

Issue  
No. 23  
2018

Saitama University



# Newsletter

International Graduate Program on Civil & Environmental Engineering

## International Collaborative Program

International exchange program enhances the development of students educationally as well as personally. The international learning environment provides the students with new challenges outside a familiar support and comfort zone, making them competent in the international arena. With such considerations, Saitama University (SU) has collaborated with over 160 international universities (Asia 69, Europe 55, North America 26, Oceania 5, Latin America & Caribbean 5, Africa 1) in promoting cooperation and exchange related to education and research.

Similar to the university's approach, the International Collaborative Program at the department of Civil and Environmental Engineering started its journey soon after the establishment of the International Graduate Program on Civil and Environmental Engineering in 1992. The program signed its first Memorandum of Understanding (MoU) with the University of Hawaii, USA in 2005 through incessant efforts by the Foreign Student Office (FSO) and the counterpart university. The department of Civil and Environmental Engineering is not only striving for more international academic collaborations through the program but also managing the existing university level collaborations related to Civil and Environmental Engineering. Figure 1 shows the department of Civil and Environmental Engineering managed collaborations with various universities.

The International Collaborative Program, not only focuses on the exchange of students from Saitama University and partner universities but also includes visits by faculty members to give lectures on latest developments in the field of civil and environmental engineering. Figure 2 shows the photographs of our bilateral visits with the associated universities.

The acceptance of short-term student exchange program (2017-2018) under Japan Student Services Organization (JASSO) showcases the success of our international collaborative efforts.



Figure 1: Collaboration activities managed by the department of Civil and Environmental Engineering



Figure 2: Recent visits of SU to associated universities and vice versa

## Greetings from the Head of the Foreign Student Office

I hope that you have had another fulfilling and successful year since you received our last issue of the newsletter. It has been a busy year for me having acted as the head of civil and environmental engineering department and the head of FSO simultaneously. Let me share with you two significant changes that happened since you heard from us last year.

The undergraduate academic programs offered by the Faculty of Engineering saw a significant change in April 2018. Seven programs were merged into five, leading to an increase in the number of student enrolment from 75 to 100 for our program in civil and environmental engineering. Our program is now one of the biggest undergraduate programs in civil and environmental engineering offered by national universities in Japan. We will maintain or even improve the quality of education of our undergraduate program so as to lead good students to pursue their higher studies at our graduate program where they can benefit from studying with international students.

Another change relates to the graduate level scholarship scheme supported by the Ministry of Education, Culture, Sports, Science and Technology (MEXT). As you may know, our graduate program (both masters and doctoral courses) has been partly supported by the MEXT scholarships for over 20 years. The MEXT scholarship scheme was altered as a short-term program several years ago and renewal is now

necessary every five year for its continuation. Last year was the end of the five-year period and we made every efforts to be selected for the renewal. Thanks to Prof. Mutsuyoshi's leadership and dedicated contribution from the members of FSO, the application was successful. However, the MEXT scholarship that we can now offer under this scheme is available only for doctoral students. I believe that the effect of this change should be minimum as there are other scholarships available for master's students, details of which are available on our website.

Finally, I would like to add that the alumni network developed with you was highly favoured in our MEXT scholarship renewal application and seems to be a significant driving force for the successful outcome. Your continuous cooperation and support in the alumni network activities would be greatly appreciated. I strongly hope that the network will develop further and be beneficial for both you and us.

With best regards,

**Yasunao Matsumoto**

Head of the Foreign Student Office  
International Graduate Program on Civil and Environmental Engineering  
Saitama University



## Research Profile Series (22)

### Tsunami Mitigation

Tsunami, one of the devastating natural disasters, is caused due to abnormal rise of the sea surface. Tsunamis that have a significant wave height and wavelength are capable to run up and propagate great distances with a high flow rate and a high inundation depth. It causes catastrophic damages to people, buildings, seaside artificial land, and natural structures. Therefore, an effective countermeasure is highly desirable to mitigate the impact of such events.

