



Kyushu University

ITP Steering Committee,
Earth Resources and the Environment,
Faculty of Engineering



Five years of Achievement JSPS International Training Program (FY2008 to FY2012)

**Formation of Asian Center on Earth Resources and Environment Research for
International Research Associates and Graduate Students**

**Departments of
Earth Resources Engineering, Civil and Structural Engineering, Urban and Environmental Engineering,
Faculty of Engineering
Kyushu University**



Interdisciplinary Graduate School of
Engineering Sciences Research Institute and
Graduate School of Engineering, Kyushu University

Earth Resources and The Environment from Asia to The World

Training to cope with changes encompassing global resources and the environment
Diverse training in earth resources and environmental issues from a long-term point of view
Cultivating human resources to tackle earth resources and environmental issues occurring in Asia
Building networks for young researchers connecting Asia and the world

Lund University
(Sweden)

University of Birmingham
(United Kingdom)

University of Duisburg-Essen
(Germany)

Technical University of Ostrava
(Czech Republic)

Libya

Egypt

Zambia

Worldwide increase in demand for resources and to environmental issues in Asia

- Human resources able to tackle “earth resources and the environment” ambitiously
- Human resources aware of the latest research trends and able to think from a global point of view
- Human resources able to contribute to the solution to Asia’s resource and environmental issues
- Human resources able to practice in earth resource and environment-related fields

Cultivating global human resources to develop the fields of international earth resources and the environment

Think Globally

Human resources
who have expertise in
resources and the
environment and the
ability to look at the
global issues

Act Regionally

Human resources
who are leaders in
resource and
environmental
technology

Human resources who
build cooperative
networks in Asia



Kyushu University

Japan

- University of Alberta (Canada)
- Environmental Systems Research Institute (ESRI) (United States)
- University of New Hampshire (United States)
- Redlands University (United States)

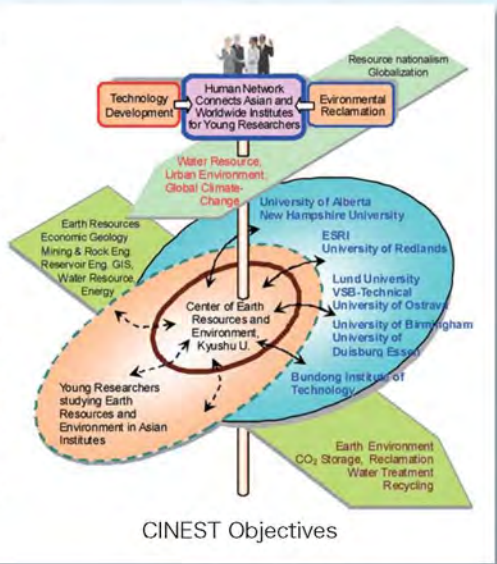
- Mongolia
- China
- Cambodia
- Korea
- Thailand
- Vietnam
- Malaysia
- Philippines
- Indonesia
- Bandung Institute of Technology (Indonesia)

Human Network connects Asia to World-wide Institutes in Earth Resources and Environment

Cooperative International Network for Earth Science and Technology (CINEST)

As urgent problems facing human beings, exhaustion of resources exists at their front and global environment problems exist at their back. Especially, rapid increase of the resources and energy consumptions is casting a shadow over sustainability of human activities. Therefore, the cooperative studies and activities by young researchers hold a key to solve the problems in Asian fields.

The mission of CINEST is to link young researchers against the problems generated in Asian region in the area of earth resources and the environment in order to analyze problems and find solutions together. The project provides the research and the training opportunities to young researchers as a systematic program, and they are trained to get a global viewpoint in the international cooperation-related network considering of the fields of earth resources and environment.



CINEST Objectives

Five Years of Achievement

JSPS International Training Program at Kyushu University

Project title: Formation of the Asian Center for Research on Earth Resources and Environment for International Research Associates and Graduate Students

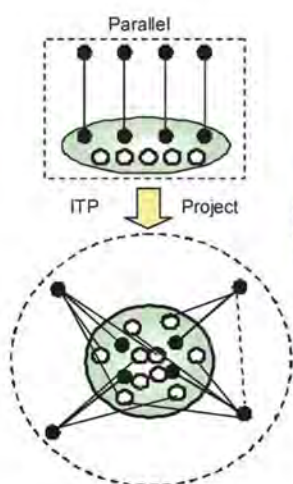
Name of the institution: Departments of Earth Resources Engineering, Civil and Structural Engineering, Urban and Environmental Engineering, Faculty of Engineering, Kyushu University

As urgent problems facing human beings, exhaustion of resources exists at the entrance and global environmental problems exist at the exit. In particular, the rapid increase in resource and energy consumption in developing Asian countries is casting a major shadow over the depletion of resources and the global environment. Therefore, cooperative studies and activities hold the key in solving the problems in Asian fields and efforts in cooperation with research institutes around the world are required.

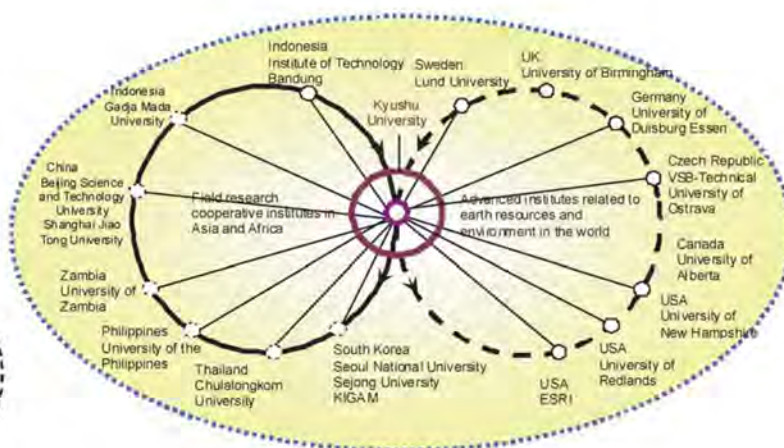
Kyushu University has aggressively promoted strategic international exchange activities in line with two mainstays for an international strategy of an “Asian-focused approach lead by historical and geographic necessities” and “Formation of global knowledge bases.” In such a manner, Kyushu University, as an “Open university for Asia,” has continued academic activities in Asia.

The three departments of our Faculty of Engineering, Earth Resources Engineering, Civil and Structural Engineering and Urban and Environmental Engineering associated with this application are comprised of the distinctive organizations of education and research comprehensively addressing the exploration and processing of mineral resources, geosphere environment including the earth’s surface and urban area where human activities are located.

However, demanded are human resources as leaders who can develop strategic ideas and actively demonstrate policy remarks and initiatives for the problems of resources and the environment for international research opportunities. Although young researchers and postgraduate students have so far been dispatched to overseas research institutes individually by each laboratory, potentially recognized is the necessity for systematically pursuing research and training projects which allow the vigor of young researchers and students to be fully delivered based on long-term perspectives. In particular, with regard to the training of the human resources who



Changes in the relationship of mutual cooperation by ITP project



Organization for assistant professors and graduate students in earth resources and environment

can deal with global issues as typified by the problems of earth resources and the environment, distinctive advanced field research and educational training in cooperation with overseas institutes are indispensable.

We started the project of the JSPS International Training Program (ITP) from April 2008. At the start of the program, four partner institutes were selected from overseas, and then five institutes were screened additionally in conjunction with this project. Thus, we have worked together with nine partner institutes at North America (4), Europe (4) and Asia (1). During 5 years, FY2008 to FY2012, 7 assistant professors, 3 associate researchers, 11 doctoral students, and 26 master students, total 47 young researchers have been selected by the steering committee based on application forms and interviews for each partner institute.

According to longstanding cooperative relationships among professors, a project management system, which flexibly connects young researchers belonging to the applying university to the overseas research institutes, has been provided based on cooperative relationships. In addition, professors in charge (academic supervisors) have advised and supported researches in consideration of the problems in staying the partner institutes. After providing follow up workshops on presentation skill, mental health and securities at overseas, young researchers have been dispatched, and they have been supported by supervisors at the partner institutes.

The Symposium on Earth Science and Technology has been successfully held every year from 2008 as a joint planned conference with the overseas partner institutes. In the 2011 symposium, there were total 205 participants attended, and over 100 young researchers, including 70 foreign young researchers from Asian and African countries and 30 Japanese young researchers, presented their full papers in English based on their research activities. And, the 2012 symposium was held at Institute of Technology Bandung which is one of cooperative institutes related this project.

We expect that this project will provide an environment for carrying out the training of young researchers who will be human resources and future driving force to overcome various technological and comprehensive problems on earth resources, global and local environment not only in Asia also in the world to get sustainability for human beings.

