ICUS Newsletter

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International Center for Urban Safety Engineering
Institute of Industrial Science, The University of Tokyo

The mission of new ICUS towards sustainable urban systems

By K. Meguro

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Our International Center for Urban Safety Engineering (ICUS) restarted as a new research center on April 1st, 2011 after ten years of activity. The purpose of the "new" ICUS is to identify, investigate, and resolve issues towards the realization of sustainable urban systems for the prosperity and safety of society considering challenges of socio-economic problems such as depopulation and aging society, shrinking economic resources, advanced technology, environmental awareness and climate change, dense and decentralized urbanization, and so forth.

The role of new ICUS in the coming five years towards the establishment of safer and sustainable urban systems was discussed at the 20th ICUS Open Lecture held on April 21, 2011. This discussion necessarily included issues related to the 2011 Tohoku Earthquake, which has great affected the direction of future urban safety engineering in Japan. In the panel discussion, the actions ICUS should take after experiencing this earthquake disaster were also discussed with three guest speakers. In this article, the results of the

ICUS professors and guest speakers during the ICUS Open Lecture panel discussion

discussions held during the Open Lecture are introduced.

Missions of the new ICUS research divisions

The new ICUS has three missions: "promotion of advanced research," "construction of networks," and "information collection and dissemination." Advanced research will be conducted by three research divisions: "Urban safety and disaster mitigation division," "Environment informatics division," and "Social infrastructure management division."

The "Urban safety and disaster mitigation division" works towards the realization of a safer and more comfortable urban built environment against hazards such as huge earthquakes or urban floods while considering current socio-economic conditions.

Solutions for both technical and social issues towards safer urban systems should be proposed from the multi-disciplinary viewpoints. All the disaster stages from mitigation and preparedness before the event to post-disaster recovery and reconstruction will be covered as our research themes. Not only problems emerging after the past disaster but also new problems that can be expected in the future disaster should be tackled. In order to reduce real damages due to future disasters, implementation of research results in real society is essential. ICUS will place emphasis on practical approaches for achieving implementation of disaster mitigation strategies. Development of new consensus building systems, efficient disaster exercises, and the proposal of financial incentive systems for promoting countermeasures are included as parts of these practical approaches.

Structure of new ICUS and the relationship between the new research divisions

In order to enhance people's awareness against disasters, explaining disaster risk easily to key stakeholders, reducing gaps of risk perception between the public people and experts and promoting individual investigation for risk reduction are important activities for this division to carry out.

The "Environment informatics division" aims to reduce the effect of wide-ranging hazards particularly related to frequent abnormal weather in order to realize a home land where people can coexist comfortably and sustainably with the natural environment.

Remote sensing is a powerful technology for collecting wide-ranging data. The new ICUS will continue to establish methodologies for monitoring environmental change and detecting potential risk such as the heat-island phenomenon, desertification and environmental pollution through the application of remote sensing. Techniques for monitoring the urban built environment, such as historical buildings or transportation networks, are also covered. Based on a deep understanding through monitoring of real phenomenon, suitable and effective countermeasures can be obtained.

The "Social infrastructure management division" focuses on the safety preservation of maturating social infrastructure facilities while considering difficulties such as growing maintenance management expenses, large number of facilities, and decreasing engineers. In order to conduct maintenance of infrastructure facilities efficiently, precise evaluation of the residual performance of existing structures and suitable strategies for maintenance or renewal are

essential. ICUS aims to develop new methodologies for these approaches. Regarding new construction of infrastructure facilities or houses, reduction of environmental impact is very important. New materials, structures and construction techniques with low environmental impact should be developed and implemented.

