

3 – 4 MARCH 2011

GRAND COPTHORNE WATERFRONT, SINGAPORE



CLIMATE CHANGE

– IMPLICATIONS ON FOOD & WATER SECURITY

**SECOND INTERNATIONAL SYMPOSIUM
ON CATASTROPHE RISK MANAGEMENT**

Institute of Catastrophe Risk Management (ICRM)
Nanyang Technological University, Singapore

Organized by



Institute of Catastrophe Risk Management

Academic Partner:

Centre for
Risk Studies



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WELCOME MESSAGES



Professor Haresh SHAH

Founding Chairman, Advisory Board, ICRM; NTU Board of Trustee member; Emeritus Professor, Stanford University; Founder & Senior Advisor, *RMS Inc., USA*.

We are delighted to welcome you to our second International Symposium on Catastrophe Risk Management. ICRM has made impressive progress in developing its research agenda, funding for research support from the government, industry and NTU resources, and in establishing collaborative programmes with academic and industrial institutions. This year, our Symposium theme is on Climate Change and its Impact on Food and Water Security, a theme that affects all of us. We are certain that with your participation, the Symposium would help everyone gain a better understanding of the pressing issues and to develop mitigation strategies through the concerted efforts of the government, private and public sectors, and the society at large.



Professor Tso-Chien PAN

Symposium Chair, Founding Director, ICRM
Dean, College of Engineering, *NTU, Singapore*

On behalf of NTU's Institute of Catastrophe Risk Management (ICRM), I would like to extend our warmest greetings to our Guest-of-Honour, Speakers and Delegates to the Second Symposium. ICRM was launched in January 2010 and over the past one year, we have received very encouraging support from the government and the industry towards our research activities on climate change and catastrophe risk management. We are honoured that Aon Benfield is funding PhD scholarships while Willis Re will be funding Post-doctoral Fellowships at ICRM. We are now in the final review stage with funding agency for two key start-up projects on flood and seismic risk assessments. This April, ICRM and RMS Inc will co-organize the Fifth Micro-insurance Round Table Forum where our focus will be on catastrophe micro-insurance pilot projects in this region.

This Symposium, with a timely theme on Climate Change and its Impact on Food and Water Security, will not only help to address the pertinent global concerns but also investigate policy implications leading to Public-Private Partnerships in managing catastrophe risk which is the theme of this series of Symposium. International and local delegates can look forward to engaging presentations and panel discussions from the world's leading experts in catastrophe risk spanning academia, industry and government. We are positive that your presence will make a difference to the Symposium. Lastly, but not the least, I wish all of you a most wonderful time in Singapore.

SYMPOSIUM SYNOPSIS

The Institute of Catastrophe Risk Management or ICRM was launched by Nanyang Technological University in January 2010 with a vision to become Asia's leading research institute in catastrophe risk management. In conjunction with the launch, an Inaugural International Symposium on Catastrophe Risk Management was organized with the core theme of Public-Private Partnerships in managing catastrophe risk. This second symposium continues with the same key theme of public-private partnerships, but with focus on managing potential risks of climate change on food and water security.

CLIMATE CHANGE – IMPLICATIONS ON FOOD & WATER SECURITY

The symposium theme is timely, as nations all over are increasingly being challenged by food and water security concerns, and how such risks could be exacerbated by potential impacts of climate change such as prolonged and severe droughts and floods. In an increasingly globalized and inter-dependent world, food and water security risks are often trans-boundary and trans-national. Severe weathers which disrupt food production in one region could affect food supply security in other regions. Similarly, weather fluctuations and water infrastructure operations in one nation could impact water resources in downstream nations, as in the case of Mekong river basin. Separately,

geohazards such as volcanic eruptions could also exert enormous economic and social strains on downwind nations, as happened during the Iceland volcanic eruption, and this will also be discussed.

This Second Symposium will have five sub-themes:

- Extreme Weathers: Impacts on Food and Water Security
- Food Security: Mitigation and Adaptation Strategies
- Water Security: Mitigation and Adaptation Strategies
- Catastrophe Risk Management: Financial & Insurance Instruments
- Recent Volcanic Eruptions and Risk Implications

It is the aim of the Symposium to raise awareness and understanding of food and water security risks against the backdrop of potential climate change impacts, which will then lead to the development of novel and innovative public-private partnerships in mitigating and managing such risks.

WHO WILL ATTEND

The Symposium will bring together an assembly of the world's leading scientists, engineers, researchers, and representatives from the finance, insurance, public and private sectors to share their knowledge on the potential impacts of climate change on food and water security, and discuss innovative and novel mitigation and adaptation strategies for managing such risks.

