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International Center for Urban Safety Engineering

Institute of Industrial Science
The University of Tokyo

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CONTRIBUTION OF FORESTS TO SOLVING GLOBAL WARNING ISSUES

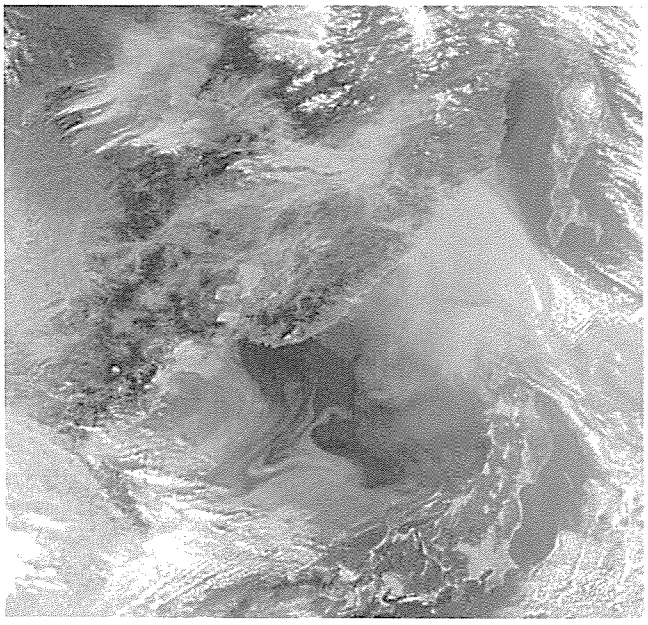
By

*Haruo Sawada**

Forests provide timber, fuel wood and non-timber forest products for our daily life. At the same time, forests provide various ecosystem services. Various solutions based on technical improvement have been tried to address the negative influence of global warming on citizens. However, these measures are not advanced enough to save natural forests. According to the Kyoto Protocol, Japan is expected to reduce CO_2 emissions by 6.0%. 60% of them, that is 3.7%, is expected from the forest sector through forest sinks. Japan has developed the forest management information system, which introduced various types of GIS and satellite data, for that purpose. We are requested to submit appropriate methodologies to make the emission reduction from deforestation and forest degradation effective in the world for the post Kyoto Protocol. Forests could play as a generous donors for selfish people until the global environment issues arise in the world. Many forests are now under the impact of global environment changes. How can we return the favor to the forest ecosystem through countermeasures to global warming?

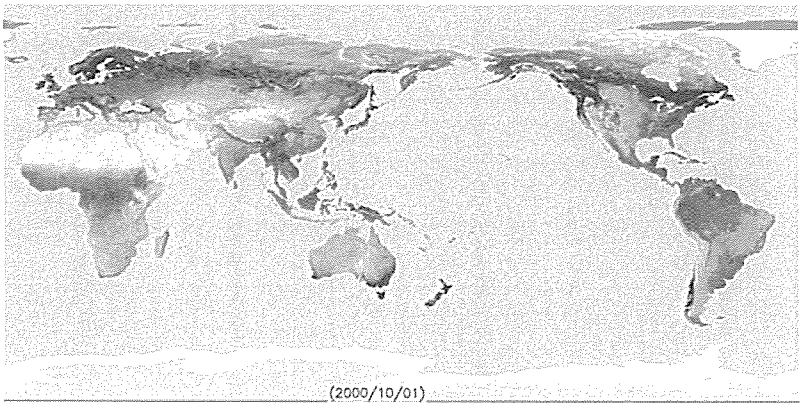
Human beings keep prospering on the Earth supported by natural environment and forests are indispensable for sustaining such conditions. Although many cities have developed on forested land, we are still supported by the photosynthesis of natural vegetation. While human activities contribute to climate changes in many direct and indirect ways, CO_2 emissions from human activities are considered the largest anthropogenic factor affecting climate change.

Various solutions based on technical improvement have been tried to address the negative influence of global warming on citizens. However, these measures are not advanced enough to save natural forests. History shows that the destruction of the surrounding natural environment brought the collapse of prosper cities.



