# THE INTERNATIONAL EMERGENCY MANAGEMENT SOCIETY

**Members Newsletter - ISSUE 16 – October 2012**
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# MESSAGE FROM THE PRESIDENT

*K. Harald Drager, TIEMS President*

TIEMS has just finished its 2012 annual conference and training in Erbil, Iraq, which took place 16 – 21 September 2012. The event was attended by more than 400 participants from 15 countries, and we concluded the conference with an important declaration, which you will see later in this newsletter.

Due to concerns about security, I knew that we would probably lose some international participants for this event. However, those that participated in the Erbil event felt completely safe, even though we knew there was violence still taking place in other parts of Iraq. But organizing TIEMS annual conference in Iraq was therefore a small contribution to an important normalization of life in Iraq. The professionalism, the engagement and interest we were met with from the Iraqi professionals, was overwhelming. Also, I'd like to add that the social events which included seeing the ancient city of Erbil and its historic heritage added further value to making TIEMS Iraq conference a very successful event. My belief is that this area will flourish with tourists in the coming years!

# Presidents Message

The honor for making the event so successful goes entirely to our wonderful hosts, Dr Mohammed Shuaib and Dr Shakir Katea and their staff, in the Ministry of Health in Iraq.

During this year's TIEMS annual event, a new event concept was tried, by first holding a three day training workshop and then a three day conference. This worked very well and will be the model for future TIEMS annual events.

The reasoning behind this change was to provide more time to in depth studies as well as more discussion on important subjects. The experience gained in Erbil will be used in next year's conference, taking place in Southern France at the new training center of French Fire Service close to Marseille. Next year's event will be in cooperation with the French Fire Service and École des Mines with a conference theme on simulations and robotics in emergency and disaster management. All producers of robotics for use in emergency and disaster management worldwide are invited to join us to put an increased focus on these tools, which improve the efficiency and safety of emergency and disaster management workers. Other topics in emergency and disaster management will also be covered. The conference and training workshop 2013 will take place the first week in October 2013. Further announcements will be coming soon.

TIEMS launched its international education, training and certification program in 2011. Our goal with this program is to find a common denominator for worldwide emergency and disaster management education and training and define an international standard. After now having run four training workshops globally since October 2011; two in China, one in Romania and one during TIEMS annual conference in Iraq 2012, our experience is that the local focus and needs vary quite considerably. However, the need for global experienced teachers and trainers on different topics in emergency and disaster management is evident.

Whilst TIEMS already has an International Pool of Teachers and Trainers in Emergency and Disaster Management who are experienced teachers and trainers, there is a need for more. So we invite those who feel they would like to take part in TIEMS global education and training workshops to add to this pool with their expertise and experience; see http://www.tiems.info/about-tiems/diverse.html.

I am very pleased to see the interest is growing for TIEMS concept worldwide, and I expect TIEMS to grow both in Chapters and members beyond what was already predicted in TIEMS five year plan. TIEMS has found its role internationally among the many good other organizations working in the same field, and we like to invite to partnership and cooperation, to work together for a safer world. To end this short introduction to the TIEMS newsletter, let me say;

***In emergency and disaster management, only global cooperation and partnership will solve the challenging issues we face and creating a safer world!***

Oslo September 2012
K. Harald Drager, TIEMS President

# The 1st International Emergency Medicine Management and joint TIEMS 19th Annual Conference and workshops

*Erbil, Iraq – 16th - 21st September 2012*

**DECLARATION**

The conference has identified the following themes as priority areas where the Government of Iraq will be focusing on in the next years to come. These include reviewing and updating existing policies and strategies related to the organization, structure and administration of disaster risk reduction including emergency medical services pre-hospital and hospital plus long term rehabilitation.

The conference recognizes the important role played by international organizations such as the International Medical Corps (IMC) and The International Emergency Management Society (TIEMS), the World Health Organization (WHO), key individuals and other partners in supporting the Government of Iraq to develop and enhance DRR [Disaster Risk Reduction], Disaster Risk Management, Crisis Management and Emergency Medicine in Iraq and calls upon these organizations to continue providing technical support, under the coordination and the leadership of the Ministry of Health of Iraq and the Ministry of Health of the Kurdistan Regional Government.

TIEMS members express their full commitment and support to work within the common platform and as a contact point for the exchange of knowledge, sharing of experiences and collaboration among the DRR and Crisis Management professionals and practitioners involving all stakeholders. Various topics of concern were raised during the preconference workshop, which served as an excellent forum in building capacity of Iraq professionals dealing with emergencies in terms of reviewing best practices and lessons learnt from other countries. The Ministry of Health welcomes and supports these initiatives.

We recognize that the vulnerability of the people of Iraq to natural and human induced disasters is increasing. We identify that the rapid urbanization, population rise and environmental degradation increases the incidence of disasters. In recent years, the impacts of environmental change including climate are causing increasingly detrimental consequences upon the people and food security.
The government has to comprehend that proactive legal provisions are of high importance for Disaster Risk Reduction and it need be realized that disaster preparedness activities require to be adopted routinely to minimize the potential impacts of disasters.

The joint organizers and delegates of the International Conference of Emergency Medicine and Management agree unanimously and declare the following recommendations:

**Disaster Risk Reduction Recommendations:**

**1.** We recognize the need and importance of TIEMS and of attending delegate representatives in addressing the issues of DRR through resource management, networking and sharing experiences through the workshops, continued collaborations and annual conferences.
**2.** Disaster risk reduction strategies of early warning and response mechanisms need to be developed through the regional and international collaboration. Regional and cross border plans should be prepared in order to address the disaster risk reduction activities of common concern amongst the neighboring countries.
**3.** Disaster awareness through simulations and education is highly necessary. The hazard maps, posters, pamphlets, booklets and audiovisuals should be prepared and publicized. The best practices and indigenous knowledge should be shared amongst the concerned communities and countries. Similarly, joint simulation exercises .need to be carried out between collaborative teams mobilized during mega disasters within the region
**4.** Considering that the local people and communities are the first responders immediately to a disaster – their capacity needs to be strengthened in order to enhance the community's resilience, preparedness and response in a sustainable and cost effective way.
**5.** Environmental change including climate change, agricultural land depravation, waste management, pollution and urbanization requires prioritization in recognition of the magnitude of potential impact
**6.** It is the firm belief of the conference that the role of civil society is vital. Therefore, the respective governments should mainstream their inclusiveness within DRR strategy.
**7.** The governments should work and contribute to achieve the objectives of Millennium Development Goals and Hyogo Framework of Action (HFA).
**8.** The incorporation of DRR within curricular is essential

**Action Plan – the next step:**

- The Conference delegates commit to devote themselves to address the issues of DRR. We, therefore, as the common platform urge the respective governments to:
    - Improve community resilience, innovative urban planning, governance, capacity building and rural sustainability
    - Participate within the ISDR Resilient Cities Program
    - Support International strategies for preparedness, mitigation and crisis response
    - Implement the World Health Assembly resolution WHA 60.62 on trauma care and emergency medical services

- That TIEMS, WHO and Conference Representatives continue to support the development of DRR strategies and initiatives where appropriate within Iraq.
- That the medical practitioner delegates request that the attached appendix be considered as part of the conference recommendations to be reviewed within the context of the best practices and daily operations.

***Written and adopted on 21 September 2012 at Hotel Sheraton, Erbil, Iraq.***

**The conference set the stage for the following awards***:*

- ***TIEMS Annual Conference 2012 Award for Best Project Presented*** – awarded to **Dr. Mason Bragg**
- ***TIEMS Annual Conference 2012 Award for Best Presentation*** – awarded to **Dr. Osama Abdul Hassan**
- ***TIEMS Annual Conference 2012 Award for Best Research Paper*** - awarded to **Dr. Amer Al Ani**
- ***TIEMS President's Outstanding Achievement Award for 2011*** – awarded to **Stela Petrescu, Dr. Shakir Katea & Dr. Mohammed Shuaib**

# International Workshop on Emergency Management for Critical Infrastructures Crises

*ENEA Headquarters, Rome - 4th October 2012*

The Workshop is aimed at exploring new challenges posed by Preparedness Plans and Emergency Management for Critical Infrastructures Crises. The issue of major incidents (natural disasters, cyber attacks, terrorist attacks) that have had an impact on critical infrastructures and the difficulties to get-by, to resist, to recover and eventually rebound from those incidents is of actuality. Special attention will be paid to new threats, vulnerabilities and suitable defensive strategies to prevent, mitigate and manage the emergencies. The objective of the Workshop is to bring together experts, emergency managers, technology suppliers, infrastructure specialists and stakeholders, with different cultural and scientific backgrounds, to address and analyze the following aspects:

- Proposing methods and tools to analyze and understand new risks and vulnerabilities.
- Providing practical solutions to reduce and mitigate potentially dangerous consequences of outages
- Identifying strategies and tools to support emergency managers during critical events.

**9.30-10.00 – Registration & Welcome Coffee**
**10:15** - *K. Harald Drager* – TIEMS (Norway) TIEMS Activities on Emergency Management
**10:45** - *Sandro Bologna* – AIIC (Italy) New Challenges on Critical Infrastructures Protection
**11:00** - *Cristina Leone* – SERIT (Italy) Security, a new Dimension of CIP
**11:15** - *Merle Missoweit* - FRAUNHOFER (Germany) Results from ACRIMAS Project
**11:40** - *Nicola Iarossi* – EOS (Belgium) Results from CRISYS Project
**12:00** - *Alessandro Annunziato* – JRC (Italy) JRC European Laboratory for Crises Management
**12:20** - *Vittorio Rosato* – ENEA (Italy) ENEA Support Tools for Crises Prediction and Management
**12:40** - *Gaetano Condorelli* –ENEL (Italy) Electricity Operator experience on Crises Management
**13:00** - **Lunch Break**
**14:30** - *Vinicio Pelino* – CNMCA (Italy) The Role of Weather Forecast
**14:50** - *Luigi D'Angelo* – DPC (Italy) Italian Experiences on Emergency Management
**15:10** - *Carmelo Di Mauro* –The Public-Private Partnership for Critical Infrastructure Crisis Management in Lombardy Region
**15:30** - *Chaim Rafalowski* – MDA (Israel) Planning for disasters: the use of a simulation tool (CRISMA project)
**15:50** - *Johannes Sautter* – FRAUNHOFER (Germany) Results from SECUR-ED Project
**16:10** - *A. M. Birk* - Queen's University (Canada) Intentionally Staged BLEVE as a Threat to CI
**16:30** - *J.P. Monet* - French Fire Brig. (France) A robotic solution for CBRN Defence dedicated to CI
**16:50** - *K. Harald Drager* – TIEMS (Norway) How to set up an Italian TIEMS Chapter
**17:10** - **End of the Workshop**

***For security reasons registration is requested before the Workshop at:***
http://editors.enea.it/it/enea_informa/events/infrcritiche4ott12/international-workshop-on-emergency-formanagement-for-critical-infrastructures-crises

# Space Weather and Challenges for Modern Society

*Oslo Conference, 22nd - 24th October 2012*

2012 – 2013 is expected to be years with high solar activity. This can trigger larger solar storms which can generate disturbance on earth. Eruptions on the sun can trigger geomagnetic induced currents (GIC), enhanced UV and X-ray from solar flares can disturb our atmosphere, and high-energy particles can damage satellites. Thus, solar storms can affect the normal operations on specific industrial operations and critical infrastructure that our society depends on (e.g. power grids, oil industry, teelcom, navigation systems, etc).