Borderless collaboration among various research fields

The causes and mechanisms of current social problems are complex and multi-disciplinary approaches are required to solve them. The three research divisions in ICUS will collaborate together in order to solve new emerging problems. ICUS has a diverse staff with a variety of academic backgrounds, which enables ICUS to conduct "borderless" research collaboration. For example, the "Urban safety and disaster mitigation division" and "Social infrastructure management division" will jointly focus on the effective management and operation of infrastructure for disaster mitigation. The "Social infrastructure management division" and "Environment informatics division" will jointly develop sustainable materials with low environmental impacts such as recycled material and waste timber resources. The "Environment informatics division" and "Urban safety and disaster mitigation division" will develop new methodologies for rapid damage detection after a disaster, efficient management of transportation networks after disasters, and environmentally-friendly disaster management systems.

In addition to collaboration inside ICUS, collaboration with organizations outside ICUS is also important. In particular, ICUS has a mission to lead the collaboration with government and private companies as a representative of the academic field. The new ICUS will continue to hold research committees with private companies as a forum for discussion with the public and private sectors.

Action plan after 3.11 earthquake

The 2011 Tohoku Earthquake occurred on March 11, 2011 off the north-eastern coast of Japan. Coastal areas in the Tohoku region suffered severe tsunami damage and are now in the middle of the reconstruction process. The tsunami also damaged nuclear power plants in Fukushima Prefecture and has led to long-lasting social effects in the surrounding areas. Residents are still forced to evacuate because of the high risk of exposure to radiation. The new ICUS wishes to provide all knowledge possible and contribute to the prompt reconstruction of all the affected areas.

This enormous earthquake highlighted various problems such as insufficient tsunami countermeasures along the coastal area, difficulty in tsunami evacuation, problems with the tsunami warning system, residents' low awareness of the tsunami warning system, land-usage in areas with high tsunami risk, and more. At first, these problems need to be investigated and recorded precisely; then, the mechanisms and reasons of the problems should be analyzed. In Japan, there is high risk from other future huge earthquakes such as the Tokai, Tonankai, Nankai, and Tokyo Metropolitan earthquakes. Suitable countermeasures for improving the current situation should be developed and implemented quickly before these events occur. ICUS will contribute to solving these problems through borderless discussions with other research centers inside and outside IIS.

Moreover, the lessons learnt from these problems should be shared with all countries around the world. One mission of the new ICUS is the dissemination of disaster information to the world, especially in Asian. Following this mission, ICUS plans to launch a new project to collect, translate, and disseminate various lessons from the Tohoku earthquake disaster.

Recommendation from Open Lecture guest speakers

During the second part of the 20th ICUS Open Lecture, a panel discussion on the role of "new" ICUS and its prospects in Asia was held with three guest speakers. Dr. Reiko Amano (Kajima Corporation) was the first speaker and served as a representative of private companies. Dr. Amano was previously a visiting professor in ICUS. When she was an ICUS member, she believed there was a lack of collaboration between the private sector, governmental sector and the academic field, so she launched a new joint project between the Fire and Disaster Management Agency and ICUS. Based on this experience, she recommended that ICUS acts as a bridge to bring together these separate groups. In light of the Tohoku Earthquake, she also addressed the importance

of immediate dissemination of information. Practical research results regarding recovery and reconstruction may be more useful when provided as soon as possible, and she requested that ICUS contributes to society through speedy dissemination of information.

The second guest speaker was Dr. Satoru Nishikawa from the Ministry of Land, Infrastructure, Transport, and Tourism as a representative of the government sector. He was one of the committee members of the external evaluation held in the autumn of 2009. He requested that ICUS evaluates the effectiveness of previous investments in disaster prevention countermeasures, such as how much the retrofitting of existing buildings, coastal levees, and earthquake and tsunami warnings decreased the expected damage due to the Tohoku Earthquake. The objective and quantitative evaluation of the effectiveness of these countermeasures will be important to discuss the appropriate level of future investment towards coming disasters. Regarding the reconstruction in the Tohoku area, building back better is the key issue. The proposals for recovery and reconstruction technologies and analysis of their cost-benefit are welcomed.