Smoke from forest fires in Siberia covers northern Japan (observed by MODIS/MAFFIN)

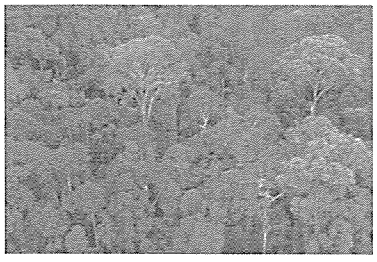
Forests provide timber, fuel wood and non-timber forest products for our daily life. At the same time, they provide various ecosystem services, for example, sequestering carbon from the atmosphere, conserving biodiversity, preventing landslides, purifying water, and providing recreation sites. Forest environmental services also include the regulation of the water cycle and climate, soil formation, and nutrient recycling. While forest products are widely known, importance of forest services is often not well recognized. However, it becomes important to evaluate these environmental services, so that decisions for forest land use are based on the true worth of forests.



Noise-free NOAA color composite image of the world in early October 2000, created by Vegetation Index (NDVI), and surface temperature (Green color: dense leaves, Pinkish color: no leaves, and white color: snow and ice)

FOREST SITUATION IN THE WORLD

Forests are the most productive terrestrial ecosystems, which makes them attractive for climate change mitigation. Forests cover a total of 40 Mkm^2 (about 30% of all land in Earth) with 42% in the tropics, 25% in the temperate, and 33% in the boreal zone. Changes in vegetation cover affect surface energy and water balances at the regional scale, from boreal to tropical forests. In every region, fire causes big problems, changing vegetation covers and emitting gases to the atmosphere. The densities of CO_2, methane and N_2O in the atmosphere have been increasing since 1970s. Main sources of CO_2 increment are considered to be the use of fossil fuel (two thirds) and land use changes including deforestation (one third). Accurate assessment of trends in forest carbon balance requires long-term monitoring of many replicate plots or very large plots. For assessing the global land-atmosphere flux, a modeling study is also required, because observation sites for ecosystem carbon fluxes are too sparse and forest ecosystems are too heterogeneous to assess the global net flux with sufficient accuracy.



Tropical forests

Tropical forests

During the past two decades, the CO_2 flux caused by land use changes has been dominated by tropical deforestation. Tropical lands are found to be either carbon neutral or sink regions, despite widespread deforestation. This implies carbon uptake by undisturbed tropical ecosystems. However, forest clearing is a large contributor to the land use change component of the atmospheric CO_2 budget. Extreme events can cause mass mortality of individuals and contribute significantly to determining structures in ecosystems.

Drought plays an important role in forest dynamics and causes big forest fires. An example occurred during the 1997 to 1998 El Nino event, when large fires in the Southeast Asia are estimated to have released 0.8 to 2.6 GtC. Fire frequency and intensity are critical to climate change and land use. A shift from tropical rainforest to savannah would result in a net flux of carbon from the land surface to the atmosphere. The future evolution of the CO_2 budget in forest land is, therefore, of critical importance.

Temperate forests

Although the temperate forest area is smaller than the two other regions, forests are expanding and play as sinks for CO_2. According to the Forest Resource Assessment 2005 of the Food and Agriculture Organization of the United Nations, China is the leading country in forest plantation over the last decade. Many modeling studies have demonstrated that land cover changes have local and regional climate impacts on temperature and precipitation changes. However, current literature cited in the Intergovernmental Panel on Climate Change Fourth Assessment Report (IPCC AR4) has large discrepancies in conclusions. For example, Snyder et al. found that removal of northern temperate forests gave a summer warming of 1.3°C and a reduction in precipitation of 1.5 mm/day. Conversely, Oleson et al. reported that removal of temperate forests in the USA would cool summer temperatures by 0.4 to 1.5° C and probably increase precipitation, depending on the model and prescription of vegetation. The discrepancy between these two studies was caused by different assumptions.

