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TOHOKU UNIVERSITY Graduate School of Environmental Studies
ENVIRONMENTAL LEADERSHIP PROGRAM



SERMSS

東北大学大学院環境科学研究科環境リーダープログラム
国際エネルギー・資源戦略を立案する環境リーダー育成拠点

BULLETIN | No.09 May 2013

Strategic Energy and Resource Management and Sustainable Solutions

新年度スタート

今年度は、プログラム開始より4年目を迎える。4月は、新たに7名の学生を長期コースに迎え、在籍者合計28名での新年度開始となった。オリエンテーションでは学生がそれぞれ、研究科長より許可証を受け取り、自己紹介を行った。この中には、3月に修士課程を修了しPMSE認定を受け博士課程に進んだ学生もあり、新メンバーと共に益々の活躍が期待される。



オリエンテーションにて
At the new year orientation

New School Year Started

This school year is the fourth year of the program. In April, we welcomed seven new members to the regular course, starting the new school year with 28 students in total. In the entrance ceremony and orientation session, each student was given a certificate of admission to the program from Dean Tohji and then each introduced themselves to other members. Among the new members are some students who were awarded the PMSE (Professional Master for Sustainable Environment) in March and who are now proceeding to the doctor course. We look forward to a stable new semester this year.

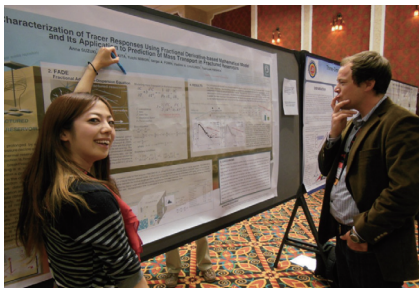


環境リーダー特別研修 | 授業風景
Class of Environmental Leadership Special Training |

インターンシップ レポート INTERNSHIPS REPORT

アメリカ：スタンフォード大学 Stanford University, United States of America

私は 2012 年 7 月から 約 2 か月半、アメリカスタンフォード大学にて地熱エネルギーに関わる研究活動を行ってきました。スタンフォード大学の地熱プログラムは、35 年以上の歴史があり、地熱開発に関して世界の中心的な役割を果たしています。期間中は、地熱発電所の持続性に関わる技術について学ぶことができました。また、National Geothermal Academy というサマープログラムに参加し、アメリカおよび世界の地熱エネルギーの動向について調査してきました。様々な地域で地熱エネルギーの多様な利用がされ始めている一方、日本では開発が停滞しており、世界各国から集まったプログラム参加者の関心を集めていました。日本の地熱開発における問題点、震災前後の状況の変化などについての議論を通じ、日本の地熱開発への可能性を実感するとともに、今後、国内外における地熱エネルギーの普及拡大に活躍できる人材を目指したいという気持ちが強まりました。 **鈴木杏奈 (D3)**



スタンフォード大学にてポスター発表をする鈴木杏奈
Anna SUZUKI giving a poster presentation at Stanford



スタンフォード大学にて同室の友人と
Anna and her friends in the same office



DTU にて発表をする大野肇
Hajime OHNO giving a research presentation at DTU



大野の発表を受け質問をする DTU の学生
DTU students asking questions to Ohno

I worked at the Technical University of Denmark (DTU) for a month last January. In DTU, I learned how to use the LCA tool "EASETECH" which was developed by a research group at DTU, and tried to apply it to my research. DTU has a large research group working on the improvement of waste treatment systems from the environmental point of view. Based on the activities of the group, EASETECH was developed to enable more realistic process descriptions about waste treatment in the LCA model, although the lack of reality on the results from conventional statistical analyses such as LCA sometimes becomes a problem. By

I conducted some research on geothermal energy at Stanford University in the USA in the summer of 2012. The Stanford Geothermal Program has carried out geothermal reservoir engineering research for more than 35 years and has played a leading role in the geothermal industry all over the world. Their research over the past decade includes studies of well test analysis of fractured and multiphase reservoirs, design and interpretation of tracer tests in fractured reservoirs, adsorption in vapor-dominated reservoirs, experimental measurements of fluid flow parameters, and optimization of production and reinjection strategies.

A sustainable and reliable supply of energy is one of the major conditions for social development and environmental protection for all countries in the world. In order to produce geothermal energy from a reservoir sustainably, reinjection has been developed, which involves returning some of the water produced back into the geothermal system after energy extraction, which increases

production. Hence, a study about reinjection strategies offered a productive experience for advancement of my PhD research. The aim of my research is to propose a new method to design injection wells in a fractured reservoir and contribute to success in geothermal development.