The third guest speaker was Dr. Ryutaro Tateishi from the Center for Environmental Remote Sensing (CEReS) in Chiba University as a representative of the academic field. In the field of remote sensing, immediate information collection after the disaster and its dissemination is important for disaster reduction. ICUS should continue research on remote sensing and expand its research targets. Recently, the contribution of the academic field to real society is growing in importance. ICUS should explore how the academic field can contribute to solving real problems in society. Both bottom-up approaches from the local organization side and top-down approaches from the government or lead side will be important. In particular, Dr. Tateishi recommended that ICUS conducts top-down approach on the governmental side to establish laws or acts for disaster countermeasures. He also requested that ICUS sets research targets from the global viewpoints and applies research results in Asian countries.

From these recommendations in the panel discussion, we would like to continue our activities towards our missions and will report periodically on recent activities through upcoming newsletters. We gladly welcome comments from the friends of ICUS worldwide.

20th ICUS Open Lecture held at IIS

By M. Ohara

ICUS held the 20th ICUS Open Lecture at the Institute of Industrial Science on April 21, 2011, with approximately 150 people in attendance. The lecture was divided into two parts. First, Prof. Kimiro Meguro, director of ICUS, gave an urgent report on the East Japan Great Earthquake disaster and its implications. This lecture was added to the program after the occurrence of the March 11 earthquake off the coast of the Tohoku region.

The theme of the second part of the lecture was "Towards the establishment of safer and sustainable urban systems - the role of ICUS and prospects in Asia," which introduced the future plans and prospects of "new" ICUS as it moves into a new 5-year cycle. Prof. K. Meguro began by presenting the 10-year history and future of ICUS. He was followed by three ICUS professors who introduced the new ICUS research divisions: Prof. Takaaki Kato (Urban Safety and Disaster Mitigation division), Prof. Mikio Koshihara (Environment Informatics division), and Prof. Reiko Kuwano (Social Infrastructure Management division).

Dr. R. Amano

Mr. S. Nishikawa

Dr. R. Tateishi

A panel discussion was then held on the role of "new" ICUS and its prospects in Asia with ICUS professors and three guest speakers: Dr. Reiko Amano (Kajima Corp.), Mr. Satoru Nishikawa (Ministry of Land, Infrastructure, Transport, and Tourism), and Dr. Ryutaro Tateishi (Chiba University).

Present situation of recovery and reconstruction in the regions affected by the East Japan Earthquake Disaster

By T. Kato

The characteristics of East-Japan earthquake disaster can be summarized using three key words. The first is "shrinking". Japan has entered the shrinking period in this decade. It has already passed the inflection point of times from expanding trend to shrinking trend, which includes economic shrinking and aging and decreasing of population. This disaster recovery during a shrinking period is the first experience in the history of Japan. The second and third key words are "super vast" and "super devastating."

How does the social preparedness for disaster contrast with the characteristics of the disaster? The answer is fundamentally inadequate. Local governments basically have the responsibility to all disaster response as set by Disaster Countermeasure Basic Act. This means that the present system of disaster countermeasure focuses on the local disaster, i.e. it cannot respond well to the super vast disaster. In the disaster, unprecedented tsunami devastated all social and physical infrastructures. As section-oriented administrative functions are inefficient in the post-disaster recovery and reconstruction, comprehensive and integrated countermeasures are needed. However, Japan doesn't have a basic act on post-disaster recovery, although small academic society has discussed the necessity of it before the disaster. It cannot also respond to the super devastating disaster. Moreover, the institutions related to city and rural planning which play main role in the post-disaster recovery cannot respond to shrinking period. Japan has faced this situation without existing powerful political tools for the recovery.

Three months have already passed since the 3.11 event. It can be simply said that the action for the recovery has not been quick because the existing political tools, which are inefficient for this disaster, as described above, have been applied in the same manner as the usual disaster. At the same time, recent trend of decentralization of power from central to local governments makes the central government hesitate to make new decisions. At present (three months later), the frame of financial and planning policy for recovery is still under consideration.