Kyuro Sasaki,
Chairman of Steering Committee, ITP Program
Prof., Dept. of Department of Earth Resources Engineering
Faculty of Engineering, Kyushu University
(March. 10, 2012)



Steering Committee Members visited University of New Hampshire to discuss ITP issues

From right,
Prof. Takayuki Shimaoka
Prof. Kevin Gardner (New Hampshire University)
Prof. Sasaki
Mr. Hiroshi Ando (Former Account Affairs Division)
Mr. Shinichiro Sato (Former General Affairs Division)

Aug. 26, 2009 @ Kingsbury Hall



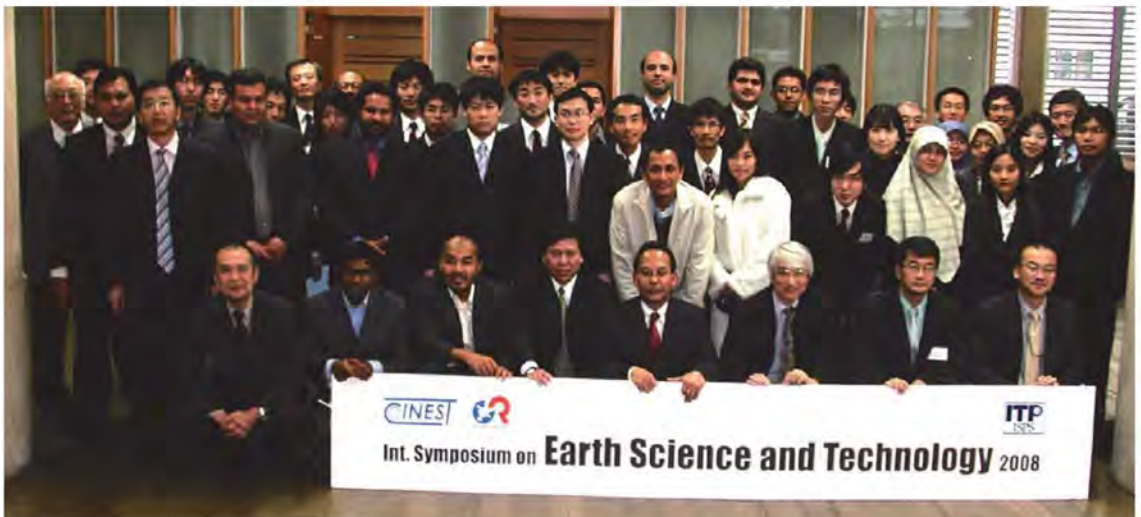
Meeting on ITP program with Prof. Dew, Faculty of Engineering, University of Alberta

From right
Prof. Steven K Dew (Vice Dean, Univ. of Alberta)
Dr. Yuichi Sugai (Assistant Professor dispatched)
Mr. Akira Matsunaga (Former Principal Secretary of
Department Earth Resources Engineering)

Sept.8, 2008 @ Dean's Office, Faculty of Engineering

International Symposium on Earth Science and Technology

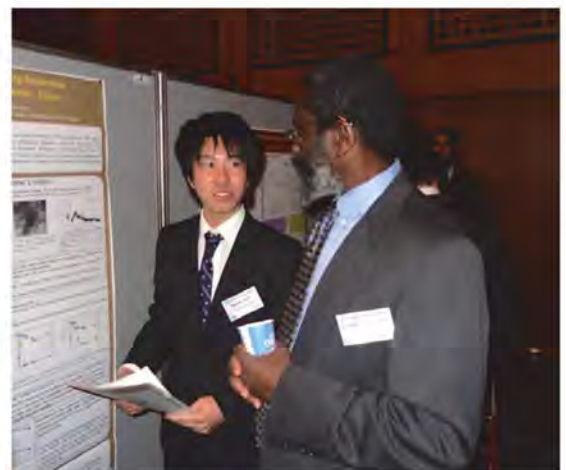
The International Symposium on Earth Science Technology has been held annually to present a conference on presentations of the research activities by young researchers since 2008 supported by the ITP project. The CINEST strives to enhance the content of the presentation, and 70 to 80 foreigners are participating with increasing its size. The international student is included from foreign countries by 25-30 people every year. 30-40. ITP participants have presented 10 to 15 papers. It has been established as a place for an active exchange of the young researcher in Asian countries on the earth science and technology. In addition, doctoral students have functions of supports of session chairs, management and publications.



Participants of the international conference (December 2, 2008)



Plenary Lecture by Professor Tayfun Babadagli, University of Alberta (Dec. 1, 2008)



Discussion at the poster session in the international symposium (Dec. 7, 2011)

Plenary Lectures for Young Researchers

2008

Prof. Rudy Sayoga Gautama, Institute of Technology Bandung; On the Issue of Acid Mine Drainage in Indonesian Mines

Prof. Tayfun Babadagli, University of Alberta; Evaluation of the Critical Parameters affecting CO₂ Sequestration Performance During Enhanced Oil Drainage

Prof. Suseno Kramadibrata, Institute of Technology Bandung; Failure Criteria Development using Triaxial Test Multistage and Conventional

2009

Prof. Ronny Berndtsson, Lund University; Dynamic Links between Climate and Environmental Change

Dr. Kenji Sawada, JOGMEC; A Comparative Analysis of the Chinese and Japanese Copper Industry

2010

Prof. Kevin H. Gardner, ; Life Cycle Assessment of Recycled Materials

Prof. Wisup Bae, Sejong University; The Current Energy Industry and Government Policy in Korea

2011

Prof. Masafumi Nagao, United Nations University; Projects Education for Sustainable Development in Africa

Dr. Konstantin Krivoruchko, ESRI; GIS, Spatial and Two Accidents at the Nuclear Power Plants



Proceedings of the international symposium (number of pages: 800 to 600) from 2008 to 2011
(ISDN: 978-4-9902356-9-7, 978-4-9902356-0-4, 978-4-9902356-1-1)



Field Trip (Coal gasification combined cycle at Kitakyushu, J Power Co.,LTD., Dec. 9, 2010)



Galena (Royal Alberta Museum)

2008▶2012

Five years of Achievement

List of Young Researchers Dispatched



@Edmonton, Alberta, Canada



@Durham, New Hampshire, USA

FY2008 – (7)

- Hiroshi Nishiyama(AP), Lund Univ. (Sweden)
- Yuichi Sugai(AP), Univ. of Alberta (Canada.)
- Hiroshi Takahashi(AP), Univ. of New Hampshire
- Mamoru Katsuki(MS), Lund Univ. (Sweden)
- Futa Izumi(MS), ESRI (USA)
- Shinpei Fukui(MS), New Hampshire Univ. (USA)
- Kotaro Yonezu(DS), Univ. of Alberta (Canada.)

FY2009 – (10)

- Ryohei Takahashi(RS), Lund Univ. (Sweden)
- Kazuyuki Ota(MS), Lund Univ. (Sweden)
- Tomonobu Nakazono (MS), Lund Univ. (Sweden)
- Dang Thuong Huyen(DS), Lund Univ. (Sweden)
- Hiroaki Ikemi(AP), ESRI (USA)
- Kohei Yamaguchi(AP), Univ. of New Hampshire (USA)
- Tasuku Takatori(MS), Univ. of New Hampshire (USA)
- Hideo Oshikawa(AP), Univ. of Alberta (Canada.)
- Hiroyuki Kono(MS), Univ. of Alberta (Canada.)
- Phung Quac Huy(DS), Univ. of Alberta (Canada.)

FY2010 – (11)

- Masaki Tsukihara, ESRI (USA)
- Yoshitaka Kajita (AP), Lund Univ. (Sweden)
- Kazuya Yokohata(MS), Univ. of New Hampshire (USA)
- Maneeintr Kreangkrai (RA), Univ. of Alberta (Canada.)
- Takafumi Yamakawa (MS), Univ. of Alberta (Canada.)
- Daisuke Oka (DS), Univ. of Alberta (Canada.)
- Takahiro Uemura(MS), Lund Univ. (Sweden)
- Jillian Aira Gabo(DS), Lund Univ. (Sweden)
- Mei Guo (MS), Univ. of Redlands & ESRI (USA)
- Sakiyo Sawabe (MS), New Hampshire Univ. (USA)
- Akihiro Hamanaka (MS), VSB-Technical Univ. of Ostrava (Czech)

FY2011 – (13)

- Ken Yamashiro(AP), Lund Univ. (Sweden)
- Takahiro Uemura (MS), Lund Univ. (Sweden)
- Tomohiro Matsushita (MS), Lund Univ. (Sweden)
- Kosuke Sato (MS), Lund Univ. (Sweden)
- Yasuyuki Samejima (MS), ESRI (USA)
- Jia Ning (DS), ESRI(USA)
- Hironori Hayashi (AP), New Hampshire Univ. (USA)
- Yang Shuo(DS), Univ. of New Hampsher (USA)
- Arsyad Ardy(DS), Univ. of Alberta (Canada.)
- Amin Yousefi Sahzabi(DS), Univ. of Alberta (Canada.)
- Yusuke Matsunami(MS), Univ. of Alberta (Canada.)
- Akira Hisae(MS), Univ. of Duisburg-Essen (Germany)
- Yu QianQian(DS), Univ. of Birmingham (U.K.)

FY2012 – (8)

- Tomohiro Matsushita(MS), Lund Univ. (Sweden)
- Shinya Karasuda(MS), Univ. of New Hampshire (USA)
- Masataka Iwasaki(MS), Univ. of Alberta (Canada.)
- Yuta Yoshioka(MS), Univ. of Alberta (Canada.)
- Katsutoshi Shiota(MS), Bandung Institute of Technology
- Hiroaki Takayama(MS), Univ. of Duisburg-Essen (Germany)
- Masafumi Fujimoto (MS), Lund Univ. (Sweden)
- Yang Wenyu(DS), VSB-Technical Univ. of Ostrava (Czech)

AP: Assistant Professor

RS: Research Associate(Postgraduate)

DS: Doctoral Student

MS: Master Student

Statistics

Institute	Number (Total 47)	Country	Number (Total 47)
Lund University	13 (+2)	Sweden	13 (+2)
University of New Hampshire	9	USA	15
Environmental System Research Institute	5		
University of Redland	1		
University of Alberta	13	Canada	13
VSB-Technical University of Ostrava	2	Czech	2
University of Duisburg Essen	2	Germany	2
University of Birmingham	1	U.K.	1
Bandung Institute of Technology	1	Indonesia	1

+2 : dispatch two years for double degree program

Department	Number (Total 47)	Two years for double degree program
Urban and Environmental Engineering	19	(+1)
Civil and Structural Engineering	10	
Earth Resources Engineering	16	(+1)

Position	Number (Total 47)	Two years dispatch for Double degree program
Assistant Professor	7	
Research Associate (postdoctoral)	3	
Graduate Student of Doctoral Program	11	
Graduate Student of Master Program	26	(+2)

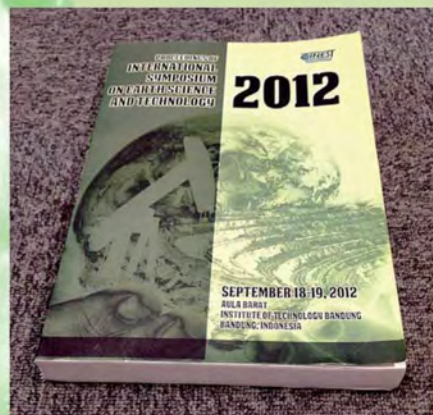
Nationality of Young Researchers	Number (Total 47)	Two years dispatch for Double degree program
Japanese	36	(+2)
Chinese	5	
Vietnamese	2	
Iranian	1	
Thai	1	
Indonesian	1	
Filipino	1	





Fly to the Global World !

