

## Building community resilience to natural hazards: linking global programmes to local action



# Key Questions

***Why, despite advances in the natural and social sciences of hazards and disasters, do losses continue to increase?***

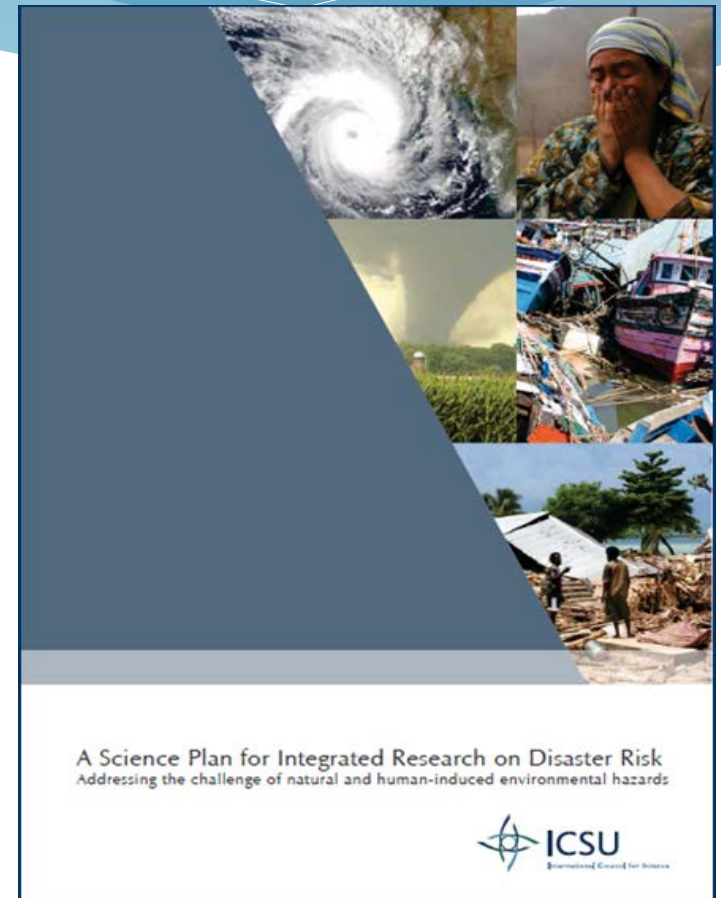
***How do we address the lack of sustainability in current disaster practices?***



# IRDR Programme

Addressing the challenge of natural and human-induced environmental hazards

An **integrated approach** to research on disaster risk through: an **international, multidisciplinary** (natural, health, engineering and social sciences, including socio-economic analysis) **collaborative** research programme.



# IRDR Mission

"To develop trans-disciplinary, multi-sectorial alliances for in-depth, practical disaster risk reduction research studies, and the implementation of effective evidence-based disaster risk policies and practices."

