DRN@USM
Disaster Research Nexus

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NEWSLETTER
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Contents

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Message from the Coordinator of DRN

Welcome to the Disaster Research Nexus (DRN), School of Civil Engineering, Universiti Sains Malaysia. Universiti Sains Malaysia (USM) being a sustainability led academic institution recognizes the urgent needs to develop programs, resources and human capital within USM with a global aim of managing and mitigating the potential adverse effects of natural/human made hazards such as floods, earthquakes, landslides and tsunamis which could lead to unforeseen disaster. In order to achieve this objective, the School of Civil Engineering (PPKA), Universiti Sains Malaysia has initiated the establishment of this Nexus. The School of Civil Engineering is honoured to be responsible to take charge, coordinate and manage the Nexus. The setting-up of the DRN was approved in the 72nd school board meeting on 11 March 2010.

The DRN will co-ordinate the development of technology, human capital and awareness as well as expertise to better understand, monitor, model, mitigate and manage the risks associated with natural/human made hazards. The Nexus pursues basic research on the prediction and mitigation of natural disasters, as well as interdisciplinary applied research oriented towards on-site applications. Natural disasters being investigated include those that are caused by earth and sea surface processes and are related to fields such as geology, geophysics, geomorphology, hydrology, oceanography, soil science, environmental technology and climate change. The DRN focuses on research related to the generation, behaviour and impacts of natural disasters, as well as methods of hazard mapping and mitigation, interdisciplinary studies within and outside of USM, and practical applications of sophisticated basic and applied research. At present, there are 22 researchers covering various expertise in disaster research and management in this Nexus. Based on the available expertise at USM, the DRN has identified five main projects, i.e. earthquake, tsunami, flood, landslide and bio-hazards.

DRN invites interested government agencies and private organizations from various engineering, science, social and financial disciplines to participate either as an associate or a partner. For our partners, arrangements can be made to carry out research into a specific topics or issues of common interest.

"Ensuring future sustainability through efficient disaster management"

ASSOC. PROF. DR. TAKSIAH A. MAJID
Coordinator,
Disaster Research Nexus

Welcoming Remarks From ADVISORS OF DRN

Assalamualaikum wbt

Dear readers,

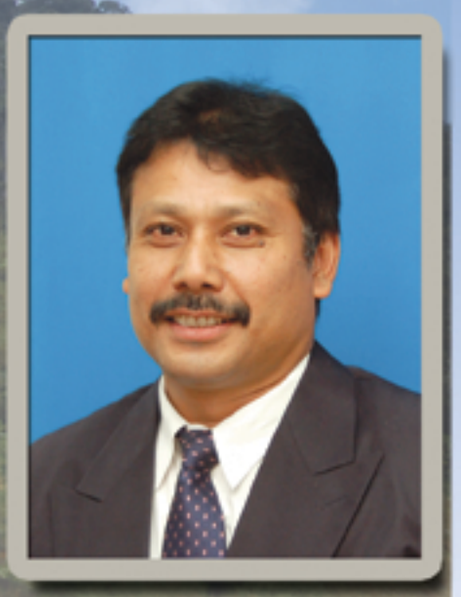
It is my pleasure to welcome you to the very first Disaster Research Nexus (DRN) Newsletter. This newsletter is published by the Disaster Research Nexus (DRN), School of Civil Engineering, Universiti Sains Malaysia.

As reflected from the mission statement, DRN Newsletter welcomes contributions from a various fields of natural disaster, these includes flood, landslides, earthquake, tsunami, wind storm and related field. DRN Newsletter will publish articles, opinions or anything that related to natural disaster issues.

I hope DRN Newsletter will be a platform, an encouragement and motivation for scientific writing among students and academicians to translate research findings into community benefit. Therefore, it is hoped that this newsletter can be used as a link between the researchers and community. This newsletter will be published quarterly every year with updates of the current research and ideas shared with the community.