Reports by Young Researchers



ITB Rector, Prof. Akhmaloka at Opening Ceremony of the International Symposium on Earth Science and Technology 2012 (Bandung, Sept. 18, 2012) and the Symposium Proceeding (right)

Name: Koji Nishiyama (Associate Professor, Urban and Environmental Engineering)
Host Institution: School of Engineering, Lund University
Program Period: July 7, 2008 to September 5, 2008



(Left) Professor Cintia Uvo with whom joint research was conducted.



(Right) Dining with Professor Ronny Berndtsson and others (Nishiyama far left).

At the ITP's partner institution of Lund University in Sweden, I conducted joint research with Professor Cintia Uvo of the School of Engineering's Water Resources Department (Specializing in Meteorology and Hydrology). We identified patterns in the characteristics of weather fluctuations in central South America with the aim of showing their relationship with changes in water levels (in periods of drought and plentiful precipitation). With the application of artificial intelligence technology called self-organizing maps, we discovered that North Atlantic barometric changes and long-term fluctuations in the trade winds of the North Atlantic tropical zone are closely related to water level fluctuations in central South America.

In the past on short-term overseas joint research projects, a lack of adequate time meant that most of our time was spent explaining our research to one another. Even if we were able to conduct joint research, we each presented our own individual findings rather than actually researching together.

On the ITP program, however, I was able to achieve things that are difficult at international conferences or short-term overseas trips. With a two to three month program, I found it very beneficial to be able to tackle one subject face to face with another scholar, and discussing matters at length I was able to make substantial progress.

I am particularly grateful to Prof. Cintia Uvo of Lund University and Prof. Berndtsson who acted as my supervisor for all their help in matters ranging from research to everyday living. The department accepts international students and staff from all over the world and as an extremely internationally rich institution it makes for an ideal environment. I hope to use this experience as a starting point for further relations with Lund University.

Name: Yuichi Sugai (Associate Professor, Department of Earth Resources Engineering)
Host Institution: School of Mining and Petroleum Engineering, University of Alberta
Program Period: July 21 to September 28, 2008



At Professor Babadagli's home, and the accommodation near university



in order to carry out my research goals.

Getting definitive results where I am the main researcher but in a framework of cooperation has given me tremendous confidence to proceed with as a full-fledged researcher in a national or international setting. In addition, the kind support I received from my neighbors with everyday living while I was staying in a rented house enabled me to adjust quickly to the Canadian lifestyle and to focus right away on my research.

This was the first opportunity I have had to carry out research at an overseas research institution. Before departing, I exchanged e-mails with the professor who was to act as my supervisor at Alberta University, Prof. Tayfun Bagadagli, and we decided to conduct research to measure the oil swelling and viscosity reduction by CO₂ solution on EOR process. After vigorous discussions with the supervising professors, the institution's staff and graduate students, I was sometimes able to improvise by converting experimental apparatus or altering experiment procedures

I realized how important settling in to one's new surroundings is to achieving research results when one is overseas. I would like to take this opportunity to express my great appreciation to the JSPS for its financial support, to Prof. Tayfun Babadagli for all his help both officially and privately and well as the research lab staff and graduate students with whom I worked. I would also like to thank Prof. Kyuro Sasaki for his valuable advice concerning my research at the host institution, as well as Izumi Yokoda of Kyushu University who was very helpful with taking care of the details of the training program.

Name: Fumitake Takahashi (Associate Professor, Department of Urban and Environmental Engineering)
Host Institution: Recycled Material Resource Center (RMRC), University of New Hampshire
Program Period: August 29 to October 25, 2008



Working in the RMRC laboratory (left) and Portsmouth Memorial Bridge (right)

I was extremely fortunate to have the opportunity to spend two months at the RMRC. Here I conducted a wide range of research concerning recycling of waste materials including the characterization of soil and rock refuse (for example iron and steel slags), and its adaptation into road construction materials. With the help of Professor Kevin Gardner, I pursued two themes at the same time. One was risk evaluation of particles due to wear when waste such as slags are used in asphalt aggregate. Related risk evaluation research was previously carried out at the RMRC, so I was able to proceed while referring to it. The other theme concerned stabilization of carbon dioxide in waste combustor ash.

In addition to carrying out experiments at the RMRC, I also gathered samples from a landfill more than 200km away. As I am still in the process of reporting my findings in dissertations and papers, I will focus on my living arrangements in the remainder of this report.

The spoken English of native speakers was very fast, but after a while I got used to it.

This is something you cannot experience unless you live overseas, and at the very least this was one valuable thing I achieved. It is important to experience the host country's lifestyle as well. Here almost everyone goes home at 5pm. No one stays late to work or do experiments. If you don't conduct your research according to a plan, you will fall behind. Experiencing such a lifestyle where the line between work and private life is so clearly marked and respected was a first for me, and it had a significant impact on my lifestyle. Getting to know Scott and Jeff and the other young researchers of my generation was also an invaluable asset. I would like to express my great appreciation to Prof. Gardner, and all the other people who made this experience possible.

Name: Mamoru Katsuki (2nd Year Master's Course Student, Department of Urban and Environmental Engineering)
Institution: School of Engineering, Lund University
Program Period: October 18, 2010 to January 30, 2011



Get-together with professors and Ph.D students of Lund University's Water Resources Engineering Department after a presentation

While at Lund University, I attended the "Advanced Hydrology" class offered as part of the Graduate School's master's and doctoral level International Course starting on October 29th.

The class was conducted by Prof. Bengtsson of the Department of Water Resources Engineering and the

lectures were all in English. In the "Essay" part of the program, the students had to give a dissertation review presentation concerning the topic and field questions. In the "Assignment" part of the program, students did group work in pairs. I received guidance from Professor Berndtsson on my essay topic and on November 26th gave a presentation under the title "Water balance and nutrients input to the Baltic Sea" and was evaluated by Professors Bengtsson and Berndtsson. The question and answer session was very lively with a lot of meaningful discussion.

Furthermore, as a summary of my master's research, I wrote and presented a roughly 50-page master's dissertation. My dissertation is registered on Lund University's publication system XERXES (<http://theses.lub.lu.se/undergrad/?lang=en>) as an official thesis. I am very grateful to the ITP.

Name: Futa Izumi (1st Year Master's Course Student, Department of Civil and Structural Engineering)
Host Institution: Environmental Systems Research Institute (ESRI)
Program Period: November 3, 2008 to January 31, 2009



Water Resources Group: Mr. Djokic (far left), Mr. Sreedhar (second from left), Waizumi (center)

During my stay, I divided my time between my own research using with Arc. GIS and taking a training course in about an 8:2 ratio. In the final week I carried out a presentation concerning the results of my internship. I talked about the goals of my internship, the details of my activities during my internship, and my future research plans for about 30 minutes. Mr. Djokic evaluated the content and gave me advice on how to present my research to those who are not specialists in the same field.

It is particularly important to describe such things as

places, models, and technical terms in the features and analysis of my research in ways so that the listener can get an image.

In the training course I took on "ArcHydro: GIS for Water Resources", our studies focused on the structure and concepts of the tools and data models of the ArcHydro which was my main topic of study during my internship. I had already studied how to use the basic tools through my research, but since I didn't really understand with what purpose they were made and what kind of features they had, it was very informative. Furthermore, I was able to study about geo-databases and ArcGIS as a whole in depth. Since this course was highly specialized compared to other training, and the other participants were all in consulting-related businesses where ArcGIS and ArcHydro are highly utilized, I was able to get an idea during question and answer sessions about what kind of people are using GIS for what kind of purposes at the forefront of the industry today.

I would like to thank the leader of the Water Resources Group, Dean Djokic, for planning my internship according to my wishes and for guiding me in my research, and staff member Sreeresh Sreedhar for offering me technical guidance in my research.

Name: Shimpei Fukui (1st Year Master's Course, Department of Urban and Environmental Engineering)
Host Institution: Recycled Material Resource Center (RMRC), University of New Hampshire
Program Period: September 19 to November 18, 2008



Gathering samples at Franklin (left), and trekking on a day off (Fukui right)

During my training at the Univ. of New Hampshire, I conducted research on carbonization of landfill. The subject of my study was Franklin Landfill in Concord County, New Hampshire. Waste is brought there from a garbage incinerator located about 8 miles away. In a small country like Japan, securing sites like these is very difficult because land is a scarce resource, but in a large country like the United States it is common for garbage to be buried without being incinerated. Franklin Landfill, however, is similar to Japan in that the landfill is made up of ash from an incinerator.