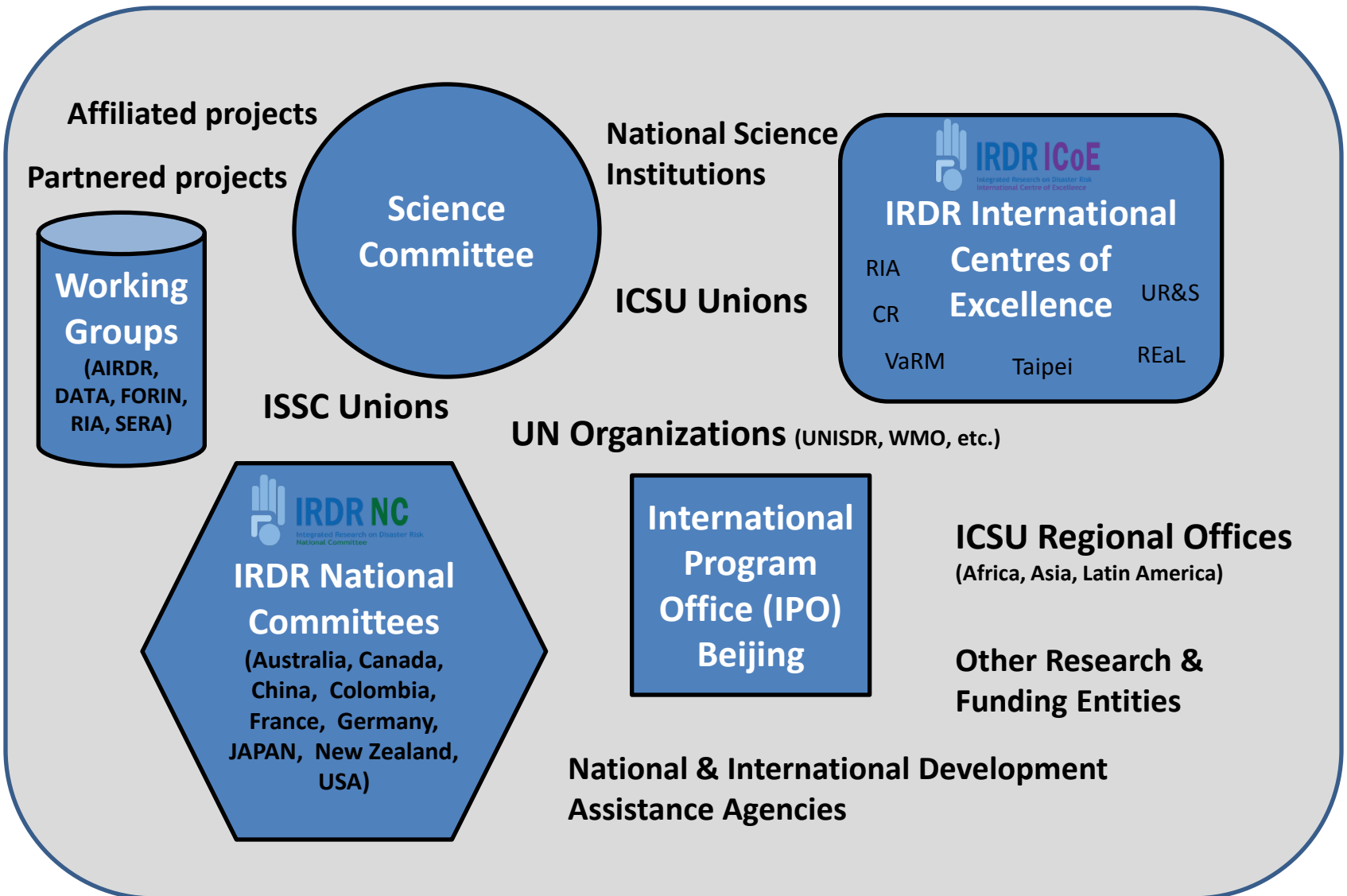
# Research Objective #1

- \* Characterization of hazard, vulnerability and risk
- \* Effective decision-making in complex and changing risk contexts
- \* Reducing risk and curbing losses through knowledge-based actions



# Who is IRDR?

A community of interested stakeholders from academe, private sector, government, NGOs who are addressing the challenge of managing disaster risk to reduce losses





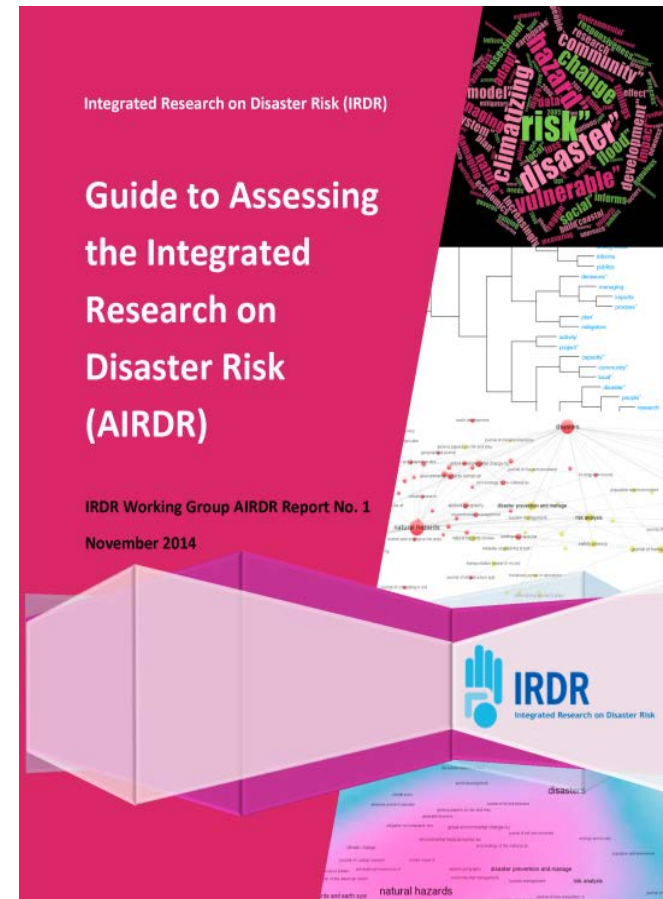
# AIRDR findings:

## *Bibliometric analysis of English-language peer reviewed research publications*

- Disaster risk research remains academic and multi-disciplinary, little stakeholder engagement
- Little evidence that research put into practice or policy-making
- Theory has advanced (vulnerability, resilience, climate adaptation)
- Limited geographic coverage; limited integration

## *ICSU Ad-Hoc Expert Group Synthesis (in progress):*

- Science-driven approaches to disaster risk management help reduce impacts, build resilience, and facilitate post-HFA2 goals
- Periodic assessment of research helps to monitor progress and catalyze policy





# Improving the Infrastructure of Disaster Loss Data

## Disaster Loss Data (DATA) Project

Co-Chairs: Daniele Ehrlich (Italy), Sisi Zlatanova (The Netherlands), Susan Cutter (USA)

Members representing CIESIN (Columbia University, USA), CRED (University of Louvain, Belgium), Swiss Re, EU Joint Research Centre, MunichRe, UNISDR, NCDC/NOAA (USA), National S&T Center for Disaster Reduction (Taiwan), Austrian Government, Delft University (The Netherlands), IFRC, Eclac Cepal, The World Bank, UNDP

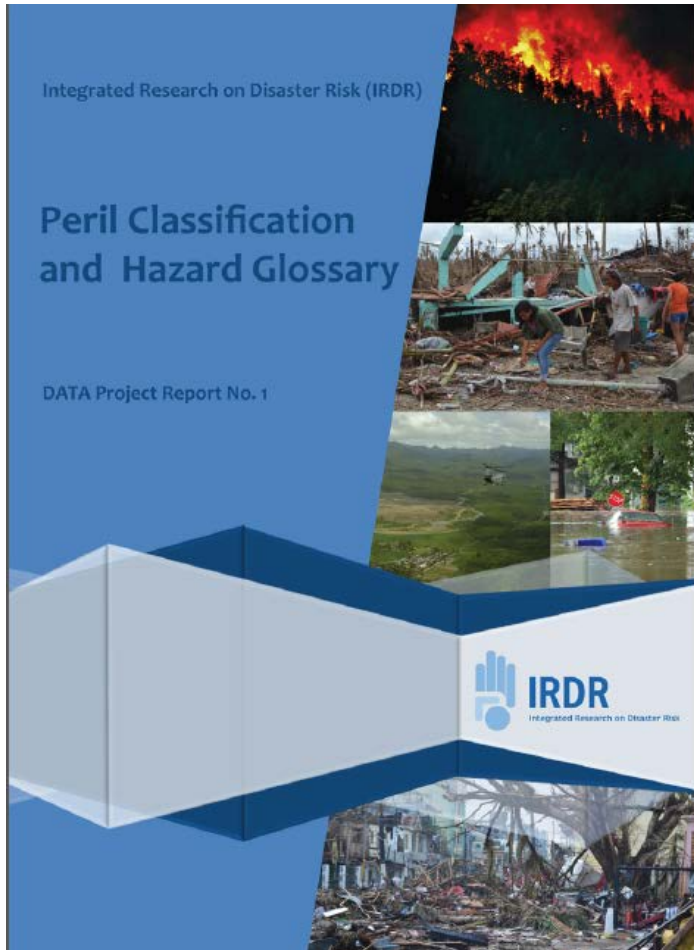
*Vision: to improve the infrastructure of  
disaster loss data globally and locally*

