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京都大学地球環境学堂 2016 年度学位授与式と謝恩会

## 6th Congress of East Asian Association of Environmental and Resource Economics (Aug. 7-9, 2016)

By Akihisa Mori, Associate Professor, GSGES

Co-organized by GSGES, the Society of Environmental Economics and Policy Studies, Kyushu Sangyo University and Fukuoka municipality, the 6th Congress of the East Asian Association of Environmental and Resource Economics was held at the Faculty of Economics, Kyushu Sangyo University on 7-9 August 2016. The 182 participants included researchers, practitioners, and students in the field of environmental economics and policy in East Asia. A plenary speech entitled "Conservation in the Green Economy" was followed by a policy forum on this issue. There were 42 sessions comprising 141 oral presentations and 4 poster presentations. Through the lectures, speech, presentations and active discussion, the latest research results in the field of environmental economics and policy were shared with participants.

2016年8月7日から9日の3日間に渡り、九州産業大学において、East Asian Association of Environmental and Resource Economics の第6回研究大会を、研究者、実務家、学生の計182名を集めて開催されました。

基調講演では、アリゾナ州立大学の Charles Perrings 教授より、"Conservation in the Green Economy" と題した講演が行われました。この基調講演を受けて、Policy Forum では、大沼あゆみ慶應大学教授、Shaw Daigee 台湾科学研究院教授、Cho Seong-Hoon テネシー大学准教授を交えて、東アジアでの生物多様性保全の現状と政策、資金メカニズム、コミュニティの参加に関する展望が議論されました。

このほか、一般セッションでは、環境評価・費用便益分析、経済成長と環境、エネルギー政策、再生可能エネルギー、大気汚染など42の一般セッションで計141件の発表、ポスターセッションにおける4件の発表が行われ、発表後には活発な討議が行われました。



## 4th Stage Kick-off Symposium of Tsinghua and Kyoto Universities' Cooperative Research and Education Center for Environmental Technology (CRESET) (Sep. 5-6, 2016)

By Kazuyuki Oshita, Associate Professor, GSGES

Since establishment of Tsinghua and Kyoto Universities' Cooperative Research and Education Center for Environmental Technology (CRESET) at the Shenzhen Campus, Tsinghua University, in October 2005, support personnel have been able to stay on the site and use it as a base. Collaborative research and educational activities have been progressively developed during the EML and GCOE projects.

On September 6, 2016, the 4th Stage Kick-off Symposium of CRESET was held at Kyoto University's Katsura Campus. Prof. Masao Kitano (Vice-president of Kyoto University), Prof. Takayuki

Kitamura (Dean of GSE), Prof. Shigeo Fujii (GEGES), Prof. Hiroaki Tanaka (Director of CRESET) and Assoc. Prof. Kazuyuki Oshita (GSGES) participated in the symposium.

On the day before the symposium, core members of the Shenzhen Campus of Tsinghua University visited GSGES and Prof. Masao Kitano to discuss the possibility of organizing a double degree program between GSGES and Tsinghua University.