For reference, I introduce the recovery activities after the 2008 Sichuan Earthquake Disaster in China, the scale of which was also large and similar to the East-Japan Earthquake Disaster. In China, the most important characteristic was that the central government responded rapidly and rationally in the recovery phases. The first action for recovery of the central government started only three weeks after the earthquake. The government clearly showed the road map for disaster recovery and authorized the work order and outlined the recovery plan. At the same time, it established financial and human resource support system for the affected areas. One month later, it completed systemizing policies to support affected areas and victims. These actions resulted in completion of the central government's proposed recovery plan two months later, and the proposed recovery plan of a local government (Dujianyan City) five months later. In summary, the strong leadership of the central government could implement rapid recovery and reconstruction. Comparing the Chinese and Japanese cases may be difficult, but it suggests the importance of the top-down approach and the need for balance between top-down and bottom-up.

At the end of June, The Reconstruction Design Council in Response to the Great East Japan Earthquake, which was established as an advisory panel of intellectual figures by the Central Government of Japan on April 2011, submitted its report of recommendations for a reconstruction plan, titled "Towards Reconstruction - Hope beyond the Disaster." The Central Government will make policies respecting these recommendations, which include policies for both the affected area and other parts of the nation in the future. The policy is based on bottom-up style weighing and respecting the local government and affected areas. In other words, it can be said that the leadership of the central government is relatively weak. These characteristics are remarkable in contrast to the past recovery cases in the world. We have to struggle for better recovery in this challenging situation.

Digitally archiving the areas affected by the Great East Japan Earthquake and Tsunami

By S. Ono, ITS Center, The University of Tokyo

The Advanced Mobility Research Center (ITS Center), The University of Tokyo, in collaboration with Tohoku University, is surveying the situation of the area affected by the Great East Japan Earthquake and its tsunami. In April 2011, with the cooperation of local governments, we sent a mission team to the Tohoku area with our sensing vehicle, which is equipped with an omni-directional camera, to record the detailed conditions along and around roads in the affected area. The length of the targeted area was roughly 600 kilometers, from Hachinohe city, Aomori Prefecture, to Yamamoto town, Miyagi Prefecture. In areas which suffered massive damage, such as Rikuzen-Takata city, Iwate Prefecture, almost all the roads were covered with debris.

Sensing vehicle equipped with omni-directional camera

The camera on the vehicle is able to capture all 360-degrees at once as a panoramic video, and the positional information is also recorded by synchronizing with a high-accuracy GPS. After the survey, we can select a point on a digital map and immediately see the surrounding conditions on a computer display. Similar kinds of systems are operated by the Geographical Survey Institute, Google Inc., and others; however, each mission has different significance since the survey periods differ from each other and the local conditions can vary by the hour. The significance of our mission is that the data was captured just 40 days after the earthquake occurred, just after the roads were cleared.

We are now discussing how to utilize the captured data on "3.11net Tokyo," considering options such as inspecting the status of tsunami control forest, estimating the amount of debris, verifying the hazard map, and so forth. In addition, we also hope to prevent the loss of memories regarding the disaster and to contribute to education for disaster prevention. For example, we made a prototype system for virtually experiencing the affected areas using goggles. These goggles provide the view of the actual area in front of your eyes, and when you move your head and look around the motion is detected by a gyro sensor in the goggles and the appropriate view synthesized from a part of the omni-directional image is presented. You can get much higher reality by playing back the video and changing the viewpoint. Also, other virtual data can be virtually overlaid onto the scenery, such as the striking tsunami, which may be able to be utilized for evacuation simulations or other applications.

Note: At this time there is no plan to open the surveyed data to the general public.

Display showing both the geographic location and local conditions

Prototype system for virtually experiencing the areas affected by the tsunami

The disaster information gathering behavior of people in the Kanto region after the Tohoku Earthquake: initial findings

By M. Henry

After the March 11 earthquake and tsunami in the Tohoku region of Japan, ICUS began an investigation on the disaster information gathering behavior of people in the Kanto region (which lies to the south of Tohoku and includes Tokyo) in order to understand whose information people trusted, how they searched for information, what information they needed, and what post-disaster actions people took, with the final goal of improving the dissemination of disaster information. This survey was distributed online and ran from May 23 to July 6, during which 1357 responses were obtained from 74 countries.