Welcome to the DRN Newsletter as readers and as contributors. Well done once again to the DRN team members and I wish all of you the best of luck.

Prof. Dr. Hamidi Abdul Aziz
Advisor of DRN @ Dean



Assalamualaikum wbt

It is truly a great pleasure for me to welcome you to this inaugural issue of Disaster Research Nexus (DRN) Newsletter. DRN was established by USM in response to the urgent need to develop programs and human capital to mitigate the adverse effects of natural and manmade disasters such as floods, landslides, earthquakes and tsunamis.

Malaysia faces various disasters hazards throughout the year such as flash floods, monsoon floods, landslides and fire. Even though Malaysia is located in relatively low seismicity region, the seismic activities from two of the most seismically active plate boundaries, i.e. Indo-Australian and Eurasian plates, we are somehow affected. These effects include numerous strong tremors, the unprecedented 2004 Indian Ocean tsunami and the April 2012 Sumatra earthquake.

The establishment of DRN is in line with the research niche area to provide safe and resilient living environment worldwide. DRN strives to provide strategic direction and holistic solutions for disaster risk reduction through various means for this region and the globe. In this regards, DRN plays an important role in building a knowledge society and ensuring livelihood and social transformation.

I sincerely welcome all researchers to contribute to DRN in order to realize its vision and missions.

Thank you.

Prof. Dr. Nor Azazi Zakaria
Advisor of DRN @ Director of REDAC

Introduction

The School of Civil Engineering (PPKA) and River Engineering and Urban Drainage Research Centre (REDAC), Universiti Sains Malaysia (USM) recognize the urgent need to develop programs and resources within USM to mitigate the adverse effects of natural/human made disasters such as annual floods, earthquakes, landslides and potential future tsunamis. To meet this objective, PPKA and REDAC have set up a Disaster Research Nexus (DRN) to co-ordinate the development of technology, human capability, awareness and expertise to better understand, monitor, model and manage the risks associated with these natural/human made hazards.

The mission of the DRN is to advance and to disseminate knowledge on natural disaster mitigations, research and community preparedness, response and recovery. Using an interdisciplinary framework, the DRN fosters information sharing and promotes integration of activities among researchers, practitioners and policy makers from around the nation; obtains supports and conducts research; and provides educational opportunities for the next generation of natural hazards scholars and professionals. The prime objectives consist of conducting fundamentally sound research of deep scientific interest, producing results which are reliable, accurate and of practical use to both society and industry. The Nexus will work closely with other centers and institutes within and outside USM. The Nexus welcomes opportunities for collaboration with private and public institutions, locally and internationally.

Vision

The nexus seeks to explore the frontier of knowledge in disaster management in the country to the level where it will be capable of leading activities in the region and internationally, driven by technology, for the benefit of Malaysians and the rest of the world, especially for the bottom billion, by employing sustainable and novel solutions through collaboration with worldwide research agencies and industries, involving commercialization of technology and leading expertise.

Mission

Focus on multi disciplinary strength to develop more structured unit in dealing with arising issues of natural/human made disasters;

Coordinate the development of technology and expertise to deal with the broad spectrum of issues arising from natural / human made disasters;

Carry out rigorous and cutting-edge research involving large-scale modeling of natural disasters, damage monitoring, risk assessment and hazards mitigation action plan;

Collaborate and enhance partnership/networking with other national and international centers and institutes to extend the research to a broad social, economic and financial context;

Provide resources and support services for Post Disaster Victims, Corporate Social Responsibility or Community Outreach and companies working on national and international projects that require natural disasters considerations;

Establish One Stop Centre for Sustainable Disaster Mitigation Research in the Region; and

Creating innovative venture involving commercialization and partnership with industry.