### Goals:

- Identify quality of existing data and data needs for improving integrated disaster risk management
- Bring together loss data stakeholders to identify common issues and develop synergies
- Develop standards/protocols to minimize data uncertainty
- Define “losses” and create transparent methodologies for assessing them
- Advocate for loss data at sub-national geographies
- Educate users on database biases and data interpretation

# DATA activities

Reconcile peril classification across loss databases with implementation



Revision in progress (March 2015)

## Outreach and Consultations:

- WMO technical review
- 2<sup>nd</sup> WMO User Workshop
- EU Data Loss Experts
- UNESCAP
- EM-DAT Technical Advisory Committee
- IRDR China

## Implementation of Peril Classification:

EM-DAT, DesInventar, SHELDUS, EU, UNESCAP

**Forthcoming:** *Guidelines on Measuring Losses from Disasters: Human and Economic Impact Indicators*

# Advancing the Understanding of Risk Perception, Communication, and Decision-making

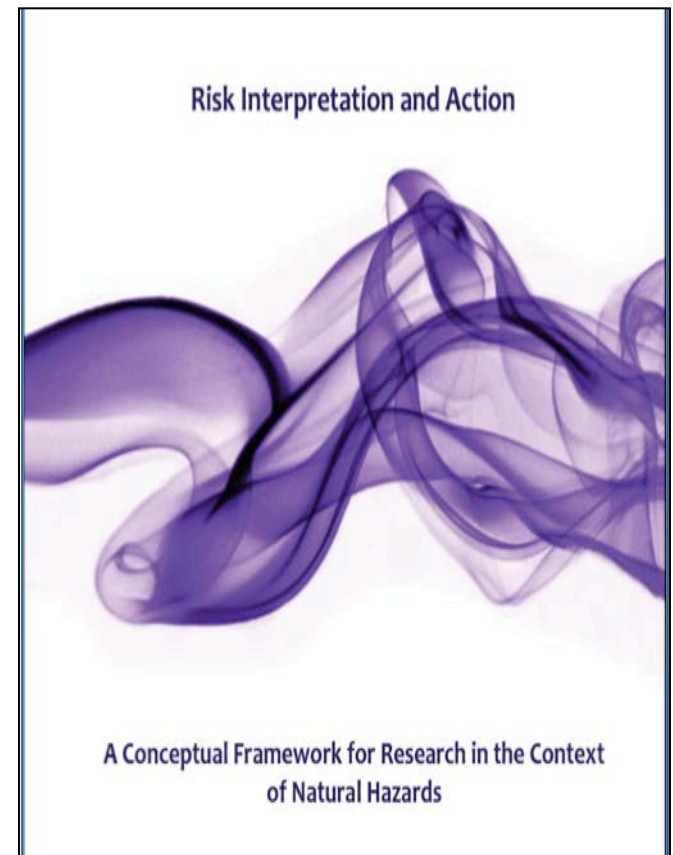
## Risk Interpretation and Action (RIA) Project

Co-Chairs: Ann Bostrom (USA) and Mark Pelling (UK)

**Goal:** build a community of practice on risk perception, communication and decision-making that focuses on better understanding how people make decisions in the face of risk, with special emphasis on disaster risk and resilience building.

Four focus areas:

1. Decision-making for uncertainty
2. Early warning systems
3. Adaptive management and resilience
4. Individual perceptions and risk behavior



# RIA activities

## Publications:



International Journal of Disaster Risk Reduction

Volume 1, October 2012, Pages 5–16



Review Article

### Risk interpretation and action: A conceptual responses to natural hazards

J. Richard Eiser<sup>1</sup>, Ann Bostrom<sup>2</sup>, Ian Burton<sup>3</sup>, David M. Joh Paton<sup>3</sup>, Joop van der Pligt<sup>7</sup>, Mathew P. White<sup>8</sup>