Several artificial (viz. embankments, tsunami gates) and natural (coastal or inland forest) methods are proposed as well as implemented to mitigate the impact of large tsunamis. However, for developing and under-developed countries, implementing artificial approaches are often very costly and not economically viable. On the other hand, natural approaches such as coastal forest, are well-known to provide a natural ecosystem in the coastal environment and are potentially a cheaper option that can be implemented to mitigate tsunami damages. Additionally, coastal forest reduces tsunami energy, traps tsunami-induced debris, offers a buffer zone, and provides an escape route for displaced people in the event of a tsunami. Several studies in designing optimal arrangement of emergent forest (tall trees) for the tsunami mitigation purposes have reported that the denser type emergent forest is effective in reducing maximum tsunami energy. However, it is difficult to implement such arrangement in practice as tall trees require necessary space to grow. Moreover, coastal forests in large areas in Tohoku were destroyed due to land erosion, scouring, and tree breakage during the 2011 Great East Japan tsunami. Pandanus odoratissimus, a dominating coastal vegetation found in South (and Southeast) Asia, which grows densely with complex aerial roots, is found to be effective in reducing tsunami energy when the inundation depth is less than 5 meters.

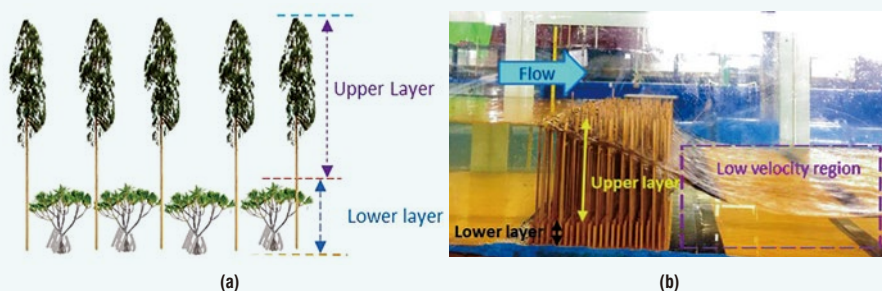


Figure: (a) View of the schematic double layered forest model, (b) Flow structure through an experimental model placed in a flume.

Considering the benefits of dense type short and sparse type tall vegetation, I am currently working on tsunami mitigation through physical modelling of two-layered rigid vegetation (combination of short and tall trees). I am conducting my research work under the supervision of Prof. Norio Tanaka in the Hydraulic and Environmental Engineering lab with endless support and help from Assoc. Prof. Junji Yagisawa, Assist. Prof. Yuta Mizoguchi, and cordial lab mates.

Results obtained from experiments show that the combined vegetation increases the water level upstream of the forest by reflection and damming up, reduces inundation depth at the downstream of the forest, and creates a low-velocity region around and within the forest. These mechanisms contribute to the significant reduction of tsunami energy while compared to single layer submerged or emergent vegetation. I am hopeful to finish my research successfully with some further findings on tsunami mitigation.

*(Written by-Mr. Rashedunnabi A.H.M.)*

## Graduation Time Congratulations

### September 2017

**Mr. Nguyen Duc Nghiem** from Vietnam was awarded his Ph.D degree under the guidance of Prof. H. Kubota. His doctoral thesis was entitled "Cyclists' facility choice and bicycle controllability: The new insights into improving cycling comfort and safety".

**Mr. Ghufuran Ahmed Pasha** from Pakistan was awarded his Ph.D degree under the guidance of Prof. N. Tanaka. His doctoral thesis was entitled "Role of vegetation in dissipation of tsunami energy and entrapment of tsunami-borne wood debris".

**Mr. Ho Manh Hung** from Vietnam was awarded his Ph.D degree under the guidance of Prof. J. Kuwano. His doctoral thesis was entitled "Confined-reinforced subgrade to reduce differential settlement of road pavement".

**Mr. Amo Nurudeen Tomiwa** from Nigeria was awarded his M.Eng. degree under the guidance of Prof. N. Tanaka. His master's thesis was entitled "Effect of downstreamrevet to the embankment on time of failure due to overtopping".

**Mr. Achmad Fuadi Noor** from Indonesia was awarded his M.Eng. degree under the guidance of Prof. N. Tanaka. His master's thesis was entitled "Energy loss with two different layers of vegetation".

**Ms. Saw Wut Yee** from Myanmar was awarded her M.Eng. degree under the guidance of Prof. J. Kuwano. Her master's thesis was entitled "Effects of flow direction on internal erosion of sand".

**Mr. Sohail Amir** from Pakistan was awarded his M.Eng. degree under the guidance of Prof. Y. Matsumoto. His master's thesis was entitled "Analytical investigation of modal damping changes in RC beam due to corrosion induced damages".

**Ms. Thandar Tun** from Myanmar was awarded her M.Eng. degree under the guidance of Prof. M. Takeshi. Her master's thesis was entitled "Comparative study on seismic design of reinforced concrete bridge piers with different codes".

