

Final Program



IFED 2007

Third Forum

Optimal Strategies for Disaster and Hazard Mitigation

12-15 December 2007

Shoal Bay Resort and Spa
Port Stephens, New South Wales
Australia

Sponsored by

**Centre for Infrastructure Performance and Reliability
The University of Newcastle**

**Centre for Advanced Structural Engineering
The University of Sydney**



The University of Sydney



Theme: Optimal Strategies for Disaster and Hazard Mitigation

- Hazard modelling
- Consequence modelling
- Life-cycle cost analysis
- Socio-economic impacts on decision-making
- Modelling of preferences of decision-makers
- Risk treatment to mitigate risks
- Societal preferences in engineering decision making
- Structuring complex systems using Bayesian nets and other methods
- Sabotage, terrorism and man-made hazards
- Implications on regulatory frameworks for decision making
- Treatment/modelling of different types of uncertainties
- Models for assets integrity management
Stochastic and spatial modelling of damage
- Decision making involving stochastic fields
- Representation of spatially distributed systems in consequence assessment

Background and Motivation

The IFED forums are concerned with engineering decision-making that is based on assessments of engineering risks. The quantification of risks is an important element of risk-based decision-making, but the third IFED forum is focussed primarily on the development of strategies to manage risks in an optimal manner. In particular the forum is focussed on the development of strategies for disaster and hazard mitigation, including emerging problems associated with changes in the natural environment (including potential climate change) and the man-made environment (including risks of sabotage and terrorism).

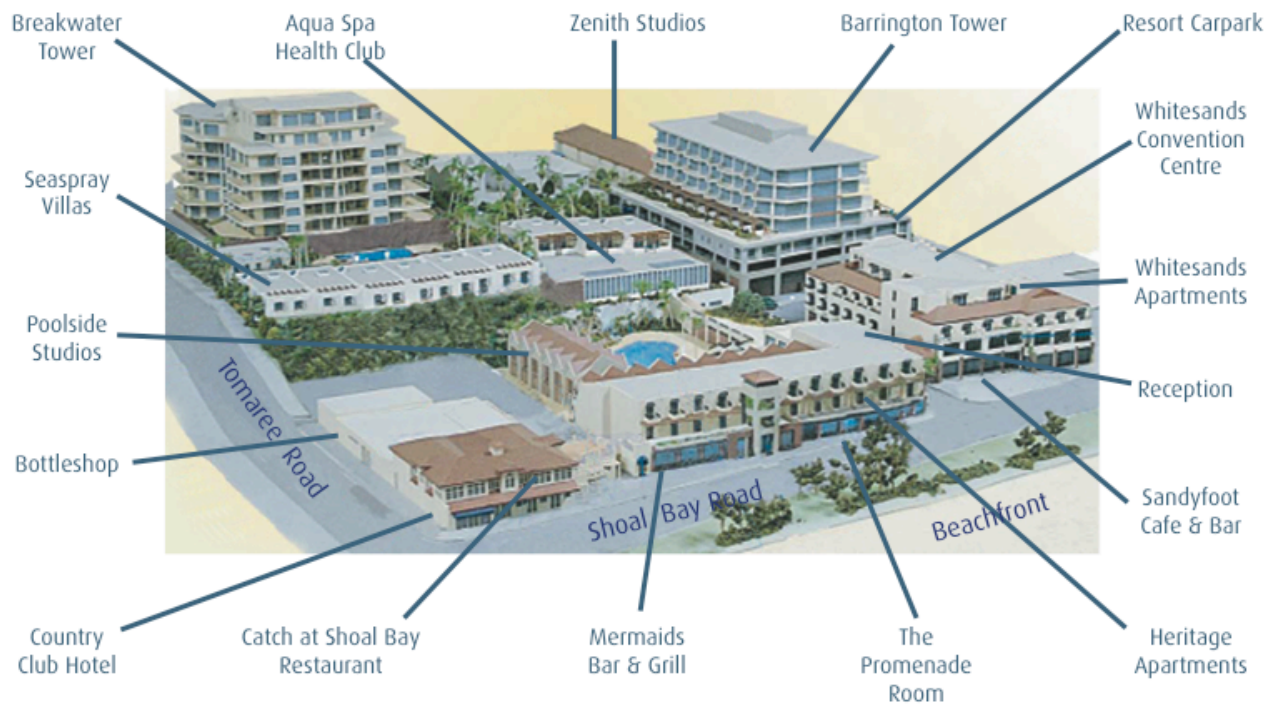
Aim of the Third IFED Forum

The single-session IFED forum format brings together experts in the field of decision making, risk and reliability analysis, and probabilistic modelling who have specific interests in the themes of the forum. The objectives are:

- To outline current challenges related to disaster and hazard mitigation.
- To discuss and to present possible solutions and applications.
- To develop directions for future research in the field.