GIC can affect the normal operation of specific industrial operations and critical infrastructure (e.g power grids, telecom, navigation systems, etc). During space weather events, like solar storms, electric currents in the magnetosphere and ionosphere experience large variations, which manifest also in the earth's magnetic field. These variations induce currents (GIC) in conductors operated on the surface of the earth. Electric transmission grids and buried pipelines are common examples of such conductor systems. GIC can cause problems, such as increased corrosion of pipeline steel and may disturb and possible damaged high-voltage power transformers and it can also have damaging effects on communication systems, navigation systems and oil and gas operations. Vulnerable industries are the oil and gas industry, railways, telecommunication industry, navigation industry and not at least the society, which is very vulnerable concerning short or long term interruption of critical infrastructure.

The conference will focus on increasing the general knowledge of solar storms, space weather, GIC, etc., and the possible consequences for different industries and critical infrastructure, and look into reasonable means of protection, and consider possible early warning solutions.

***Conference Focus***

The conference will focus on increasing the general knowledge of solar storms, space weather and GIC and the possible consequences for different industries and critical infrastructure, and look into reasonable means of protection, and consider possible early warning solutions. The main topics which will be addressed at the conference are:

- Solar Storms and Space Weather - History and Experiences
- Solar Storms and Space Weather - History and Experiences
- Stormy Sun - our Current Knowledge
- Effects on Satellites, Navigation and Telecommunication
- Predictions of Solar Storms, Warnings, Preparedness Measures and Response
- Expectations and Effects on Electric Power Supply and Oil and Gas Exploration Activity
- Industries Preparedness and Protection Measurers
- A Super Storm - What can happen and how to prepare for and handle it?
- Authorities Handling Strategies and Contentious Level
- Society's Ability to Withstand Short and Long Term Shut Down of Critical Infrastructure
- Future Developments and Expectations
- Other relevant topics related to Risk and Preparedness Measures

***Who Should Attend***

The topic is important for political and administrative decision makers, researchers in the field, risk management specialists, relevant vulnerable industry representatives, authorities, insurance industry and others who want to increase their general and specific knowledge on the subject.

***Conference International Program Committee***

The Conference International Program Committee members are:

- Pål Brekke, The Norwegian Space Centre, Norway, Chairman; paal.brekke@spacecentre.no
- Roger Steen, Norwegian Water Resources and Energy Directorate, Norway
- Risto Pirjola, Finnish Meteorological Institute, Finland
- Peter Wintoft, Swedish Institute of Space Physics, Sweden
- Peter Stauning, Danish Meteorological Institute, Denmark
- Alf Olaussen, Statnett, Norway
- K. Harald Drager, TIEMS President, Program Organizer and Committee Secretary; khdrager@online.no

***Conference Venue***

The conference will take place in Oslo, Norway at Grand Hotel, www.grand.no, located in the centre of Oslo, with direct access to the main street, Carl Johan and opposite the Parliament building (Stortinget). Grand Hotel is amongst others famous for housing the Nobel Peace Prize Laureates during their stay in Oslo for the Peace Price Ceremony.

***Exhibitors***

One of TIEMS goals with the conference is to establish a good dialogue between researchers, industry and authorities and "close the gap between theory and practice".We therefore welcome industry and others who like to expose their products, systems and solution within this field, to exhibit their solutions during the conference, and establish the necessary contacts to achieve practical results.

***Conference Fee***

The conference fee has to be paid prior to arrival at the conference. TIEMS web-site will open up for registration and payment, either by credit cards or bank transfer. The conference fee will include one year membership in TIEMS, and there will be a special "early bird" rate, regular rate and a late rate, as shown below. The conference fee includes 1 copy of the proceedings and all social events. Conference fee depending on time of payment:

| **Time of Payment** | **Conference Fee** |
|---|---|
| Late Rate – After 1st September 2012 | Euro 500 |
| Exhibition space (incl. table, chair and electricity) | Contact khdrager@online.no |

# Tentative Program

## *Monday October 22, 2012*

**08:00 - 09:30** *Registration and Coffee*

**09:30 - 10:15** Welcome and Opening
Chair: Roger Steen, *Norwegian Water Resources and Energy Directorate, Norway*

**09:30 - 10:15** *"The Authority's Role and Responsibility in Preparedness"*
Director General Per Sanderud, *Norwegian Water Resources and Energy Directorate*

*"Statnett and Space Weather Threats - Past, Present and Future"*
Executive Vice President Øivind Kristian Rue, *Statnett, Norway*

*"Space Weather and the Role of Norway in the Polar Regions"*
Director General Bo Andersen, *Norwegian Space Center*

**10:15 - 12:30** Introduction to Space Weather
Chair: Roger Steen, *Norwegian Water Resources and Energy Directorate, Norway*

**10:15 - 10:45** *"The Stormy Sun - From Kristian Birkeland to Space Weather Hazards"*
Pål Brekke, *Senior Advisor at Norwegian Space Centre, Norway*

**10:45 - 11:15** *"Solar Storms and Space Weather - Opportunities for International Collaboration"*

Terry Onsager, *Space Weather Prediction Center, NOAA, USA*

**11:15 - 11:30** *"European Space Weather Activities within ESA"*
Juha-Pekka Luntama, *SSA Space Weather Segment Manager, ESA - European Space Agency, ESAC, Spain*

**11:30 - 12:00** *"Space Weather Activities within NASA"*
Joseph M. Davila, *Astrophysicist in the Solar Physics Branch at Goddard Space Flight Center in Greenbelt, Maryland, USA*

**12:00 - 12:15** *"The European Space Weather COST Action ES0803"*
Anna Belehaki, *Head of the Ionospheric Group of the National observatory of Athens (NOA), Greece*

**12:15 - 13:30** *Lunch and Poster Viewing*

**13:30 - 15:00** Stormy Sun - our Current Knowledge
Chair: Pål Brekke, *Senior Advisor at Norwegian Space Centre, Norway*

**13:30 - 14:00** *"Coronal Mass Ejections - the Drivers of Space Weather"*
Rainer Schwenn, *Max-Planck-Institut für Sonnensystemforschung, Germany*

**14:00 - 14:30** *"Solar Storms and Topology: Observed with SDO"* Henrik Lundstedt, *Deputy Director, ISES, Swedish Institute of Space Physics, Sweden*

**14:30 - 15:00** *"Solar Activity - Past, Present, Future"*
Leif Svalgaard, *HEPL, Stanford University, USA*

**15:00 - 15:30** *Coffee and Poster Viewing*

**15:30 - 17:00** Effects on Satellites, Navigation and Telecommunication
Chair: Terry Onsager, *Space Weather Prediction Center, NOAA, USA*

**15:30 - 16:00** *"Space Weather Impact on Satellite Navigation and Positioning Systems"*
Norbert Jakowski, *German Aerospace Center , Institute of Communications and Navigation, Germany*

**16:00 - 16:30** *"Impact of a Geomagnetic Storm on the GNSS-based Positioning Service CPOS"*
Knut Stanley Jacobsen, *Norwegian Mapping Authority, Norway*

**16:30 - 17:00** *"Space Weather Effects on Communications"*
Anna Belehaki, *Head of the Ionospheric Group of the National observatory of Athens (NOA), Greece*

**17:00 - 17:30** *"Forecasting the Radiation Belts with SPACECAST to Help Protect Satellites on Orbit"* Richard B. Horne, *British Antarctic Survey, UK*

18:00 - 19:30 *Reception at Oslo City Hall, by invitation of Oslo City Government* *http://en.wikipedia.org/wiki/Oslo_City_Hall*

## *Tuesday October 23, 2012*

08:30 - 10:30 **Predictions of Solar Storms, Warnings, Preparedness Measures and Response**
**Chair: Peter Wintoft,** *Scientist at Swedish Institute of Space Physics, Sweden*

08:30 - 08:45 *"Introduction on USA Experience - Present Products and Services and Plans for Future Improvements"*
**Terry Onsager,** *Space Weather Prediction Center, NOAA, USA*

08:45 - 09:00 *"The SIDC, a European Space Weather Prediction Center"*
**David Berghmans, E. Robbrecht and R. Van der Linden,** *Solar Physics and Space Weather group (SIDC) at the Royal Observatory of Belgium*

09:00 - 09:30 *"Hazard Assessment and Real-time Simulation of Geomagnetically Induced Currents"*
**David H. Boteler,** *Geomagnetic Laboratory, Natural Resources Canada, Canada*

09:30 - 10:00 *"Space Weather and Critical Infrastructure in the Australian/New Zealand Region"*
**Richard Marshall,** *IPS Radio & Space Services, Bureau of Meteorology, Australia*

10:00 - 10:30 *"Remote Triggering of Energetic Events"*
**Alan Title,** *Lockheed Martin Advanced Technology Center, USA*

10:30 - 11:00 *Coffee and Poster Viewing*

11:00 - 13:15 **Expectations and Effects on Electric Power Supply and Oil and Gas Exploration Activity**
**Chair Alf Olaussen,** *Statnett, Norway*

11:00 - 11:30 *"Reducing Uncertainty - an Electricity Utility's Response to Severe Solar Storms"*
**Trevor Gaunt,** *University of Cape Town, South Africa*

11:30 - 12:00 *"Effects of Geomagnetic Disturbances on the North American Bulk Power System"* **John N. Moura,** *Associate Director of Reliability Assessments of North American Electric Reliability Corporation, USA*

12:00 - 12:30 *"Observations and Modeling of GIC in the Chinese Large-Scale High-Voltage Power Networks"*
**Chunming Liu,** *Associate Professor, School of Electric and Electronic Engineering, North China Electric Power University, China*

12:30 - 13:00 *"The GB Electricity Transmission Network: Modeling, Monitoring and Mitigation"*
**Andrew Richards,** *National Grid, UK*

13:00 - 13:15 *"How to Deal with Geomagnetic Storms in Directional Drilling"*
**Inge Edvardsen,** *Survey Management, Baker Hughes, Norway*

13:15 - 14:30 *Lunch and Poster Viewing*

14:30 - 16:00 **Industries Preparedness and Protection Measurers**
**Chair: Risto Pirjola,** *Visiting Scientist, Geomagnetic Laboratory, Natural Resources Canada, Finland*

14:30 - 15:00 *"GIC Experience in Norway, Risk Assessment and Mitigation in View of Existing and Future Transmission System"*
**Trond M. Ohnstad,** *Section Manager R&D, Projects Division, Statnett, Norway*

15:00 - 15:30 *"GIC Measurements in Japan"*
**Shinichi Watari,** *National Institute of Information and Communications Technology, Japan*

15:30 - 16:00 *"Hydro One GMD Preparedness - A Knowledge-based Approach"*
**Luis Marti,** *Special Studies & Professional Development Manager, Transmission Projects Development, Hydro One, Canada*

16:00 - 16:30 *Coffee and Poster Viewing*

**16:30 - 18:00** **A Super Storm - What can happen and how to prepare for and handle it?**
**Chair: Peter Stauning,** *Scientist at Danish Meteorological Institute, Denmark*

**16:30 - 17:00** ***"A Super Storm - Current Limits of Extreme Space Weather"***
**Edward W. Cliver,** *Space Vehicles Directorate, Air Force Research Laboratory, USA*

**17:00 - 17:30** ***"Effects of a Super Storm on Vital Satellite Systems"***
**Juha-Pekka Luntama**, *SSA Space Weather Segment Manager, ESA - European Space Agency, ESAC, Spain*

**17:30 - 18:00** ***"Consequences of Super Storms on Power Grids - Examination of the March 13, 1989, Magnetic Storm"***
**David H. Boteler,** *Geomagnetic Laboratory, Natural Resources Canada, Canada*

**18:00 - 18:30** ***Reception starts with Poster Viewing***

**18:30 - 19:30** ***Reception continues with a Politician's Reflections on Preparedness as an introduction to a Popular Lecture on Northern Light Science***

***"How to think about the Unthinkable without losing your Mind"***
**Odd Einar Dørum,** *Norwegian Citizen and Former Norwegian Minister of Justice and Police (2001 - 2005)*