The survey found that the most-trusted information source was Japanese news, followed by Japanese research and academic institutions, international organizations such as IAEA or Red Cross, the national Japanese government, and overseas news sources. However, the national Japanese government, overseas news sources, and Japanese news sources were also among the top-five least trusted sources of information, which shows that people were clearly divided on whom to believe and not believe. The least-trusted of all sources was Tokyo Electric Power Company (TEPCO).

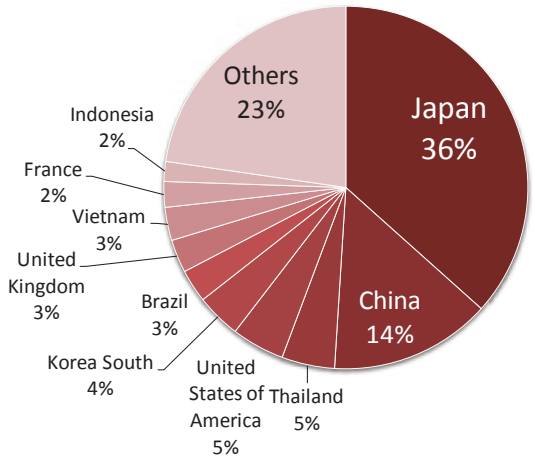
For acquiring disaster information, Japanese television was the most-used means, followed by Japanese and English traditional internet media (meaning websites, information portals, and so forth). These same media were also the means by which people would prefer to receive their disaster information. Japanese language was generally preferred over English for domestic forms of media – such as television, radio, and printed media – whereas English was preferred for media which aren't tied to a specific location – such as internet-based media.

The importance of information was found to change over time. On the first day, the safety of family and friends was by far the most important information, but by the first week radiation level and risk became the most important, followed by information on food and water supply and the government responses.

Unavailability or difficulty in understanding information also changed over time and, in general, people appeared to be able to find or understand information better as time passed, except in the case of radiation level and risk and the government responses. The biggest reason why disaster information was unclear or hard to understand was that people were confused by conflicting or differing information. Being unable to access information due to problems such as mobile congestion or power outages was another reason, followed by lack of language comprehension, unfaimilar terminology, and difficulty in locating information.

Within the survey sample, most of the people chose to remain within the Kanto area. The timing of relocation or leaving Japan increased from within one day after the quake up to within one week then decreased again. The primary reason people cited for whether they stayed, relocated or left was that it was a personal decision, which far outranked other reasons such as family request, job obligation, and other reasons. Overall, it appeared that disaster-related information was very useful to somewhat useful for people's decision making.

The brief results given here represent the initial findings of this survey considering all respondents. Further analysis will be conducted by separating Japanese and foreigners and then considering more targeted characteristics.



Distribution of respondents by country

Distribution of aerial photo maps with tsunami lines

By H. Sawada

The remote sensing team of Prof. Sawada in ICUS has created aerial photo maps at 1:10,000 scale showing the tsunami lines in areas affected by the March 11 Great East Japan Earthquake and distributed these maps through a website for public use. The maps were produced from aerial photos taken by digital camera which were converted to orthophotos by the Geospatial Information Authority of Japan.

The team first converted the geographic coordinate parameters of these orthophotos to be available on Google Earth. Tsunami inundation lines were then interpreted and digitized on Google Earth and compared with the satellite images taken before the earthquake and tsunami. Finally, the digital tsunami line data and the aerial photo maps with the tsunami line were published for various users such as governmental officers, field investigators, researchers and volunteers. The tsunami line can also be used to help show the recovery process

An aerial photo map of the Kesen-numa area at a scale of 1:10,000 with tsunami lines shown in yellow

IIS Open House 2011

By M. Henry

The Institute of Industrial Science (IIS) organized and held the IIS Open House from June 2nd to 4th.