Discussion, collegiality, and dialogue are the key ingredients of a successful IFED forum. The programme of the forum provides plenty of opportunity to interact. At the end of each IFED forum a joint conclusion is formulated by all the participants in the IFED forum.

SHOAL BAY RESORT & SPA



All technical sessions located in the Star Room in the Whitesands Convention Centre.

Wednesday 12 December 2007

5.00 pm – 6.00 pm	Registration (Whitesands Convention Centre Lobby)
6.00 pm – 10.00 pm	Aussie BBQ (Poolside)

Thursday 13 December 2007

8.45 am - 9.00 am	Welcome
9.00 am - 10.30 am	<p><i>Assessment and mitigation of risk from competing low-probability, high-consequence hazards.</i> <u>Bruce Ellingwood</u> (Georgia Institute of Technology, U.S.)</p> <p><i>Societal optimal performance of infrastructure subject to natural hazards.</i> <u>Kazuyoshi Nishijima</u>, Michael Faber (ETHZ, Switzerland)</p> <p><i>Resilient communities.</i> <u>David Elms</u> (University of Canterbury, New Zealand)</p>
10.30 am - 11.00 am	Morning Tea
11.00 am - 12.30 pm	<p><i>Managing Highly Capitalised Mitigated Disasters.</i> <u>George Walker</u> (Aon Re Asia Pacific, Australia)</p> <p><i>Design differentiation for critical infrastructure networks for disaster mitigation.</i> <u>Stuart Reid</u> (University of Sydney, Australia)</p> <p><i>Synthetic hurricane wind speed records: development of a database for hazard analyses and risk studies.</i> <u>David Rosowsky</u>, Kyung Ho Lee (Texas A&M University, U.S.)</p>
12.30 pm - 1.30 pm	Lunch (Promenade Room)
1.30 pm - 3.00 pm	<p><i>Fatality rate modelling with a spatial network using hierarchical Bayes methods.</i> <u>Marc Maes</u>, Markus Dann, Sudipta Sarkar, Ann Karin Midtgaard (University of Calgary, Canada)</p> <p><i>Life safety risks and optimisation of protective measures for terrorist threats to built infrastructure.</i> <u>Mark Stewart</u> (University of Newcastle, Australia)</p> <p><i>Risk-based decision making for multi-hazard mitigation for wood-frame residential construction.</i> <u>Yue Li</u> (Michigan Technological University), Bruce Ellingwood (Georgia Institute of Technology, U.S.)</p>
3.00 pm - 3.30 pm	Afternoon Tea
3.30 pm - 5.00 pm	<p><i>Optimal disaster risk reduction on coasts.</i> <u>Paul Grundy</u> (Monash University, Australia)</p> <p><i>Managing geotechnical hazards at various scales in urban soils using a 3D model.</i> A Marache, S Dominique, <u>Denys Breysse</u>, J Dubost, A Denis (Université Bordeaux, France)</p> <p><i>Shared management of 'wicked' risks.</i> <u>Erica Seville</u>, Stephen Esposito (University of Canterbury, NZ)</p>
6.30 pm - 10.00 pm	Dinner Cruise (meet at reception at 6.30 pm for coach transfer)