Annals of the New York Academy of Sciences

Volume 118, Number 1

### Reporting on the Seminar - Risk Interpretation and Action (RIA): Decision Making Under Conditions of Uncertainty

**The World Social Science (WSS) fellows on Risk Interpretation and Action (RIA) include the core writing team of this report (alphabetical after leads):**  
 Emma E. H. Doyle<sup>1</sup>, Shaohua Khoo<sup>2</sup>, Carolina Adler<sup>3</sup>, Ryan C. Allsop<sup>4</sup>, Simone Altanovic<sup>5</sup>, Kain-Hui Elaine Liff<sup>6</sup>, Wendy Saunders<sup>7</sup>, Todd Schreier<sup>8</sup>, Fabrice Sosa-Rodriguez<sup>9</sup>, and Victoria Speed-Davies<sup>10</sup>, which has been written on behalf of the wider group that attended the seminar (in alphabetical order): Clayana Akanksha<sup>11</sup>, Marie-Ange Baubouin<sup>12</sup>, Chung-Ying Chang<sup>13</sup>, Katherine De Bruin<sup>14</sup>, Riyad Djatanti<sup>15</sup>, Christine Eriksson<sup>16</sup>, Hsiang-Chieh Lee<sup>17</sup>, Jyoti Mishra<sup>18</sup>, Victor O. Okunribido<sup>19</sup>, David R. Chang<sup>20</sup>, Godeo Perrevelou<sup>21</sup>, Nayshah Razi-Rivers<sup>22</sup>, Suzanne Mahoney<sup>23</sup>, Xinyi Xie<sup>24</sup>, Lun Yip<sup>25</sup>.  
 The organizers and scientists that also attended the RIA Fellows seminar included (in alphabetical order): Sarah Beaman<sup>26</sup>, Charles Edwards<sup>27</sup>, Richard Eiser<sup>28</sup>, David Johnson<sup>29</sup>, Christine Kennedy<sup>30</sup>, Tony Liff<sup>31</sup>, Douglas Paton<sup>32</sup>, Sarah Schweitzer<sup>33</sup>, Viv Stavarou<sup>34</sup>.  
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**Author correspondence:**  
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**Abstract**  
 The paper reports on the World Social Science (WSS) Fellows seminar on Risk Interpretation and Action (RIA), undertaken in New Zealand in December, 2013. This seminar was coordinated by the WSS Fellows program of

### Disaster Risk Communication: Dialogues for Reducing Disaster Risk

An Integrated Research on Disaster Risk, Risk Interpretation and Action programme Briefing Note



#### Risk Interpretation and Action

How do scientists, practitioners and people at risk make decisions, individually and collectively? Social theory, psychology and learning theory have all addressed this question but somewhat independently. This has led to a number of discontinuities in the analysis of risk communication and perception and gaps in research and practitioner activity (and funding). The result is a number of unanswered questions:

## Capacity Building:

- 25 World Social Science (WSS) fellows on Risk Interpretation and Action (RIA)
- Support GAR15 (Pathways for Transformation)
- Establish ICoE-RIA at Kings College, London UK

### Pathways for Transformation:

Disaster risk management to enhance development goals



This photograph depicts key representatives from national government, local authorities, Māori organizations and the Māori community who collaborated in a rapidly nationalized response to address the needs and facilitate recovery of the Christchurch community after the Canterbury earthquakes. The collective are depicted at Rēhua Māori, the Ngāi Tahu tribal urban community centre, which was the initiating centre for the response and operated after the February 22nd earthquake as an emergency welfare and outreach support centre for the entire Christchurch community. Subsequent to the welfare centre being decommissioned, Rēhua has continued to act as a hub for Māori's resilience initiatives that address social risk factors associated with poverty. One such is He Toki ki te Rūka, a Māori trades training programme that is facilitating youth education and employment in the Canterbury rebuild.

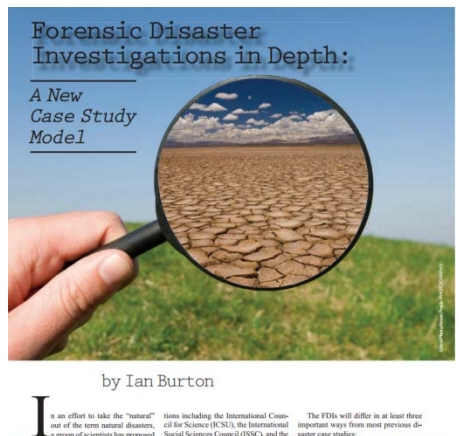
Rēhua marena was also registered as a Ministry of Civil Defence and Emergency Management recovery assistance centre prior to the earthquakes, by the recently deceased 'Upoko' or regional tribal leader Mr Henare Rahitahi Tau ONZM (pictured centre with his walking stick and flanked on his right by the Cabinet Minister for Māori Development the Hon Pita Sharples). Mr Tau was a Rēhua supporter of 'transformative' Disaster Risk Reduction planning. He had registered all the marena in his region as welfare centres and more recently led a Māori seminar for the 2013 World Social Science Fellows' Forum in New Zealand, which addressed Māori risk interpretation and related decision-making within the context of disasters. Mr Tau passed away on the June 30 2011, it is respectfully suggested that should you decide to use the photo as your cover picture, that you consider including in the report a small memorial acknowledgement of his contribution.

# Uncovering the Root Causes of Disasters

## Forensic Investigations of Disasters (FORIN) Project

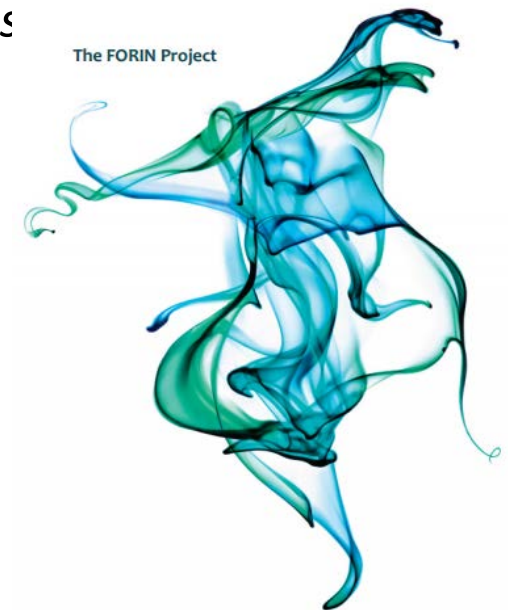
Co-Chairs: Irasema Alcántara-Ayala (Mexico) and Anthony Oliver-Smith (USA)

**Goal:** *to provide a framework for examining the root causes and underlying risk drivers of disaster through comprehensive, in-depth, and integrated investigations that aim to shift disaster management policies.*



### The FORIN Methodology:

1. Critical cause analysis
2. Meta-analysis
3. Longitudinal analysis
4. Scenarios of disaster





# FORIN activities

## Capacity Building:

4 Training workshops  
(Taiwan, Mexico, US)

## Completed FORIN case studies:

Typhoon Morakot  
Great East Japan Earthquake Tsunami  
Metro Manila (FORIN and Climate Change)

## Review of FORIN\*:

“it gives power to analysis that conceptualises disasters as intrinsic to development and societal processes more broadly, based on its inter-disciplinary and comprehensiveness.”