2005年に日中環境技術研究講座として開設され、工学研究科や地球環境学堂を中心に運営されてきた京都大学—清華大学環境技術共同研究

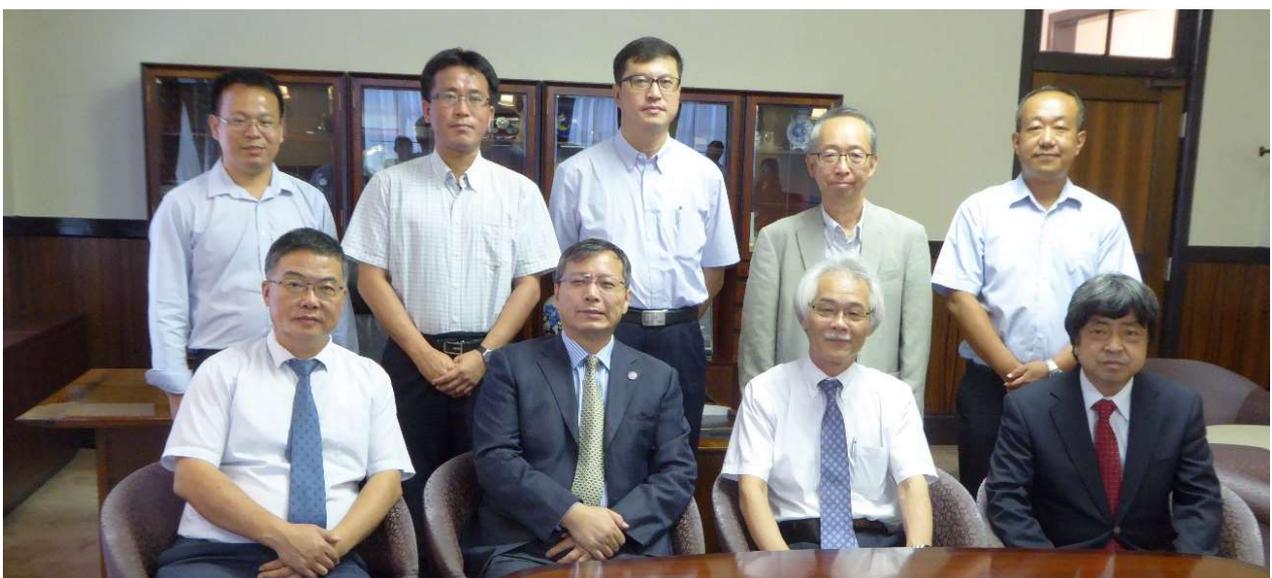
教育センター（以下、センター）が、2016年度より、第4期の運営に入ることとなり、2016年9月6日にそのキックオフシンポジウムが京都大学桂キャンパスで開催され、日本サイドとして、京都大学から、北野正雄理事・副学長、北村隆行工学研究科長、藤井滋穂教授、田中宏明センター日本側主任、大下和徹准教授らが参加し、加えて、センター協議会矢尾眞幹事長、センター協議会関連企業などの関係者が参加しました。また、清華大学深圳研究生院からは、夏広志副院長、センター中国側主任胡洪宮副院長、副主任管运涛教授、王伟教授ら、合わせて59名が出席し、これまでのセンターの歴史を振り返りつつ、新たな第4期を迎えての展望などが講演されました。また、中国からの参加者からは最新の中国の環境問題の現状が報告され、種々の課題が共有されました。

なお、本シンポジウムの前日9月5日に、清華大学深圳研究生院の夏広志副院長、センター中国側主任胡洪宮副院長、副主任管运涛教授、王伟教授らは、地球環境学堂を訪問し、藤井滋穂教授、田中宏明教授、大下和徹准教授らと、地球環境学堂と清華大学深圳研究生院との間で Double Degree の実施可能性に関する打ち合わせが行われました。その後、京都大学北野正雄理事を表敬訪問し、記念品の交換や、京都大学と清華大学深圳研究生院それぞれの国際交流の状況について情報交換がなされました。

第4期においても、本センターが、日中の共同教育・研究に関するプラットフォームとなり、ますます京都大学と中国清華大学との交流を促進していくことが期待されます。



桂キャンパスにおける第4期キックオフセミナー参加者



中国清華大学メンバー。北野理事への表敬訪問。

## Special Seminar “Environmental Engineering and Technology for Sustainable Development” (Oct. 11, 2016)

By Kazuyuki Oshita, Associate Professor, GSGES

On October 11, 2016, a special seminar on “Environmental Engineering and Technology for Sustainable Development,” jointly organized by Kyoto University (KU) and Mahidol University (MU), was held at the Yoshida Campus. The primary objective of this seminar was to discuss potential research and educational collaborations between MU and KU. The event utilized VCS (a videoconferencing system) to link between MU in Salaya (Thailand) and KU in Yoshida (Japan) to check the viability of using the system for active discussion and opinion exchanges between participants from both once the double degree program gets underway.

Prof. Shigeo Fujii opened the seminar with introductory remarks before Prof. Dr. Trakarn Prapasongsa introduced her research topic: Eco industry at MU. Then, Prof. Shuhei Tanaka, Prof. Hidenori Harada and Prof. Yuji Suzuki presented on their research activities in the field of Environment-friendly Industries for Sustainable Development. Next, researchers from Prof. Dr. Suwanna Kitpati Boontanon’s group at MU described their “hot topics” by way of VCS. Finally, Prof. Kazuyuki Oshita made a presentation on introduction of resource recycling science, including a sound materials society and waste treatment technology. In each presentation, question and comments were exchanged and future enhanced collaboration is expected.