Boreal forests

The spatial impact of insect damage is significant comparing to fire in some ecosystems, especially in boreal forests. Spruce bud worm (SBW), for example, defoliated over 20 times the area burned in eastern Ontario between 1941 and 1996. Models indicate increased boreal forest reduces the effects of snow albedo and causes regional warming. The IPCC AR4 pointed out that migration of boreal forest northward into tundra would initially lead to an increase in carbon storage in the ecosystem due to the larger biomass of trees compared to that of herbs and shrubs. However, over a longer time (e.g., centuries), changes in soil carbon would need to be considered

to determine the net effect.

KYOTO PROTOCOL

Role of forest for Kyoto Protocol

The UN Framework Convention on Climate Change was adopted in 1992 to address global warming. The 3rd session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP3) was held in Kyoto in 1997. The Kyoto Protocol was adopted there. The Protocol stipulates that 38 countries will reduce their greenhouse gases, including CO_2, to total emissions 5.2% below the 1990 level during a period from 2008 to 2012. For example, reduction below 1990 levels of 8% is required for the EU, 7% for the U.S., 6% for Japan, and 0% for Russia.

The Japanese government decided the General Principles to cope with global warming in June 1998. According to these General Principles, energy-derived CO_2 emissions control is to be 0%, the emissions control of methane, etc., is to be –0.5%, reduction through technical innovation, etc., is to be –2.0%, reduction by forest sinks is to be –3.7%, the emissions control of chlorofluorocarbon substitutes, etc., to be +2%, and the use of the Kyoto mechanisms is to be –1.8%, which will be a total of –6%. Because the reduction by forest sinks is set to be –3.7% out of the total -6.0%, more than 60% of reduction of CO_2 is expected from the forest sector in Japan.

Japanese forest management for Kyoto Protocol

Forest area is about 24.8 million ha, which is 67% of the total land area in Japan. Considerable parts of forests, about 10 million ha, have been planted since 1950s. However, 80% of planted forest are immature and require adequate care, such as pruning, weeding, thinning, etc. In the Kyoto Protocol, the national target for forest carbon sink is 13Mt-C (47Mt-CO_2). At the first commitment period, 'Forest Management' under Kyoto Protocol article 3.4 was defined as follows: *'Forest management' is a system of practices for stewardship and use of forest land aimed at fulfilling relevant ecological, economic and social functions of the forest in a sustainable manner*. Considering the concept of that definition, Japan enhances forest management practices focusing on sustainability of forest productivity as well as multiple function of forest. The Forest Management concept in IPCC AR4 is as follows: *"In the long term, a sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual sustained yield of timber, fiber or energy from the forest, will generate the largest sustained mitigation benefit."* Related to these activities, the Forestry Agency developed the forest management information system which introduced various types of GIS data. The system is composed of orthophotos with 1m resolution in 1990, ortho-images of SPOT satellite with 2.5m resolution, Landsat images with 28.5m resolution, forest boundary maps, field sampling data, elevation data as well as forest inventory records. Land cover changes were interpreted at every 500m of all over the country and the Japan National Forest Inventory System with 4km grid is also combined with this system. Japan adopts the stock change method to evaluate the carbon fixation in forest during the five years of the Kyoto Protocol, which was just started last April (2008-2012).

REDD for Post Kyoto Protocol

Just before the Kyoto Protocol started in 2008, the COP13 was held in Indonesia. One of the main discussion targets was emission reduction from deforestation and forest degradation (REDD). It aims to strengthen stopping deforestation rather than promoting plantation because very few projects are accepted as Clean Development Mechanism (CDM) plantation in the Kyoto Protocol although the concept of the CDM plantation was accepted. Furthermore, it is considered that to stop deforestation is much easier and more effective than plantation. The Center of International Forest Research organized the meeting. Here, I introduced two statements of the summaries as follows:

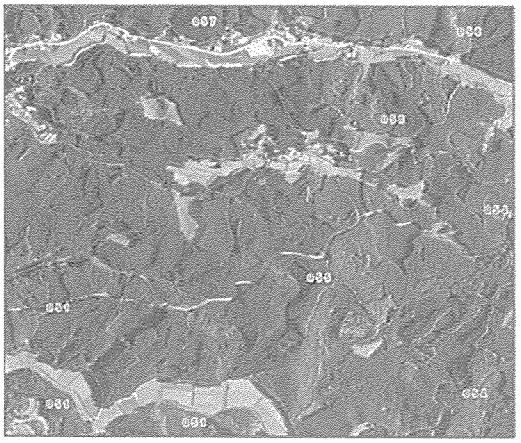
1. We need better data on forest degradation and better methods for monitoring change in carbon stocks overall, particularly with respect to forest degradation and peat lands.
2. We need new methods for assessing the vulnerability of forest ecosystems to climate variability and change.