## FORIN’s impact:

- Significant recognition of the approach globally
- Provides structured approach to identify true cause of disasters and the actions to reduce or eliminate the risk
- Not fully realized; research takes time and resources that are beyond the scope of existing studies to date

**Next:** An advanced version is now in development (mid-2015)

\*“A review of the FORIN methodology and existing FORIN case studies”, by A. Fraser, S. Patterson, and M. Pelling (2014), for EU FP7 funded PEARL (Preparing For Extreme and Rare Events) project., p. 6. Draft available at: <http://www.irdrinternational.org/projects/forin/>



# Integrated Disaster Risk Science: A Tool for Sustainability

## IRDR CONFERENCE 2014

June 7-9, 2014 Beijing, China

The central banner features a green and white background with a grid pattern. Below the title, it lists the logos of the organizing and supporting institutions: IRDR (Integrated Research on Disaster Risk), ISDR (International Strategy for Disaster Reduction), RADI (Research and Analysis for Disaster Intervention), ICSU (International Council for Science), and ISSC (International Social Science Council).



### RISK INTERPRETATION AND ACTION

The focus of the Risk Interpretation and Action (RIA) Working Group is the question of how people – both decision-makers and citizens – make choices, individually and collectively, in the face of risk. There are several broad fields of research that are relevant to this question, but most of these have progressed under the auspices of disciplines typically within the framework of single academic disciplines. This has led to a number of disconnected but relevant research activities that are not well coordinated, as well as to areas where research activity (and funding) is presently concentrated. The result is a number of unanswered questions that include:

- How can risk reduction policies and practices be generalized across hazards or to combinations of hazards, as well as across cultures?
- How much emphasis should be placed on risk-bearing versus communication?
- Why and when do local citizens' evaluations of risk diverge from scientific forecasts?
- How do people's decisions, perhaps due to social norms and perceptions or social constraints on their freedom of choice, change from their evaluation of risk under different policy and planning, what priority is given to prevention and protection?
- Existing infrastructure, rather than rebuilding for greater resilience or prevention?

To fully address these questions, the Risk Working Group hopes to advance multidisciplinary research on human decision-making and how it relates to hazard, and encourage organizations to support this area of disaster risk research.

#### THE RIA REPORT

Launched during the Integrated Research on Disaster Risk Conference 2011, the Risk Interpretation and Action (RIA) Working Group has been established to emphasize on the contributions that can be made to the study of risk and decision-making through the study of several disciplines and to provide an integrated perspective on decision-making. The aim is to provide an integrated perspective on decision-making and other aspects of how we live our lives. The RIA Report will be a synthesis of research findings and will be used to inform policy-making and other aspects of risk reduction for natural hazards, and other risk reduction.

To learn more about the Working Group and to download the Risk Report visit the website: [WWW.IRDRINTERNATIONAL.ORG](http://WWW.IRDRINTERNATIONAL.ORG)

The bottom of the poster features the logos of IRDR and ICSU.

# Integrated Approaches; need to bridge gaps

- Adopting integrated risk management at all levels, local through to global
- Tools to drive collaboration and an integrated approach
- Participation / co-responsibility of all actors to communicate the need for scientific advances, technological progress and social, practical and decision making needs.
- Our role is our inter- and trans-disciplinarity but we must identify communities not yet involved
- Science that is useful, useable and used is key





UN World Conference on  
Disaster Risk Reduction  
2015 Sendai Japan

14-18 March 2015  
Sendai, Japan

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[Major Groups](#)

**[Organizing Partners](#)**

[FAQs](#)

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## Organizing Partners

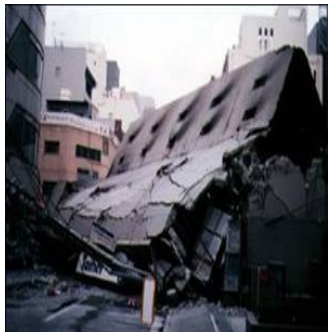
### Major Groups

The concept of the nine Major Groups comes from Agenda 21. As will be remembered, the UN Conference on Environment and Development in Rio in 1992 agreed to understand civil society in the context of sustainable development negotiations at the UN as the nine Major Groups. Having made the decision to designate civil society into nine Major Groups, the outline and rationale was explained in detail in Chapter 23 of Agenda 21. The Major Groups as defined by Agenda 21 are:

# Major Group Science and Technology

## Voluntary Commitment

- Synthesis
- Assessment
- Advisory
- Monitoring and review

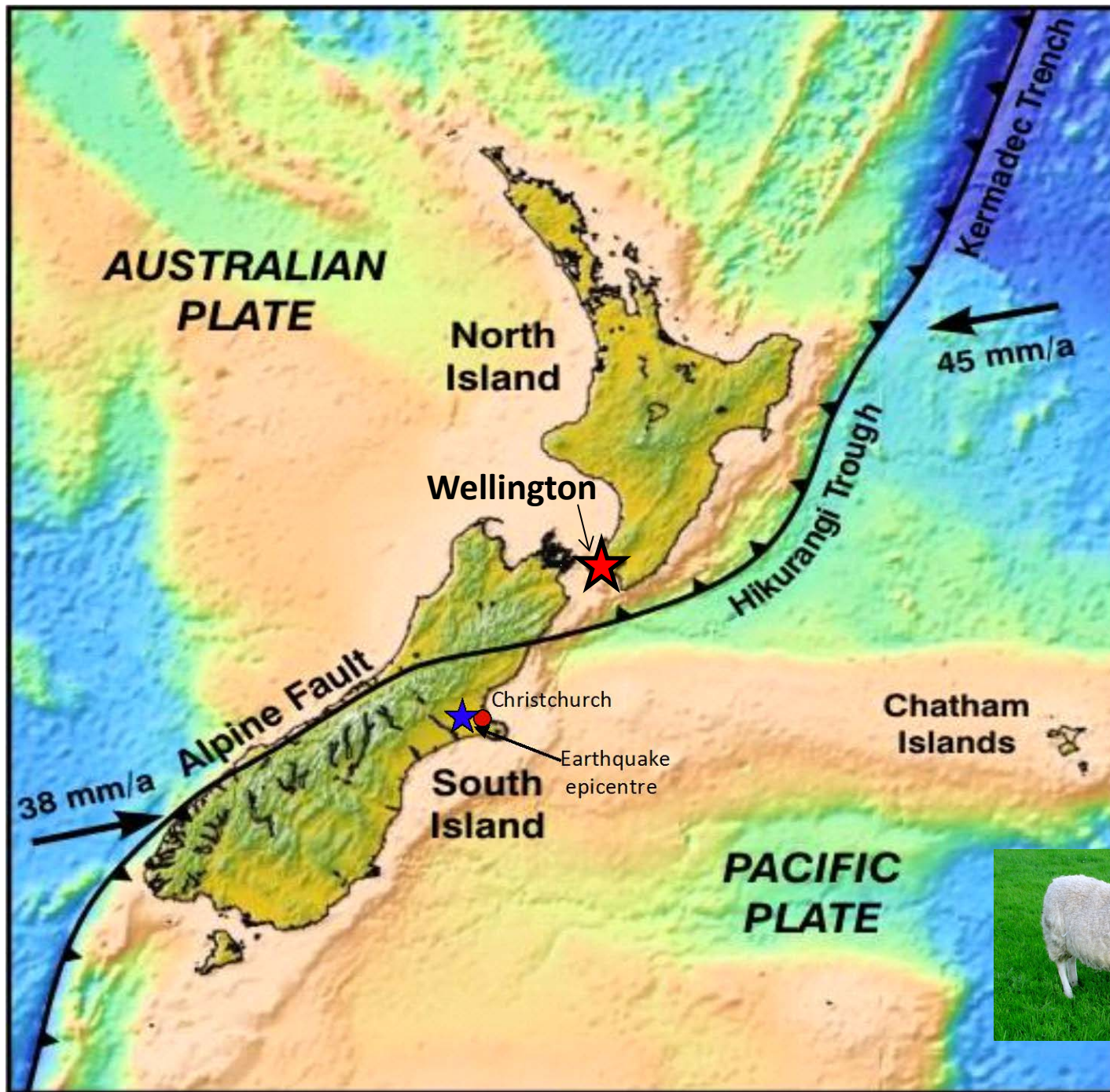