2016年10月11日に、特別セミナー“Environmental Engineering and Technology for Sustainable Development”が開催されました。本セミナーの目的は、現在ダブルディグリー制度などの連携を進めつつあるタイ・マヒドン大学と本大学院の環境工学分野における研究・教育連携の可能性を議論することにあります。

本セミナーは、マヒドン大学から Prof. Dr. Trakarn Prapasongsa の来学、発表と、マヒドン大学のサラヤキャンパスと京大の吉田キャンパスとをビデオ会議システムにより接続して実施されました。

まず、環境調和型産業論分野の藤井教授の冒頭挨拶の後、Prof. Dr. Trakarn Prapasongsa より、マヒドン大学における研究活動について、彼女の研究テーマであるエコインダストリーを中心とした紹介がありました。その後、環境調和型産業論分野での研究紹介として、田中周平准教授より琵琶湖沿岸水生植物群落に関する研究、原田英典助教より、途上国におけるし尿処理に関する研究、鈴木助教より有機フッ素化合物の挙動、コントロールに関する研究の紹介がなされました。続けてマヒドン大学側から、遠隔講義システムを用いて、Prof. Dr. Suwanna Kitpati Boontanon から研究グループの研究紹介がなされました。最後に資源循環科学論分野から、大下和徹准教授より、循環型社会形成や廃棄物処理に関する研究紹介がなされました。各発表に対し、活発な質問や議論がなされ、今後、将来的な研究の連携が期待されます。

なお、今回のセミナーは、マヒドン大学とのダブルディグリー制度の開始に先駆けて、双方の大学で構築したビデオ会議システムの運用チェックも兼ねて実施されました。



セミナーにおける集合写真（中央モニター中はマヒドン大学の面々）

## 26th Global Environmental Forum “Energy and Environment: The Role of Batteries in Utilizing Renewable Energies”

(Oct. 29, 2016)

By Tomokazu Fukutsuka, Associate Professor, GSGES

On 29 October, GSGES held an open forum called the Chikyu Kankyo Forum (Global Environmental Forum), in which 59 participants enjoyed three lectures on effective utilization of renewable energy through an energy-conversion system. Professor Takeshi Abe (GSGES, Kyoto University) talked about rechargeable batteries for storing electricity generated from renewable energy sources. He presented the history of batteries, the principle of lithium-ion batteries as one of the best rechargeable batteries, and ideas for next-generation rechargeables. Mr. Toshikazu Shibata (Sumitomo Electric Industries) introduced redox-flow batteries as large-scale rechargeables for electricity storage. After explaining the principle behind redox-flow batteries, he described cases of practical application of that principle. Development of redox-flow batteries by Sumitomo Electric Industries was explained in detail. Professor

Kenji Kano (Graduate School of Agriculture, Kyoto University) raised the possibility of using enzymes for energy- or material-conversion devices. He backgrounded the biofuel cell, from its underlying principles through state-of-the-art research being undertaken around the world. He also showed a blood glucose meter and demonstrated CO<sub>2</sub> fixation using enzymes.

Following the three lectures, a panel discussion was held. Questions from the audience were answered by the lectures. All participants came to the conclusion that effective utilization of renewable energy sources currently faces high barriers and that development of rechargeable batteries, bio-devices, etc. must be achieved in the near future in order to enable establishment of sustainable societies.



第26回京都大学地球環境フォーラム「エネルギーと環境」の総合討論で司会をする福塚准教授と討論に参加する安部教授、柴田氏、加納教授（左から右へ）

## How Can We Educate about Sustainability in Japan? Workshop Discusses Formal and Non-formal ESD to Mark Launch of New Book (Nov. 21, 2016)

By Jane Singer, Associate Professor, GSGES



In order to realize a more sustainable society we must provide everyone – youths, university students, government, corporate management and ordinary citizens – with accurate information about sustainability, but information alone is not enough to achieve the requisite transformation of behavior. How can we reach everyone, and how can we infuse knowledge with inspiration and motivation to achieve long-lasting behavioral change?

In a November 21 workshop sponsored by the Environmental Education laboratory of GSGES presenters and participants discussed both formal and non-formal approaches for Education for Sustainable Development (ESD). The main presenter, Dr. Yoko Mochizuki, Head of Curriculum at the UNESCO Mahatma Gandhi Institute of Education for Peace and Sustainable Development in New Delhi, India, explained the current thinking on ESD after the UN-sponsored Decade for ESD concluded in 2014. Education is an important facet of the current Sustainable Development goals, she explained, and SD Goal 4 includes education for sustainability as one of its outcome targets, ensuring that ESD mainstreaming at all levels will continue to be a well-funded national

government priority worldwide. Dr. Mochizuki concluded by leading us through the UN's Framework for Action, which will build on existing partnerships and mechanisms to achieve greater diffusion of ESD's socially inclusive, locally relevant, participatory and skills-driven educational approaches.