Visitors to ICUS during the IIS Open House 2011

ICUS has been participating in the Open House since 2001 in order to provide people of all ages and professions with the opportunity to learn about ICUS activities and the importance of urban safety from various perspectives. This year, over 150 people visited ICUS, with 100 of them participating in the ICUS quiz for various ICUS goods. ICUS research works presented at the open house this year included special posters and exhibits on the March 11 Great East Japan Earthquake, the activities of 3.11net Tokyo, and ICUS projects on a high-density wooden structure city and 3-dimensional middle-rise high-density dwelling model for urban block, in addition to the research by individual laboratories on urban safety and disaster mitigation, environment informatics, and social infrastructure management.

By M.A. Ansary, BNUS

Training program on and application of ground-penetrating radar

Ground penetrating radar (GPR) is a near-surface geophysical technique that can provide high resolution images of the dielectric properties of roughly 20 meters of earth. It is a very useful technique which employs radio waves typically in the 16 to 2000 MHz frequency range to study structures and features buried in the ground, groundwater, subsurface faulting, and underground cavities (natural or man-made). It is also useful in locating defects and voids in concrete structures, and in determining the embedded reinforcement. GPR is a cost effective way to help locate and characterize features and one of the better techniques for exploring shallow subsurface.

A training program on GPR was held between April 11 and April 15 at BNUS, BUET. This 5 day long training program was organized by BUET – Japan Institute of Disaster Prevention and Urban Safety (BUET-JIDPUS). The training was divided into two parts: classroom teaching and field demonstration. The trainer was Mr. Reinhurt Schultz, GSSI, Germany. Fifteen participants took part in this program.

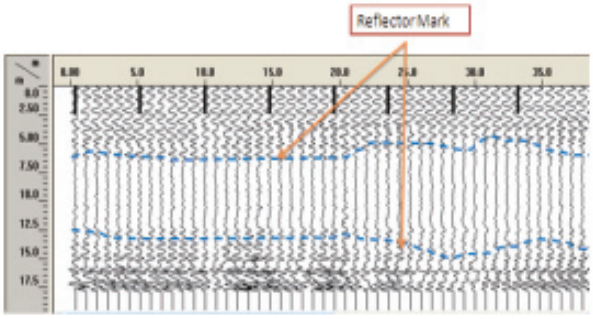
In addition, a geophysical investigation was carried out for Meghna Dhonagoda Irrigation Project (MDIP) located in the north part of Chandpur district. Both Common Depth Point (CDP) and Survey Wheel Distance mode were used with a 100 MHz frequency antenna. Another study was conducted for a bridge deck assessment using a 1.6 GHz antenna. Two bridges (Suyagaji Bridge at Comilla and Babubazar Bridge at Dhaka) were studied for reinforcement location, condition assessment and deterioration mapping.

Estimation of shear wave velocity in reclaimed areas of Dhaka city

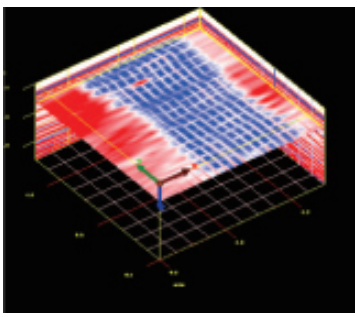
The dynamic properties of soil are essential for predicting the behavior of soil deposits and their effect on structures during any type of vibration. Vibration can come from a machine, adjacent construction work, or an earthquake. Recently with the help of BUET-JIDPUS, two research engineers from BNUS (Estiak Mahmud Murad and Mintu Deb) have been determining the shear wave velocity of hydraulic-filled areas of Dhaka city using downhole seismic method according to ASTM D7400-08. The equipment used in this test is a seismic cone with a single receiver. This test has already been carried out at nine locations in Dhaka and two locations just outside Dhaka, and more data will be collected soon.

All the locations are low land and most of them were water bodies which were filled up to construct residential and commercial buildings. During an earthquake, shaking will be amplified more in these areas. To study the amplification of these reclaimed areas, shear-wave velocity is an essential parameter. Some photographs were taken during these tests which are provided for easy illustrations.