***"Space Weather - A Beauty and A Beast"***
**Pål Brekke,** *Senior Advisor at Norwegian Space Centre*

**19:30 - 20:30** ***Press Conference***
*Media is invited to attend the reception and ask questions to all keynote speakers, poster presenters and exhibitors*

## *Wednesday October 24, 2012*

**08:30 - 10:00** **Society's Ability to Withstand Short and Long Term Shut Down of Critical Infrastructure**

**Chair: Bengt Sundelius**, *Swedish Civil Contingencies Agency, Sweden*

**08:30 - 09:00** ***"Critical Infrastructure Protection - Are we willing to try a Disaster?"***
**Sven Ullring,** *Former President and CEO of Det norske Veritas (DNV) and Chairman of Governmental Commission on Critical Infrastructure Protection, Norway*

**09:00 - 09:30** ***"Risk Analysis of Severe Space Weather Events to U.S. Critical Infrastructure"***
**Brandon Wales,** *The Department of Homeland Security's Office of Infrastructure Protection, USA*

**09:30 - 10:00** ***"Estimating the Economic Impact of Disturbances in the U.S. Electric Grid Associated with Solar Activity"***
**Karel Schrijver,** *Lockheed Martin Advanced Technology Center, USA*

**10:00 - 10:30** ***"Two Cans of Coca Cola and a Piece of String: Developing Standards for Non Standard Events"***
**Edward Borodzicz,** *Professor at Portsmouth Business School, UK*

**10:30 - 11:00** ***Coffee and Poster Viewing***

**11:00 - 12:30** **Authorities Handling Strategies and Contentious Level**
**Chair: Trond M. Ohnstad,** *Section Manager R&D, Projects Division, Statnett, Norway*

**11:00 - 11:30** ***"Building Capacity for Preparedness"***
**Bengt Sundelius**, *Swedish Civil Contingencies Agency, Sweden*

**11:30 - 12:00** ***"Preparing the U.S. to Respond to Space Weather Events"***
**Genene Fisher,** *Senior Advisor for Space Weather NOAA National Weather Service, USA*

**12:00 - 12:30** ***"Severe Space Weather Relevance to NATO"***
**Timothy Cook,** *U.S. Representative to the NATO Civil-Military Planning Support's - Industrial Resources and Communications Services Group, committee Work Group Chair*

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|---|---|
| 12:30 - 12:45 | *"Crisis Management Tools as Common Ground for Space- and Energy Sector"*<br>**Brage W. Johansen,** *Space & Energy, Norway* |
| 12:45 - 13:15 | **Poster Presentations**<br>**Chair: K. Harald Drager, TIEMS President** |
| 13:15 - 14:15 | *Lunch and Poster Viewing* |
| 14:15 - 15:00 | **Poster Presentations**<br>**Chair: K. Harald Drager, TIEMS President** |
| 15:00 - 16:00 | **Future Developments and Expectations**<br>*Topics to be Address:*<br>▪ *Solar activity*<br>▪ *Developments into a more complex society infrastructure (e.g. power grids, communication)*<br>▪ *General public awareness and education*<br>▪ *Enhancement of science efforts to understand and monitor Space Weather*<br>**Chair: Luis Marti,** *Special Studies & Professional Development Manager, Transmission Projects Development, Hydro One, Canada* |
| 15:00 - 15:30 | *"Building Space Weather Preparedness and Resilience in Europe"*<br>**Mike Hapgood,** *Head of the Space Environment Group, RAL, UK* |
| 15:30 - 16:00 | *"Global Enhancement of Science to Understand and Monitor Space Weather"*<br>**Peter Wintoft,** *Swedish Institute of Space Physics, Sweden* |
| 16:00 - 16:30 | *Coffee and Poster Viewing* |
| 16:30 - 17:00 | **Summing Up and Conclusions**<br>**Chair: K. Harald Drager,** *TIEMS President, Norway* |
| 17:00 | *End of Conference* |

***For further details and questions, please contact TIEMS President at khdrager@online.no***

## Conference Central Themes

- Solar Storms and Space Weather – History and Experiences
- Stormy Sun: Our Current Knowledge
- Effects on Space Infrastructure and Aviation
- Expectations and Effects on Electric Power Supply, Satellites, Telecommunication, Navigation and Oil and Gas Exploration Activity - Industries Preparedness and Protection Measurers
- Predictions of Solar Storms, Warnings, Preparedness Measures and Response
- A Super Storm - What can happen and how to prepare for and handle it?
- Industries and Authorities Handling Strategies and Contentious Level
- Future Expectations
- Other relevant topics related to Risk and Preparedness Measures

# TIEMS 2012 New Directors

## TIEMS Treasurer 2012 - 2015


**Name:** *Ji (Jack) Zhang*

**Position:** *Chief Executive Officer*

**Organization:** *HARMONY Technologies Co.,Ltd*
*B-8/F InDo Tower, No.48A*
*Zhichun Road*
*Haidian District, Beijing*
*100098 China*

**Date of Birth:** *03.02.1969*

**Nationality:** *Chinese*

**Mobile:** *+86 13910770527*

**E-mail:** *zhangji@harmonytech.com.cn*


Dr. Ji (Jack) Zhang is the President of Beijing HARMONY Technologies Company and the head of Harmony International Disaster Reduction and Emergency Management Academy (HiDREMA). He has a Ph.D of management from China Academy of Sciences, MBA from Peking University and BE of Electrical Engineering & BS of Applied Mathematics from Tsinghua University. Dr. Zhang has abundant working experiences in the IT industry in well-known companies such as Lenovo, IBM, and Micron Technology Inc. among others. His main areas of study focus on government emergency management information systems, Internet of Things (IOT) technology, emergency response plan study, and homeland security, particularly national critical infrastructure and key resource protection.

Establishing the Beijing HARMONY Technologies Company in 2002, Dr. Zhang developed the first domestic government emergency management information software in China in 2003 against SARS. Beijing HARMONY today has grown to be the biggest IT enterprise in the industry of emergency management in China. With ten branch offices in China in Shanghai, Guangzhou, Chengdu etc., HARMONY Technologies and HiDREMA provide comprehensive consultation, ICT system integration and services to the Chinese enterprise, government and public customers in disaster reduction and crisis management.

Dr. Zhang is the undertaker of the Emergency Response System (ERS) research project for the Emergency Management Office (EMO) of the State Council of China , the consulting member of Beijing EMO Research Group, the chief designer for the ERS platform of the Beijing 2008 Olympic Games, co-founder of China-Japan IOT(Internet of Things) Development Alliance and consulting member of China ZGC IOT Industry Alliance. He has published extensively and is a member of various leading professional and scientific organizations, including the Healthcare Information and Management Systems Society, the Organization for the Advancement of Structured Information Standards and the PSC Europe Forum. Dr. Zhang is presently the director of Communication and Publications of The International Emergency Management Society (TIEMS) and the Secretary of TIEMS China Chapter.

# TIEMS Regional Director for Asia 2012 - 2015


**Name:** *Yukio FUJINAWA, Ph.D.*

**Position:** *Chair man*

**Organization:** *Risk Control Association*

*Samoncho 14-61-205*

*Shinjyuku-ku,*

*Tokyo*

*Japan*

**Date of Birth:** *21.05.1941*

**Nationality:** *Japanese*


**Biography**

Yukio Fujinawa started his work in the disaster mitigation from 1965 as Researcher, National Research Centre for Disaster Prevention (NRCDP). He received a Dr. Science degree in 1976 from Department of Physics, Faculty of Science, University of Tokyo focusing on generation and two directional spectrum of the wind wave based on observations at one of the largest oceanographycal tower in the world. As the chief of the First Research Laboratory of Coastal Disaster Prevention , he investigated tsunami deformation and amplification in the shallow part of sea by means of multi-point measurements of ocean long wave and surf beats in the Sagami-Bay.

In 1975 he joined the team for the earthquake disaster mitigation as Chief Researcher of Crustal Deformation Research Laboratory. He engaged in the prediction research of the great earthquake through seismic observation using pop-up type ocean bottom seismometers. In 1987 he became Visiting Researcher to make collaborative researches. Main interest was the investigation of earthquake precursor through electromagnetic approach using underground antenna , geodetic approach using GPS, and seismic approach using cable-type ocean bottom seismic and tsunami observational network. In 1990 as a director of the Special researcher he engaged in the Magnetotelluric survey of crustal conductivity, synthetic aperture radar image for detecting ground surface deformation related with earthquake, volcanic eruption and climate changes.

In 2000 he started the R/D for the earthquake early warning system. After leaving NRCDP in 2003 he participated in the national EEW project to develop systems for disaster mitigation using EEW as CEO of the (NPO) Realtime Earthquake Information Consortium (REIC). Currently he is a chief researcher in Genesis Inc. in the work of development of the high accurate disaster mitigation system for EEW, Tsunami Early Waning (TEW) and earthquake prediction. And he is chairman of Risk Control Association and senior adviser of the TIEMS Japan Chapter to promote the technology transfer of EEW and TEW systems as well as international standardization of EEW. He received the Prize of The Director of Science and Technology Agency in 1981,and the Prize of The Distinguished Work in Science and Technology in 1997. He has served as referee for various scientific journals. Professional publications: Refereed Journals - 65, institutional papaers-80, Proceedings - 20, Popular Science – 10, numerous appearances in national news-networks.

# TIEMS Regional Director for Middle East & Africa 2012 - 2015


**Name:** *Mohammed Shuaib, Dr.*

**Position:** *Director General*

**Organization:** *Medical Operations &*
*Specialized Services (MOSS)*
*Ministry of Health*
*Iraq*

**Date of Birth:** *1961*

**Nationality:** *Iraqi*

**Mobile:** *+964 79011 16562*

**E-mail:** *Shuaibm61@yahoo.com*


**Biography**

Dr. Mohammed Shuaib graduated from Iraqi Medical College at university of Baghdad 1986. In 1996 he received his Ph.D. in community medicine at Iraqi Board of Community of Medicine. Dr. Mohammed Shuaib is now Director General of MOSS in Iraq Ministry of Health. Dr. Mohammed Shuaib is a member of Iraqi National Committee for crisis management. Moss (Medical Operations & Specialized Services), is the directorate in Iraq that was established in 2004 under the Ministry of Health to be the high level of command system for preparedness, response and rehabilitation for emergencies and crisis management. From 2005-2006 he was the Director General of Primary Health Care and Public Health Directorate. From 2007-2008 he was the Inspector General Consultant in I.G. Office. From 2010 -2011 he was the Director General of Administration, Finance and Legal Directorate.

Under his leadership the following initiatives were implemented:

- Evaluation of Nutritional Status for Primary Schools (comparative study)
- Measure weight and length (for primary schools)
- Evaluation Study for health Situation in the Ibn Al- Rrushed and Rashad hospitals
- Supervising of the (students) boarders of primary health care and public health fields
-

He is a highly appreciated member of the following committees:

- A member of high studying discussing committee for getting doctorate of microbidogism/Baghdad university medicine college
- A member of discussing committee for researcher (Jalal Abed al- Razak) specialist (society medicine) his research about the health habits and dangerous factors for the patients who enter the revival unit in Al-Hussein hospital in karbla (Al-Mustanirya university – medicine college)
- A member of discussing committee doctorate's student (Amen Ageal Yasser) on his research about activation program of administrative educational for nursing managers in Baghdad City at Baghdad university nursing collage
-

Dr Shuaib is also a member of numerous scientific committees.