ESD is not only in the classroom. The other speakers provided case studies that illustrated the breadth of ESD efforts and their local impacts. Associate Professor Misuzu Asari of the Environmental Education laboratory provided examples of efforts and activities that are helping to make Kyoto University a more sustainable campus, from the annual Environmental Report with the latest data on university performance in such areas as energy use, CO<sub>2</sub> emissions and waste reduction, to the annual Ecole de Kyodai month-long sustainability fair. Environmental taxes, energy-savings campaigns, sustainable job fairs, eco performances, and multi-stakeholder discussion meetings ("hyakunin kaigi") are just a few of the ways that students, faculty, administration and the community are coalescing around efforts to green the campus.

Associate Professor Miki Yoshizumi of the Educational Unit for Studies on the Connectivity of Hills, Humans and Oceans, Kyoto University, showed that this kind of multi-pronged, multi-stakeholder approach can be implemented city-wide, with dramatic results. In Nishinomiya city an NGO helped to link schools, residents, local businesses and local government to sponsor eco-point campaigns, community storytelling tours, family forest outings and neighborhood efforts that have not only raised environmental awareness, they have brought residents of this fast-growing bedroom community together.

“Place-based Formal Education” was the final workshop theme. Tadashi Izumitani, a teacher at Kindai Junior and Senior High School, explained an innovative program for teaching elementary school children in Nara about their cultural heritage by having them interview visitors and learn of the long history of the Daibutsu, or Great Buddha, of Todaiji Temple. The Daibutsu was destroyed twice over its 1200 year history, Mr. Izumitani noted, but each time it was rebuilt thanks to contributions of money and material from untold numbers of ordinary citizens. By having children investigate the Buddha’s history they learn “the importance of holding on to belief, the meaning of the wishes represented by the Great Buddha, and the importance of passing

down our cultural heritage and conserving traditions,” he concluded.

The final speaker, Associate Professor Jane Singer of the Environmental Education Laboratory, recounted the experience of creating a model undergraduate course on community sustainability that was piloted at Kyoto University and replicated at a university in Vietnam. She explained that the team-taught course featured a skills-based approach, interactive learning and a modular structure that allowed students to investigate sustainability through fieldwork conducted on campus, in Kyoto City and in rural villages. The Japan team then worked with Vietnamese university staff and faculty to localize the content, ceding ownership of the course they had created. Interviews held with students a year after them having taken the course found that, for many, the transformative effect of what they had learned continued to impact their behavior and their life paths.

The workshop was held to commemorate publication of a book, *Educating for sustainability in Japan: Creating resilient communities after the triple disaster* (Routledge, 2016). Many of the presenters were contributors or co-editors of the book, and they relished the opportunity to share their findings with students and the larger community.



## 2nd Global Sansai Gakurin Konwakai (Jan. 11, 2017)

By Makoto Usami, Professor, GSGES

The 2nd Global Sansai Gakurin Konwakai in the 2016 academic year took place on January 11. In this year, some educational and research projects in operation in the GSGES are to be presented and discussed in Konwakai meetings. The second meeting focused on the United Nations University's Grant for the Global Sustainability Project, "Enhancement of Urban Disaster Resilience through Activities of Local Participatory Platform," which has been conducted in Kathmandu and Yangon. The meeting began with Professor Kenji Okazaki's presentation, in which he sketched the background, objectives, participating organizations, achievements, and future plans of this project. Next, Professor Junji Kiyono described the joint research project on Urban Seismic Risk Assessment. Then, Dr. Koichi Shiwaku presented the project on Disaster Education and Action Plan. The final speaker was Dr. Glenn Fernandez, who gave a talk on the project on Risk Perception and Housing Safety. Their talks were followed by a free discussion session, and all participants shared detailed information on the ongoing project and exchanged ideas on its future development.