SECOND INTERNATIONAL SYMPOSIUM ON CATASTROPHE RISK MANAGEMENT

CLIMATE CHANGE – IMPLICATIONS ON FOOD & WATER SECURITY

DAY ONE PROGRAM

THURSDAY, 3 MARCH 2011

0845	Registration and Arrival of Guests
0915	Welcome Greeting by Master of Ceremony Prof Tso-Chien Pan Founding Director, ICRM and Dean, College of Engineering, NTU, Singapore
0925	Welcome Address by Prof Bertil Andersson President-Designate and Provost, NTU, Singapore
0935	Opening Address by Dr Su Guaning President, NTU, Singapore
0945	Morning Refreshment
1015	Master of Ceremony Prof Kusnowidjaja Megawati School of Civil & Environmental Engineering, NTU, Singapore Address Climate Change: Its Implications on Food and Water Security Prof Haresh Shah Founding Chairman, Advisory Board, ICRM; Member of the Board of Trustees, NTU; Emeritus Professor, Stanford University; Founder & Senior Advisor, RMS Inc., USA
1045	Address ADB's Approach to Sustainable Food and Water Security in Asia Dr Katsuji Matsunami Advisor to Director General, Practice Leader Regional and Sustainable Development Department, Agriculture, Rural Development, and Food Security Unit, Asian Development Bank
1115	Address Post-Disaster Reconstruction and Sustainable Risk Reduction: A Case Study of Gujarat Earthquake Reconstruction Mr Venkatachalam Thiruppugazh Commissioner of Information and Additional CEO, Gujarat State Disaster Management Authority, India
1145	Lunch

THEME 1: EXTREME WEATHERS: IMPACTS ON FOOD AND WATER SECURITY

1300	Keynote Address 1 Decision-Making Tools for Water Resource Management: What can State of the Art Models Offer? Prof Raghuram Murtugudde Professor, University of Maryland, USA
1345	Plenary Presentation 1 From Agriculture Insurance to Rural Protection Against Disasters in China: Risk Perception, Management and Policy Prof Wang Ming Associate Professor, Beijing Normal University; Director, Institute of Integrated Risk Management, People's Republic of China

1415	Plenary Presentation 2 Climate Change and the Implications for Regional-Scale Catastrophic Extremes on Crops and Food Dr Robert Muir-Wood Chief Research Officer, RMS Inc., UK
1445	Panel Discussion 1 Session Chairman: Prof Tso-Chien Pan Founding Director, ICRM and Dean, College of Engineering, NTU, Singapore Panelists: 1. Prof Raghuram Murtugudde , Professor, University of Maryland, USA 2. Prof Wang Ming , Associate Professor, Beijing Normal University; Director, Institute of Integrated Risk Management, People Republic of China 3. Dr Robert Muir-Wood , Chief Research Officer, RMS Inc., UK 4. Prof Johnny CL Chan , Dean of School of Energy and Environment and Chair Professor of Atmospheric Science, City University of Hong Kong; Director, Guy Carpenter Asia Pacific Climate Impact Centre, Hong Kong SAR, China
1515	Afternoon Refreshment

THEME 2: FOOD SECURITY: MITIGATION AND ADAPTATION STRATEGIES

1545	Keynote Address 2 Food Security as a Multi-dimensional Concept Requiring Cross-sectoral Interventions Prof Paul P.S Teng Dean, Office of Graduate Studies & Professional Learning, National Institute of Education, Singapore
1630	Plenary Presentation 3 Introduction to the Foreseer Project for Visualising Future Resource Pathways Prof Danny Ralph Academic Director, Cambridge Centre for Risk Studies, University of Cambridge Judge Business School, UK
1700	Plenary Presentation 4 Agricultural Modernization and Crop Insurance Mr Rade Musulin COO, Aon Benfield Analytics Asia Pacific, Australia
1730	Panel Discussion 2 Session Chairman: Mr Malcolm Steingold , CEO, Asia Pacific, Aon Benfield, Singapore Panelists: 1. Prof Danny Ralph , Academic Director, Cambridge Centre for Risk Studies, University of Cambridge Judge Business School, UK 2. Mr Rade Musulin , COO, Aon Benfield Analytics Asia Pacific, Singapore 3. Mr Andreas Schaffer , Sustainability Director, Earth Observatory of Singapore, NTU, Singapore 4. Mrs Tan-Low Lai Kim , Director, Food Supply Resilience Dept, Agri-Food & Veterinary Authority, Singapore
1830	Symposium Dinner

DAY TWO PROGRAM

FRIDAY, 4 MARCH 2011

THEME 3: WATER SECURITY: MITIGATION AND ADAPTATION STRATEGIES

0900 **Master of Ceremony**
Dr Shuy Eng Ban
School of Civil & Environmental Engineering,
NTU, Singapore

Keynote Address 3
Water Security: Mitigation and Adaptation Strategies for Mega Cities

Prof Srikantha Herath
Director, Academic Affairs and Senior Academic
Programme Officer, United Nations University Institute for
Sustainability and Peace, Japan