Training session and field demonstration of GPR



Soil layer in wiggle mode at Meghna-Donagoda Irrigation Project



Super 3D file of bridge deck investigation at Babubazar Bridge

Final report of Research Committee RC67

By T. Endo

The briefing session of ICUS Research Committee 67 (RC67) was held at IIS on June 2, 2011, with more than twenty people in attendance. The session consisted of two parts. First, Mr. Ookawa from the Forestry Agency talked about "The significance of international forest year and materiality of forest." Second, RC67 members introduced the results of our activities to the session participants. In this article we briefly summarize our activities and final report.

Over the past two years RC67 has been evaluating CSR activities and discussing what is the ideal CSR activity for the environment and Japanese society. In the first year, to understand the contribution of CSR activities in the private sector of society, we analyzed the relationship between the future national plan for forest management and the forest management strategies of companies. Specifically, we focused on the investigation of statements on forest operation in environmental CSR activity reports. In the second year, we discussed evaluation methods for environmental CSR activities. As a result of the discussion, our committee proposed two basic concepts for forest CSR activity:

The RC67 final briefing session

1) Since the forest ecosystem is a type of social capital, we should promote forest management based on long-term view for the future generations.

2) Since sustainable development of forests is necessary to keep forests healthy, we should utilize more domestic timber to support the forestry and lumber industries.

To check our proposal, we designed a questionnaire and conducted a survey of six companies in different areas of the private sector. The evaluation points of CSR activity were continuity, environment (biodiversity, soil and water conservation), society (environmental education, regional contribution), and economy (support for forest management). Additionally, we designed a self-evaluation sheet to evaluate own CSR activity by myself. From the questionnaire results, we realized that the relationship between the core business of a company and CSR activity affected the evaluation of their CSR activity. Next, we classified the companies into three groups in order to evaluate them equivalently. The CSR activities of the companies which were evaluated highly were original and unique. Through analysis of the CSR activities, it became clear that all groups lack effort for "supporting forest management" on the economic side and "soil and water conservation" on the environmental side.

In order to bring current forest CSR activity to ideal model we've concluded that the following four points are important: 1) set the purpose of CSR activities as "forest circulation;" 2) close the relationship between the core business and CSR activities; 3) include specialists in CSR activities; and 4) cooperate with other activities.

We hope that forest CSR activities will improve through the following steps: evaluation of CSR activities using our questionnaire, understanding of the current situation of CSR activities by through the self-evaluation sheet, review of CSR activities from the viewpoint of the four important points, and re-evaluation of the improved CSR activities.

Awards and honors

❖Mr. Hiroki Shimono, master student in Meguro Laboratory from Chuo University, won the Best Paper Award from the Institute of Social Safety Science on May 27 for his research "Mitigation effect of an early earthquake warning system on the Tokyo metropolitan area railway network

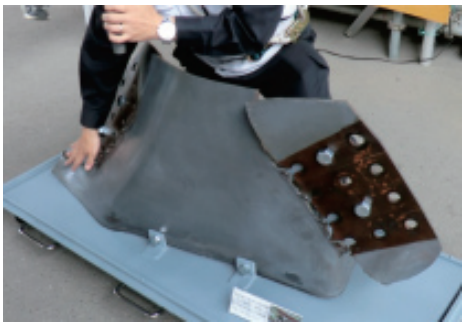
❖Mr. Makoto Fujiu, Ph.D. student in Ohara Laboratory, won the Outstanding Poster Presentation Award at the Eastern Asia Society for Transportation Studies on June 23 for his poster "Characteristics of cruise tourism in Asia."

Visit to the Metropolitan Highway Watching

By S. Kondo

Dr. S. Kondo, along with eight students and staff, visited a maintenance demonstration organized by the Metropolitan Highway Co. Ltd., "Metropolitan Highway Watching." On May 20, the first day, participants visually inspected the underside of a highway overpass, where minor damage such as peeling or lifting of the concrete could be seen.