平成 28 年度第 2 回の三才学林懇話会が、1 月 11 日に開催されました。懇話会は、各専門へと細分化されがちな環境関連諸分野の間のコミュニケーションを促進するために長年実施されている部局内勉強会です。平成 28 年度は、地球環境学堂・学舎で実施中の様々な教育・研究プロジェクトが順次取り上げられています。第 2 回のテーマは、国連大学の「地球規模課題解決に資する国際協力プログラム」に採択され実施されている「参加型プラットフォームの活動による都市の災害レジリエンスの向上」で、9 分野から 12 名の参加者を得ました。

初めに、岡崎健二教授が、この国際協力事業の概要を説明されました。ネパールの首都カトマンドゥとミャンマーのヤンゴンで実施されている事業の背景・目的・参加機関やこれまでの成果、今後の予定などが発表されました。続いて、清野純史教授が、都市部の地震リスク評価について、塩飽孝一研究員が、学校での災害教育と防災・減災の取り組みについて、グレン・フェルナンデス研究員は、地域住民のリスク認知と住宅の安全性について、それぞれ進行中の共同研究の内容を発表されました。4 名の発表を受けて、参加者から、本事業の特徴や詳細について質問や意見が出され、活発な議論が行われました。

## Kyoto University President, Prof. Juichi Yamagiwa Visit Mahidol University (Feb. 3, 2017)

By Shigeo Fujii, Professor, GSGES



マヒドン大学学長 Udom Kachintorn 教授を表敬訪問する京都大学総長 山極壽一教授

On February 3, 2017, the President of Kyoto University, Prof. Juichi Yamagiwa visited Mahidol University accompanied by Prof. Kayo Inaba (an Executive Vice-president), Prof. Mamoru Shibayama (Director of KU ASEAN Center), Prof. Shigeo Fujii and administrative staff members. The visit began with a courtesy call on Prof. Udom Kachintorn (President), Prof. Sansanee Chaiyaraj (Vice-president), and other VIPs and was followed by a VCS meeting among seven collaborating universities on a project with GSGES (Graduate School of Global Environmental Studies).

Then, the visitors from Kyoto University toured the huge campus by electric bus and visited the GSGES partnership office at Mahidol University, which was established in January, 2016. The visit ended with a luncheon hosted by Dr. Jackrit Suthakorn, Dean of the Faculty of Engineering.

2017年2月3日、山極壽一総長、稲葉カヨ理事・副学長、藤井滋穂地球環境学堂教授、柴山守ASEAN拠点所長ら6名の京都大学一行が、マヒドン大学を訪問しました。訪問は、まず Udom Kachintorn 学長、Sansanee Chaiyaraj 副学長ら、マヒドン大学要人への表敬から始まりました。そこ

ではそれぞれの大学での国際教育・研究の紹介がされるとともに、今後の両大学間での協力について活発な意見交換がなされました。その後、遠隔会議室に移動し、地球環境学堂と協働プロジェクトを実施しているハノイ理工科大学、ダナン理工科大学（以上、ベトナム）、ボゴール農業大学、バンドン工科大学（以上、インドネシア）、王立農業大学（カンボジア）、チャンパサック大学（ラオス）、そして京都大学と、遠隔会議システムで結び、短時間ながらそれぞれの大学紹介の時間を持ちました。

つづいて、広大なマヒドン大学キャンパスを、電気自動車（トラムと称し、学内の教職員・学生の移動のため5路線がキャンパス内を巡回）で移動し、各種の学部、建物を車内から視察しました。その後、マヒドン大学の得意とする医学部門と工学部門の融合研究センター、地球環境学堂との共同研究実施実験室などを見学の後、地球環境学堂が2016年1月に設置した京大海外拠点オフィスを訪ねました。そこではマヒドン大学および京都大学とのクロスアポイント教員の Suwanna Kitpati Bootanon 准教授（京都大学では特定講師）から活動が説明されました。その後、Jackrit Suthakorn 工学部部長らと昼食会を持ち、マヒドン大学訪問の全プログラムが終了しました。



マヒドン大学学長 Udom Kachintorn 教授を表敬訪問する京都大学総長 山極壽一教授

## 27th Global Environmental Forum: “Thinking Environment Through Waste” (Feb. 4, 2017)

By Takashi Fujimori, Assistant Professor, GSGES

On 4 February 2017, GSGES held an open forum called the 27th *Chikyu Kankyo* Forum (Global Environmental Forum). Eighty-three participants enjoyed three guest lectures about the relationships between the environment and waste issues. Professor Masaki Takaoka (GEGES, Kyoto University) lectured on the two facets of waste - as hazardous substances and as recyclable materials. Waste power generation, biogas as a sustainable energy source, and the concept of the “urban mine” were introduced as positive aspects of waste. In contrast, he also noted that there are still many problems related to hazardous waste, referring to informal recycling of electronics waste and management of mercury waste. Professor Minoru Yoneda (Graduate School of Engineering, Kyoto University) reported on the current situation of specific wastes polluted by radioactive nuclides. Since soil in Fukushima Prefecture (Japan) was severely polluted by radioactive cesium, final disposal of such soil has recently been a subject of