# TIEMS Japan Chapter Workshop on Resilient Asia
# May 22nd 23rd 2012

## *Report and Resolution*

TIEMS Workshop on Resilent Asia and the 2011 East-Japan Earthquake was held during May 22-23 at Yotsuya Kumin Hall and Ariake Emergency Operation Centre. 234 people participated in public conference on May 22 and 77 specialists on emergency management attended the workshop. Experiences were shared about developing resilient society in Asia as well as discussed a future vision to develop Resilient Asia. The workshop ran 3 concurrent session; Emergency Management in the Private sector, Information Management for Emergency Management and Emergency Management in the Public Sector. From these sessions participants agreed following points are important to establish Resilient Asia:

- Holistic emergency management system based on risk assessment should be developed.
- Economic activities in Asian countries are dependent on each other. Therefore for Asian countries to be resilient, Emergency management system in Asia should be standardized.
- Economic impacts of Asian countries from natural hazards increase with their level of economic development.
- A country index of resilience should be developed. With outcome indexes such as “Safe Community” used.
- Unified Command System should be used for effective flood management across Asia
- Incident Command System should be used as a doctrine for Emergency response.
- Investigation needed on good practices for promoting BCP/BCM (country level) and effective Incentives/motivations for top corporate management/leadership.
- Combination of CSR and BCP/BCM with no extra costs should be considered.
- Flexible regulatory management to promote business continuity (not hinder) is important.
- Practical system to know what is going on the underground using such (as underground weather map) should be developed.
- The effective and efficient implementation of disaster response measures necessitates a shared Common Operational Picture (COP). We need national/worldwide support system for having Emergency Mapping Teams.
- Whole picture of world wide climate change effects needed. We should have “Long time view” and “worldwide view” and share the information.
- Create international certification in disaster management based on complex multi hazard disasters occurring today
- Involving vulnerable groups (gender, age, people with disabilities, indigenous group, etc.) in decision making and sharing knowledge for disaster risk reduction
- Develop response system for cascading multi-hazard disasters
- Promote policy that contributes to flat-government models in Asia rather than hierarchical model. Central government should offer flexibility and allow decentralization. Local government should support community initiatives

# INTERNATIONAL TIEMS COURSE

***" Preparation Of Voluntary Services Chiefs From Rural Comunities For Management Of Emergency Situations Created By Disasters "***

DAMBOVITA, ROMANIA: 22nd - 24 JUNE 2012

## 1. Formal Training

**he course was attended by 114 participants, most of them from Emergency Management Services from local villages around Dambovita and from private emergency services and one attendee from Nigeria. The course was designed with the highest standards and was facilitated by world class lecturers able to convey complex ideas and Global Emergency Management concepts. Participants felt it was an effective and memorable experience.**

**As can be seen from the following photo, the Dambovita, Romania Emergency Management course was well attended.**

## 2. Course Delivery

At the end of the course - "PREPARATION OF VOLUNTARY SERVICES HEADS FROM RURAL COMUNITIES FOR MANAGEMENT OF EMERGENCY SITUATIONS CREATED BY DISASTERS " - a post-course evaluation questionnaire was provided to all participants. This enabled the course participants to evaluate the success level of the course and provided insight to course organizers on how well knowledge and skills were conveyed and retained by attendees. The survey was designed using a multiple choice format.

The questions themselves were designed to help evaluate the various course materials and test the level of knowledge that course participants obtained and retained through their experience with the various course components and topics.

The course environment was designed to create a relaxed atmosphere that ensured participants were able to maintain focus and attention. The course itself was designed to enable the transferance of complex subject matter in an easily understandable manner. This approach helped, not only to communicate complex matters, but also to enable attendees to understand various methods of response to situations they may be faced with. Course materials were not limited to lecturers, but included power point slides and films; all provided valuable insight and references for course participants.

This approach also helped tranfer the idea that the same situations can occur throughout the globe and the materials presented did not just focus on the local communities but situations and occurances that have significant consequences on an international scale. A mult-faceted library of examples helped stress ideas and communicate mitigation and responses that can be leveraged.

All these methods provided an elevated level of educational learning during each course day; a positive signal for maintaining readiness and acquiring knowledge, while achieving course objectives.

Maintaining a constant level of interest is a key strength in service quality training and development, where skill and knowledge transferance is core.

## The course program is shown below:

INTERNATIONAL EXCHANGE PROGRAM TIEMS

"PREPARATION OF VOLUNTARY SERVICES HEADS FOR RURAL COMUNITIES EMERGENCY SITUATIONS CREATED BY DISASTERS MANAGEMENT"

| PERIOD | PROGRAM | LECTURER | POSITION / INSTITUTION |
|---|---|---|---|
| Day 1<br>.....<br>*14,00-19.00* | Opening Program.<br>1. Activities And Organizations Worldwide In Emergency And Crisis Response And Management of Disasters | Kare-Harald Drager | President TIEMS<br>International Teacher TIEMS |
| | 2. Global Emergency Management Concepts<br>Case Studies and Practical Examples.<br>Debates. Consultations | Prof. James Hagen | International Teacher TIEMS |
| Day 2<br>.....<br>*9.00 to 14.00* | 3. Current Picture Of Crisis Management In EU. | Prof Univ.<br>Dr. Dan Mănăstireanu | International Teacher TIEMS |
| | 4. The VULNERABILITY IN RURAL COMMUNITIES EMERGENCY | Prof.<br>Dr. Nicolae Steiner<br>NATO International Expert in Disaster Medicine; | International Teacher TIEMS<br>Responsible for preparing TIEMS Romania Course |
| | 5. IDENTIFICATION AND RISK ASSESSMENT OF HAZARDS IN A COMMUNITY | | |
| | 6. PLAN COVERAGE ANALYSIS AND RISK IN ADMINISTRATIVE AND TERRITORIAL UNIT<br>Case studies and practical examples.<br>Debates. Consultations | | |

| | | | |
|---|---|---|---|
| Day 3<br>.....<br>*9.00 to 14.00* | 7. CONCEPTS OF DISASTER RISK REDUCTION | Dr. Marcu Carmen | Deputy Director of Emergency County Hospital Mumbai |
| | 8. REDUCTION OF NEGATIVE EFFECTS OF SPECIFIC HAZARDS. | Prof dr. eng Ion Popa, PhD | International Teacher TIEMS |
| | 9. MONITORING, ASSESSMENT AND RISK REDUCTION | | |
| | 10. PSYCHOLOGICAL BEHAVIORAL OF POPULATION | | |
| | FINAL EXAM | | |

## 3. Course Assessment

The results of the evaluation questionnaire completed by attendees, showed that the majority felt they acquired a solid level of knowledge and skills, which denotes that the educational objectives for the course was achieved.

## 4. Trainer & Attendee Relationship

Though there were many attending the course, the venue and facilitators provided a relaxed atmosphere, which helped facilitate the transfer of knowledge and skills from the teachers to the attendees even when communicating complex issues and topics. This relaxed and open forum greatly contributed to a successful knowledge transfer through out the course.

## 5. Conclusions and Recommendations

a. In order to ensure a balanced distribution of knowledge it's recommended that participants receive course materials on a CD; also containing useful guidelines and good practices, which may be useful for participants upon their return to their respective places of employment.
b. It is recommended to send an invitation to participate in the courses to GIES (General Inspectorate for Emergency Situations in Romania) to help bolster the course and course materials and open up participation to an international level.
c. There is a desire to develop specific topics of interest that can focus on specialized Emergency and Disaster Management subjects. This would allow for many participants to attend single-day courses that meet their specific needs.
d. All course participants were awarded a diploma of graduation by TIEMS International for attending the course.

Course Coordinator

Prof. Dr. Nicolae Steiner.

TIEMS International Teacher

# Emergency Management for Critical Infrastructures Crises

*Sandro Bologna, AIIC, Italy*

Protection of Critical Infrastructures (CI hereafter) is a major issue of nations as the impact of their malfunctioning or, even, their fault might have dramatic and costly consequences for humans and human activities. Activities on CI protection attempt to encompass all possible causes of faults in complex networks: from those produced by deliberate human attacks to those occurring in normal operation conditions up to those resulting from dramatic events of geological or meteorological origin. Although much effort has been devoted for realizing new strategies to *reduce* the risks of occurrence of events leading to the fault of CI elements, a further activity is related to the study of possible strategies to be used for *mitigating* and *predicting* the effects produced by CI crisis scenarios. As far as the latter issue is concerned, it is evident as a detailed knowledge of what is going to happen might enormously help in preparing healing or mitigation strategies in due time, thus reducing the overall impact of crises, both in social and economic terms.

All these issues become even more difficult to be analyzed if one considers the presence of *interdependence* effects among different CIs. A service reduction (or a complete outage) on the electrical system has strong repercussions on other infrastructures which are (more or less) strongly related to the electrical system. In an electrical outage case, for instance, after a certain time, also vehicular traffic might have consequences as petrol pumps need electrical power to deliver petrol; pay tolls do need electrical current to establish credit card transactions of car drivers. As such, also vehicular traffic on motorways might strongly perceive the effects (after a certain latency time) of an outage on the electrical system. This is a less subtle interdependence than that present for CI which are more directly related to the electrical power delivery, such as railway traffic; nevertheless, all these effects must be taken into account when healing strategies have to be envisaged for the solution of a crisis events.

Work is needed aimed at realizing new tools for the prediction of the onset of crisis scenarios and for a fast evaluation of their consequences and impacts on a set of interdependent infrastructures in terms of reduction in the services dispatched by the infrastructures and the impact that services unavailability might have on population. To highlight these problems, TIEMS in cooperation with the Italian Association of Critical Infrastructures' Experts (AIIC http://www.infrastrutturecritiche.it/ ), the Technological Platform Security Research in Italy (SERIT http://www.piattaformaserit.it/ ) and the Italian National Agency for new Technologies, Energy and Sustainable Economic Development (ENEA http://www.enea.it/it ) is organizing the International Workshop on "Emergency Management for Critical Infrastructures Crises" to be held in Rome, October 4th, 2012, see http://www.tiems.info/images/stories/tiems%202012%20italy%20workshop%20rev2.pdf
The Workshop is aimed at exploring new challenges posed by Preparedness Plans and Emergency Management for Critical Infrastructures Crises. The issue of major incidents (natural disasters, cyber attacks, terrorist attacks) that have had an impact on critical infrastructures and the difficulties to get-by, to resist, to recover and eventually rebound from those incidents is of actuality. Special attention will be paid to new threats, vulnerabilities and suitable defensive strategies to prevent, mitigate and manage the emergencies.

**The objective of the Workshop is to bring together experts, emergency managers, technology suppliers, infrastructure specialists and stakeholders, with different cultural and scientific backgrounds, to address and analyze the following aspects:**

- Proposing methods and tools to analyze and understand new risks and vulnerabilities.
- Providing practical solutions to reduce and mitigate potentially dangerous consequences of outages.
- Identifying strategies and tools to support emergency managers during critical events.
- Last but not least, the objective of the Workshop is also the start up of a TIEMS Italy Chapter.

# TIEMS QIEDM Training Project was successfully held in Guangzhou

TIEMS QIEDM Training Project was successfully carried on in Guangdong Building, Guangzhou during July 10-11. This training project was co-sponsored by TIEMS and TIEMS China Chapter, and about 100 learners came from different level of China government emergency management offices and other emergency organizations took part in the project. TIEMS experts including Prof. James Hagen, Director of TIEMS North American Chapter, Prof. Young Jai Lee, TIEMS Korean Chapter, Prof. Shan Chunchang, Prof. Qu Guosheng, Dr. Zhang Ji from TIEMS China Chapter gave lectures and made the training project impressive and successful.

The training topics involved: recent development on international emergency management, China's emergency management development and prospect, EMDR case study and other courses.

The training project made the learners understand better the prospect of international emergency management development and broadened their vision in emergency disposal. With the successful experience, TIEMS China Chapter will continue to promote the QIEDM training projects, try to build a platform on learning international advanced ideas, methods and high-technology, help China government to further improve in the crisis management and emergency response.