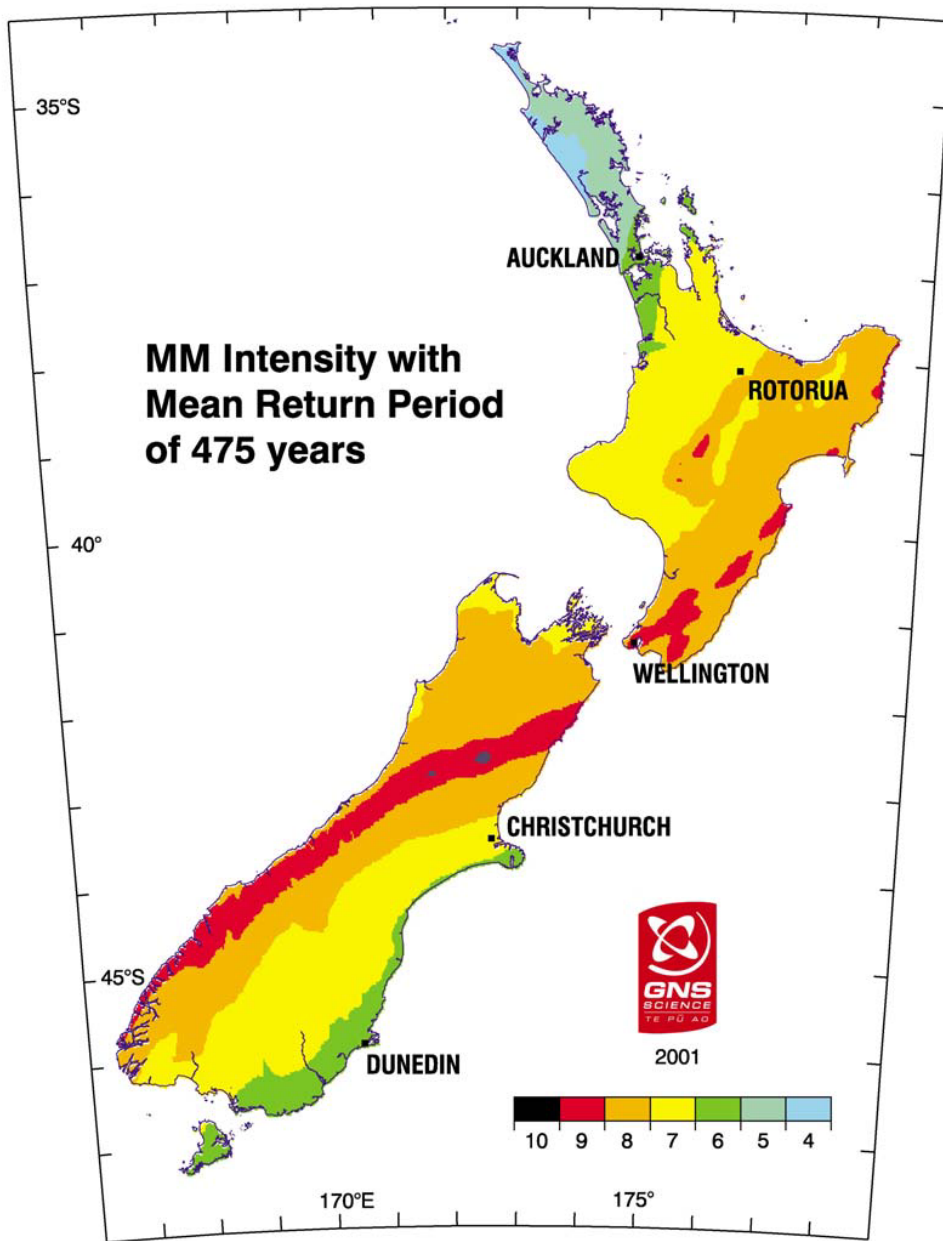


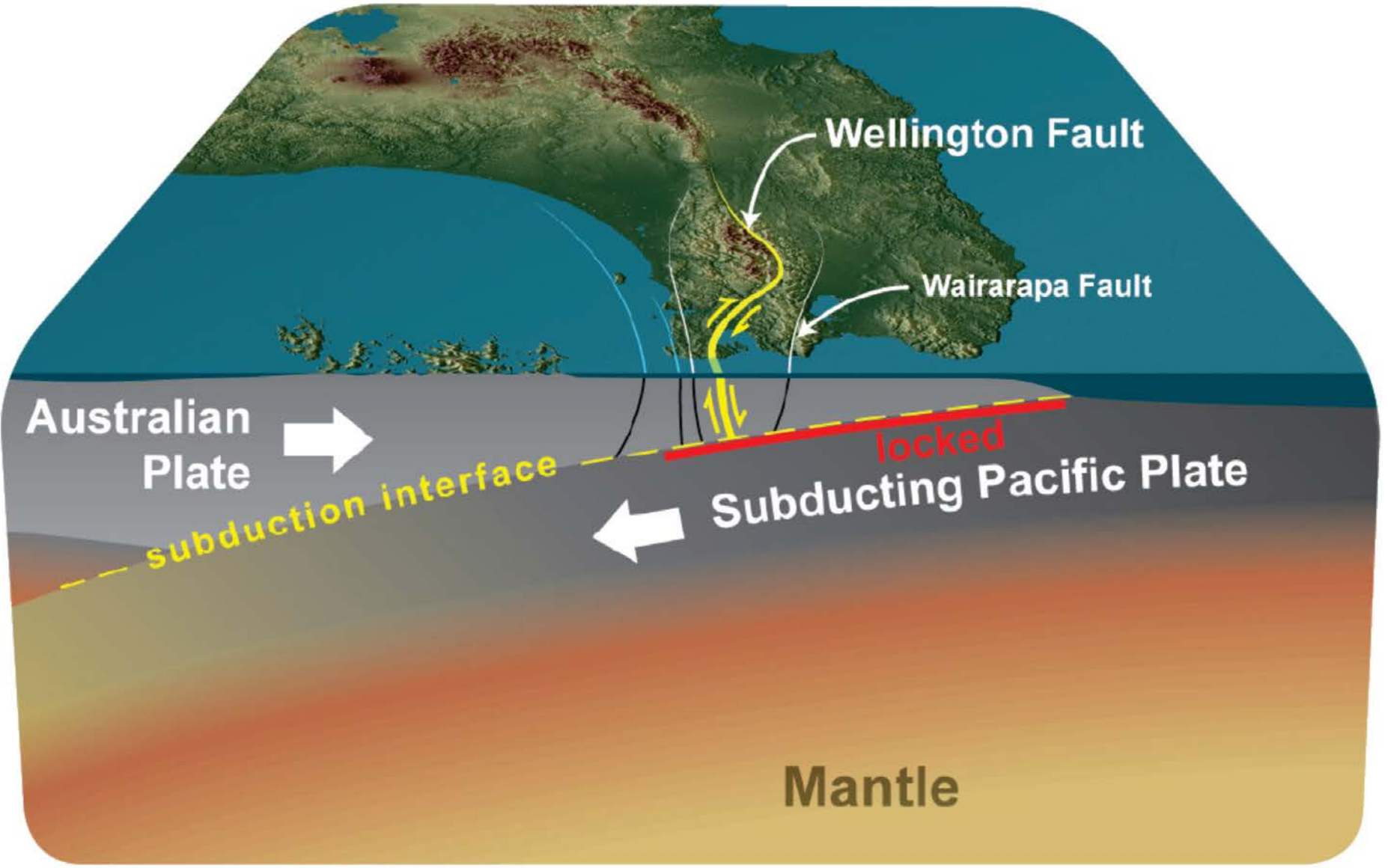
To deliver on this, there are at least two essential enablers