discussion. Accurate information is needed in order to communicate with local people in the event of a requirement to manage waste polluted by radioactive nuclides. Professor Yoshio Takahashi (School of Science, University of Tokyo) presented on the effects of microscopic characteristics of elements on global environmental issues such as waste management, resource recycling, and global warming. Cesium exists as suspended or dissolved species in particulate solids, depending on region (e.g., Fukushima and Chernobyl). He also introduced unique technology for concentrating and separating rare earth elements using DNA derived from the milt of salmon. Calcium oxalate in micron-size fine particles in atmosphere could help in assessing global warming. Following the lectures, a number of constructive questions were posed to each lecturer by audience members. This was a valuable and interesting opportunity to re-think the definition of the “waste.”



第27回京都大学地球環境フォーラム「廃棄物を通して見る環境」の総合討論で司会をする藤森助教と討論に参加する高岡教授、米田教授、高橋教授（左から右へ）

## Students Feature Internship Study

By Yoshihiro Okumura, Assistant Professor, GSGES

Three Master's students reported in *Sansai* Newsletter No. 17 what they saw, heard, sniffed, felt and learned through the GSGES's educational program "Internship Study."

**砂** 漠化対処プロジェクト(総合地球環境学研究所)でナミビアを訪れ、3か月間樹木利用の実態調査を行いました。滞在中は村に住み込み、村民と寝食を共にしました。1か月間断水が続いた時は、体を洗うことも出来ず、喉の渇きと戦いながら1日を必死で生き、政府からの救援物資の缶詰に支えられながら、ハイエナ、ジャッカルの匂いの強い肉や、芋虫やセミで食い繋ぎました。現地生活を通して生きる術と鉄の精神力を得ることが出来ました。これからは世界のどこでも生き延びていけそうです。

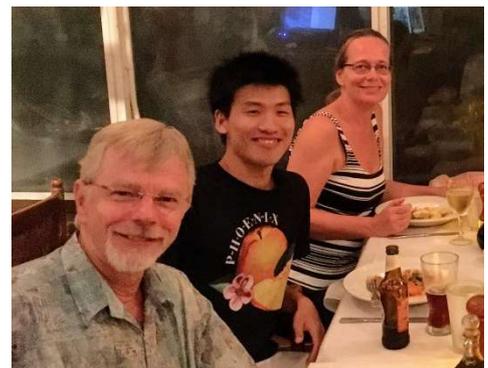
— 大西航, 陸域生態系管理論分野(舟川研) 修士1回生



(右上) 誕生日の祝いの席にて。(左下) 3時のおやつ、モパネワーム。(右下) ここが私のアナザースカイ。

**ハワイ**大学で日本とアメリカの構造物に対する津波の設計基準の違いについて勉強しました。長期滞在なので自分の研究を思う存分できることはもちろん、ハロウィンやサンクスギビングなどアメリカならではの文化を経験できました。また、日中はしっかり研究を行い、その代わりに週末は思いっきりサーフィンで現地の友人と行うなどメリハリのある充実した生活を送れました。