Group photo for lecturers and learners

**The TIEMS QIEDM Training Course of the 3rd Annual Conference of TIEMS China Chapter**

| Time | Lecturer | Training Contents |
|---|---|---|
| **July 10 2012** | Opening Ceremony | |
| | Chair: Zhang Ji | |
| | Address | Vice president of TIEMS |
| 8:30-08:40 | Address | Head of Guangdong Emergency Management Office |
| July 10 08:40-10:40 | Shan Chunchang | How to improve the capabilities to manage risks and crises |
| July 10 10:40-12:10 | James Hagen (the U.S.) | Emergency Management Introduction-Principle and Practice 1 |
| July 10 12:10-13:30 | Lunch | |
| July 10 13:30-15:30 | James Hagen the U.S. | Emergency Management Introduction-Principle and Practice 2 |
| July 10 15:30-16:00 | Tea Break | |
| July 10 16:00-18:00 | Young Jai Lee（South Korea） | Building a Global Framework for Disaster Technology and Information Sharing |

| Day -II | | |
|---|---|---|
| **July 11 2012** 8:30-10:30 | Ji Jiaqi | Introduction of Emergency Management Experience in Guangdong |
| 10:30-12:00 | Chen Rong | Inheriting and Carrying forward China's Disaster Prevention and Emergency Response Culture |
| 12:00-13:30 | Lunch | |
| 13:30-15:00 | Zhang Ji | Introduction to New Trends and New ICT Technologies in International Emergency Management |
| 15:00-15:30 | Tea Break | |
| 15:30-17:00 | Qu Guosheng | New tech in earthquake Emergency Management and Disaster Reduction |
| 17:00-18:00 | Presenting the training certificates | |
| | Chair: Qu Guosheng | |
| | Shan Chunchang/James will present the certificates to the trainees and have a photo taken as a memento | |

# TIEMS Young Scientists Network

TIEMS Young Scientists Network (YSN) is an association under The International Emergency Society Management (TIEMS) established by student award winners at the 2011 TIEMS Annual Conference in Bucharest, Romania.

YSN attempts to embrace young researchers working in the emergency and disaster management in order to have an active function in TIEMS by putting up their ideas and proposals as well as to learn and share experiences with established scientists or practitioners in the field of emergency managements.

YSN aimed at improving young scientist research at international scale; creating contacts with global emergency and disaster management community; providing information related to studentship/fellowship and opportunities for projects or research related to emergency and disaster management undertaken in TIEMS professional global networks.

An information sharing platform through a web-portal was created to support the young researchers to develop their career and actively contribute to improve emergency and disaster management at global scale. Nowadays, there are at least six countries participate in YSN: Czech Republic, Indonesia, Romania, China, Canada and United States.

YSN applicants must be registered as a TIEMS member, less than 33 years old and at least a Master Degree student or up to two tears from finishing a Master or three years from finishing a PhD Degree. For further information and registration, please contact TIEMS secretariat, r.miskuf@squaris.com or one of the interim board members as follow:

Chair : Alena Pejcochova, M.A.,

Czech Republic - pejcochova@gmail.com

PhD student at a Department of Criminal Police, Police Academy of the Czech Republic. Her research focus on biological security policy.

Vice : Estuning Tyas Wulan Mei, M.Sc.

Indonesia - estu.mei@gmail.com

PhD candidate from Paris 1 University, Laboratory of Geography of Physical Geography, UMR 8591 CNRS, France. Her PhD research focuses on evacuation management and modeling during volcanic crisis in Merapi Volcano, Indonesia

Secretary: Andreea Dutu, Ph.D., Eng.

Romania - andreea_dutzu@yahoo.com

Post-doctoral Fellow at Tokyo Institute of Technology, Department of Built Environment, Japan. The research field is assessment and retrofitting of masonry, timber and timber framed masonry buildings

# New Academic Network for Disaster Resilience Created By EU

Experts from across Europe have joined together in a new academic network funded by the European Union to improve disaster preparedness in cities worldwide.

The project, called ANDROID (Academic Network for Disaster Resilience to Optimise Educational Development), aims to promote co-operation and innovation among European higher education institutions to increase society's resilience to disasters of human and natural origin – such as earthquakes or the damage caused by ongoing wars.

ANDROID, supported by an EU grant worth €800,000, will run for three years and is led by University of Salford's Centre for Disaster Resilience, based in the UK.

So far a consortium of partners from 64 European higher education institutions has embarked on the project, joined by three institutions from Australia, Canada and Sri-Lanka.

“There is now recognition of the need for collaboration on a large scale that involves a plurality of actors. ANDROID is based on an inter-disciplinary consortium of partners that comprises scientists from applied human, social and natural disciplines. Addressing disaster risk is an endless or continuous process that cannot stop,” Professor Amaratunga from the Centre for Disaster Resilience said.

Over three years, the consortium partners will describe, analyse and compare the capacity of European cities and higher education institutions to address disaster risk. ANDROID will provide the link between the research and the public, helping to reinforce the connection between education and society.

The project was inspired by the United Nations International Strategy for Disaster Reduction (UNISDR) 'Making Cities Resilient' campaign. The campaign advocates widespread commitment by local governments to build resilience to disasters, increase national government support to cities to strengthen local capacities and to develop global goals that are applicable for all cities.

Quoted on the UNISDR website, Helena Molin Valdes, UNISDR’s interim Director and Manager of ‘Making Cities Resilient’, praised the project saying: “UNISDR has taken part in developing the project proposal and now looks forward to disseminating the results when they emerge. Those results will be especially useful in the second phase of our campaign, where we hope to see more city-to-city learning among our campaign cities that leads to laws and other practical measures to build resilience.”

The next phase of ANDROID will involve using all the data collected by the consortium partners to create laws and other practical measures to build resilience.

For further information on the ANDROID project, contact Dr Richard Haigh at android@disaster-resilience.net or visit the website at www.disaster-resilience.net.

The ANDROID Network receives financial assistance from the European Union. The associated activities and publications are the sole responsibility of the Network consortium and can under no circumstances be regarded as reflecting the position of the European Union.

# Web 2.0 and TIEMS

Are you connected with TIEMS on twitter? If so you may have noticed some changes going on **@TIEMS_ORG**.

After a review of TIEMS social media presence in July, TIEMS has been become more proactive in utilizing social media channels to engage with TIEMS members, share ideas and updates in the Emergency Management world. We began by relaunching our twitter feed **@TIEMS_ORG** in July. At the moment Twitter is leading the way with #SMEM (Social Media and Emergency Management) developments and we are gathering best practice information on our feed. So connect with us on **@TIEMS_ORG** to join in the #SMEM debate!

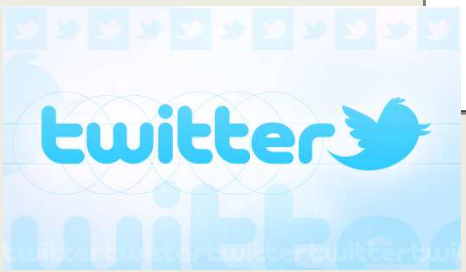
Soon we will also be relaunching the facebook page www.facebook.com/tiemsociety as a place for members and friends to share conference photos, videos, and interesting news clips on Disaster/Emergency preparedness. If you have a Disaster/Emergency related blog we'd love to see your posts on the facebook page. Sharing information is the core of TIEMS purpose, so we want our members to be able to leverage TIEMS social media presence to raise their profiles and exchange information.

Linkedin is on our horizon too, however with so many Emergency/Disaster related groups already available, we want to make sure any relaunch of TIEMS on Linkedin is of value to members. However, as there is always the risk that third party social media platforms like Facebook, Twitter and Linkedin etc could eventually fade, fold or filter out useful information, it is vital that we ensure www.TIEMS.org become the core of our online information strategy. So our current priority is to put together a proposal for relaunching our website for which we need your help!!

How can we improve the TIEMS website www.tiems.info ? Please share your feedback (the good, bad and ugly) in our survey http://www.surveymonkey.com/s/X8LD7JK

Thank you!





# Australian Institute of Emergency Services rewards Excellence and Dedication

*Stephen Jenkins, TIEMS Regional Director for Australia, New Zealand & Oceania*

On 6 June 2012, the Australian Institute of Emergency Services (AIES) (Queensland Division) hosted the AIES's annual awards presentation ceremony in the Auditorium of the Department of Community Safety's Kedron Park Complex, Brisbane.

At this ceremony, the AIES's 2012 National Medal for Excellence was awarded to Deputy Commissioner (Regional Operations) Ian Stewart APM, Queensland Police Service (QPS). This award recognised Deputy Commissioner Stewart's leadership as Queensland's inaugural State Disaster Coordinator during the response to the 2010-11 Queensland flooding and cyclone events, including severe category 5 Tropical Cyclone *Yasi* that impacted the North Queensland coast.

Deputy Commissioner (Regional Operations) Ian Stewart APM. Photo: Queensland Police Service.

The National Medal for Excellence is the highest award issued by the AIES and recognises outstanding and significant contributions made by individuals as a member of an emergency service organisation or affiliated entity in the fields of leadership, management, operations, training, support and innovation. Only one medal is issued annually and Deputy Commissioner Stewart was selected as the most deserving of the over 40 nominees.

In his acceptance speech, Deputy Commissioner Stewart acknowledged that he was receiving the award on behalf of a large team of professionals from the numerous agencies that responded to the events during the 2010-21 summer storms period.

Deputy Commissioner Stewart is a widely recognised police leader in Australia with over 37 years of dedicated service to policing in Queensland. He has served in Brisbane, Townsville, Blackwater, Sunshine Coast and the Gold Coast. Mr Stewart was appointed to the rank of Deputy Commissioner in 2007 and awarded the Australian Police Medal (APM) in 2005.

Deputy Commissioner Ian Stewart (right) receiving the National Medal for Excellence from Mr Bob Maul. Photo: Stephen Jenkins.

During the events of the 2010-11 summer period, Deputy Commissioner Stewart was appointed to the critical position of State Disaster Coordinator on the 23 December 2010 when Tropical Cyclone *Tasha* loomed off the north Queensland coast before crossing the coast in the vicinity of Cairns on Christmas Day.

Deputy Commissioner Stewart's appointment as the State Disaster Coordinator was the first such appointment in Queensland and was made under amendments to the *Disaster Management Act 2003* (Qld) that had only come into effect in November 2010. Due to number of events and their magnitude, Deputy Commissioner Stewart remained in this position until 21 January 2011.

On 10 January 2011, and without warning, the Toowoomba region received an unprecedented deluge of rain that generated significant flooding events between 10 and 13 January. During these events 25 people lost their lives as a consequence of the flash flooding that occurred when a wall of water described as an 'inland tsunami' swept seaward from Toowoomba. Although the loss of life and damage to property was widespread, the small community of Grantham suffered most from these events with at least 12 of its residents deceased or missing.

Deputy Commissioner Stewart was again appointed the State Disaster Co-ordinator for the period 28 January 2011 until 11 February 2011 when the Bureau of Meteorology advised that a severe category 5 storm, Tropical Cyclone *Yasi,* was bearing down on the north Queensland coast. Cyclone *Yasi* ,the most severe cyclone to cross the north Queensland coast in living memory, made landfall in the Mission Beach, Tully and Cardwell regions causing significant damage to marine facilities, agriculture particularly sugar cane and banana crops, residential properties, infrastructure and the environment. Although this was a severe category 5 storm, no lives were lost as a direct consequence of the event.

The AIES's Evaluation Committee considered Deputy Commissioner Stewart displayed exceptional leadership by coordinating disaster response operations for the State Disaster Management Group, reporting to the State Disaster Management Group about disaster response operations, ensuring that strategic decisions of the Group were implemented, and providing strategic advice on disaster response operations to district disaster coordinators and others across Queensland. During the event, Deputy Commissioner Stewart also took time to visit operational disaster response personnel in the field.

For his role during the 2011-12 flooding and cyclone events, Deputy Commissioner Stewart was also awarded the National Emergency Medal by The Honourable Julia Gillard MP, *Prime Minister,* at the National Emergency Medal Presentation Ceremony in Canberra on 26 January 2012.