On June 7, the second day, participants presented the results of the inspection and then visited the Arakawa Bay Bridge, which was damaged by the Great East Japan Earthquake. A variety of inspection methods were also demonstrated. The Arakawa Bay Bridge is a truss bridge located at the mouth of the Arakawa River where it feeds into Tokyo Bay. In this earthquake, the bridge suffered damage to areas such as the gusset plate located at the junction of the horizontal strut and the sway bracing, and emergency rehabilitation took about 10 days. In the inspection demonstration, participants learned about a method for early detection of damage to roads and other facilities through close inspection of the aerial structure.



A gusset plate damaged by the Great East Japan Earthquake

Roads are essential to our daily lives, and this meaningful demonstration was educational for learning about the actual site issues and maintenance of highways in Japan.

Farewell to Prof. Yoshitaka Kato

By K. Meguro

From April 2011, Associate Professor Yoshitaka Kato will retire from ICUS to assume a position in the Department of Civil Engineering at the Tokyo University of Science.

Prof. Y. Kato joined ICUS as a lecturer in April 2002 and was promoted to associate professor in April 2006. Over his nine years in ICUS, Prof. Y. Kato and his laboratory conducted a wide variety of research works on the durability, maintenance, and sustainability of concrete materials and infrastructure as a part of ICUS's Sustainable Engineering Division.

Prof. Y. Kato

I would like to express my sincere gratitude to Prof. Y. Kato for his many years of excellent service as a member of ICUS and, on behalf of everyone at ICUS, I wish him the best at his new position. We are looking forward to collaborating with him again in the future.

ICUS Activities April – June

- Prof. M. Koshihara traveled to Wien, Austria, from June 27 to July 2 to investigate middle-rise timber buildings.
- Prof. S. Tanaka visited the Korean Institute of Construction Technology (KICT) in Seoul, Korea, from April 17 to 20.
- Prof. S. Tanaka also attended the International Symposium on ITS Research in Taipei, Taiwan, from June 10 to 12 and the IEEE-FISTS conference and workshop in Vienna, Austria, from June 28 to July 3.
- Prof. A. Kawasaki returned to Bangkok, Thailand, from April 7 to May 26 and from June 5 to July 5 for operating the RNUS office and conducting lectures and supervising students at AIT.
- Dr. T. Endo traveled to Brazil from June 25 to July 5 for a meeting with INPE and INPA.

Editor's note...

After the March 11, 2011 Mw 9.0 earthquake, national and local governments and academic societies established many committees for responding to the disaster and for recovery and reconstruction of the affected areas. For well-balanced recovery of the affected areas, it is important to clearly see all the activities of the numerous related committees. However, the relationships between committees with similar purposes are not clear and the discussions and activities by the advisory committees in different affected areas aren't well coordinated.

The number of dead and missing due to the earthquake disaster was over 28 thousand at its peak, roughly one month after the earthquake. But by verifying the missing people, this number became around 20 thousand as of the end of August 2011. Although it is good that this number decreases, it does not include indirect fatalities. During the 1995 Kobe earthquake disaster, there were over 930 indirect fatalities, a 17% ratio to the total number of fatalities (6,437). Although there is no official report on indirect fatalities due to the March 11 earthquake yet, many people already died due to very cold weather and poor medical conditions just after the earthquake along with long-term refugee camp life. Furthermore, there is a high possibility that many more people died due to the summer heat or will die due to prolonged life in refugee camps due to the tsunami and nuclear power plant accident. Society needs proper measures to reduce the number of such victims, and such measures are the ones which should be established by good coordination among the above-mentioned committees.

By. K. Meguro

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PRINTED MATTER

The International Center for Urban Safety Engineering (ICUS) is a research center located at the Institute of Industrial Science, The University of Tokyo.

The purpose of ICUS is to identify, investigate, and resolve issues towards the realization of sustainable urban systems for the prosperity and safety of society considering challenging socio-economic problems.