ORGANIZATION STRUCTURE OF DRN [2010-2012]

Advisory Panel
Prof. Dr. Hamidi Abdul Aziz
Prof. Dr. Nor Azazi Zakaria

Coordinator
Assoc. Prof. Dr. Taksiah A. Majid

Technical & Administration Team

Divison of Wind Storm	Divison of Earthquake & Tsunami	Divison of Flood	Divison of Landslide	Divison of Disaster Management /GIS/ICT
Assoc. Prof. Dr. Taksiah A. Majid	Prof. Dr. Koh Hock Lye	Prof. Dr. Ismail Abustan	Prof. Dr. Fauziah Ahmad	Prof. Sr. Dr. Wan Muhd. Aminuddin Wan Hussin
Mr. Noram Irwan Ramli	Assoc. Prof. Dr. Taksiah A. Majid	Assoc. Prof. Dr. Rozi Abdullah	Assoc. Prof. Dr. Habibah Lateh	Prof. Dr. Ruslan Rainis
Mr. Shaharudin Shah Zaini	Dr. Hareyani Zabidi	Prof. Dr. Wan Ruslan Ismail	Dr. Jamilah Hj. Ahmad	Assoc. Prof. Dr. Bahari Belaton
	Dr. Lau Tze Liang	Assc. Prof. Sr. Dr. Mohd Sanusi b. S. Ahamad	Dr. Mohd. Ashraf Mohamad Ismail	Assoc. Prof. Dr. Chan Huah Yong
	Dr. Teh Su Yean		Dr. Tay Lea Tien	Assoc. Prof. Dr. Nabsiah Abdul Wahid
	Mr. Shaharudin Shah Zaini		Dr. Wan Mohd. Muhiyuddin Wan Ibrahim	Dr. Noreha Haji Hashim
				Dr. Intan Hashimah Mohd Hashim

Research areas at DRN

Earthquakes

- Seismic hazard assessment
- Identification of dynamic parameters and seismic assessment of structures (buildings and bridges)
- Identification of dynamic parameters of multi-story RC building in Peninsular Malaysia
- Multi-Channel Surface Wave and microtremor observations

Tsunamis

- Tsunami modeling and prediction
- Early tsunami warning systems
- Modeling of structures under tsunami loading
- Preparedness, prevention and mitigation management
- Awareness and education

Floods

- Flood risk management
- Forecasting extreme events
- Flood simulation and modeling
- Global climate change impacts on disasters
- Offshore natural disasters
- Preparedness, prevention and mitigation management
- Awareness and education

Landslides

- Geotechnical hazard slope monitoring and alert system
- Landslide hazard zonation

Wind Storm

- Wind hazard
- Wind code development

The Deputy Vice-Chancellor of University of Malaya, Prof. Dato' Dr. Mohd. Jamil Maah delivers the welcoming speech in the opening ceremony

2nd ASIAHORCs Joint Symposium 2010

Second Asian Heads of Research Councils (ASIAHORCs) Joint Symposium has been successfully held on 1-2 November 2010 at Impiana KLCC Hotel, Kuala Lumpur, Malaysia. This symposium was jointly organized by Universiti Sains Malaysia and University of Malaya. There were 65 registered participants, *4 from China, 4 from India, 4 from Indonesia, 8 from Japan, 4 from Korea, 28 from Malaysia, 6 from Philippines, 6 from Thailand and 1 from Vietnam.*

The Second ASIAHORCs Joint Symposium has achieved its objectives. It has offered a very interesting and exciting presentations, be it poster or oral and had provided a platform for sharing and learning from each other's experience. The discussions held gave a useful insight and pertinent viewpoints in promoting active deliberation among experts from member institutions. Knowledge, experience and data were exchanged to establish an efficient and comprehensive system for a better coordination and monitoring of disasters and their mitigation. The Symposium has generated many useful inputs that can be shared. This convergence of diverse ideas and insights surely augurs well for the advancement of knowledge pertaining to the disaster management.

