked to the Centre

Debra Ellis (PhD student, School of Psychology)
"Health sector emergency management roles in New Zealand"

Julia Becker (PhD student, School of Psychology)
"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)
"Effective land-use planning for natural hazard management"

Ian de Terte (PhD student, School of Psychology)
"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)
"A tri-partite governance framework for iwi development and resilience"

Heather Taylor (PhD student, School of Psychology)
"The role of non-governmental organizations (NGOs) in long-term recovery from disaster"

Robyn Tuohy (MSc student, School of Psychology)
"Older people's experiences of the Kaitaia flood evacuation: a narrative study with the residents of two communities."

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

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 dairy industry 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."

Grant Kaye (University of Canterbury PhD student – Department of Geological Sciences)
"A volcanic hazards assessment for the Rotorua region of the Taupo Volcanic Zone, New Zealand. A prototype proximal hazard module for the Riskscape program."

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".

Upcoming Events

Te Papa, Wellington, New Zealand
29-30 July 2008
Optional Workshops 28 & 31 July 2008

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 2007	Call for papers and trade displays
March 2008	Registration details on the web and printed final circular available
1 April 2008	Deadline for abstract submissions
1 May 2008	Confirmation of programme
28-31 July 2008	Conference and workshops

Contact: ahmc@hazards-education.org
www.hazards-education.org/ahmc/2008

New Publications

Becker, J., Johnston, D., Coomer, M. & Ronan, K. (2007) Flood risk perceptions, education and warning in four communities in New South Wales, Australia – results of a questionnaire survey, November 2005, *GNS Science Report*, 2007/30. 66p.

Becker, J.; Johnston, D.; Coomer, M.; Ronan, K. (2008) Flood risk perceptions, education and warning in four communities in the Hawkesbury-Nepean Valley, New South Wales, Australia – results of a questionnaire survey, February 2006, *GNS Science Report* 2008/02 70 p.

Coomer, M.A., Johnston, D.M., Edmonson, L., Monks, D., Pedersen, S. & Rodger, A. (2008) Emergency management in schools – Wellington survey. *GNS Science Report*, 2008/04. 32 p.

Finnis, K., Johnston, D., Becker, J., Ronan, J. & Paton, D. (in press). School and community-based hazards education and links to disaster resilient communities. In Kelman, I (ed) "School Safety", Regional Development Dialogue (RDD), 2008.

Glavovic B.C., Jones, K.S. & Johnston, D.M. (eds) (2008) Proceedings of a workshop on emergency management and social science disaster research in New Zealand. Wellington, 6th December 2007. *GNS Science Miscellaneous Series* 13.

Gordon, R. (2008). A "Social Biopsy" of social process and personal responses in recovery from natural disaster, *GNS Science Report* 2008/09, 14 p.

Leonard, G.S., Johnston, D.M., Paton, D., Christianson, A., Becker, J. & Keys, H. (in press) Developing effective warning systems: Ongoing research at Ruapehu volcano, New Zealand. *Journal of Volcanology and Geothermal Research*.

Gregg, C.E., Houghton, B.F., Paton, D., Swanson, D.A., Lachman, R. & Bonk, W.J. (in press) Hawaiian cultural influences on support for lava flow hazard mitigation measures during the January 1960 eruption of Kˆılauea volcano, Kapoho, Hawai'i, *Journal of Volcanology and Geothermal Research*,.

Paton, D., Gregg, CE, Houghton, B.F., Lachman, R., Lachman, J., Johnston, D.M. & Wongbusarakum, S. (2007) The impact of the December 26th, 2004 tsunami on coastal Thai communities: Accessing adaptive capacity. *Disasters* 32(1): 106-119.

Paton, D., Smith, L., Daly, M. & Johnston, D.M.(in press) Risk perception and volcanic hazard mitigation: Individual and social perspectives. *Journal of Volcanology and Geothermal Research.*

Paton, D., Houghton, B.F., Gregg, C.E., Gill, D.A., Ritchie, L.A., McIvor, D., Larin, P., Meinhold, S., Horan, J. & Johnston, D.M. (2008) Managing tsunami risk in coastal communities: Identifying predictors of preparedness. *The Australian Journal of Emergency Management*, 23, 4-9.

Ronan, K.R., Crellin, K., Johnston, D.M., Finnis, K., Paton, D. & Becker, J. (2008) Promoting Child and Family Resilience to Disasters: Effects, Interventions, and Prevention Effectiveness. *Children, Youth and Environments* 18(1): 332-353. Retrieved from http://www.colorado.edu/journals/cye.

Saunders, W., Glassey, P. (2008) Landslide guidelines for consents and policy planners. *Planning Quarterly* 168:28-29

Spee, K. (2008). Community recovery after the 2005 Matata disaster: long-term psychological and social impacts, *GNS Science Report* 2008/12. 40p.

Tsunami Working Group Signage Subcommittee (2007) New Zealand national tsunami signage recommendations for CDEM Groups, *GNS Science Report*, 2007/40. 44 p.

Wilson, T., Cole, J., Stewart, C., Dewar, D., Johnston, D., Cronin, C. (2008) Assessment of long-term impacts on agriculture and infrastructure and recovery from the 1991 eruption of Hudson volcano, Chile. University of Canterbury progress report.

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.

Contact Details

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