In addition to research in Stanford University, I joined the "National Geothermal Academy", which is an intensive summer course covering all aspects of geothermal energy development and utilization. This investigated the worldwide activities in geothermal development. Despite an increase in the generation capacity and the various use of geothermal energy all over the world, Japan remains lightly developed, which generated participants' attention. Through discussions about the issue of geothermal development in Japan and the changed circumstances after the Tohoku earthquake, I was able to see massive potential for geothermal development in Japan. **Anna SUZUKI (D3)**

デンマーク：デンマーク工科大学 Technical University of Denmark, Denmark

私は 2013 年 1 月 6 日から約 1 ヶ月、デンマーク工科大学 (DTU) において学外研修を行いました。DTU では、DTU の研究グループが独自に開発した廃棄物処理に特化した LCA ツール「EASETECH」の講習を受けると共に、その自身の研究への応用に取り組みました。LCA をはじめとする統計解析は時に現実との乖離が問題視されますが、EASETECH は DTU が実験を通じて収集したインベントリデータを元に構築されているため、その視点からより現実的なプロセス記述ができるように工夫されています。自身の研究である自動車スクラップリサイクルへの応用に際しては、何度も議論の場を設けて頂き、様々な視点からの助言を元に良い結果を得られたと感じています。

DTU にはヨーロッパを中心とした各国から学生が集まっており、研修期間を通して様々な国の環境に対する取り組み方、他国が日本に対して持っている印象について議論することができ、充実した 1 ヶ月を過ごすことができました。 **大野肇 (D3)**

applying this tool to my topic (the recycling of end of life vehicles scrap), I was able to obtain some good results, thanks to many discussions with the group and useful suggestions from them.

Because there were various European students in DTU, I could also learn how they tackled environmental problems in each country, and what they thought about Japan during my stay. I spent a fruitful month in Denmark and this experience provides a base for global thinking in my research activities.

Hajime OHNO (D3)

平成 25 年度授業開始 Courses in 2013 Started

平成 25 年度は 4 月より「都市水環境論」をはじめとする授業を順次開講。教育プログラムを開始し 3 年目、採択を受け 4 年目の今年度は、学術・産業界から講師を招き特別講義を展開するほか、夏、秋にもフィールドワークを計画中である。

The current academic year started in April with courses on "Water and Urban Environments", "Introduction to Sustainability" as well as the Environmental Leader Training Courses.. It has been three years since the education program started, also this is the fourth year since the program was adopted by MEXT. Now we are planning to invite lecturers in the fields of academia and industry for special lectures, as well as some major fieldworks in summer and autumn.



2012 年度 若者のための環境教育 × 国際交流 ミーティング in 清里 International Exchange & Environmental Education for Young People

アメリカ大使館との共同開催として、3 月に山梨県清里の KEEP 協会にて開催されたワークショップに、環境リーダープログラム基本コースから 2 名が参加。他大学からの参加者との交流を通じて、文化の多様性と環境問題の共通性について理解を深めることができた。

Two students in the basic course joined a workshop hosted by the American Embassy and Kiyosato Educational Experiment Project (KEEP) in Yamanashi last March. From the following reports we can appreciate what participants could gain from the workshop.

レポート STUDENTS' REPORT

March 17~19, 2013

This year I got an opportunity to participate in a program called "International Exchange and Environmental Education for Young People" held by KEEP, located in Yamanashi Prefecture. Even though it's a bit difficult to describe the detail of this program, since most of the time the program was carried out in Japanese, it's easy to get the 'the taste' of the program. If I use an analogy of Japanese food, the program seemed like a set of rice, Sanma fish and Misoshiru: the schedule and the activities were composed in a simple, but enjoyable way.

In this program, we visited some places like the church, the cow farm, the Paul Rusch historical museum and the Yamane museum. The Paul Rusch museum is really an interesting place: the building, the rooms, the ornaments, the books, the carpet, the chairs, everything seemed so classic (old), but they are still 'alive'. While visiting the Yamane museum, I heard interesting information about a conservation project called "Yamane Bridge". They built

special bridges to help yamane (endangered Japanese dormouse) move freely across the busy motorways that cut through the forests where they live—it's like helping a lost child to find his way back home. We also had a simple, yet delightful game called mori no tomodachi sagashi. In this game we walked into forest with our partner in order to find a couple of trees or any objects that look like a friend (sense of friendship). In the last day we got involved in small groups for making a project proposal on environmental education, and we had only six hours to finish it. To me, it was like eating kamatama udon in a big cup using chopstick and I had only five minutes to finish it. Challenging!

Finally, this experience has taught me something: the basic value of all environmental educations is supposed to be rooted in faith (heart) and cultivated through our daily lifestyle—a simple lifestyle.