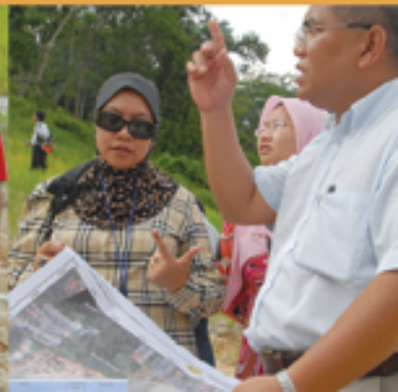
Prof. Norio Okada from Kyoto University delivers his Keynote Lecture in the symposium

Gifts presented by India's delegate to Prof. Asma and Prof. Norio Okada

Presentation by the country delegate

Organizing committee of the 2nd ASIAHORCs Joint Symposium

Technical visit to Bukit Antarabangsa, Kuala Lumpur



Dr. Yap Kok Seng gives his welcoming speech followed by Prof Hamidi Abd. Aziz during the open ceremony

NaTSET 2010

The National Seminar on Earthquake and Tsunami in Malaysia (NaTSET 2010) conducted on 10-11 November 2010 was a joint collaboration program between Malaysian Meteorological Department, Ministry of Science, Technology and Innovation (MOSTI) and the Disaster Research Nexus, Universiti Sains Malaysia (USM). The seminar commenced at 9.00 am with a welcoming speech by Dr Yap Kok Seng, Director-General of Malaysian Meteorological Department followed by Prof. Hamidi Abd Aziz, the Dean of the School of Civil Engineering, Universiti Sains Malaysia.

One of the objectives of this seminar is to establish a platform where local researchers, academicians, professional, administrator and policy makers can share research results and new developments in the field of seismology and tsunami. Concurrently, this seminar is also aimed to stimulate and encourage the research activities in seismology, tsunami and earthquake engineering in Malaysia and to discuss ideas and methods applicable in mitigating the risk of earthquakes and tsunamis in Malaysia.

Twenty guest speakers and sixty-five participants consist of local lecturers, researchers, engineers and government officers especially from the earthquake and tsunami monitoring agencies and disaster management agencies participated in this seminar. The seminar was conducted in five sessions which discussed various related topics: Session 1: Geo-hazards; Session 2: Earthquake Engineering, Building Guidelines, Land Development and Usage in Risk Areas; Session 3: Tsunami Early Warning System, Tsunami Risks/Study and Tsunami Impacts; Session 4: Community Awareness, Preparedness and Education, Community Resilience; Session 5: Disaster Management, Response and Mitigation Measures.

Speakers deliver the presentation in the workshop

WASP 7 2010

The Water Quality Simulation Program (WASP7) Training Workshop has been successfully held on 16 and 20 December 2010 at Computer Laboratory, School of Civil Engineering, Universiti Sains Malaysia. The workshop was organized by Disaster Research Nexus (DRN), School of Civil Engineering. The invited speakers are Professor Koh Hock Lye and Dr. Teh Su Yean from DRN, School of Civil Engineering and School of Mathematical Science, respectively.

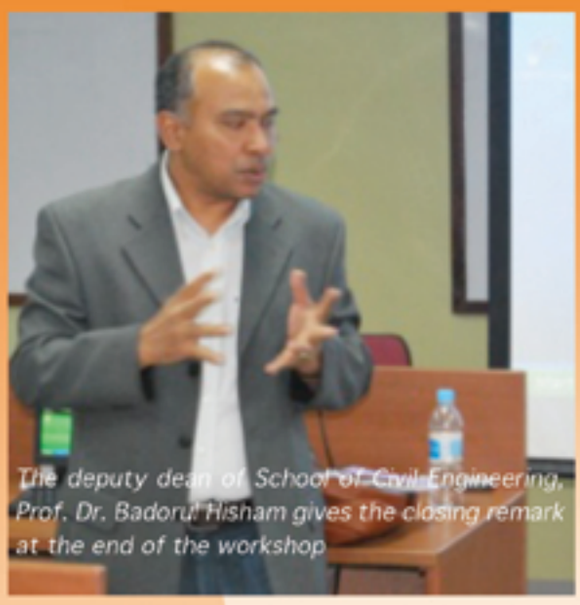
The objective of the workshop is to enable the participants to develop the simulation models for their projects. It was focused on hands-on numerical experiments based upon WASP7 by means of PC. Basic mathematical background was presented and discussed to enable modelers to understand the relevant physics and biology of water quality simulation (WQS). The participants are given 16 CPD credit points for this 2-day training workshop.