0945 **Plenary Presentation 5**
Water Security: Mitigation and Adaptation Strategies
Dr Daniel Gunaratnam
Consultant, Gunaratnam Associates; former Principal
Water Resources Specialist, World Bank

1015 **Plenary Presentation 6**
Water Scarcity and its Impact on Food Security in the
Context of Globalization of Water Resources and Climate
Change
Dr Hong Yang
Senior Research Scientist & Group Leader of Water, Food
and Environmental Studies, Dept of System Analysis,
Integrated Assessment and Modelling, Swiss Federal
Institute for Aquatic Science and Technology (Eawag),
Switzerland

1045 Morning Refreshment

1115 **Panel Discussion 3**
Session Chairman
Prof Chen Charng Ning, Professor Emeritus, School
of Civil & Environmental Engineering, Nanyang
Technological University, Singapore

Panelists:

- Prof Srikantha Herath**, Director, Academic Affairs and Senior Academic Programme Officer, United Nations University Institute for Sustainability and Peace, Japan
- Dr Daniel Gunaratnam**, Consultant, Gunaratnam Associates; former Principal Water Resources Specialist, World Bank
- Dr Hong Yang**, Senior Research Scientist & Group Leader of Water, Food and Environmental Studies, Dept of System Analysis, Integrated Assessment and Modelling, Swiss Federal Institute for Aquatic Science and Technology (Eawag), Switzerland
- Ms Michelle Tuveson**, Founder & Executive Director, Cambridge Centre for Risk Studies, University of Cambridge Judge Business School, UK
- Prof Rajib Shaw**, Associate Professor, Graduate School of Global Environmental Studies, Kyoto University, Japan

1145 Lunch

THEME 4: CATASTROPHE RISK MANAGEMENT: FINANCIAL & INSURANCE INSTRUMENTS

1300 **Master of Ceremony**
Prof Robert Tiong
School of Civil & Environmental Engineering,
NTU, Singapore

Keynote Address 4
Catastrophic Risk Management : Financial and Insurance Instruments

Mr S. Narayanan,
MD & CEO, IFFCO TOKIO General Insurance Co. Ltd, India

1345 **Plenary Presentation 7**
How Catastrophe Risk is Reshaping the Global Landscape of Finance, Science, Technology and Public Policy
Mr Rowan Douglas
Chairman, Willis Research Network; CEO, Willis Re Analytics, Willis Group Limited, UK

1415 **Plenary Presentation 8**
CAT Risk, Climate Change, Food Security – Finding Solutions for Farmers and Agricultural Risk Transfer
Dr Pane Stojanovski
VP, Model Development Operations, RMS Inc., USA

1445 **Panel Discussion 4**
Session Chairman:
Mr John Tan, CE, Asia Capital Reinsurance Group Pte Ltd, Singapore

Panelists:

- Mr S. Narayanan**, MD & CEO, IFFCO TOKIO General Insurance Co. Ltd, India
- Mr Rowan Douglas**, Chairman, Willis Research Network; CEO, Willis Re Analytics, Willis Group Limited, UK
- Dr Pane Stojanovski**, VP, Model Development Operations, RMS Inc., USA
- Dr Dong Weimin**, Chief Risk Officer, RMS, Inc., USA

1515 Afternoon Refreshment

THEME 5: RECENT VOLCANIC ERUPTIONS AND RISK IMPLICATIONS

1530 **Keynote Address 5**
Volcanic Ash and Aviation Safety: How Much Ash is too Much?
Prof Christopher Newhall
Professor, Earth Observatory of Singapore, NTU, Singapore

1615 **Plenary Presentation 9**
Volcanic Ash and Aviation over South-East Asia – Implications of Eyjafjallajökull
Dr Andrew Tupper
Regional Director, Australian Bureau of Meteorology (Northern Territories), Australia

1645 **Plenary Presentation 10**
Climate Change Adaptation and Drought Resilience: Some New Thoughts
Prof Rajib Shaw
Associate Professor, Graduate School of Global Environmental Studies, Kyoto University, Japan

1715 **Panel Discussion 5**
Session Chairman:
Mr Foong Chee Leong, Director-General, Meteorological Services, National Environment Agency, Singapore

Panelist:

- Prof Christopher Newhall**, Professor, Earth Observatory of Singapore, NTU, Singapore
- Dr Andrew Tupper**, Regional Director, Australian Bureau of Meteorology (Northern Territories), Australia
- Dr Anselm Smolka**, Head, Corporate Underwriting – Geo Risks, Munich Re, Germany
- Prof Rajib Shaw**, Associate Professor, Graduate School of Global Environmental Studies, Kyoto University, Japan
- Dr Antonius Ratdomopurbo**, Senior Research Fellow, Volcano Group, Earth Observatory of Singapore, NTU, Singapore

1745 **Close of Symposium**
Prof Tso-Chien Pan
Founding Director, ICRM and Dean, College of Engineering, NTU, Singapore