Here, the purpose of incinerating waste is to generate power, not to reduce garbage as in Japan, but I was able

to confirm with my own eyes that paper accounts for a large part of the ash compared to that of Japan. In sections where the landfill is full, a thick plastic sheet covers the surface to prevent surplus effluent from hazardous substances such as heavy metals in the ash from leaking due to rainfall.

In order to get a sample of ash, I had to use heavy machinery to excavate a spot that had already been excavated in order to clean a water pipe, and after exposing a new layer of ash, I still had to

use a hammer to get a sample because it was so hard after settling for more than 10 years. In order to conduct experiments on my samples, the lab is very prudent and I had to take a "Safety Quiz" concerning basic knowledge such as what to do in case of an accident and how to handle hazardous chemicals. You are not allowed to use the lab until you have taken the quiz.

A seminar concerning the environment was also held about once a week, and I attended whenever I could. The seminar was held from 12 to 1pm over lunch in an informal manner in which anyone could participate. I found I had trouble understanding themes outside my research due to the unfamiliar technical terms.

Name: Kotaro Yonezu (3rd Year Doctoral Course Student, Department of Earth Resources Engineering)
Host Institution: University of Alberta
Program Period: January 19 to March 20, 2009



Mineral composition analysis with EPMA
(Electron Probe Microanalyzer)

At the U. of A., before beginning research activities even visiting researchers are required to take the Dept. of Earth and Atmospheric Sciences' safety class, and experiments may begin only after verification of this. The Department of Earth Resource System Engineering does not have such a system, and I see the need for similar safety education for

international students as well as Japanese students in this major.

I also participated in special classes outside of my field of specialization on such topics as carbon dioxide sequestration using the many abandoned oil wells, examining the origin of water using chlorine isotope ratios, the origins of life, tracking the movement of glaciers in the Arctic Circle with remote sensing, and the formation of the Canadian Rockies. This program expanded my knowledge in physics outside the field of earth resources.

While at the U. of A., as a writing activity I composed a summary and contributed an article for the Gold 2009 International Conference held in Heidelberg, Germany in July of 2009. With the dissertation proofreading support of the ITP, I also sent several drafts of papers. The proofreading and my experiment results formed the foundation of an abstract.

Besides the analytical instruments used in this research at U. of A. also provides a lot of analytical equipment such as a laser for analyzing fluid inclusion, and it is possible to perform measurements of normal homogenization temperatures and salt concentration as well as trace elements analysis and hydrogen isotope analysis. I could independently develop a specialized mass spectrometer for U-Pb dating techniques.

▼ 2009

Name: Ryohei Takahashi (Research Associate, Environment Research Center, Kyushu University / Currently Assistant Professor at Akita University)
Host Institution: Lund University
Program Period: September 14 to December 4, 2009



Takahashi separating minerals, Mr. Lawrence, who provided support with my experiments, with rock dating equipment.

While at Lund University, I analyzed rocks with the $^{40}\text{Ar}/^{39}\text{Ar}$ dating method. A very small trace of mineral particle then undergoes laser ablation and the proportion of Argon 39 and Argon 40 are measured by mass spectrometer, which allows for an extremely accurate radioisotope dating method established recently to determine the age of rocks. Although for only a brief period, the sample becomes radioactive during the experiment process due to the neutron activation, and therefore, it is not possible to perform analysis or acquire such technology in Japan for various reasons including legal

regulations except for at a very few research institutions.

This time the samples used for dating were gold-bearing quartz veins and igneous rocks gathered from hydrothermal deposits in Japan and Southeast Asia. I was able to perform dating on all 17 samples. My research results successfully revealed the geologic setting and date of formation of metal deposits including analysis of excess Argon not possible with conventional K-Ar methods.

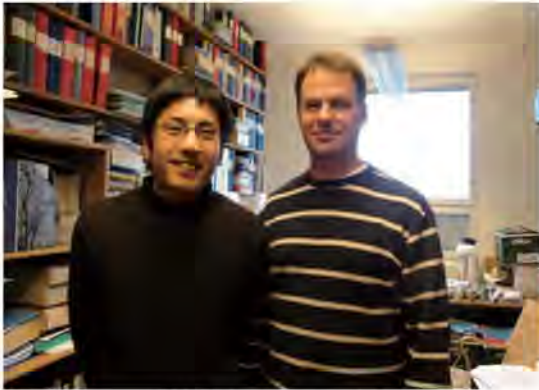
This was my first time to experience such a long stay overseas. I saw with my own eyes a phenomenon frequently noted by Japanese living in Sweden and often mentioned in guidebooks. When a foreigner who doesn't understand Swedish, Swedish researchers will switch effortlessly from Swedish to English in mid-conversation.

While this made for daily feelings of embarrassment and nervousness since I have no confidence whatsoever in English, it also impressed me very much. Finally, I would like to express my great appreciation to all the people who helped and supported me during my overseas training.

Name: Kazuyuki Ota (2nd Year Master's Course Student, Department of Maritime Engineering)

Host Institution: Lund University

Program Period: August 23 to November 2, 2009



With Professor Larson, right

I took an 8-week master's and Ph.D level course in Environmental Hydraulics from August to October. In the Practical Assignment class I presented an introduction to the Coastal Waters Engineering Research Laboratory affiliated with Kyushu University under the title "Analytical Study of Long Ship Oscillation in Harbors".

There were about 15 participants including 5 faculty members and it was my first time to participate in such a

lively discussion in English.

I was able to successfully field the questions and as I am planning to get a job in a research position next year, it was an excellent experience for me. It has inspired me to hone my English presentation skills.

On the weekends I explored the Oresund Channel that separates Sweden and Denmark from the Swedish side. The Oresund Bridge is magnificent, and near it I could see Denmark's power-generating windmills spinning in the strong westerly wind. Because the weather and ocean conditions are very different from Japan, the benefits and threats caused by nature are also different. Considering the differences in civil engineering structures was very valuable to me. This was my first time to conduct both research and everyday living entirely in English. While I did experience some difficulties, I was for the most part able to proceed according to my original schedule. Interacting with so many researchers has provided me with great encouragement as I prepare to step into the world of serious research.

Professor Larson was of great help to me in both an official and private capacity, offering me advice on matters concerning studies and research, as well as helping me find housing. I also want to thank Prof. Berndtsson, who has had a long relationship with Kyushu University, for his dinner invitations and helpful information on daily living. I am grateful to the people at Kyushu University's ITP for giving me this invaluable opportunity although I am just a master's course student.

Name: Tomonobu Nakazono (1st Year Master's Course Student, Department of Urban and Environmental Engineering)

Host Institution: Lund University

Program Period: August 21 to November 2, 2009



Me giving a presentation and the department staff listening



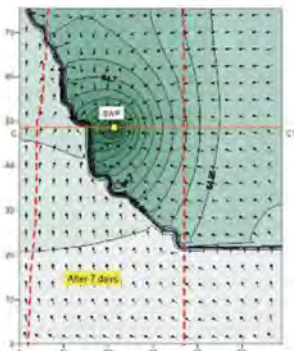
I felt its environment was very similar to that of Tarama Island. The difference was that Ven's underground soil contains substances with low permeability like silt and clay, and since the number of people in relation to the land area is low, influence on groundwater recharge due to groundwater consumption is small. It was a very informative visit.

This was my first time to give a presentation in English. I practiced giving my presentation a few days before and Prof. Berndtsson looked at my slides and gave me guidance on

In regards to my research topic "Methods of water extraction from freshwater lenses" at Lund University, using data I explained to Professor Berndtsson the experiment results concerning freshwater lenses I had acquired up until now on Tarama Island in Okinawa Prefecture. After explaining the content of my research, he suggested I visit the island of Ven in Sweden. Ven can be reached by ferry in 30 minutes from the town of Lanskröna. It is a flat island with an area of 7.5km², which is about half that of Tarama Island. I actually visited Ven and went around the whole island by bicycle in about 2 or 3 hours. Most of the island is farmland, with a portion of it used for golf courses and campgrounds. There is little surface water and all I could find on the map were 2 small ponds.

what sort of expressions to use. I spoke in front of about 10 faculty members and doctoral course students for about 20 minutes. Since I had received training in Japan, I feel the presentation went rather smoothly. Following the presentation, I fielded many questions about my research. The participants seemed especially interested in my water extraction method model experiment. I was able to respond to the questions about my experiments and research data with accuracy. The presentation revealed to me the areas I need to improve when expressing myself in English, and it was an excellent experience. The presentation revealed to me the areas I need to improve when expressing myself in English, and it was an excellent experience.

Name: DANG THUONG HUYEN (PhD 3rd year student, Department of Urban and Environmental Engineering)
Host Institution: Department of Water Resources Engineering, Lund University
Program Period: January 12 to March 16, 2010



Water table and flow direction at the study site



Me in front of the Department of Water Resources Engineering

My research at Lund University during dispatched period was "effectiveness of a super well point(SWP) to prevent leachate transferring from a municipal landfill to the neighboring environment". The results of numerical simulation were in good agreement with observation data. Therefore, the simulation can be used to evaluate the effectiveness of the SWP. The results show that the

SWP is new technology that has the ability to recover polluted groundwater that leaked from the landfill A. The simulation results also show that all polluted groundwater flows easily to the SWP for extraction and safe disposal. Within the landfill, groundwater flows easier than it does outside because of the sheet wall. However, the polluted groundwater surrounding the landfill can be transported under the sheet wall.

The SWP induces the change of groundwater flow direction along the faults when the SWP has high pumping rate. Groundwater has no

chance to move out. On the other hand, the SWP is able to collect leachate and prevent leachate transferring to the neighboring environment.