Prof. Koh and Dr. Teh give their lectures during the workshop

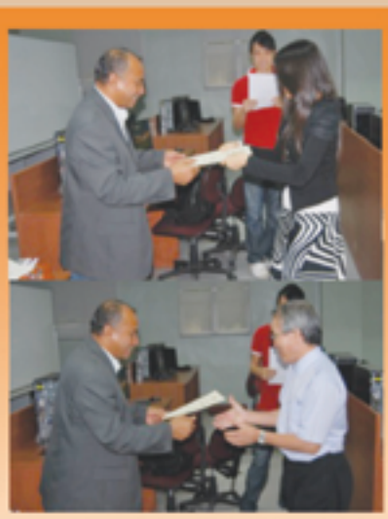
Participants in the workshop

A total of 18 participants registered for WASP7 Training Workshop that consist of undergraduate students, postgraduate students and lecturers. The composition of participants consists 12 from School of Civil Engineering, 2 from River Engineering and Urban Drainage Research Centre (REDAC), 1 from School of Material and Mineral Resources Engineering and 3 from School of Environmental Engineering of UniMAP. Tea-breaks (morning and afternoon) and lunch were provided for all participants and speakers during the workshop. At the end of the workshop, the Deputy Dean of School of Civil Engineering, Prof. Dr. Badorul Hisham was invited for the closing remark and presented the certificate to all participants and invited speakers.

WASP 7



The deputy dean of School of Civil Engineering, Prof. Dr. Badorul Hisham gives the closing remark at the end of the workshop



Certificate is presented to the invited speakers

USM - AS Taiwan

Collaboration Research Workshop 2011

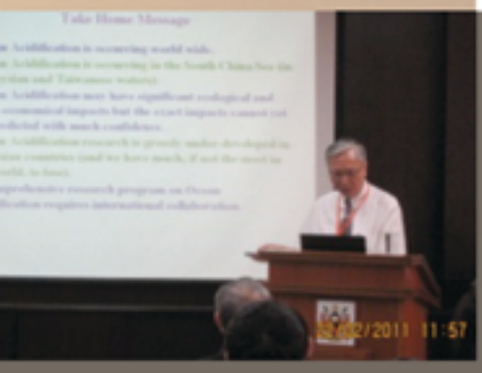
The Universiti Sains Malaysia-Academia Sinica Taiwan Research Collaboration Workshop was successfully held on 22 February 2011. It was jointly organized by Institute for Research in Molecular Medicine (INFORMM), School of Civil Engineering and School of Mathematical Sciences, University Sains Malaysia. The workshop commenced at 9.00 am with a welcoming speech by Prof. Asma Ismail, the Deputy Vice Chancellor for Research and Innovations of Universiti Sains Malaysia.

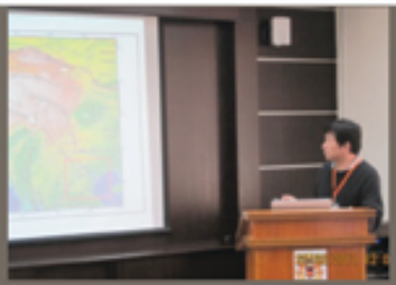
Opening ceremony of the workshop

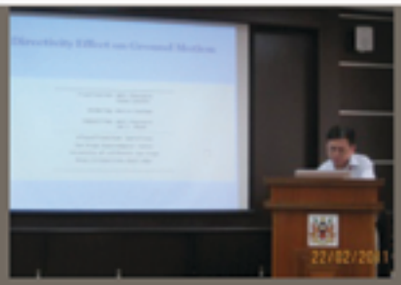
The objectives of the workshop are to initiate research interests and training for doctoral research students and postdoctoral research staffs in Taiwan and explore long-term research collaborations between USM and Academia Sinica Taiwan in Molecular Medicine & Biotechnology, and Earth System Science.