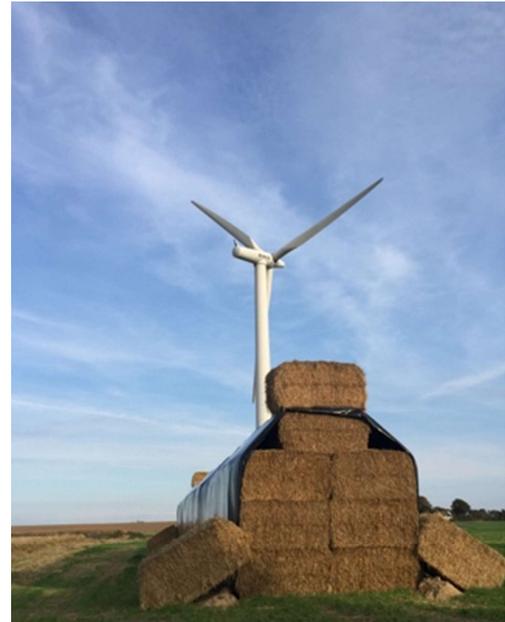
— 森隆, 地震災害リスク論分野(清野研) 修士1回生



(右上) ハワイ大学 Riggs 教授らと。(下) 息抜きにすぐ行けるワイキキビーチ。

こみや木、わらや太陽の熱で地域一帯の暖房や給湯を賄う「地域熱供給」。私はデンマークで実際の事業立ち上げに携わり、実務能力を養いつつ日本への導入可能性やその課題と向き合うことができました。幸福度 1 位のデンマーク(日本は 2016 年版 53 位)は、16 時帰宅が当たり前。家族や友人との時間を大切に、余暇の時間を幸せに過ごす小さな工夫が随所に見られました。格差が小さく、周りとの生活水準の差を気にすることが無いことも重要な要素。「幸せ」というより、「満たされている」「現状に満足している」と表した方が適切かもしれません。学びに溢れたインターンと幸せなプライベートで充実したデンマークでの思い出は、一生の宝物です。

— 高橋叶, 地球環境政策論分野(宇佐美研) 修士1回生



(右上) 風車とわら。(下) インターン先の指導責任者と。

# Faculty Spotlight

## Interview with Takeshi Katsumi

By Arif Udin, Short-term Student from Indonesia, GSGES,



*“These days, I am more interested in practical contributions on-site than writing academic papers, but many people observe our work and request that I write articles for journals and magazines.”*

### **Professor Takeshi Katsumi, GSGES, Kyoto University Disaster Waste Management and Reconstruction**

I had a very enjoyable one-hour discussion with Professor Takashi Katsumi, an expert in geotechnical and geoenvironmental engineering. This young, smart, and enthusiastic professor has published dozens of articles in journals and conference proceedings, in both English and Japanese, and has also written popular articles in Japanese magazines on his main research theme, the use of recovered soil - characterization, standardization, and strategic utilization. However, his priority for this topic is contributing research findings on site, and publication is a second priority. This research is aimed at promoting use of the soil fractions recovered from disaster debris, which was initiated in the wake of after the Great East Japan Earthquake and Tsunami of 2011 in affected areas, including Iwate, Miyagi and Fukushima Prefectures.

Professor Katsumi and his team, including laboratory personnel and researchers from the Japanese Geotechnical Society, have conducted three stages of the research. The first stage was experimental work on recovered soils that are extracted from the disaster debris to see whether or not the recovered soil can be utilized, compared to conventional soil. The second is to convince people that recovered soil is useful and to pressure the government to adopt standards for its. The third stage, he said, is to create a strategy for communication, since, even though we have standards for re-use of recovered soil, people tend to use other sources for soil outside of the affected areas due to sectionalism in the government. For example, one section may have responsibility for soil debris management whilst another is responsible for reconstruction, and the latter group might purchase soil from outside of the affected area rather than utilize debris soil because it's easier. Therefore, we have to promote the idea that recovery will be strengthened through recycling the soil debris. And, these research findings are now being considered by the government with a view to revising the law to require utilization of recovered soil in disaster-affected areas.

The main concept of this research is integrated management of the soil for disaster recovery, and its significance was recognized as a result of its success in recent competition with other Japanese research institutions for major funding from the Ministry of Environment. Our research objective is to optimize allocation of materials from recovered soil and promote utilization of waste generated by earthquake and tsunami disasters for such purposes as road embankment construction, seaside afforestation and residential land applications. Recovered soil is divided into A, B and C classes. Class A is soil separated from soil-dominant stockpiles; Class B is soil separated from waste-mixed stockpiles, which satisfies the criteria for utilization; and Class C is fine fractions obtained through the disaster waste treatment process. This research has revealed that recovered soils are similar to conventional soils, and this important finding has been contributing to disaster recovery, particularly in Iwate Prefecture. A future target of [t]his research is to promote use of soil with natural contamination. At the end of interview, Prof. Katsumi said that he still bears responsibility for using recovered soil by evaluating outcomes at his research site.

## Interview with Koichi Shiwaku

By Arif Udin, Short-term Student from Indonesia, GSGES,



*“Building linkages between school and community is a big challenge for Disaster Risk Reduction Education (DRRE), even in Japan, a world leader in disaster management.”*

### **Dr. Koichi Shiwaku, GSGES, Kyoto University Education for Disaster Risk Reduction**

Dr. Koichi Shiwaku, a researcher from GSGES, asserts that the above is an important theme of his DRRE research in Japan, as well as overseas, including such countries as Nepal and Myanmar. In conducting this research, he has published several articles, not only in academic journals but also in book form, with his latest co-edited book “Disaster Resilience of Education Systems” having been published by Springer in June 2016.