**Ms. Mwanaisha Nganzi Ulenge** from Tanzania was awarded her M.Eng. degree under the guidance of Prof. J. Kuwano. Her master's thesis was entitled "Deformation behavior of slender sandbag filled with compacted sand".

**Mr. Khieu Hai Hoang** from Vietnam was awarded his M.Eng. degree under the guidance of Prof. H. Mutsuyoshi. His master's thesis was entitled "Mechanical behavior of corroded prestressed concrete bridges".

**Mr. Bach Hung Phu** from Vietnam was awarded his M.Eng. degree under the guidance of Prof. Y. Okui. His master's thesis was entitled "A comparison of AASHTO Bridge Load Rating Method with Japanese highway specifications".

### March 2018

**Mr. Mostafa Faghihnia Torshizi** from Iran was awarded his Ph.D degree under the guidance of Prof. M. Saitoh. His doctoral thesis was entitled "Influence of pile radius on kinematic and inertial responses of pile groups".

**Ms. Mai Thi Nguyen** from Vietnam was awarded her M.Eng. degree under the guidance of Prof. H. Mutsuyoshi. Her master's thesis was entitled "Safety performance evaluation of cable-stayed bridges under various cable loss scenarios".

**Mr. Nergui Gantulga** from Mongolia was awarded his M.Eng. degree under the guidance of Assistant Prof. L. Yao. His master's thesis was entitled "Study of fly ash blended self-compacting concrete at low temperature".

**Mr. Pradeep Pokhrel** from Nepal was awarded his M.Eng. degree under the guidance of Prof. J. Kuwano. His master's thesis was entitled "Study of internal erosion and sinkhole formation process by site investigation and laboratory model test".

**Mr. Subash Ghimire** from Nepal was awarded his M.Eng. degree under the guidance of Associate Prof. H. Taniyama. His master's thesis was entitled "Numerical analysis of buried pipeline subjected to earthquake fault in dense and loose granular".



**Mr. Peter James Amajo Esmalla** from Philippines was awarded his M. Eng. degree under the guidance of Assistant Prof. J. Dang. His master's thesis was entitled "Function recovery time risk assessment for steel bridge pier under earthquakes".

**Mr. Chanaka Vinodh Talpe Liyanage** from Sri Lanka was awarded his M.Eng. degree under the guidance of Prof. N. Tanaka. His master's thesis was entitled "Experimental study on the energy reduction of a solitary wave using a sand dune – coastal lagoon system".

**Mr. Anh Tuan Tran** from Vietnam was awarded his M.Eng. degree under the guidance of Prof. M. Osada. His master's thesis was entitled "The build-up of pore-air pressure associated with water infiltration under heavy rainfall condition".

**Mr. Liaqat Ali** from Pakistan was awarded his M.Eng. degree under the guidance of Associate Prof. J. Yagisawa. His master's thesis was entitled "Experimental Study on different scour patterns after levee overtopping under different flow conditions".

**Mr. [REDACTED]** from Afghanistan was awarded his M.Eng. degree under the guidance of Prof. Y. Matsumoto. His master's thesis was entitled "[REDACTED]".

**Mr. Muhammad Atif Anwer** from Pakistan was awarded his M. Eng. degree under the guidance of Prof. Y. Okui. His master's thesis was entitled "Probabilistic distribution of buckling strength of stiffened steel plate considering column like buckling".

**Ms. Thilini Piumali Abeywickrama Bamunusin Kankanamge** from Sri Lanka was awarded her M.Eng. degree under the guidance of Prof. K. Kawamoto. Her master's thesis was entitled "Evaluation of aging effect on geo-physical, chemical and mechanical properties of dumped municipal solid waste".

**Mr. Agha Zafar Ali** from Pakistan was awarded his M.Eng. degree under the guidance of Prof. M. Saitoh. His master's thesis was entitled "Inelastic behavior of caisson foundations".

**Mr. Mohd Saufi Bin Mohd Redzuan** from Malaysia was awarded his M.Eng. degree under the guidance of Prof. K. Kawamoto. His master's thesis was entitled "Gas transport parameters and thermal properties for permeable pavement subbase utilizing construction demolition waste and industrial waste".

**Ms. Jyoti Singhal** from India was awarded her M.Eng. degree under the guidance of Prof. T. Maki. Her master's thesis was entitled "Deflection based running safety evaluation of long span concrete bridges for high speed railways".