I gave the presentation on my reearch at the department and our jointed paper was submitted to Journal of Hydrology. Finally, I would like to thank Prof. Ronny Berndtsson for his kind supports during my stay.

Name: Hiroaki Ikemi (Assistant Professor, Department of Civil and Structural Engineering)
Host Institution: Environmental Systems Research Institute (ESRI)
Program Period: July 10 to September 9, 2009



With my host family in Redlands

I stayed at ESRI for my GIS training. Compared to the pleasant climate of the West Coast, Redlands has a desert-like climate, and in the summer when I was there, it is so hot it takes courage to go outdoors. Furthermore, since the lab I am affiliated with has had exchanges with ESRI for many years, before leaving I lacked any anxiety, but I also lacked any expectations or sense of excitement. Looking back now, however, I believe the 2 months I spent there has

changed me significantly.

In terms of research, I held deep discussions about the disaster information studies field with people at ESRI in related fields and completed a paper titled "GIS Theory and Application" concerning sharing disaster information. Furthermore, drawing inspiration from the topography and landscape of Redlands, I was able to begin research from a new point of view concerning shifts in land use and topography. Sometimes known as neo-topography, one attempts to quantitatively detect the influence of living things including human beings on the topography process. I feel that this viewpoint is missing in today's predictive simulation technology of slope disintegration and the like.

On a personal level, my son was born while I was away. I really feel bad that I, who as a disaster information researcher should be more sensitive than anyone to the fragility of society, left my vulnerable wife in an apartment to spend her anxious days and give birth by herself. However, my host family (see picture), who worried with me, encouraged me, and shared my joy upon my son's birth, made me realize more than anything the importance of family.

Although it was only 2 months, my training had a great influence on the direction of my life now. I am very grateful to the ITP and everyone who helped me during the course of my stay for giving me such an opportunity.

Name: Kohei Yamaguchi (Associate Professor, Department of Civil and Structural Engineering)
Host Institution: Recycled Material Resource Center, University of New Hampshire
Program Period: July 29 to September 29, 2009



Presenting research to lab members



Hiking on a holiday

I stayed at the RMRC. The subject of my research was social infrastructure such as roads, and I found the Interstate Highways, for example the one that connects the major city of Boston with the comparable city of Portsmouth, to be similar to those of Japan in terms of soundness. However, the regular roads that run above the highways suffer obvious damage, such as corrosion of steel girders and exposure of reinforcing rods in reinforced concrete slabs.

The Interstate Highways used to be called "freeways", but in recent years those around major cities have been charging tolls of a few dollars, for the most part as a maintenance service charge. On the other hand, on the local

roads, I saw more bridges and roads closed rather than open for use but damaged. An example of one bridge damaged but in service is the Memorial Bridge (constructed in 1940) on Route 1 spanning the mouth of Portsmouth's river. Until about 10 years ago, this bridge had no weight restrictions for vehicles using the bridge, but about 10 years ago a weight restriction of 15 tons was enforced and a few years ago it was lowered to 10

tons. In addition, the local bridge maintenance management systems of Japan and the United States are decidedly different in that while in Japan bridges are replaced, in the U.S. closed bridges are left where they are and a new bridge is built elsewhere. This system is possible in the U.S. because of its abundance of land, and that is probably the reason I saw so many closed bridges and roads.

Everything about living overseas and communicating in English was totally new to me, and I will do my best not to forget the new sensations I felt in a different culture over those 2 months. Finally, I would like to express my appreciation to everyone at ITP.

Name: Tasuku Takatori (1st Year Master's Course Student, Department of Civil and Structural Engineering)
Host Institution: Recycled Material Resource Center, University of New Hampshire
Program Period: August 20 to October 19, 2009



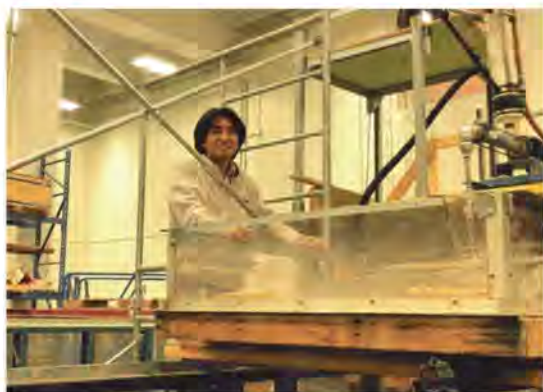
Working at Franklin landfill field

At Recycled Material Resource Center, I carried out carbonation experiments on samples of inorganic construction sludge recycling material from the Franklin Landfill. I was able to get many results and it was a very fruitful training.

There is one thing I really noticed during this training. At

UNH, international students from all over the world come together to cooperate in their research, but I got the feeling that the Japanese were not highly regarded. Usually with a preface of, "There are many brilliant Japanese," people told me, "The Japanese can't state their opinions clearly," and, "Overall, their English is poor so communication is difficult." Actually, I was not a little shy when I first arrived at UNH, and because it took me a while to adjust, I strongly felt the necessity of learning English. I felt the importance of learning English not just as a communication tool, but also as a language in which you can express your opinion clearly (and a necessary language). I was also impressed by how completely different the atmosphere in classes, seminars, and meetings was from Japan. Students ask many questions, which sometimes the professor answers and sometimes the students resolve among themselves. Sometimes the students even answer the professors' questions. Just looking on from the sidelines, I can tell that the students spend their time very productively and I began to feel impatient. In this way, everyday I discovered things you can't experience in Japan, and I learned so much. Finally, I would like to thank everyone at ITP who supported me.

Name: Hideo Oshikawa (Assistant Professor, Department of Urban and Environmental Engineering)
Host Institution: Department of Civil and Environmental Engineering, University of Alberta
Program Period: June 1 to August 31, 2009



Laboratory equipment

Professor Zhu, my supervisor at the University of Alberta, was there to pick me up upon my arrival at the Edmonton Airport on June 1st, and 4 graduate students from my lab threw me a welcome party at a restaurant on campus. After a discussion with Professor Zhu, I decided to conduct two research projects concerning solid-liquid two-phase jet streams.

One research project involved solid-liquid two-phase jet

stream emitting sediment particles in a vertical downwards direction from a nozzle placed in the vicinity of the surface of a stationary fluid. I performed solid-liquid two-phase jet stream experiments with an international student from Iran. The research attempted to simultaneously measure the velocity of the liquid (water) and particles (sand) and the particle density using image processing (including PIV image processing) and a visual current meter and densimeter. Due to the differing values in control settings in the analysis software for the measurement devices, an accurate value of a plume's falling velocity was unknown. Therefore, we measured the plume's typical falling velocity in advance with imaging measurements taken with an Argon laser light sheet. After placing an open and close nozzle on the top part of a 133x122x90cm rectangular water tank (with replaceable nozzle tip and 2-10mm bore), and attaching a hopper to the upper part of the nozzle, we supplied the sand inside the hopper from the nozzle to the tank. Using the open-close switch, we transferred the sand out through the nozzle into the tank continuously, filming and analyzing images of the behavior of the sand jet front.

I concluded that when the height of the sand hill is low and has little effect on the water surface, the shape of the sand hill is acute, however when the peak of the sand hill gets close to the surface or is exposed above the surface, the slope of the sand becomes gentle.

Name: Hiroyuki Kono (1st Year Master's Course Student, Department of Earth Resources Engineering)
Host Institution: School of Mining and Petroleum, University of Alberta
Program Period: August 4 to October 17, 2009



University of Alberta's fellow lab members

I had wanted to get involved in the petroleum industry, particularly oil sands development, for some time, and this is what prompted me to apply to the ITP program. My experience at the U. of A. strengthened my fascination with the petroleum industry, solidified my intentions, and raised my motivation. The U. of A. is very open, and just walking through the campus lifted my spirits.

The students in my lab the same year as me were much more knowledgeable than I, and I really felt my immaturity.

The other students in the lab helped me out in many ways and we became quite friendly, doing things after class like playing squash. Another aspect of university here I felt was quite different from Japan is that the atmosphere during class makes it unimaginable to sleep there. Students ask many questions, sometimes to the point of troubling the professor. After seeing the high level of awareness of overseas students, I realized I still have a ways to go. The high level of awareness of the students that surrounded me in class and in the lab made me see my own immaturity objectively. As for my research, in order to investigate my research topic through trial and error, I had to read many papers in various fields and I was able to deepen my own knowledge. I also realized how difficult it is to complete one research project in a place to which you are unaccustomed.

As part of on-site training, I was actually able to see the horizontal wells of SAGD to produce heavy oil from oil sands, which I had wanted to see for a long time, and feel the vastness of the oil sands reserves.

The ITP program is truly a wonderful study program. I hope it will continue to provide young researchers with the opportunity to have valuable experiences.

Name: Phung Quoc Huy (3rd year PhD student, Department of Earth Resource Engineering)
Host Institution: School of Mining and Petroleum Engineering, University of Alberta
Program Period: June 30 to Sept. 20, 2009



CO₂ sequestration into un-mineable or deep coal seams is now being actively investigated as a method for reducing greenhouse gas emissions to the atmosphere. However, coal is well known to swell in the presence of CO₂, and this is likely to affect gas transport through coal seams. Swelling of the coal matrix depends on many parameter such as coal characteristics (ash, moisture, volatile content); pore structure; type of fluid and adsorption capacity. The aim of

my study was to clarify the swelling phenomenon caused by CO₂ injection in the gas, liquid and supercritical state. A comparison of volume expansion with other methods was performed and is discussed. An investigation of coal sample swelling using a visualization method was undertaken using injected CO₂ (gas, liquid and supercritical) at temperatures ranging 25-60°C and pressures up to 15 MPa. Volume expansion of Japan and Australia coal lumps was from 0.1% to 1.0%. Negative volume expansion was observed in the Vietnam and China coal. Volume expansion of crushed Vietnam, Japan and Australia coals were from 0.5% to 3.6%. The swelling effect was observed by using visualization and adsorption results. We suggest that adsorption capacity must be considered in calculating volume expansion values.