We are requested to submit appropriate methodologies to make REDD effective in the post Kyoto Protocol world. Many researchers of forest remote sensing sector are focusing their activities on these REDD issues.

CONCLUSION

Forest provides the land for human beings to settle and develop cities. People cut the trees around the city and use woods and non-timber products for their consumption. Forests could play as generous donors for selfish people until the global environment issues arise in the world. Many forests are now under the impact of global environment changes. How can we return the favor to the forest ecosystem?

** ICUS Professor*



Orthophoto with 1m resolution used as the base data of Forest Information in Japan for the Kyoto Protocol

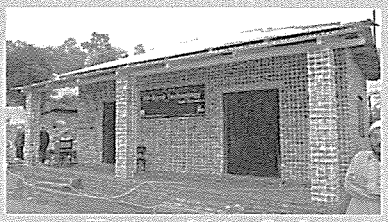
Towards more earthquake resilient built environment in the aftermath of the 2008 Sichuan Earthquake

On May 12, 2008, a Mw7.9 earthquake hit the Sichuan Province in China causing almost 90,000 fatalities and missing, more than 350,000 injured, and leaving almost 5 million people homeless. First of all, I would like to hereby express our condolences to the affected people. The earthquake focal depth was less than 10km and the fault plane area estimated was approximately 300 by 30 kilometers. As a result, a huge region is supposed to have been subjected to Japanese Meteorological Agency Intensities 6+ or more although information in this respect is still limited.

Building damage was widespread. Mass media promptly pointed out that design and construction problems and corruption were to blame for such huge damage. Although I have no information on these factors, it is important to recognize that the intensity of the shaking was so strong that even buildings constructed following the Chinese Seismic Design Code experienced damage and failure.

Soon after the Sichuan Earthquake, the Central Disaster

Devastating damage caused by the 2008 Sichuan Earthquake (Photo courtesy of Prof. K. Konagai)



House model retrofitted with PP-band mesh in Kashmir area

Management Council, Japanese Government, released the estimate of damage expected in case inland earthquakes occur under Osaka and Nagoya Plains. These events are expected to be magnitude 7.6, with an energy release equivalent to about one fourth of that of Sichuan Earthquake. The numbers are somber: 42,000 people would die due to shake and fires, 560,000 structures would collapse due to the shake, and some 400,000 structures more would be lost by other effects including fires. This points out that Japan too, will face a huge catastrophe if a strong earthquake hits under a heavily populated region.

Japanese academic societies and their Chinese counterparts are discussing ways to collaborate for the reconstruction of the earthquake affected areas and several cooperation projects have started. In my research group, we have been working on a technique for retrofitting existing low earthquake resistant adobe/masonry houses which can also be used for new constructions. I believe that it can be very useful for the reconstruction. With this technique, adobe/masonry walls are wrapped on both sides with Polypropylene (PP-band) meshes which are then attached with passing through wire connectors. These bands are commonly used for packing and are inexpensive, durable, strong, and world-wide available. After the meshes are installed, the walls are plastered with mud or mortar, in case of adobe or masonry, respectively.

After the 2005 Kashmir Earthquake, a PP-band retrofitted house model was constructed to demonstrate the people in Muzaffarabad, one of the severest hit cities. A workshop to explain basic earthquake engineering and how to make houses stronger by PP-band meshes was carried out. During the workshop, two 1/6 model houses, one retrofitted and the other not, were shaken. Participants, which included government officials, practitioners, decision makers, researchers, NGO/NPO leaders and personnel, funding agencies personnel, mass media, and the general public, were greatly impressed by the improved performance.