**Mr. Jayanta Kumar Khamari** from India was awarded his M.Eng. degree under the guidance of Prof. M. Saitoh. His master's thesis was entitled "Damage to railway structures influenced by soil structure interaction".

## Welcome New Students

### October 2017



**Mohammad Najmol Haque**  
Bangladesh, Doctor



**Thanadet Sriprasong**  
Thailand, Doctor



**Rowan St Gregory Sachika De Costa**  
New Zealand, Doctor



**Junfeng Tang**  
China, Doctor



**Muhammad Rashid Iqbal**  
Pakistan, Doctor



**Arjun Baniya**  
Nepal, Doctor



**Naba Raj Shrestha**  
Nepal, Doctor



**Yu Nywe Aye**  
Myanmar, Master



**Ei Ei Khaing**  
Myanmar, Master



**Tseltmeg Aldarjav**  
Mongolia, Master



**Rongzhi Zuo**  
China, Master



**Yahya Ndoeye**  
Senegal, Master



**Ahmad Waheed Sahil**  
Afghanistan, Master



**Mohammad Reza Mohammadi**  
Afghanistan, Master



**Duc Minh Hai Tran**  
Vietnam, Master



**Usama Zafar**  
Pakistan, Master



**Ha Thanh Ngo**  
Vietnam, Master



**Reheman Nijati**  
China, Master



**Luyao Wang**  
China, Master



**Tserenlkham Lkhagvasuren**  
Mongolia, Master



**Sachin Sharma Rijal**  
Nepal, Master

### April 2018



**Gombosuren Dagvabazar**  
Mongolia, Doctor



**Chanaka Vinodh Talpe Liyanage**  
Sri Lanka, Doctor



**Pradeep Pokhrel**  
Nepal, Doctor



**So Hyun Ahn**  
Korea, Master



**Navoda Tharunduni Abeygunawardana**  
Sri Lanka, Master



**Mohammad Saiful Islam**  
Bangladesh, Master



**Ibrar Ahmed**  
Pakistan, Master



**Kumari Kanchana Mallika Achchillage**  
Sri Lanka, Master



**Alok Kumer Saha**  
Bangladesh, Master



**Surendra Ghimire**  
Nepal, Master



**Isiri Upeksha Nagasinghe**  
Sri Lanka, Master



**Udayanga Sajith Pathiraja Arachchillage**  
Sri Lanka, Master



**Tabassum Navila**  
Bangladesh, Master



**Asiya Nurhasanah Habirun**  
Indonesia, Master



**Kabul Fadilah**  
Indonesia, Master

## News

### New Appointments

Dr. Adnan Anwar Malik, a 2015 doctoral graduate of Saitama Univ. was appointed as an assistant professor of Geotechnical and Geosphere Research Group in February 2018. His research interest is geotechnical engineering. He is also a staff member of the Foreign Student Office.

Dr. Yota Togashi was appointed as an assistant professor of Geotechnical and Geosphere Research Group in March 2018. His research interest is rock mechanics and tunnel engineering.

Dr. Teppei Kato was appointed as an assistant professor of Transportation and Planning Group in April 2018. His research interest is transportation planning.

### Faculty Promotion

Dr. Takeshi Maki was promoted to Professor of Structural Engineering, Mechanics and Material Group in April 2018. His research field is Concrete Engineering.

### Alumni Information

Dr. Muhammad Abdur Rahman Bhuiyan, a 2009 doctoral graduate of Saitama University was appointed as a Dean of Faculty of Civil Engineering at the Chittagong University of Engineering & Technology (CUET), Chittagong, Bangladesh on October 4, 2017.

## Awards

Mr. Ali Murtaza Rasool and Prof. Jiro Kuwano received the best paper award at the 7<sup>th</sup> International Conference on Geotechnique, Construction Materials and Environment, held in Mie, Japan in November 2017, for the paper "Influence of matrix suction on instability of unsaturated silty soil in unconfined conditions".

Mr. Aung Aung Soe et al. received the best paper award at the 7<sup>th</sup> International Conference on Geotechnique, Construction Materials and Environment, held in Mie, Japan in November 2017, for the paper "Optimum use of geogrid in the unbound granular layer for the pavement construction".

Mr. N.V. Tuan et al. received the best paper award at the 7<sup>th</sup> International Conference on Geotechnique, Construction Materials and Environment, held in Mie, Japan in November 2017, for the paper "Current situation of construction and demolition waste in Vietnam: Challenges and opportunities".