I would like to thank the International Training Project (ITP), Kyushu University for their financial support and give me the chance to go to Canada. It is very good change for student to exchange and discuss with Canadian professors in the field of earth science. I had chance to visit some openpit coal mines, coal-fired power plan, oil sand mines. Through the trip, I have known that energy companies did very well to protect the environment.

▼ 2010

Name: Masaki Tsukihara (1st Year Master's Course Student, Department of Civil and Structural Engineering)
Host Institution: Environmental Systems Research Institute (ESRI)
Program Period: June 1 to August 27, 2010



A view of the city of Redlands
 (The A.K. Smiley Library built in 1898)

I participated in a 3-month internship at the American company Esri in Redlands, California. Esri is a very international company involved in the development and retail of the graphic information systems (GIS) used all over the world. The city of Redlands, located in inland California, has a dry climate and extreme temperatures. I was there during the hottest season when temperatures during the

day rose above 40 degrees Celsius. Once the sun went down, however, the temperature dropped so much that the heat of the day seemed like a dream. I still remember how chilly I felt in short sleeves, although it was still more pleasant than summer in Japan. My living accommodations were near the company and I shared a residence with an employee of ESRI Japan.

I was assigned as an intern to the localization section which is responsible for a part of the software development process of customizing software for a particular market. Partly because I lacked technical knowledge and skills, I was given mostly simple tasks such as installing the Japanese and German language versions of software, collecting captured images, and searching for errors. However, I enjoyed thinking of ways to manage my tasks more efficiently and coming up with new ideas, so it turned out to be a fulfilling internship. In addition, in order for my work as an intern to go more smoothly, I took a free GIS course run by Esri staff, and I made use of their library stocked with books on GIS and software development. This environment was very ideal for study and training concerning GIS.

Looking back now, the three months flew by, and I appreciate how much support I received from so many people, including the professors at Kyushu University's research lab, the ITP staff, and the staff at Esri. I would like to take this opportunity to thank them all.

Name: Yoshitaka Kajita (Assistant Professor, Department of Urban and Environmental Engineering)
Host Institution: Lund University
Program Period: July 5 to September 24, 2010



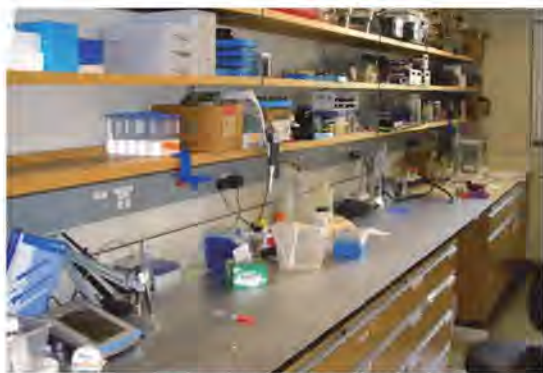
With the staff of the Water Resources Department,
Lund University

At Lund University I conducted research on two themes: (1) Sustainable city and community planning in Northern Europe, and (2) Evacuation of vehicles in case of flooded roads. Theme (1) entailed collection analysis of literature on current conditions and government policy concerning the topic. Theme (2) entailed modeling according to observation of vehicle behavior when roads are flooded and numerical simulation.

Weekdays I joined the 30-minute coffee breaks at 9:30am and 2:30pm where the lab staff including doctoral course students discussed their research as well as everyday matters. I also occasionally played sports with the doctoral course students, and had many chances to interact with them. On my days off, I often visited the city of Lund and nearby cities, roaming around and visiting historical archives and sights, learning about the history and culture of the area. These things were related to my research on theme (1) and were very educational. On September 15th near the end of my stay, I gave a 15-minute presentation in the Seminar Room on the results of my research on theme (2). Despite the fact that it was the beginning of the school year and a very busy time, many of the staff of the Lund University's Water Resources Department participated. It was a chance to do a presentation in English, and although I had had many chances to hold discussions with other young researchers, receiving questions and suggestions from the older more experienced faculty was a first.

Although I was at Lund University for only 83 days, it was a very worthwhile experience both in terms of my research and daily living. I am very grateful to Prof. Berndtsson for all his kind advice not only in regards to my research. The other staff members were also very kind, and thanks to them I was able to live very comfortably. Finally I would like to thank the ITP committee and staff for giving me the opportunity to study overseas.

Name: Kazuya Yokohata (1st Year Master's Course Student, Department of Urban and Environmental Engineering)
Host Institution: University of New Hampshire
Program Period: July 15 to October 4, 2010



RMRC laboratory

At the beginning of my training, it was difficult for me to communicate when it came to my research as well as daily living and everyday was a series of failures. I found the English of native speakers very fast and I had trouble getting information from conversations. However, in this environment, a feeling that I really wanted to better communicate with many people awakened in me. I faced English head on and began to take the initiative and speak to people more and to ask questions when I couldn't

understand.

The students in my lab the same year as me were much more knowledgeable than I, and I really felt my immaturity. The other students in the lab helped me out in many ways and we became quite friendly, doing things after class like playing squash. Another aspect of university here I felt was quite different from Japan is that the atmosphere during class makes it unimaginable to sleep there. Students ask many questions, sometimes to the point of troubling the professor. After seeing the high level of awareness of overseas students, I realized I still have a ways to go. The high level of awareness of the students that surrounded me in class and in the lab made me see my own immaturity objectively. As for my research, in order to investigate my research topic through trial and error, I had to read many papers in various fields and I was able to deepen my own knowledge. I also realized how difficult it is to complete one research project in a place to which you are unaccustomed.

As part of on-site training, I was actually able to see the see the horizontal wells of SAGD to produce heavy oil from oil sands, which I had wanted to see for a long time, and feel the vastness of the oil sands reserves.

The ITP program is truly a wonderful study program. I hope it will continue to provide young researchers with the opportunity to have valuable experiences.

Name: Kreangkrai Maneeintr (Research Associate, Department of Earth Resource Engineering)
Host Institution: University of Alberta
Program Period: August 4 to October 18, 2010



Research group in University of Alberta, Canada (Kreangkrai: 5th from left of back line)

I came to the School of Mining and Petroleum Engineering, Department of Civil and Environmental Engineering, University of Alberta under the supervision of Prof. Dr. Tayfun Babadagli. This training provided me both valuable experiences in foreign country and research skills. It could broaden my wisdom and expand my thought in petroleum Engineering. It would be my big different step to my career path in the future.

The topic of this research is "Enhanced Oil Recovery by Using Steam Flooding with CO₂ Injection" which is

heavy oil production by using steam flooding coupled with CO₂ injection. It is focused on the problems related to the efficiency of enhanced oil and gas recovery. Moreover, this research worked on the emulsion of heavy oil formed by the steam injection. Emulsion occurred when steam was applied for heavy oil production. In addition, viscosity reduction in oil depends mainly on the amount of gas dissolves in oil as well. It enhances oil recovery in terms of mobility of residual

oil. Consequently, the measurement of oil swelling factor and interfacial tension measured by applying the pendant drop volume analysis method for emulsion will help for better understanding of this system.

I would like to acknowledge International Training Program (ITP), Kyushu University, for financial support in order to encourage young researchers to gain more experience in University of Alberta, Edmonton AND International Petroleum Conference (CURIPC 10) in Calgary, Alberta, Canada.

Name: Takafumi Yamakawa (1st Year Master's Course Student, Department of Earth Resources Engineering)
Host Institution: School of Mining and Petroleum Engineering, University of Alberta
Program Period: August 4 to October 17, 2010



With JACOS engineers in Calgary, Canada (Yamakawa second from right)

At the University of Alberta in Canada, research on recovery methods of heavy crude oil is conducted.

Currently, commercial production using a new drainage method called SAGD is expanding. This is a recovery

method of oil sands deposits, which hold the extraordinary amount of 3 hundred billion barrels of heavy crude oil, that lowers viscosity by the thermal extraction process using steam to recover it directly from the ground. It is anticipated to be the petroleum resource of the 21st century. At present, a recovery method that combines solvent, gas, and steam is being vigorously researched. The Japanese-American firm JACOS (Japan Canada Oil Sands Limited) in Alberta Province has been a leader in oil sands development for the last 30 years. While I was at the University of Alberta, I was able to visit the JACOS company headquarters in Calgary and the Fort McMurray production site and study various technological developments and their conditions. First I received the company summary and a summary report of the SAGD method from the technical expert in charge of excavation. After listening to an explanation of the facility and the production flow from the head of the facility, we moved to Fort McMurray. The chief of the production facility, a technician of Chinese descent, explained about the production facility. The expansiveness of the production site was

impressive. Seeing a Japanese company compete in the production of energy resources with my own eyes made me vow with even more conviction to become involved in the industry as a petroleum technician.

Name: Daisuke Oka (1st Year Doctoral Course Student, Department of Earth Resources Engineering)
Host Institution: School of Mining and Petroleum, University of Alberta
Program Period: August 12 to November 1, 2010



At Fort McMurray oil production site from oil sands

I was sent to the Enhanced Oil and Gas Recovery and Reservoir Characterization Research Group (EOGRRC), which is a laboratory at the University of Alberta that

specializes in enhanced recovery methods of petroleum.