In addition, together with members of his research team and other researchers in his field of active research, Shiwaku has applied a five-dimensional framework for use as an assessment tool for DRRE, called School Disaster Resilience Assessment (SDRA). The framework includes (1) physical conditions; (2) human resources; (3) institutional issues; (4) external relationships; and (5) natural conditions. This tool is utilized to create an action plan after determining how to classify the problems related to school disaster management. The SDRA tool has been implemented in Japan and other countries by customizing it according to the specific conditions in each country. Furthermore, SDRA has been found to be very useful for enhancing capacity development for schoolteachers and for government officers.

According to Dr. Shiwaku, the findings from DRRE research in Japan show that there is often a conflict of interest between the local education board and the government section on DRR that bears responsibility for disaster management, as occurred at one of his research sites, Kesennuma City in Miyagi Prefecture, following the Great East Japan Earthquake and Tsunami of 2011. If a school has a head teacher who has good relationships with the community, they can collaborate smoothly to jointly implement the action plan; if not, it is difficult to implement DRRE. In his research, the teachers in Kesennuma not only participated as respondents, but some also took part in the DRRE research as Education Researchers, he added. He noted that, in a number of developing countries, the government and also most of the schools have plans for DRRE but they don't implement these plans or, if they do, implementation is rarely assessed or evaluated. Therefore, as his closing statement in a recent interview, he said that it is important to motivate governments and schools to put into practice an action plan, such as in Myanmar and Nepal, where his research is still in progress.

## Interview with Yoshihiro Okumura

By Arif Udin, Short-term Student from Indonesia, GSGES,



*“Education and early warning systems are important in mitigating tsunami disasters, but they are not enough. We need a new approach in order to minimize the number of fatalities.”*

### **Dr. Yoshihiro Okumura, GSGES, Kyoto University Tsunami Disaster Risk Management**

Dr. Yoshihiro Okumura is convinced that it is possible for Japan to reduce the number of victims of tsunamis. However,

Japan has a problem with people's awareness as well as technical factors such as the design of Reinforced Concrete (RC) buildings. He explained by comparing the 2011 Great East Japan Earthquake and Tsunami, which directly caused 18,452 deaths and indirectly caused 3,407 related deaths, to another case in American Samoa in which only 35 fatalities resulted from a tsunami that occurred there in 2009, even though residents lacked good education and there was a poor early-warning system. In fact, there was only one key person who knew how to mitigate the tsunami impact and the residents believed him when he shouted out that they should quickly go up to higher ground. Also, they successfully grew a sense of urgency in a community before the tsunami arrived at the village.

Dr. Okumura has also conducted research involving simulated evacuation drills in Japan and Chile. He found that the reactions of people in both countries were quite different. People in Chile tended to react better when they hear the sound of tsunami alarms compared to the Japanese, who did not take much action. Therefore, he said, we need a new approach in order to minimize the number of tsunami victims through introducing the concept of "cooperative creation of social reality." By this, he means creating an atmosphere which makes people feel more urgency.

To answer the question of why RC buildings were overturned by the tsunami, Dr. Okumura has also conducted research on the 2011 tsunami in Onagawa Town, Tohoku. He shared three findings: first, that we cannot explain from the view point of only the hydrodynamic force whether pile-supported RC buildings overturned or not; second, that the pile resisting moment makes a significant contribution to overturning resistance for most of the overturned buildings, but not for the surviving buildings; third, that the failure of these piles could be caused by only the tsunami hydrodynamic force.

## Interviewer introduction

**Mr. Arif Udin, from Indonesia**

**Short term student in Environmental Education Laboratory, GSGES, Kyoto University**

Research on disasters is very important for developing human resilience in order to minimize impacts as well as to improve our response to disasters. Therefore, this special report focuses on research on disaster issues being conducted by several researchers at GSGES. Three research topics are covered: first, how to utilize debris when managing waste after earthquakes and tsunami disasters; second, education for reducing the risk of disasters; and third, how to minimize the number of tsunami victims. This reportage was conducted by interviewing experts who have long experience in disaster research. We hope that readers will gain insights about implementation of research and education on disasters.



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