On 3 September 2012, the Queensland Premier, The Honourable Campbell Newman, and the Minister for Police and Community Safety, The Honourable Jack Dempsey, announced that Deputy Commissioner Stewart had been selected to succeed Commissioner Bob Atkinson APMwho retires from the Queensland Police Service on 31 October 2012.With 12 years in office, Commissioner Atkinson is Queensland's longest serving commissioner, and the second longest in Australia, second only to Commissioner Mal Hyde APM who recently retired from the South Australia Police after 15 years in office.

Mr Stewart, now the Commissioner Designate, will commence duty in his new role on 1 November 2012. The announcement by the Queensland Premier and Police Minister is available for viewing on YouTube at http://www.youtube.com/watch?v=oresLzuDQ4Q&list=UU5633OxdVBlaDNO9oAulVpg&index=2&feature=plcp. Readers can follow Mr Stewart's progress in his new role on Twitter @DeputyStewart although a new handle will surely be advised in the near future.

Superintendent Michael Davis AM ASM, LFAIES. Photo: Stephen Jenkins.

During the AIES awards ceremony, Superintendent Michael Davis AM ASM, from the Queensland Ambulance Service (QAS), was also recognised for his dedication and significant contribution to the emergency services in both operational and managerial roles. Superintendent Davis was elevated from the status of Fellow of the Australian Institute of Emergency Services (FAIES) to that of Life Fellow of the AIES (LFAIES).

Superintendent Davis has over 48 years' experience with the emergency services which commenced when he began as an honorary officer with the Queensland Ambulance Transport Brigade. He has been involved with numerous peak industry bodies, and the promotion of the Queensland Ambulance Service history and heritage through the QAS's Wynnum Museum in Brisbane and establishment of the QAS Museum at Charters Towers, a provincial town in north Queensland. In recognition of his service to the emergency services, Mr Davis was appointed a Member of the Order of Australia(AM) in the Queen's Birthday Honours List in 2000, and the Ambulance Service Medal (ASM) in the 2012 honours list.

The awards were presented by Mr Bob Maul, AIES National Registrar and General Secretary.

# The Management of Mitigation and Reconstruction for the Hazardous Catchment Areas in Taiwan

Wen-Chi Lai [1], Chjeng-Lun Shieh[2]

[1]Deputy Director, Disaster Prevention Research Center, National Cheng Kung University
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[2] Director, Disaster Prevention Research Center, National Cheng Kung University
( 3F, No. 500, Sec.3, An-Ming Rd., Tainan City 709, Taiwan )
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Typhoon Morakot accompanied strong southwesterly monsoonal flow brought extreme heavy rain over the southern half region of Taiwan in August 2009. The large extent, high intensity and long duration rainfall caused huge damage. The objectives of this paper are to evaluate the benefit of reconstruction and management for the main disaster catchment areas, to arrange the results of conservation management of the Soil and water Conservation Bureau in sediment-related disaster area and to review and amend those strategy and countermeasures. In response to the post-disaster reconstruction is necessary to grasp the change of the environment state and make a management process to follow the countermeasures and evaluate the risk. Settling basin, flood retaining zone are measures to protect the residents. The balance of sediment transport and the channel stability could be accelerated through dredging of unstable sediment. The recovery process of the disaster catchment areas struck by Typhoon Morakot could be proceed through the management.

***Key Words :*** *Typhoon Morakot, Reconstruction, Sediment disaster, Countermeasure*

## 1. INTRODUCTION

Typhoon Morakot is probably the deadliest typhoon over the past fifty years of Taiwan area. The purpose of this paper is thus to provide an overview of disasters resulted from Typhoon Morakot and the management of reconstruction for the hazardous catchment areas. Different kinds of disasters which include flood, landslides, landslide dams, driftwoods, and water supply disruptions, occurred during the period of Typhoon Morakot. Some of these disasters occurred almost concurrently in certain places. Such disasters are defined as the compound hazard in this paper. In the following sections, the characteristics of the heavy rainfall are first described. Then three major types of disasters, which are the flood, the sediment-related disasters, and the driftwoods, are explained. In response to the post-disaster reconstruction is necessary to grasp the change of the environment state and make a management process to follow the countermeasures and evaluate the risk. Settling basin, flood retaining zone are measures to protect the residents. The balance of sediment transport and the channel stability could be accelerated through dredging of unstable sediment. The recovery process of the disaster catchment areas struck by Typhoon Morakot could be proceed through the management. A possible measure to alleviate the loss of such compound hazard is suggested as the conclusion of this paper.

**(1) Rainfall**

The most critical feature of Typhoon Morakot is the rainfall, and the rainfall is generally regarded as the major cause of the disasters. As given in Shieh et al. ( 2009 ), the characteristics of the rainfall of Typhoon Morakot are long-duration, large-extent, and high-intensity. For example, the incremental and cumulative rainfall hyetographs (Fig. 1) at the rain gauge Fenchihu show that the duration of the observed rainfall is 118 hours and the cumulative rainfall depth is 2841.5 mm. The greatest 1-hour rainfall intensity is 109.5mm/hour.

The isohyets of cumulative rainfall depth for Taiwan during Typhoon Morakot are depicted in Fig. 1. From the figure, it can be found that the heavy rainfall covered whole Taiwan during Typhoon Morakot. Therefore, it is said that one characteristic of the rainfall of Typhoon Morakot is large-extent.

Storm centres can be observed in the southern area of Taiwan from Fig. 1. The locations of the storm centres have strong connections with the disasters. Most of severe disasters, including landslides and landslide dams, occurred surrounding the storm centres. Flood occurred in the downstream areas of the storm centres as well.


**Fig.1** Isohyets of Taiwan during Typhoon Morakot. Isohyets are in mm depth of total rainfall.

**(2) Flood**

During Typhoon Morakot, the torrential rainfall mainly fell on the areas around the storm centers and hence the corresponding downstream areas were flooded. The most severely flood-damaged area is the southwest region of Taiwan. The flood breached levees at some places. The statistics of levee breaches is given in Table 1. Through the breaches, waters of the flood flowed into areas that were originally protected by the levees. In other places, the causes of the flood damages were complex. The causes included the lack of levees, the overtopping of levees, and the unexpected flood discharge of reservoir, etc. In addition, waters that could not be drained in time by drainage systems caused damages. It is one of the causes of the flood damages as well.

**Table 1** Statistics of levee breaches (Shieh et al., 2009)

| Item | Length of breaches (m) | Length of damaged (m) |
|---|---|---|
| Levee of major River | 36,242 | 9,590 |
| Levee of drainage system | 0 | 325 |
| Sea wall | 520 | 180 |

## 2. SEDIMENT-RELATED DISASTERS

Rainfall is one driven force for landslides and the erosion of slopes. Landslides and the erosion of slopes are sources of sediment yield. A large landslide may block the river channel and may form a landslide dam. Furthermore, the sediment yield may contaminate the water and disrupt the water supply. Landslides, landslide dams and the turbid water are regarded as the sediment-related disasters in this paper. In this section, the information of sediment-related disasters during Typhoon Morakot is given.

**(1) Landslides**

During Typhoon Morakot, the torrential rainfall induced many landslides all over Taiwan. One notorious landslide is the one that occurred in Siaolin village. Over four hundred people were killed by the landslide. The location of the deadly landslide was close to the storm centres. The cumulative rainfall depth that was observed in a rain gauge near the landslide is 2,583 mm with the duration of 91 hours. Readers can refer to Shieh et al. (2009) for more information.

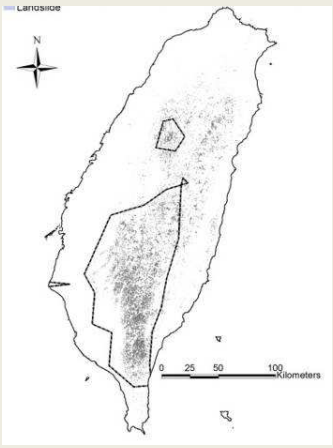


**Fig.2** Landslides within regions where the cumulative rainfall depths are more than 800 mm.

Landslides, which occurred during Typhoon Morakot, are recognized using satellite imageries. The result of the recognition is overlaid with the isohyets of cumulative rainfall depth (Fig. 2). It can be observed that numerous landslides occurred within the regions where the cumulative rainfall depths are more than 800 mm.

**(2) Landslide dams**

Fifteen landslide dams formed during Typhoon Morakot. They were observed using the satellite imageries. The locations of the fifteen landslide dams are illustrated in Fig. 3. Most of these fifteen landslide dams spread around the storm centres. Some of them are located in the downstream areas of the storm centres. Fig. 3 also comparing the locations of the landslide dams with the isohyets. Twelve landslide dams formed in the region within which the cumulative rainfall depth is between 1,000 mm and 2,500 mm.

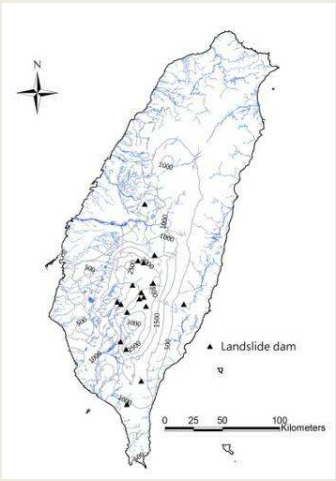


**Fig.3** Locations of landslide dams formed during Typhoon Morakot..

**(3) Driftwoods**

Driftwoods are one source of damages to various facilities, such as bridges, levees, and dams. Driftwoods may collide with these facilities, and may cause disablement of them. Driftwoods in river channels may obstruct the water flow and may raise the water level of flood. The increased water level enlarges the damage of flood.

After Typhoon Morakot, many bare lands and landslides can be observed from the satellite imageries. This implies that the vegetation at these places was destroyed during Typhoon Morakot. The resulted driftwoods rolled down river channels or were probably moved to river channels by the strong surface runoff. Then the driftwoods in the river channels were flushed downstream to the sea or stopped by dams, bridges and other facilities. From our field investigation, the driftwoods were observed in the downstream areas of the storm centres.

## 3. POST-DISASTERS RESCONSTRUCTION

The extremely heavy rain brought by Typhoon Morakot over the southern region of Taiwan during August 8-10, 2009 due to accompanied strong southwesterly monsoonal flow. The large extent, high intensity and long duration rainfall caused the most serious disaster in the past 50 years in Taiwan. Villages, roads and farms were flooded after days of incessant torrential rain. Landslides and mud flow destroyed the memorial scenery.

**Table 2** The strategy for mitigation and reconstruction of the hazardous areas.

| Class | Item | Goal | Strategy | Method | |
|---|---|---|---|---|---|
| | | | | Slope | Channel |
| Sloeland Conservation | Sediment | Balance | • Sediment Budget Balance<br>• Disasters Mitigation<br>• Environment Harmonizing | • Erosion Control<br>• Landslide Treatment<br>• Deep-Seated Landslide Countermeasure<br>• Drainage Works…etc. | • Dredging<br>• Detention<br>• Diversion<br>• Deposition<br>• Slowing etc. |
| | Hydrology | | | | |
| | Ecology | Diversity | • Habitat Building<br>• Cultured Species | • Habitat Recovery and Construction<br>• Shelter Construction<br>• Migration and Reproduction | |
| | Landscape | Naturalization | • Natural Recovery<br>• Structural Remedy | • Planting<br>• Natural Recovery etc. | |
| Slopeland Management | Serious Damaged | Healing | Limitation | • Specific Regulation Zoning<br>• Remote-Sensing Monitoring<br>• Illegal-Use Discipline<br>• Education etc. | |
| | Lightly Damaged | Resting | Monitoring | | |
| | Non-damaged | Utilization | Management | | |

The characteristics of the rainfall and induced sediment-related disasters are :

(a) Large extent: large disaster area, large amount of unstable sediment.