Ms. Udayagee Kumarasinghe et al. received the best paper award at the 7<sup>th</sup> International Conference on Geotechnique, Construction Materials and Environment, held in Mie, Japan in November 2017, for the paper "Effectiveness of permeable reactive barrier (PRB) on heavy metal trap in aquifer at solid waste dumpsite: A simulation study".

Mr. Ashish Shrestha et al. received the excellent presentation award at the 20<sup>th</sup> Symposium on Performance based Seismic Design for Bridges, held in Tokyo in July 2017, for the paper "Seismic response and health monitoring system for Takamatsu Bridge using smart devices".

Mr. Ashish Shrestha et al. received the excellent presentation award at the 72<sup>nd</sup> JSCE Annual Meeting, held in Fukuoka in September 2017, for the paper "Bridge health monitoring system based on smart devices in Takamatsu Bridge".

## Message from Alumni

### My Saitama for the Visionary Creators of Today!

Civil engineers carry out the role of creator on this blue planet to build, maintain, operate, and rebuild infrastructures. In the knowledge-based domain of Bloom's taxonomy, however, they need to overcome a steep learning curve to reach the level of a creator where they can effectively display the recognized engineering attributes, preferably in international benchmarked standards. Earning the expected competence in engineering practice is the final goal. The role of educators is equally important to those of the institution to groom civil engineers to be sharper and brighter to catch up to the new winds of the knowledge hub through the lifelong learning process. Choosing an appropriate abode to gain this fundamental training that will be an asset for the rest of one's life is not an easy task. Nevertheless, flowers are best known not for the ingredients but for the colours and fragrances that bestow them the ability to attract and roam far and wide.



When I went to Japan two decades ago, nothing much was known here in Bangladesh about Saitama University or the distinguished professors working there very silently! Almost no academic journals were even online for me to know about the current research endeavours. It was only the voice of an alumnus studying at Saitama University from Bangladesh that was the transporter of the colours and fragrances of this unique knowledge hub to me. This alumnus endowed confidence in me to travel to Japan and take the challenge to devote time there in Saitama! Some golden time in my life, I remember, was cycling between the libraries, intensive meetings and travels with my professor, spending sweet time in tea shops waiting for a favour or two from some companies, occasional short traveling in trains during holidays bound for Tokyo, enjoying the beautiful sea shorelines of Yokohama, spending an evening recharging the spirit for the coming weeks and many more!

After about two decades since then, I remember those valuable days of grooming that surely settled as an asset in my career basket. The strong alumni support bestowed to me from this university has helped me throughout all of my career, even today! I am quite blessed to see the everlasting voices of the alumni getting stronger, broader, and sharper day by day. I believe the present students are now luckier than before because of the higher level of maturity that the program, its educators, and its well-wishers have already earned. A machine may transform fuel into useful power. However, the composition and the capability of the machine operators are surely important in the systematic process for delivering substantial power in appropriate direction. Continual efforts are important to harvest perpetual power to overcome the friction that exists everywhere in the nature. Saitama University can be an abode for this generation to gain the powerful capacity to have a perpetual cruise through this century!

**Dr. A.F.M Saiful Amin**

Professor of Civil Engineering  
Bangladesh University of Engineering and Technology (BUET), Bangladesh

## Message from the Foreign Student Office

Warm greetings from the Foreign Student Office.

We are pleased to send you Issue No. 23 of our Newsletter. It does not feel like but 25 years have already passed since the establishment of our International Graduate Program on Civil and Environmental Engineering! Over the years, more than 475 students from over 25 countries have graduated from our program.

As for the recent updates, we are happy to inform you that our website was renewed this April. The link to the updated webpage is the same as before: <http://intl.civil.saitama-u.ac.jp/>

We would like to hear from you in expanding our alumni related pages such as 'Alumni News' and 'Awards' on our new website. So as to let prospective students know your experience here at Saitama University, a dedicated page titled 'Alumni Voices' has been created. Do let us know your impressions on our program, your stay in Japan, and any other feedback that may be helpful for the prospective applicants. Finally, to facilitate networking among alumni

members, we have created a "Connect" page. We look forward in seeing active participation from your side for these newly created alumni pages.

In addition, application form submission method has been changed since last year. A new system allowing one to fill the forms digitally and submit to FSO directly through email was developed. We hope that prospective applicants will find this method useful.

Thank you for your continuous support. Do stay connected. We are always looking forward to hearing from you!

### The Foreign Student Office (FSO)

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