Together with the previous initiative, the research group led by Prof. Mikiko Ishikawa, The University of Tokyo, has proposed to the local government of Dujiangyan a basic plan for the restoration of their city. I worked with Prof. Ishikawa on this project as a member of her group.

(By K. Meguro)

ICUS visited PARI

ICUS members visited the Life Cycle Management (LCM) Research Center, Port and Airport Research Institute (PARI) which is located near Yokohama on August 20, 2008. In 2006, LCM-PARI and ICUS exchanged a Memorandum of Understanding. In November 2007, Dr. Hiroshi Yokota, LCM center director, became ICUS Visiting Professor.

PARI's main goals are to facilitate the smooth and efficient construction of ports and airports and researching, developing, and improving technologies for constructing ports and airports in Japan. PARI (http://www.pari.go.jp) has four departments: Research Planning and Administration Department, Marine Environment and Engineering Department, Geotechnical and Structural Engineering Department, and Construction and Control Systems Department, and thee centers: Airport Research Center, Tsunami Research Center and LCM Research Center.

ICUS members visiting PARI

Six facilities with advanced and unique technologies were visited: Large Hydro-Geo Flume (LHGF), Intertidal flat experimental facility, Intelligent wave basin for maritime environment, Unmanned underwater working system, Underwater 3D Shake Table, and Large Scale Structure Testing Facility. Partnership between ICUS and PARI was reinforced through this visit.

(By T. Endo)

RC-62 held meeting

The Research Committee 62 (RC-62), "Technologies for Evaluation of Aging Infrastructure Performance Degradation," held its second and third meetings on July 17 and August 21, 2008. Self-introductions were given by members continuing those of the first meeting. In these two meetings, Mr. Sugiyama (Chuo Kaihatsu Corporation), Mr. Hida (K & T Consultant), Mr. Yanase (Just Co., Ltd.),

Meeting snapshot

Mr. Sato and Mr. Hamada (Toa Corporation), Mr. Gomi (Nissan Rinkai Construction Co., Ltd.), Dr. Endo (ICUS), Mr. Fukuura (Taisei Corporation), Mr. Sugano (Tanekaka Civil Engineering & Construction Co., Ltd.), Mr. Shimizu (CTI Engineering Co., Ltd.), Mr. Tsunekuni (Tokyo Electric Power Services Co., Ltd.) and Mr. Ito (Tokyu Construction) introduced themselves and their research interests. Self-introductions of all members were finished. The activities of working groups are scheduled to begin this October.

(By Y. Kato)

RNUS Activities

RNUS visited Bangladesh for seismic vulnerability and risk assessment project

The RNUS/AIT team comprised of Prof. Fumio Yamazaki, from Chiba University, Dr. Pennung Warnitchai and Dr. Kawin Worakanchana visited Dhaka and Chittagong from June 29 to July 2, 2008. The main objectives of this trip were to investigate project progress, conduct visual inspection for building and lifeline system, and provide recommendations for lifeline assessment methodology as part of the RNUS project "Seismic vulnerability and risk assessment of Dhaka, Chittagong and Sylhet city corporation area."

RNUS/AIT team visited

On the first two days, the team joined the meeting held by the Asian Disaster Preparedness Center (ADPC) team, project counterpart in Dhaka, to discuss and learn about the project progress on building and lifeline system assessment, identification of dynamic behavior of buildings, quality control of survey, etc. The team also visited Prof. Jamilur Reza Choudhury, Marco Corsi and A.S.M. Maksud Kamal, members of the Technical Advisory Group of the project at Brac University and Disaster Management and Relief Bhaban, respectively, to discuss the project methodology.

On July 1, the team departed to Chittagong to meet Prof. Md. Jahangir Alam at Chittagong University of Engineering and Technology to learn about the progress of the building and lifeline inventory survey in Chittagong. Then, the team went to the field for investigating the accuracy of the collected building inventory. On July 2, the team visited the Water Supply and Sewerage Authority in Chittagong to interview, investigate and obtain the available potable water lifeline data.