(b) Many disaster types: different disaster types caused by different conditions.

(c) Serious impact: long period need for recovery and reaching new stability, severe management coditions.

The strategy of watershed conservation and disaster mitigation for the hazardous catchment areas of the Typhoon Morakot are list in Table 2. Based on the classes and items of the problems met, we list the refer solutions for the planner of the reconstruction. The phases of the reconstruction are divided into: (a) Safety homeland(b) Infrastructures protection and (c) Conservation management.

### (1)Safety homeland

Typhoon Morakot brought record-breaking rainfall and did great damage. Many homesteads were flooded and struck by huge amount of sediment. In order to ensure life and property, relocating the residents, setting up buffer zones and constructing levees are response strategies to prevent from disaster risks. Disaster training programs are also provided to the public for disaster preparedness. Every endeavor is made to reconstruct a comfortable homestead in harmony with the nature.

The actions of the Soil and Water Conservation Bureau included took instant measures to respond the demand of villages protection and to preserve the community safety. The objectives are to prevent from secondary disaster, increase slope stability and reduce the risk potential of landslides and debris flows.

**(2) Infrastructures protection**

The water receded gradually after the disaster. It takes a long time for the heavily damaged disaster area to recovery. Repair of the lifelines and linking road and some urgent works were to be done in this phase. In order to prevent from secondary hazard, further extensive reconstruction work could be done after the environment conditions have become stable.

River channels were dredged, link roads were repaired in the frame of the urgent measures. The slope and the rivers recover the stability. It is ready for homestead reconstruction. Also the time scale and spatial scale involved should be taken account to the plan (Fig. 4). For the different time scale can be considered in the infrastructures protection. In short-term case, only watershed C is considered. But for long-term consideration, A, B and C are all take account.

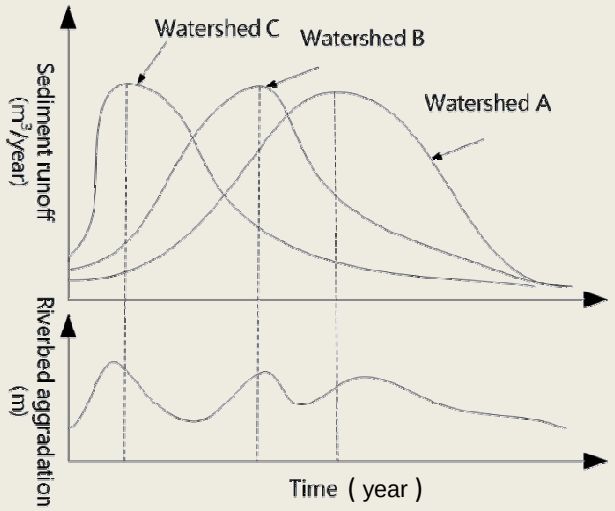


**Fig.4** The time and spatial consideration of the infrastructures protection.

**(3) Conservation management**

The recovery status of a watershed could be followed by a regular "health check". According to the results, Reinforced measures should be taken for the watersheds that get worse, and maintain work should be done for improved watersheds.

For the reason, we simulated the future profile-Gaoping river basin (Fig. 5). The simulation following the damages of the typhoon Morakot, and input the impact of the average annual typhoon rainfall (~3 events / year ), the results shows mainly deposition area are located in inside of valley area, large uplift of riverbed: 2~10 m. The results also indicates there will be highly risk in middle stream areas, and the long-term recovery.

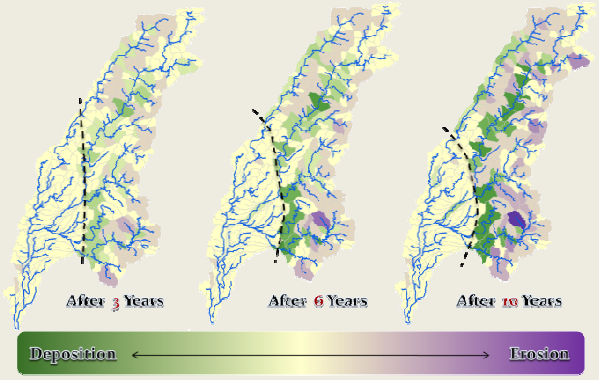


**Fig.5** The long-terms simulation of future profile of the Gaoping river basin..

The disaster area is separated in regions. The reconstruction plan is carried out in stages. The time table is then determined according to the demand of each region under the goal that the disaster area could recover from damages and retrieve its function as soon as possible.

**4. MANAGEMENT OF THE RECONSTRUCTION**

**(1) Classification of catchment areas**

Based on the environment factors (landslide ratio and riverbed variation) of 88 hazardous villages in Typhoon Morakot, we carry out the characteristic analysis of the hazardous catchment areas. The results are divide into 3 classes (Fig. 6).

(a) Class 1: seriously damaged ( landslide ratio＞8 %, riverbed variation＞5 m).

(b) Class 2: lifeline breakage ( landslide ratio 2~8 %, riverbed variation 2~5m ).

(c) Class 3: safety villages ( landslide ratio＜ 2%, riverbed variation＜2m).

The damage extent of the disaster areas was newly graded according to the present state of protected objects, changes of collapse rate and river channels in the watershed (Table 3). The risk potential has been reduced because some conservation measures have been done. But there is still a large amount of unstable sediment. It takes time for the rivers to transport the residual sediment.

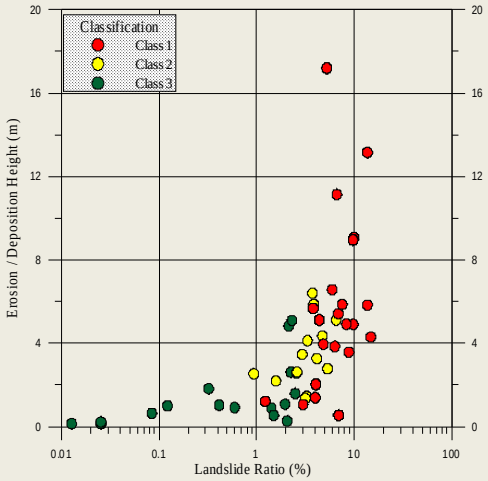


**Fig.6** Characteristic Analysis of the Hazardous Catchment Areas.

**Table 3** Characteristic index of the risk level of the hazardous catchment areas.

| Factors | Risk: < —Low — Moderate — High > | | |
|---|---|---|---|
| Protection Targets | **III** No village | **II** Village safety/ Lifeline breakage | **I** Village damaged |
| Landslide Ratio | **3** < 2% | **2** 2% ≦ , ≦ 8% | **1** > 8% |
| Riverbed Variation | **C** < 2 m | **B** 2m ≦ , ≦ 5m | **A** > 5 m |

**(2) Evaluation of risk level of catchment areas**

According to the field survey of the main disaster sites after the typhoon Morakot, the impact extent has been kept under control after conservation management works were done. People have a will to return to their houses. The reconstruction strategy needs to be revised. Protection measures have top priority.

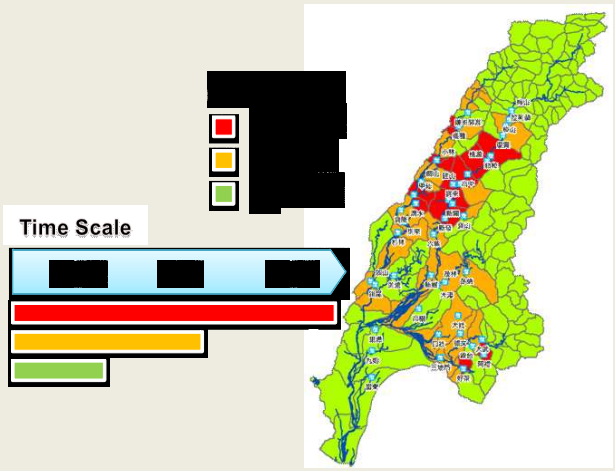


**Fig.7** The result of the evaluation of risk level of catchment areas in the Gaoping river basin.

We apply the seasonal check of the hazardous catchment areas, to check the processes of the recovery or degenerated of each catchment area (Fig. 7). Also we recheck the renovation strategy by watershed damage investigation、village damage investigation、village disasters simulation and then determine the management scale for modify of the renovation strategy.

**(3) Combination of hardware and software disaster prevention measures**


Through the combination of hardware and software disaster prevention measures (Debris flow monitoring, investigation, dredging and disasters control works). Target on conservation of watershed, protection of water resources and hazard mitigation. Strategy of watershed conservation and hazard mitigation should be done by structural engineering and risk management methods. Through the PDCA cycle (Fig. 8 : Walter A. Shewhart, 1980), Plan→Do→Check→Act continue to improve the techniques of the risk management.

Sediment control, dredging, survey of risk factors, protection of life and property, enhancement of resource utilization, water conservation, increase of cover ratio, ensuring traffic, promotion of economic and transport of agriculture products account for the reconstruction.

## 5. CONCLUSION

Climate changes that accompany anthropogenic global warming are a serious issue as they are projected to cause serious, large-scale adverse impacts that may even threaten people' s lives. These impacts will affect a wide range of areas as both the intensity and frequency of sediments disasters are expected to increase due to frequent heavy precipitation events, intensified typhoons.

The objectives of this study are to evaluate the benefit of reconstruction and management for the main disaster watersheds, to arrange the results of conservation management of the sediment-related disaster area and to review and amend those strategy and countermeasures.

The framework for procedures to whole watershed conservation should be develop. The strategy and adaptation measures mainly targets practitioners engaged in the basin-based management of the slope land in country. In response to the disaster it is necessary to grasp the change of the disaster state and make a management process to follow the reconstruction and evaluate the risk. Settling basin, flood retaining zone are measures to protect the residents. The balance of sediment transport and the channel stability could be accelerated through dredging of unstable sediment. The recovery process of the disaster area struck by typhoon Morakot could be promoted through this study.

**ACKNOWLEDGMENT:** The study had support by the Water Conservation Bureau ( Project idex: SWCB-100-138 ), Council of Agriculture, Executive Yuan, Taiwan .

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# CODATA and Emercom of Russia joint workshop

## *1. TIEMS, CODATA and Emercom of Russia joint workshop during the 33rd General Assembly of the European Seismological Commission*

During 2011-2012, the TIEMS Regional Director Europe contributed to the organization of the joint workshop "Earthquake Loss Estimations in Emergency Mode" within the 33 General Assembly of European Seismological Commission (ESC) "Seismology without boundaries", 19-24 August, 2012 in Moscow, Russian Federation. The year 2012 is the 60th anniversary of ESC.

***The main thematic areas of the ESC 2012 in Moscow were:***

1. Structure of Earth's Interior.
2. Physics of Earthquakes and Related Fields.
3. Earthquake Forecasting and Prediction.
4. Seismicity Patterns: Natural and Induced.
5. Data Acquisition and Processing.
6. Artificial intelligence in geophysical data studies.
7. Non-instrumental Seismology.
8. Seismic Hazard, Time Dependent Hazard and Risk.
9. Recent Significant Earthquakes.
10. Seismology, Social Sciences, Education and Outreach.

The joint TIEMS, CODATA and Emercom of Russia workshop was organized within the eighth thematic area "Seismic Hazard, Time Dependent Hazard and Risk". The workshop was participated by scientists and experts in seismic risk assessment and management from different countries: China, Italy, France, Kirgizstan, Korea, Finland, UK, Greece, Germany, Haiti, Iran and Russia (program is attached).

As the experience of recent disasters in Japan, Chile, Haiti, China, Italy, Indonesia, Turkey and many others gave an evidence that authorities who are responsible for emergency response are lacking prompt and reliable information on the earthquake disaster, the special attention was given to the source of uncertainties in earthquake loss simulation in emergency mode and reliability of such estimations provided by different agencies.