Mohammad Shofie (Indonesia, M1)

The Environmental Education and International Exchange Meeting is a workshop about the environment held by the Kiyosato Educational Experiment Project (KEEP) which is an economic and community development project. Its Ideals are based on food, health, faith, hope and environmental education for youth, and aims to empower them to use the knowledge gained at KEEP in their own communities to solve social, economic, and ecological issues. Through my participation in this meeting I had an opportunity to learn new things about the environment and to discuss with many students from Japan and abroad some strategies to implement in local communities to protect the local environment, which in turn will help improve the global environment at the same time. We got to know through

this meeting about Mr. Paul Rusch, and his passion and dedication to the Japanese people especially those in Kiyosato town. He was a paradigm to how we should consider the public responsibility in our life. We also learned about the Japanese dormouse (ヤマネ). It was the first time for me to know about this beautiful mouse, and I saw how much people there cared about it and made their efforts to keep it safe, like building a special bridge over the road to secure its movement between the forest sides.

In general, the program was quite interesting, we have learned about the environment, we had team work and we discussed many issues in a very positive and friendly atmosphere.

Issa ZAITER (Jordan, M1)



参加者と Shofie (下段右)
Shofie, bottom right, and other participants



参加者と Issa (左)
Issa and other participants

受賞報告 AWARDS REPORT



受賞式にて（右から Paulo SOUSA、横山俊）
At the ceremony (from right, Paulo SOUSA, Shun YOKOYAMA)

プログラム生 2 名が奨学賞を受賞 SERMSS Students Received Scholarship Award

去る 3 月 22 日、当研究科の田路教授が理事長を務める NPO 法人環境エネルギー技術研究所より、環境リーダープログラムの学生 2 名が奨学賞を受賞した。今回表彰を受けたのは、既に 3 月に博士課程後期を修了した横山俊（現当研究科助教）、および現プログラム生のパウロ ソウザ（D1）であるが、過去には同じく環境リーダーの伊藤奈津子（当時 D2）および鈴木杏奈（当時 D1）が受賞している。

On March 22, two of our students received the Scholarship Award from the NPO "Shaping the Future Technology for the Environment and Energy (SFTEE)" that Dean Tohji represents as the director. The awardee is Shun YOKOYAMA who graduated last March and now is an assistant professor, and Paulo SOUSA who is now in the first year of the doctor course. Natsuko ITO, who graduated last March and Anna SUZUKI who is now in the third year of the doctor course also received this award in 2012.

環境リーダープログラム、研究科長教育賞受賞 SERMSS Received Education Award

この度、本学環境科学研究科において、環境リーダープログラムが研究科長教育賞を受賞した。昨年の科学技術戦略推進費による実施プロジェクト中間評価の「S」評価に続き、今回は学内からの評価ということで非常に光栄な受賞となった。

Following the best mark of "S" awarded in the mid-term assessment supervised by the Japan Science and Technology Agency (JST) last year, the Environmental Leadership Program received the "Education Award" from the Graduate School of Environmental Studies, Tohoku University on May 10. This is a distinguished prize in recognition of our achievement by the Graduate School.

プログラム生 PROGRAM STUDENT'S VOICE

研究活動に専念する傍ら、先日行われた運動会では、綱引きチームのリーダーとして活躍した。
Besides his research activity, Yuta recently worked very hard as a leader of a tug-of-war at the school's sports festival.



須藤 裕太
Yuta SUDO
博士課程前期 2 年
2nd-year Master
Program

私は都市・地域環境システム研究室に所属しています。メタン発酵技術を利用し、有機性廃水などの廃棄物系バイオマスから再生可能エネルギーであるメタンを回収する研究を行っています。

環境リーダープログラムに参加して 6 ヶ月が経ちました。日本のことだけでなく、さまざまな国の社会システムや異文化、ライフスタイルを学ぶことが出来ます。国際的な視点は地球環境問題を解決していくうえでとても重要なことであると考えます。専門分野はもちろんのこと、異なる分野や文理を超えた広い知識を身につけ、自分自身を向上させるためにこれからも努力していきたいです。

I belong to the Urban and Regional Environmental System laboratory. I am working on methane fermentation, especially using biomass and wastewater for both methane generation and the wastewater treatment process.

It has been six months since I joined the Environmental Leaders Programs. In this program, I learn not only about Japan, but also different cultures and life style of other students who come from different countries. It is really useful for me to learn and understand about current environmental issues and how to solve them through an international perspective. Moreover, I would like to improve my scientific knowledge and expertise in order to develop my future career.

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SERMSS Bulletin
No.09 May 2013

制作：SERMSS 事務局
Edited by: SERMSS Secretariat

Graduate School of Environmental Studies Tohoku University
Strategic Energy and Resource Management and Sustainable Solutions
(SERMSS)

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社会システム改革と
研究開発の一体的推進
Funds for integrated
promotion of social system
reform and research and
development