RNUS held seminar

RNUS held a seminar which dealt with topics of "Remote Sensing" and "Urban Public Transport" on Sept. 16, 2008. In this seminar, three invited Japanese professors delivered special lectures:

- "Observation of environmental conditions of land cover in the Mekong River Basin based on Remote Sensing and field data" by Prof. Haruo Sawada (ICUS)
- "Bus Rapid Transit and Transit Oriented Development in the context of developing countries' urban transport" by Prof. Fumihiko Nakamura, Yokohama National University
- "Urban public transport development and environment" by Dr. Toshiyuki Okamura, Yokohama National University

A couple of dozens of students and staffs from the remote sensing and the transportation engineering field joined, and they had lively discussions after the presentations.

(By S. Tanaka and K. Worakanchana)

RC-58 members report their activities

In the framework of the Research Committee 58 activities, the working group WG-1b is studying district continuity plans (DCP) in case of a disaster. WG1b invited Mr. S. Mori, Secretariat of Tokyo Central Station Commuter Corps and had a discussion on a suitable DCPs on August 6.

The activity of Tokyo Central Station Commuter Corps is a good example related to DCP. In case of the Tokyo Inland Earthquake, many terminal stations are expected to fill with the refugees who can not return home due to the traffic disruption and congestion. Tokyo central station is one of these terminal stations.

Overview of Tokyo station and its vicinities

Commuter Corps was established in 2002 by companies in the area surrounding Tokyo central station in order to provide support for numerous refugees in case of Tokyo Inland Earthquake. It was authorized by Chiyoda Ward, Tokyo in 2004. As of August 2006, 63 member companies engage in activities.

(By M. Ohara)

Joint Student Seminar on Civil Infrastructure

The Joint Student Seminar on Civil Infrastructure was held at the Asian Institute of Technology in Bangkok, Thailand, on July 3 and 4, 2008. This seminar provided an opportunity for students from Japanese, Korean, and Thai universities to gather and share their research work. A wide variety of research topics was covered, from soil engineering and disaster mitigation to concrete engineering and traffic management. Five students from the University of Tokyo and one from the Tokyo Institute of Technology attended (from left to right in the photo): Naoki Sorimachi (Meguro Lab), Tomoya Kawasaki (Tokyo Institute of Technology), Hiroaki Ebizuka (Kuwano Lab), Michael Henry (Y. Kato Lab), Hiroaki Nishiuchi (Kuwahara Lab), and Yusuke Matsumura (Takeuchi Lab).

Guest professor and student presentations were given on the first day. On the second day, seminar participants visited the city air terminal and airport rail link construction site, an elevated light-rail project with service from the international airport to downtown Bangkok. The project manager gave a presentation about the construction methodology before giving a tour inside the city air terminal, which is under construction.

Student seminar participants during visit to construction site in Bangkok

Overall, the seminar was a chance for the students to meet and exchange ideas with people of different backgrounds and cultures. Some of the Japanese students presented for the first time outside of Japan, so it was a good chance to improve English communication as well as presentation skills. In addition, the construction site visit demonstrated the large difference in construction styles between different countries.

I would like to thank the International Center for Urban Safety (ICUS) for providing this opportunity for us to travel abroad and share the research work being conducted at the University of Tokyo with other people.

(By M. Henry, Kato Laboratory member)

BNUS Activities

Roundtable meeting was held

A roundtable meeting on the Establishment of the BUET-Japan Institute of Disaster Prevention and Urban Safety was held in the ITN Conference Room, at the Department of Civil Engineering, Bangladesh University of Engineering and Technology (BUET), Dhaka on August 23. The meeting was chaired by the honorable Vice Chancellor of BUET, Prof Dr. M. M. Shafiullah, and moderated by Prof. Ansary.