My field of study is geothermal engineering, but as research concerning hot water injection using geothermal water was going to start during the period I was there, I conducted a numerical simulation of hot water flow to determine how to efficiently remove hot water from deep underground geothermal reservoirs in northern Alberta Province. Because specialists in oil development gather at EOGRRC, I was able to deepen my knowledge of not only geothermal energy, but also of oil reservoirs.

During my training abroad I was also able to observe JACOS's Fort McMurray oil sands development, which was very useful. I learned how difficult but vital it is to apply a high level of technology to a site and to choose the most efficient technology for a target.

Finally I would like to thank the ITP program committee and university staffs for giving me the opportunity to study at U. of A.

Name: Takahiro Uemura (Master's Course, Department of Maritime Engineering, Graduate School of Engineering)
Host Institution: Lund University (Double Degree Program)
Program Period: August 15, 2010 to January 16, 2012



With friends before returning to Japan (Uemura center)

I found Lund University's classes to be very participatory compared to Japanese university classes. In order to participate in class and solve test problems, in addition to understanding the theory one has to be able to accurately decide, "What could be the cause of this problem that occurred (or is happening now) in the real world, and how can I deal with it?"

Another characteristic of classes there was besides listening to lectures there was a lot of group work.

Group work included frequent discussions, reports, and presentations.

Research related to my master's dissertation was conducted on "Methods of Water Extraction from Freshwater Lenses" under the guidance of Prof. Berndtsson in 2010, and on "A Case Study of Sweden's Beach Erosion" under Prof. Larson in 2011. I wrote a research dissertation and review for each topic.

The double degree overseas program was a long-term program, and I remember vividly the day I left for Sweden, looking down on Fukuoka from the airplane and thinking, "There's no turning back." Upon arrival, it hit me again that I would have to live in a far away city where I had not a single friend. I resolved that the first thing I needed to work on was human relations, and decided to endeavor to make as many friends and acquaintances as possible. A month later, I had settled in, and a few months later I had made quite a few friends. A year later, making my way to the campus was sometimes difficult because I met so many friends along the way. Before returning to Japan, I had so many farewell parties that it was difficult to fit them into my schedule. Of course, polishing the skills necessary for research was a valuable benefit of my study abroad, but even more precious to me are the many friendships I made that are sure to last a lifetime. I would like to take this opportunity to thank the faculty of Kyushu University and Lund University who provided me with this invaluable opportunity as well as great support during my stay.

Name: JILLIAN AIRA SIBAL GABO (2nd year PhD student, Department of Earth Resource Engineering)
Host Institution: Division of Geology, Lund University
Program Period: Sept. 9 to Nov. 25, 2010



Fieldwork in the southwest coast of Sweden (Front: Jillian Gabo)

My research in Lund University was about the "Metallogenesis of the Neogene volcanic belt in Zamboanga Peninsula, Mindanao, Philippines". I was taken under the Department of Earth and Ecosystem Science where I was able to analyze my rock samples using the $40\text{Ar}/39\text{Ar}$ dating method. The analysis includes selection and separation of ideal minerals from representative samples,

and then converting the minerals' 39K content into 39Ar by neutron activation. After this, the minerals are consumed by laser ablation in a step-heating process, where Ar gas is released and measured by the mass spectrometer. The resulting isotope quantities of Ar are then calculated to produce the age of the specific mineral analysed. This dating method is one of the more recent and advanced techniques used to determine the age of rocks, and it is only available in about thirty laboratories all over the world. Learning about this dating technique has definitely been a huge privilege for me, and I was really impressed with their modern facility. It has also given me valuable data for my research study.

Aside from laboratory work, I attended several lectures on petrology and tectonics of the Sveconorwegian orogeny in Sweden. I participated in a five-day fieldwork in southwest Sweden (September 13-17, 2010), where we looked at Archean intrusions and metamorphic rocks. The rock units that we saw and discussed are billions of years old, compared to the much younger million-year old rocks that we find in Japan. I was glad to learn the geology of an area that is very different from Japan, the Philippines and the rest of Asia.

I am grateful to the ITP program which funded this research.

Name: Mei Guo (2nd Year Master's Course Student, Department of Civil and Structural Engineering)
Host Institution: Environmental Systems Research Institute (ESRI)
Period of Stay: October 20 to December 22, 2010



With the staff of Redlands Institute (Guo in back on right)

I was dispatched to the Redlands Institute (RI), a GIS research institution that is in partnership with Esri (Environmental System Research Institute). I was introduced to various projects that the RI handles, and my impression was that most projects were commissioned by government institutions and ultimately were supported in order to settle budget allocations. I participated in the monthly RI staff meetings held at the beginning of each month and was

surprised at how high-tech and speedy they were. I also participated in project meetings for an Ecological Modeling Decision System (EMDS), which involved making a general ecosystem management system to deal with exterminating weeds and vegetation management on U.S. military bases. The management system cannot be finalized until undergoing a series of processes. I learned how the system is finally completed by putting each and every process to the test through continuous trial and error.

I briefly introduced my research topic, "Evaluation of Factors of Turbid Water Occurrence in the Upper River Basin of a Reservoir" to the RI staff and held a discussion. Since water analysis is conducted as part of my research, the RI director introduced me to a developer in Esri's Hydro section who gave me advice concerning my research. I was also shown various outflow analysis techniques, and I feel I was able to expand my knowledge.

While there, I took 2 training courses in ArcGIS offered by Esri. During the courses, discussions were held with visiting students from all over the U.S., and I was very motivated by their remarkably advanced techniques and English ability. By talking with people from not only the U.S. but from all over the world, I was able to expand my point of view all the more and alter my way of thinking concerning my own potential. I'm extremely grateful to my host family for their warm hospitality and to the people at Esri and RI. I appreciate the wonderful opportunity I was given to have this overseas experience.

Name: Sakiyo Sawabe (2nd Year Master's Course Student, Department of Urban and Environmental Engineering)
Host Institution: Recycled Material Resource Center, University of New Hampshire
Program Period: October 30 to December 29, 2010



Group photo of international training camp program

I conducted research on cost analysis of expenses necessary for final disposal of waste from the planning stage to building facilities. Everything about going abroad was new to me, from the arrangements to everyday life and at first I had a lot of trouble with English. After 2 months of studying there, however, I became used to handling everyday affairs in English, and I felt the need to continue with my English studies.

I was able to approach the waste problem from many different angles by discussing it with the other lab members,

participating in seminars, and experiencing it in daily life. I was able to see the differences between the American and Japanese ways of thinking concerning waste first hand. Although both are developed countries, I was surprised at how different their ways thinking concerning separation of waste, final disposal sites, and other matters are.

Taking advantage of the Thanksgiving holiday, I participated in a four-night international training camp program, where I stayed with other students from around the world to hold discussions. Of course, communication was in English, and my low level of English ability became obvious to me, but through the shared living arrangements I was gradually able to understand. I learned the importance of being open and active. Discussions were held about our different countries' cultures, and students talked among themselves about what kinds of things they were studying. Most of the participating students and adults were working in the U.S. or thinking of finding employment there. It seemed to me they would go on to be very active in international society.

I acquired English skills and engineering skills while in New Hampshire, and I came away with the feeling that I would like to be active in the world. Finally, I am very grateful to Professor Kevin Gardner and the faculty of RMRC for all their support in both my research and in regards to daily living.

Name: Akihiro Hamanaka (1st Year Master's Course Student, Department of Earth Resources Engineering)
Host Institution: Technical University of Ostava (VŠB-TUO), Czech Republic
Program Period: January 17 to March 22, 2011



On-site training in an underground mine

I spent about 2 months in Ostava in the Czech Republic, a town famous for its coalmining, and where one can see the history of the coalmining industry preserved in a museum as well as mineshafts that are currently in operation. One of the legacies of the coalmines is the rugged roads and areas where the ground surface sags. There are also efforts to create pond resorts by pooling water from rivers in the abandoned mine areas as well as using the land.

Currently, strip mining is practiced all over the world in

the quest for resource development. There are very few mines, however, that sufficiently consider the rehabilitation of the land after mining has finished. Therefore, I believe places like Ostava that have already rehabilitated the land post-mining will serve as very valuable examples in the near future.

The Czech is the only country in the world to have a government-run uranium mine in operation. During my training course, I had the opportunity to visit a uranium mineshaft. The uranium mine I visited has a maximum depth of more than 1000m and continues to get deeper, but since the shafts are so stable, I felt this must be the reason the Czech has such a long history of resource development as well as being a leader in high technology. As for safety precautions, gas concentration and dust particles are monitored, and if an accident such as a cave-in or a fire should occur, workers evacuate to a temporary shelter that is equipped with telecommunication equipment to contact the outside. However, there were concerns that there could be some obstacles to their operational plans if something similar to the simultaneous disasters of the Great East Japan Earthquake and Tsunami occurred.

The VŠB-TUO had cutting edge instruments for experiments that you don't see often in Japan as well as advanced research in RFID communication technology. I was able to experience the technology of the near future. It was a very productive training.

Name: Ken Yamashiro (Assistant Professor, Department of Urban and Environmental Engineering)
Host Institution: Lund University
Program Period: June 9 to August 27, 2011



At the lab with researcher Dr. Nam Thanh Pham (Yamashiro left)

With the support of the ITP, I stayed at Dept. of Water Resources Engineering as a guest researcher. Prof. Larson was my supervisor. He was a very kind person whose specializes in coastal waters engineering just as I do. As he has spent time in Japan, he was very knowledgeable about the country. I shared a lab with Dr. Pham, a young researcher who acquired his doctoral degree under Prof. Larson and was very kind.