- Capacity development
- Communication and engagement









Wellington Fault

Wairarapa Fault

Australian Plate

Subducting Pacific Plate

subduction interface

locked

Mantle



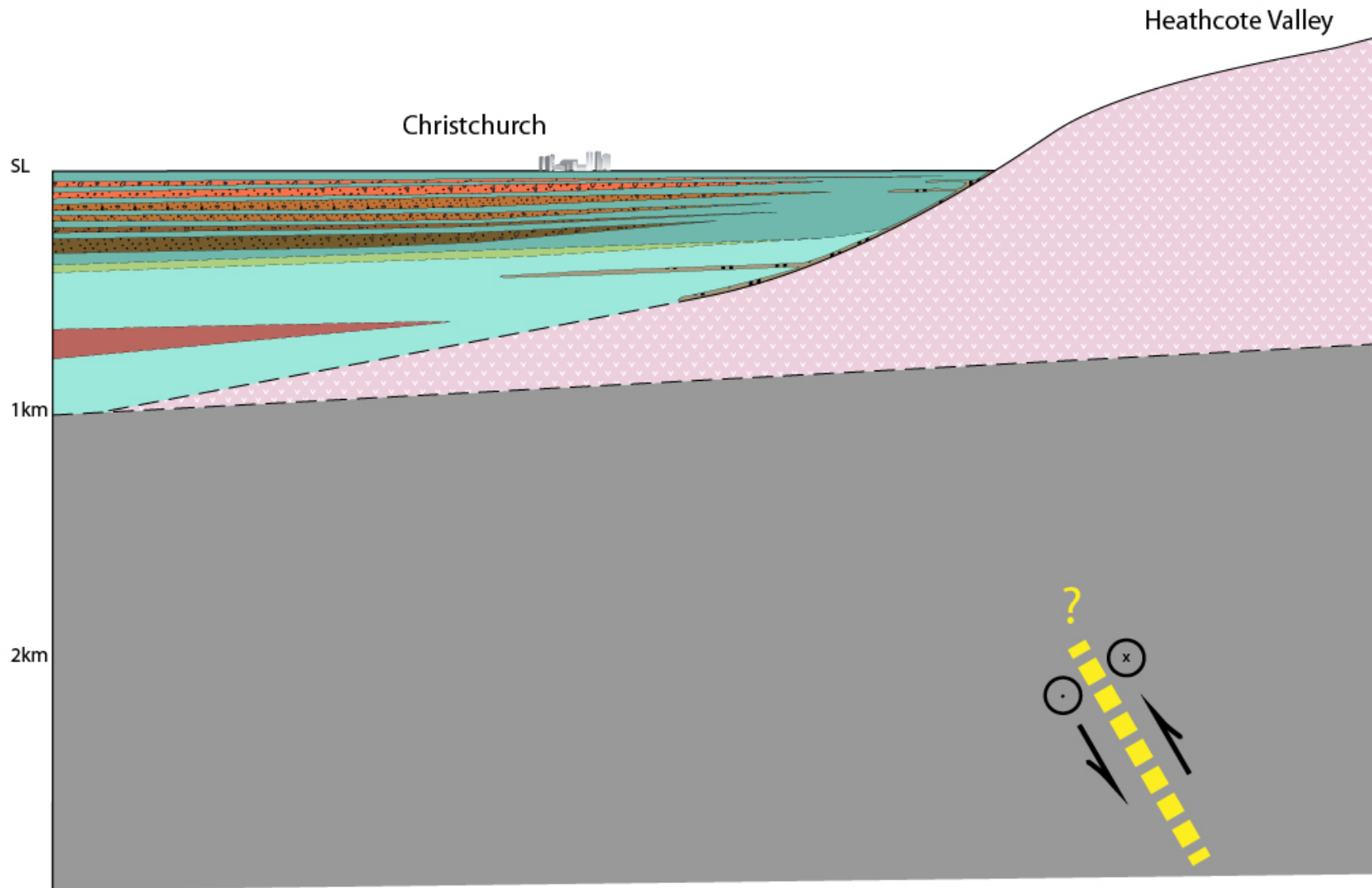
# Wellington

# A tale of two earthquakes – the Canterbury sequence of 2010-2011

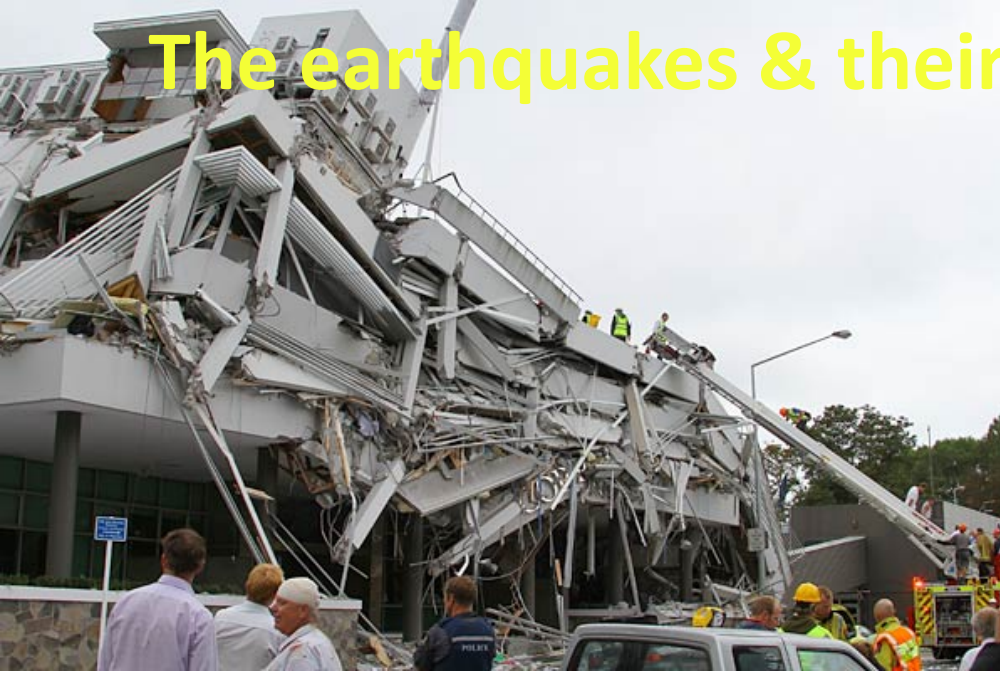
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# The earthquakes & their impacts: 22 Feb 2011





# Wellington

# International Centre of Excellence in Community Resilience

- \* Provide an evidence base for the Community Resilience Strategy.
- \* Act as a vehicle to share international good practice in Community Resilience.
- \* Promote the Wellington Region as a living laboratory for research and learning.

# Wellington's Earthquake Setting



Ohariu  
Fault

Wellington  
Fault

Wairarapa  
Fault

*Photograph by:  
Lloyd Homer*