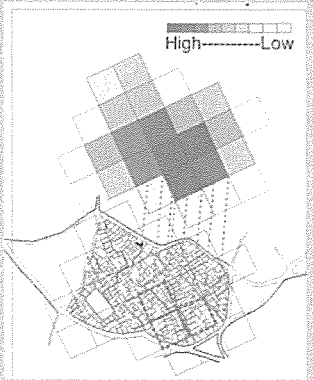
Presentations on the overview of the establishment of the institute by Dr. Raquib Ahsan, Associate Professor, Dept. of Civil Engineering, BUET, and on the proposed building structure based on the utilities and equipments required by Dr. K. Shabbir Ahmed, Professor, Dept. of Architecture, BUET, were given. After these presentations, opinions of stakeholders on the need and usability of such an institute in BUET and suggestions of stakeholders on the finalization of a mutual Memorandum of Understanding (MoU) were exchanged.

Members from several relevant institutions participated in the meeting. All agreed that this institute is a demand at this time and will be very fruitful as a link between academicians and professionals. They also agreed that BUET has the credibility and achievements to establish it.

Earthquake vulnerability reduction for urban areas

This research aims to analyze the issues related to physical urban vulnerability, particularly in Chittagong city, to arrive at strategies or policy based solutions that are necessary to support the redevelopment of urban areas, in Chittagong and Bangladesh, and how hazard motivated land use planning reduce earthquake risk.

Risk assessment analysis has been done at Nondon Kanon area. An alternative design solution is proposed showing the possibilities of earthquake vulnerability reduction and also rethinking the concept of Floor Area Ratio. Along with other supportive suggestions this exercise ends with designing earthquake resistant public facilitate buildings (schools), which may be used as a post disaster shelters.



Vulnerability of Nondon Kanon area evaluated with RADIUS

Prof. Abdul Jabbar Khan delivering his lecture

Lecture was held

BNUS organized a lecture on Raincut Erosion Control in Chittagong Hilly Areas on August 28, 2008, at ITN Conference Room of the Civil Engineering Building, BUET, Dhaka. Prof. Abdul Jabbar Khan from the Dept. of Civil Engineering, BUET delivered a lecture on the application of Geojute – a special type of woven type open mesh jute geotextiles, for protection against raincut erosion of hilly areas. After the presentation a roundtable meeting was held. The assistants appreciated the efforts and initiatives taken for examining the applicability of geojute.

(By M. Ansary)

Delegation from UN-ESCAP visited ICUS

On July 24, 2008, ICUS welcomed three guests from United Nations Economic and Social Commission for Asia and the Pacific (UN-ESCAP) located in Bangkok, Thailand. Prof. Meguro, ICUS director, and Dr. Wataru Takeuchi discussed disaster related issues with Dr. Xuan Zengpei, Director of Trade and Investment Division, UN-ESCAP, and his Japanese colleagues, Mr. Takao Akutsu and Ms. Atsuko Okuda. They were very interested in ICUS activities, especially a low-cost building retrofitting technology using plastic bands, a 3D-GIS-visualization system and a manual to support safe evacuation. Low cost technologies and knowledge transfer are key points in disaster relevant issues over Asia-Pacific countries, which are under the responsibility of UN-ESCAP. Prof. Meguro delivered an hour presentation and it was followed by another hour discussion. At the end, it was concluded that ways to carry out collaboration work between UN-ESCAP and ICUS, through RNUS office in AIT, should be sought.

(By W. Takeuchi)

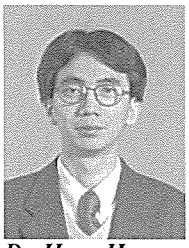
Snapshot of the working meeting

ICUS welcomes Dr. Hong Huang

We would like to welcome warmly Dr. Hong Huang as Associate Professor of ICUS from August 1, 2008.

He graduated from the Department of Chemical Engineering, Zhejiang University, China, in 1994 and obtained his Doctor of Engineering Degree in September 2000 from the Department of Chemical System Engineering, The University of Tokyo.

Dr. Huang's research focuses on various aspects related to urban safety and environmental issues. Based on numerical simulations, experiments and field measurements, his studies are designed to simulate, explain and design the air, thermal, and wind environment as well as fire safety over multi-spatial and multi-temporal axes from human scale, indoor, outdoor to meso-scale. His final goal is contributing to planning safety strategies and ensuring a safe and sustainable society.