Friday 14 December 2007

9.00 am - 10.40 am	<p><i>Multi-attribute aspects for risk assessment of natural hazards.</i> Evan Hammel, <u>Ross Corotis</u> (University of Colorado, U.S.)</p> <p><i>Hazard mitigation based on risk analysis using qualitative in-depth accident investigation reports.</i> <u>Ann Karin Midtgaard</u> (Norwegian Public Road Administration), Susanne Troive (Consultant, Calgary), Marc Maes (University of Calgary, Canada)</p> <p><i>Optimal design safety as a risk communication tool.</i> <u>Jun Kanda</u> (University of Tokyo, Japan)</p> <p>+ IFED 2009 presentation</p>
10.40 am - 11.00 am	Morning Tea
11.00 am - 12.30 pm	<p><i>Engineering models to inform risk mitigation strategies.</i> <u>Ken Dale</u>, Mark Edwards (Geoscience Australia)</p> <p><i>Conceptual dynamic response recovery model for emergency events.</i> <u>Frederico Ferreira</u>, Andre Dantas, Erica Seville (University of Canterbury, New Zealand)</p> <p><i>Bayesian network approach for managing earthquake risks.</i> <u>Yahya Bayraktarli</u>, Michael Faber (ETHZ, Switzerland)</p>
12.30 pm - 1.30 pm	Lunch (Promenade Room)
1.30 pm - 3.00 pm	<p><i>Life cycle cost analysis of ageing structural components based on non destructive condition assessment.</i> <u>Denys Breysse</u> (Université Bordeaux, France), Emma Sheils (Trinity College, Dublin, Ireland), Alan O'Connor (Trinity College, Dublin, Ireland), Franck Schoefs (Nantes Atlantic University, France)</p> <p><i>Development of a two stage inspection process for optimal management of deteriorating structures.</i> <u>Alan O'Connor</u> (Trinity College, Dublin, Ireland), Denys Breysse (Université Bordeaux, France), Franck Schoefs (Nantes Atlantic University, France), Emma Sheils (Trinity College, Dublin, Ireland)</p> <p><i>Risk analysis of structures in presence of stochastic fields of deterioration: coupling of inspection and structural reliability.</i> <u>Franck Schoefs</u> (Nantes Atlantic University, France)</p>
3.00 pm - 3.30 pm	Afternoon Tea
4.00 pm - 6.00 pm	Excursion: Guided walk to the top of Tomaree Headland for views of Nelson Bay and the offshore islands
7.00 pm – 7.30 pm	Pre-Dinner Drinks (Sandyfoot Cafe & Bar)
7.30 pm – 10.00 pm	IFED Banquet (Catch Restaurant)

Saturday 15 December 2007

9.00 am - 11.00 am	<p><i>Bayesian updating in natural hazard risk assessment.</i> <u>Mathias Graf</u>, Kazuyoshi Nishijima, Michael Faber (ETHZ, Switzerland)</p> <p><i>Risks faced decision: optimisation of decision schedule.</i> <u>Aurelia Talon</u>, Daniel Boissier (Polytech Clermont-Ferrand, France)</p> <p><i>Hazard estimation with random fields.</i> <u>Karl Breitung</u> (Munich, Germany)</p> <p><i>Sewer assets maintenance management by three approaches: relative risk based analysis, Markov process and probabilistic neural networks.</i> <u>Sidi Elachachi</u>, Denys Breysse (Université Bordeaux, France)</p>
11.00 am - 11.30 am	Morning Tea
11.30 am - 1.00 pm	Discussion and Close



IFED is an international organization with the mission to stimulate new initiatives in engineering decision making and risk analysis for engineering systems. It meets these objectives by organizing on a regular basis open international forums that focus on specific themes, providing a widely accessible publication of the contributions and of the conclusions of the forums. Detailed information can be found on the IFED website www.ifed.ethz.ch.

Two previous forums have taken place:

December 2004

Stoos (Switzerland)

Theme: Consequence Modelling in Engineering Decision Making

April 2006

Lake Louise (Canada)

Theme: Decision Making Involving Spatially Distributed Systems

IFED consortium

Mark Stewart, University of Newcastle, Australia (current co-chair)

Stuart Reid, University of Sydney, Australia (current co-chair)

Jun Kanda, University of Tokyo, Japan (current vice-chair)

Michael Faber, ETH Zürich, Switzerland

Marc Maes, University of Calgary, Canada

IFED advisory council

Paolo Bazzurro, Air-Worldwide, USA

Denys Breysse, CDGA, France

Allin Cornell, Stanford University, USA

Ross Corotis, University of Colorado (Boulder), USA

Erica Dalziell, University of Canterbury, New Zealand

Armen Der Kiureghian, University of California, Berkeley, USA

Adrian Gheorghe, Swiss Federal Institute of Technology, ETH Zürich, Switzerland

Jean Goyet, Bureau Veritas, France

Peter-Friis Hansen, Technical University of Denmark, Lyngby, Denmark

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Ian Jordaan, Memorial University of Newfoundland, Newfoundland, Canada

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Daniel Straub, University of California, Berkeley, USA

Bruno Sudret, EDF, France

Tsuyoshi Takada, University of Tokyo, Japan

Dimitri Val, Heriot-Watt University, Scotland

Han Vrijling, Technical University of Delft, the Netherlands

Enrico Zio, Politecnico di Milano, Milano, Italy