Presentation of the multimedia

The workshop was divided into two main sessions, Molecular Medicine & Biotechnology and Earth System Science and a total of eleven speakers (four from USM and 7 from Academia Sinica) were invited. A total of 100 participants consist of local lecturers, researchers, engineers and government officers took part in the workshop. The multimedia presentation for Academia Sinica, Taiwan International Graduate Program (TIGP) and Universiti Sains Malaysia were presented to the audience after the lunch break. Finally, the workshop finished flawlessly with the closing remark delivered by Prof. Rusli Ismail, Director of INFORMM.







Dr. George Wong (left), Dr. Huang (centre) and Dr. Zhao (right) from Academia Sinica present their researches during the workshop

The participants of the Earth System Science session

Lecture on "Near-Field Earthquake Engineering: Issues and Recent Progress"

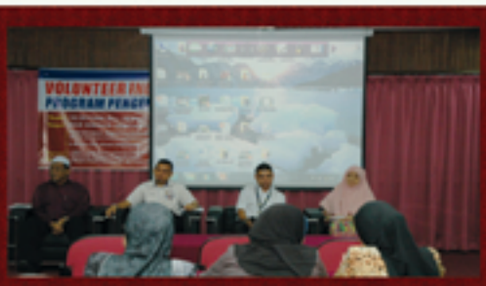
Deadliest earthquakes have been recorded in the past two decades in Northridge (1994), Kobe (1995), Chi-Chi (1999), Izmit (1999), Gujarat (2001), Bam (2003), Banda Aceh (2004), Kashmir (2005), Java (2006), Sichuan (2008), Haiti (2010), Christchurch (2011) and Japan (2011), which have caused more than 800,000 fatalities. Near-field earthquakes are much more devastating because of the closer distance to the epicenter and intense ground vibration produced. A lecture on near-field earthquake engineering was conducted on 18 March 2011 at USM Engineering Campus by Professor Tatsuo Ohmachi from the Center for Urban Earthquake Engineering, Tokyo Institute of Technology, Japan. The talk has attracted more than 200 participants consisting of staffs and students from various disciplines.

In this lecture, Professor Ohmachi has shared his knowledge and experience in earthquake engineering, after teaching and research at Tokyo Institute of Technology for more than 30 years. He has addressed an urgent necessity to establish a new field of study, namely near-field earthquake engineering. Major near-field earthquake events and their special features were highlighted. Among these are the tunnel damage for hydroelectric power generation and up throw of boulders (1984 Nagano-ken Seibu earthquake), uplift of seabed at Caleta de Campos (1985 Michoacan earthquake), observation of high acceleration exceeding 1g (1994 Northridge earthquake), jumping of bell house, drafting of Level 2 motion for Japanese design code and development of *"dynamic tsunami simulation technique"* (1995 Hyogo-ken Nanbu earthquake), sudden change in reservoir water level (2000 Tottori-Oki Seibu earthquake) and extremely high acceleration (about 4g) records and nonlinear response of a rock fill dam (2008 Iwate-Miyagi Nairiku earthquake).

Volunteer Induction Programme (VIP) 2011

18 October 2011,
Seminar Room, Administrative Office,
USM Engineering Campus

Co-organized by Bahagian Pengurusan Kualiti USM (QA), HELWA, UJI My, PUSAT ISLAM and Disaster Research Nexus (DRN), the programme is targeted for a group of personnel which are academic, supporting and technical staffs and postgraduate students. The total number of attendee is 48 persons consisting 41 staffs and 7 postgraduate students.