Dr. Hong Huang

(By K. Meguro)

ICUS Activities

· Prof. Meguro visited Dhaka, Bangladesh from Aug. 26 to 28 to discuss the future of BNUS with Prof. M. Ansary and to meet with Dr. Maksud at the Asian Disaster Preparedness Center.

· Prof. Sawada traveled to Beijing, China from July 6 to 11 to make a presentation on the "Seasonal Changes of Forest Environment in the Mekong Rive Basin" at the International Convention Center.

· Prof. Sawada stayed in Bangkok from Sept 15 to 19. During his visit, he held primary meetings on collaboration at the Survey Engineering Department of Chulalonkorn University, the Faculty of Forestry of Kasetsart University and the Geographic Information and Space Technology Development Agency. He also participated in an RNUS organized seminar and made a presentation on "Observation of Environmental Conditions of Land Cover"

· Dr. Kuwano traveled to Atlanta, US, from Sept. 21 to 26 to attend the 4th International Symposium on Deformation Characteristics of Geomaterials.

· Dr. Tanaka stayed at AIT for his research work and teaching duties at RNUS from July 2 to 20, Aug. 18 to 28, and Sept. 11 to 19.

· Dr. Tanaka attended the Intelligent Transport Systems Asia-Pacific Forum which was held in Singapore from July 14 to 18.

· Dr. Takeuchi visited the Asian Institute of Technology from Aug. 4 to 9 to hold meetings with personnel there. He also visited AIT from Sept. 15 to 23 to participate in an RNUS sponsored seminar.

· Dr. Kawin stayed at AIT for his research work and teaching duties at RNUS from June 28 to July 25 and Aug. 18 to Sept. 9.

· Dr. Kawin visited Dhaka, Bangladesh from Aug. 25 to 31 for a preliminary survey and training of the Asian Disaster Preparedness Center team in Dhaka for developing the lifeline inventory.

· The Joint Student Seminar on Civil Infrastructure was held at the Asian Institute of Technology in Bangkok, Thailand, on July 3 and 4.

· RC-62 held general meetings on July 17 and Aug. 21.

· ICUS members visit the Port and Airport Research Institute on Aug. 20.

· Prof. Meguro and Dr. Ohara participated in the preparation and execution of a disaster drill was held at The University of Tokyo Hospital on Sept. 9. Other ICUS members also participated in the drill.

· RC-58 held general meetings on Sept. 29. During this meeting, each working group reported their activities. After this, Mr. Hajime Kagiya, Itabashi District Section Manager, made a presentation on business continuity plans for local governments.

Awards

· Mr. Michael Ward Henry, from Kato laboratory, received the encouragement award from the Japan Concrete Institute on July 11 for his research "Evaluation of re-curing for the recovery of high-strength mortar exposed to fire."

Editor's Note

Urban safety is often threatened by huge cyclones, typhoons, earthquakes, and so on. In addition to these natural disasters, as introduced in the main article of this volume, global warming is another aspect relating to urban safety even if it is an environmental problem. For example, we fear that the global warming will have a great impact on the intensity of environmental actions to infrastructure. Cyclones and typhoons may be strengthened due to global warming. Also, sea level rise will affect the functions of infrastructure along coast lines.

Because CO_2 emissions from human activities are considered the largest factor affecting global warming, all of us have to take actions to reduce emissions. This includes preserving forest. As Professor Sawada mentioned, finding ways to build a sufficient forest ecosystem is eagerly required. As you find in this volume of the newsletter, the ICUS has carried out lots of collaborative activities with overseas countries. In particular, countries in the Asian temperate and tropical zones will be greatly affected by the global warming. We wish to contribute more to those countries to ensure the safety of people living there.

Dr. Paola Mayorca has served many years as one of our editorial staff of the Newsletter. This Newsletter may be the last issue edited by her because she will start her new life in Norway in this coming November. We would like to extend our sincere appreciation to her great efforts and contributions.

(By H. Yokota)

If you would like to contribute an article to ICUS newsletter or have any comment or suggestion, please contact the editorial committee at icus@iis.u-tokyo.ac.jp

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