It was stated that main constrains on accuracy/reliability of loss estimations in emergency mode come from:

- input data (event source parameters);
- free parameters in the models used for simulation (propagation/attenuation models, vulnerability/fragility functions, population impact models);
- data bases (cartographic and thematic, including inventory about elements at risk) used in loss computations.

The participants of the workshop agreed that an obvious way of improving the whole process of earthquake loss estimations in emergency mode is to confront the assessment output with the known consequences of previous events; *i.e.* data on impact of past earthquakes could help "calibrating" somehow the simulation models; furthermore, scenario earthquake approaches suffer from more or less badly-known parameters (inventory of objects-at-risk, vulnerability/fragility functions of buildings submitted to shaking, *etc.*): to a

certain extent, these weaknesses can be partially mended through calibration procedure, in addition to improvement of available databases. In this respect, the information on physical and socio-economical consequences of past damaging earthquakes is very critical. At the moment, data sets on impact of past earthquakes are not readily accessible to many potential users and can hardly be directly applied for comparison with simulated results because of lack the standard formats. In this respect coordinated and international efforts should be undertaken in order to solve the problem.

The questions of organization and provision of medical support have been discussed, as well as peculiarities of dynamics and structure social loss during earthquakes with different intensity. It was mentioned that the main difficulties in scientific based logistic planning in the case of emergency due to strong earthquakes are dealt with specific peculiarities of each events, as well as with vulnerability of existing buildings stock and resources and manpower involved in medical response which result in different quantitative and qualitative characteristics of sanitary casualties (injuries). The participants noted the necessity of creation of unified classification of the earthquake - related injuries and medical registration system, which may contribute to collecting reliable information on injury structure and medico-evacuation pattern of the casualties.

During the workshop case studies about loss estimations systems in China, Russia, Kirgizstan, Germany which included description of procedures and data used for computations and results of loss computations for recent events in China, Turkey, Haiti and other countries, have been delivered and discussed. Special interest was raised by the presentation about the Chinese rapid assessment system for disaster situations (RASDIS) developed in Beijing Normal University and applied in the National Disaster Reduction Center of China as a part of the running centralized platform. The system was applied for the Yushu earthquake ($M_s$7.1 ) on April 14, 2010 loss estimation. The event resulted in collapsed buildings in Yushu County, Yushu Tibetan Autonomous Prefecture in Qinghai Province and caused tremendous damage in the urban areas of Gyêgu town, Qamdo, etc, with death about 3,000 people, injury about 12,000 people and damages of thousands of buildings.

In two months after the Haiti 12 January 2010 earthquake the Sismo-Haiti project, supported by the Technical University of Madrid, started as an answer to a required help by the Haiti government. The damage data obtained after the 2010 earthquake has been used to calibrate the validity of the capacity and fragility curves by choosing an appropriate ground motion relationship. Additionally, the influence of other ground motion relationships has been discussed and used for the scenario earthquake computation for the country. It was mentioned in the talk of Spanish and Haiti scientists that the seismic risk for Port-au-Prince remains high in most of the districts, showing very vulnerable areas. Therefore the local authorities have to drive their efforts towards the quality control of the new buildings, the reinforcement of the existing building stock, the establishment of seismic standards and the development of emergency planning also through the education of the population.

The efforts on creation of natural coseismic effect database delivered during the workshop had definite interest. Based on our IS, the database contains information on landslides and rock falls, liquefactions including buried forms called seismites, primary and secondary brittle deformations, hydrogeological anomalies, sinks, anomalous waves and other less significant effects, as well as instrumental earthquakes that occurred during 1950–2008 on area bordered by 42°–62°N and 80°–124°E. This territory covers north-east of Kazakstan, Mongolia and almost all southern sector of Siberia in Russia.

## *2. The EGU special sessions "Natural hazard impact on technological systems and urban areas" and "Modelling of dangerous phenomena, and innovative techniques for hazard evaluation and risk mitigation"*

On April 22-27, 2012 TIEMS members participated in the special sessions "Natural hazard impact on technological systems and urban areas" and "Multi-type hazard and risk assessment" during the European Geosciences Union (EGU) General Assembly in Vienna, Austria. The EGU Assembly is usual huge scientific event every spring in Europe and this year was not exception: 4,436 oral and 9,092 poster presentations were delivered during the 530 EGU sessions. At the conference 11,275 scientists from 95 countries participated, of which 28% were students, 15,000 copies of EGU.

The main contribution to organization of the sessions "Natural hazard impact on technological systems and urban areas" and "Multi-type hazard and risk assessment" were done by representatives of Joint Research Center (JRC) under European Commission and the Global Earthquake Model (GEM) Foundation.

The paper "Estimation of loss caused by earthquakes and secondary technological hazards" by N. Frolova et al has been published by Copernicus Publications on behalf of the European Geosciences Union (Nat. Hazards Earth Syst. Sci., 11, 1–9, 2011, www.nat-hazards-earth-syst-sci.net/11/1/2011/, doi:10.5194/nhess-11-1-2011, © Author(s) 2011).

Two chapters of the book "Earthquake Casualties Estimations in Emergency Mode" and "Casualty Estimations due to Earthquakes: Injury Structure and Dynamics" were written by TIEMS Regional Director for Europe.

## 3. *Cooperation with interested international organizations*

Within the reported period the TIEMS Regional Director Europe contributed to cooperation of TIEMS with various European and international organizations, such as European Seismological Commission (ESC), European Association on Earthquake Engineering (EAEE), European Geosciences Union (EGU), the Committee on Data for Science and Technology (CODATA), International Association for Earthquake Engineering (IAEE), Joint Research Center (JRC) under European Commission, International Association on Physics of the Earth Interior (IASPEI), the Global Earthquake Model (GEM) under OECD, Global Alliance for Disaster Reduction (GARD), International Community on Information Systems for Crisis Response and Management (ISCRAM), Global Risk Forum (GRF Davos) and is the member of the IDRC Davos 2012 - Scientific & Technical Advisory Board.

Nina I. Frolova

Regional Director for Europe

**Annex 1**

**Program of**

**"Earthquake Loss Estimations in Emergency Mode (SHR-9)"**

**Joint workshop of TIEMS, CODATA and EMERCOM of Russia**

23 August 2012, Thursday

| **Lecture hall** | **GREEN** |
|---|---|
| **Conveners** | **J. Bonnin, N. Frolova, G. Qu, T. Marchenko, A. Samberg** |
| 10:00-10:15 | Reliability of Earthquake Loss Estimations in Emergency Mode (SHR9: O1)<br>N.I. Frolova, J. Bonnin, V.I. Larionov, L.S. Chepkunas |
| 10:15-10:30 | China Earthquake Loss Rapid Estimations System: a Case of Ms7.1 Yushu Earthquake (SHR9: O2)<br>L.X. Wu, Z. Wang, J.Q. Yu |
| 10:30-10:45 | Real-Time Forensic Disaster Analysis (SHR9: O3)<br>F. Wenzel |
| 10:45-11:00 | Using 2010 Haiti Earthquake Data for Calibration of Future Seismic Risk Scenarios in Port-Au-Prince (Haiti) (SHR9: O4)<br>S. Molina, Y. Torres, M. Navarro, D. Belizaire, B. Benito, J. Moise |
| 11:00-11:15 | Compilation and Preparation of Earthquake Scenario Based on Float and Scenario Fault Models by Fishnet Method, a Case Study, Gorgan City in Iran (SHR9: O5)<br>A. Beitollahi, A. Nemati |
| 11:15-11:30 | Coffee Break |
| 11:30-11:45 | Earthquake Casualty Estimation in Emergency Mode: Structure and Dynamics of Losses (SHR9: O6)<br>S.F. Goncharov, N.I. Frolova |
| 11:45-12:00 | The Importance of Calibration and Validation of Earthquake Catastrophe Models for the Insurance Industry (SHR9: O7) |

| | | |
|---|---|---|
| | O. Gaspa Rebull, G. Trendafiloski, A. Podlaha | |
| 12:00-12:15 | On Connection between Loss Values from Earthquakes and Social and Economic Situation: an Application to Damage Prognosis (SHR9: O8)<br>M.V. Rodkin, M.X. Svarov, I.A. Moshchenko | |
| 12:15-12:30 | Exposure and Vulnerability Estimation from Satellite and Ground-Based Remote Sensing for Seismic Risk Assessment in Bishkek, Kyrgyzstan (SHR9: O9)<br>M. Wieland, M. Pittore, S. Tyagunov, S. Parolai, J. Zschau | |
| 12:30-12:45 | Developing of Database on Coseismic Effects (SHR9: O10)<br>O.V. Lunina, A.V. Andreev, A.A. Gladkov | |
| 12:45-13:00 | Emergency Communications Modes in Disaster Scene: The-State-of-the-Art; Horizon 2020 - the New EU Framework Programme for Research and Innovation (SHR9: O11)<br>A. Samberg | |

| | | | |
|---|---|---|---|
| 17:30-18:30 | **POSTER SESSION-4: Thursday, 23 August 2012**<br>SHR-9: Earthquake Loss Estimations in Emergency Mode | | |
| **Hall** | **2nd Floor, under PLENARY Hall** | | |
| SHR9: P001 | ASSESS TO REDUCE THE RISK OF SCHOOL BUILDINGS AT REGIONAL LEVEL | D. Slejko, S. Grimaz, F. Cucchi, F. Barazza, S. Biolchi, E. Del Pin, R. Franceschinis, J. Garci, N. Gattesco, P. Malisan, A. Moretti, M. Pipan, S. Prizzon, A. Rebez, M. Santulin, L. Zini, F. Zorzini | 58658 |
| SHR9: P002 | ROLE OF SEISMIC FACTORS IN ACTIVATION OF NATURAL, TECHNOLOGICAL, AND BIOSOCIAL CATASTROPHES | S. Bayda | 58404 |
| SHR9: P003 | PREDICTING THE EFFECTS OF DESTRUCTIVE EARTHQUAKES IN VIEW OF REPEATED EXPOSURE TO SEISMIC LOADS, (additional from Emercom) | M.M. Dzybov, S.P. Sushchev, V.I. Larionov, N.I. Frolova, O.M. Saltykova, G.M. Nigmetov | 62173 |

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| SHR9: P004 | RELATIONSHIPS BETWEEN EARTHQUAKE PARAMETERS AND SPATIAL DISTRIBUTION OF ASSOCIATED LIQUEFACTIONS IN THE SOUTH OF SIBERIA AND MONGOLIA | A.V. Andreyev, O.V. Lunina | 57934 |
| SHR9: P005 | MONITORING SLOPE INSTABILITY USING A COMBINED GPS AND INSAR APPROACH | G. Drakatos, D. Paradissis, D. Anastasiou, P. Elias, A. Marinou, K. Chousianitis, X. Papanikolaou, E. Zacharis, P. Argyrakis, K. Papazissi, K. Makropoulos | 57634 |
| SHR9: P006 | SEISMIC RISK AND MAJOR HAZARD INDUSTRIAL PLANT | M. Ciucci, A. Marino | 57840 |
| SHR9: P007 | DEVELOPMENT AND ESTABLISHMENT OF AN INTEGRATED ALERT SYSTEM FOR PORTS TO COUNTERACT SEISMIC HAZARD AND SHARE SEISMIC DATA IN KOREA | C.G. Sun, B.S. Jeong, I.S. Lim, J.S. Lee | 57359 |
| SHR9: P008 | EVALUATION OF GEODYNAMIC FACTORS IN THE FORMATION OF NEGATIVE EXOGENOUS PROCESSES ON THE OIL PIPELINE ROUTE | A.L. Dorozko, V.M. Makeev, D.O. Sergeev, J.V. Khalilova, A.N. Ugarov, S.P. Sushchev | 60144 |