From Left: Ustaz Ghaffor, Professor Hamidi Abd Aziz, Mr Collin and Associate Professor Dr Taksiah during the welcoming speech in the opening ceremony

The activities during the workshop are lectures by Mr. Collin on Introduction of MERCY MALAYSIA, International Standard Governing Humanitarian Works such as SPHERE and Code of Conduct. In the afternoon, participants were assigned into 5 groups for the hospital design for any disaster mitigation. Mr. Collin also demonstrated the importance of the emergency backpack which at least having hygienic kit and emergency kit. The VIP is the basic programme in the capacity development and it is hope that the continuation of the next programme on Basic Life Support (BLS) and Basic Mission Training (BMT) will be followed soon.

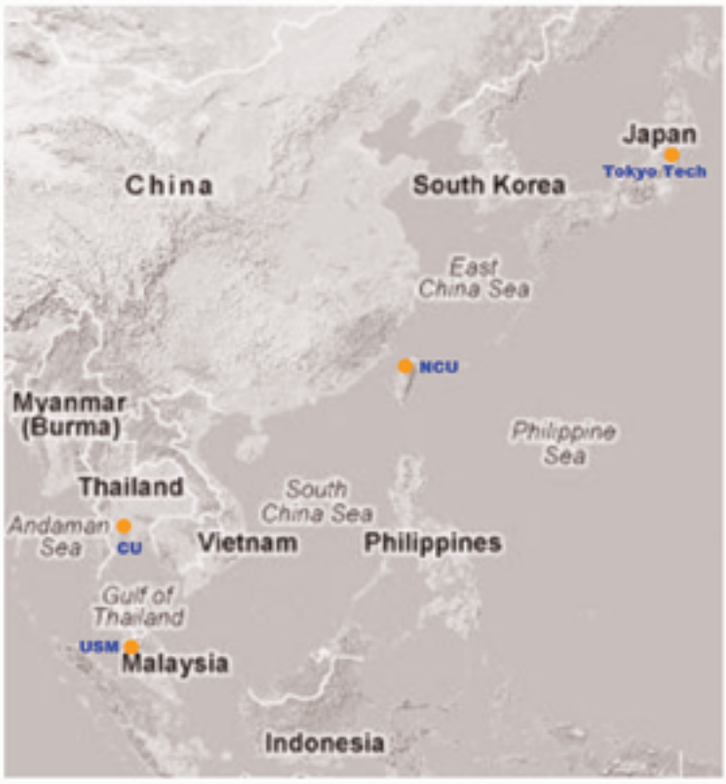
Mr. Collin Abel Nathan from MERCY Malaysia delivers his talk in the programme

The winner for the group workshop received a gift from Mr Collin

Group Workshop Presentation on Hospital Design for Disaster Mitigation

Distance Learning Lectures on

"Earthquake and Tsunami Disaster Reduction"



Universiti Sains Malaysia (USM) has been participated in this series of lecture for its third year since 2009. This is one of the collaborative activities between USM and Tokyo Institute of Technology (Tokyo Tech), Japan. The lecture was hosted by Tokyo Institute of Technology (Japan) and participated by the National Central University (Taiwan), Chulalongkorn University (Thailand) and USM (Malaysia) through video-conferencing system. There were 10 lectures delivered by renowned professors from Tokyo Institute of Technology on Friday from 4 November 2011 to 3 February 2012. The topics of the lecture cover earthquake disaster, estimation of earthquake ground motion, seismic risk assessment, modeling of ground structure, earthquake resistant design of building structure, earthquake geo-hazard and tsunami disaster mitigation. There were 12 students joined this lecture series in this session.

Chulalongkorn University
จุฬาลงกรณ์มหาวิทยาลัย

國立中央大學
National Central University

東京工業大学
Tokyo Institute of Technology

USM
UNIVERSITI SAINS MALAYSIA