My main research concerned "Examining configurations, raw materials, design standards, policy, and outdoor forces (weather, ocean conditions) of coastal structures in Sweden (particularly seawalls, shore protection, etc.) and comparing them to Japan". I examined eight harbor facilities and places on the shore in the environs of the city of Lund. Professor Larson, Dr. Pham and Professor Hans Hanson, who is a coastal engineering expert, taught me a lot about the characteristics of coastal structures and provided me with various materials.

I found Sweden in the summer very comfortable, and since it was summer vacation for the students at Lund University, it was very quiet. The time I spent in that peaceful environment concentrating on my research was very fruitful and valuable to me. Moreover, there were many international students of various ages from Europe, the Middle East, Asia and all over the world in the doctoral course at the Department of Water Resources Engineering conducting their research intently. Many of them hoped to work in another country as researchers after they acquired their doctoral degree rather than return to their home countries. Getting to know these young researchers' attitudes and ways of thinking has been very motivating for me.

Participating in this ITP program and interacting with Professor Larson, Dr. Pham and many others has been an invaluable experience. I am very grateful to Professor Sasaki and the ITP staff for all their support.

Name: Tomohiro Matsushita (1st - 2nd Year Master's Course Student, Department of Earth Resources Engineering)
Host Institution: School of Engineering, Lund University (Double Degree Program)
Period of Stay: August 24, 2011 to January 10, 2013



Conducting work on drinking water in Sweden with a member of my group

During my one-year dispatch to Lund University on the ITP program, I plan to acquire a total of 60 ECTS (European Credit Transfer System) credits on the Kyushu University - Lund University double degree program (master's course). I have taken classes in Integrated Water Resource Management, Urban Water, Groundwater Engineering, Groundwater Modeling and Contamination Transport,

Hydromechanics, Geographical Information Systems (GIS), and the Swedish language. I have already received credits for the first three classes, and am currently taking the last four. The classes covered comprehensive knowledge of sustainable water resource management, biotechnology in water treatment in cities (waterworks, sewerage systems) and pipeline efficiency, municipal engineering with Sweden as a model case, analysis of groundwater levels with computer programs and outdoor borehole testing, hydromechanics in treating flow at a deeper level, and analysis of water circulation by exercises using a geographic information base (GIS). Almost all of the classes included group work and evaluated not only individual knowledge but the content of the group's cooperative work. During this term, I am planning to undergo a review to determine if my credits from Kyushu University can be transferred to Lund University.

To be able to attend an overseas university as a regular student and attend classes with Lund University students has been a wonderful experience. In addition to expanding my knowledge, I have built up my skills at making presentations as well as my language ability.

I would like to express my appreciation to the ITP program for making this overseas experience possible, and to everyone at Lund University who has supported me.

Name: Kosuke Sato (1st Year Master's Course Student, Department of Urban and Environmental Engineering)

Host Institution: Lund University

Program Period: September 4 to December 2, 2011



Party with Lund University's Japanese Department students
(I am on right side, 4th back)

At Lund University I conducted research on qualities of precipitation fluctuation and the relationship between cause and effect of droughts that occurred in the past in subject areas in the Yellow River basin and South America where there are problems with water resources. I researched both target areas. I summed up the research on the Yellow River and wrote a paper for the Int. Symp.on Earth Sci. & Tech.

The Pantanal region in the center of the South American continent serves as an important water resource for the countries. Since predicting water level fluctuations is important for water resource maintenance, I developed a model for predicting water level fluctuations applying previously published research results. I built a model using artificial intelligence technology called a neural network. I held several discussions with Professor Cintia Bertacchi Uvo whenever I had to verify the input data to be studied. Juan Martin Bravo, who had previously applied neural network in another field within the same department, gave me advice regarding the structure of the neural network and programming while I was building it.

In addition, I volunteered to participate in Lund University's Japanese Department's classes, and I was able to interact with local students and make many friends.

This program was my first experience abroad. At first I didn't know my right from my left, but thanks to the support of many people and the sense of responsibility I felt as a participant in the program, I was able to persevere until the end. I will devote myself to my studies so as not to let this valuable experience go to waste. Thanks to everyone who supported me.

Name: Yasuyuki Samejima (1st Year Master's Course Student, Department of Civil and Structural Engineering)

Host Institution: Environmental Systems Research Institute (ESRI)

Program Period: August 31 to November 28, 2011



With my host family (Samejima right)

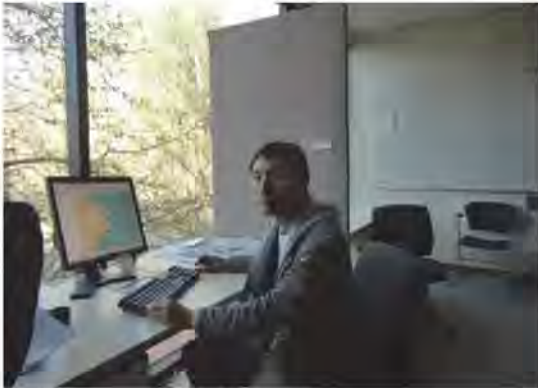
During my training at ESRI, I was in the Localization Division. In this division, in order to sell ESRI products in areas where in English is not spoken, we did translation and modifications to satisfy the culture and demands of the area. Once a week we had a team meeting where we would get an idea of the state of the whole team's work and adjust our individual schedules. The team was broken down into

groups that also held meetings. I too participated in these meetings and was assigned the task of studying a portion of the work in order to get a grasp of the translation conditions. By actually managing this work myself, I was able to understand how translation is carried out when a product is localized.

I also took four training courses during my internship. In the training course you can acquire GIS technology and know-how, and one class is carried out over 2 or 3 days. You have a choice between taking classes in an actual classroom and taking them online, and I took 2 of each. I was able to acquire an even higher level of knowledge of GIS through this overseas training program. In particular I learned the skills to plan the optimization of analysis with GIS using Python and ModelBuilder. I hope to make use of these skills in my future research.

I feel my English conversation abilities improved through my internship in the many meetings we held concerning work. As it was my first experience living overseas, I had no idea about anything, but I found the courage to ask questions when I was confused and just take the initiative and talk to various people. I'd like to express my sincere appreciation to ITP for their support during the program, everyone at ESRI, and to my host family.

Name: JIA NING (3rd year PhD student, Department of Civil and Structural Engineering)
Host Institution: Environmental System Research Institute (ESRI)
Period of Stay: Jan. 8 to March 28, 2012



At ESRI office

I belong to Geotechnology laboratory. From Jan. 8 through March 28, 2012, I was dispatched to Environmental System Research Institute (ESRI) to study some knowledge about Geographic Information System (GIS) and participate in department meetings and project work with the Localization team. It was a good opportunity to enhance my professional knowledge.

My research interest is about landslide hazards assessment using a 3D limit equilibrium method. It involves lots of Geospatial data. GIS is characterized by strong spatial data display and analysis. It is possible to integrate my study into GIS environment. As a main GIS software provider, ESRI is famous for the development and application of GIS. That is why I went to ESRI to participate in the internship.

During my stay at ESRI, I took a few classes. They were all related to making program within GIS environment and how to publish hazard map to public by ArcGIS Server. After learning this knowledge, it is possible to further my study with the help of GIS.

Besides taking classes, I also participated in some work with Localization team. The main task of Localization is to translate ArcGIS software to different language (including Japanese, Chinese, and French etc.) and making some revisions or customizations that meet the requirements of different countries. At first, I was assigned with some simple tasks. After I was familiar with workflow, I had opportunities to touch advanced and challenging tasks. While doing work, I also improved my GIS application skills.

In short, I experienced enterprise culture that was quite different from University. I believe that what I learned at ESRI can further and enhance my study to a new level. I would like to express my thanks to JSPS ITP project.

Name: Hironori Hayashi (Assistant Professor, Department of Urban and Environmental Engineering)
Host Institution: University of New Hampshire
Period of Stay: September 22 to December 14, 2011



On-site inspection with Dr. Ballestero

I was stayed at Dr. Ballestero's lab to study nature restoration of rivers in America. I mainly assisted with construction management at the site of a river restoration project and conducted on-site inspections for nature restoration case studies of rivers. I was involved with assisting the construction management of the site throughout my stay and was able to experience the process of construction from the initial stage through to the final stage.

The biggest difference I noticed between the way river

restoration projects are conducted in Japan and the U.S. was the incidence of on-site arguments. In the U.S. the designer and the contractor very frequently have on-site arguments. Whenever this happens, the design is altered. It is a very flexible construction process. In Japan, however, this kind of process is not incorporated in the construction, and it is not unusual for a river to be completed in a way the designer had not intended. The experiences I have gained on this project were very beneficial to me, particularly as I become involved in river restoration projects in Japan. Moreover, on my field inspections I had the valuable opportunity to see the kind of sites only found in America, such as large scale river channel transitions and advanced dam removal projects. With these on-site inspections and the deskwork that went along with them, under Dr. Ballestero's guidance I was able to efficiently conduct a review concerning trends in nature restoration research of U.S. rivers.

In regards to life outside of work, I could go about my daily life comfortably with few problems after about the second month there. My language ability in particular made marked improvement after about 2 months compared to when I first arrived. So much so that I regretted leaving after 3 months. This overseas dispatch was a very fruitful experience both in regards to my research and my language ability.

Finally, I would like to express my appreciation to the ITP committee made this opportunity possible.

Name: YANG SHUO (3rd year PhD student, Department of Urban and Environmental Engineering)

Host Institution: New Hampshire University

Program Period: March 10 to May 10, 2011



Thompson Hall built in 1893 and the official mascot "Wildcat" (March 2011)

I stayed at the University of New Hampshire RMRC that is an environment and resource institute mainly focused on the field of environmental and material properties of recycled materials. My supervisor was Dr. Kevin Gardener who is the director of this institute.

To develop an innovative dechlorination system for municipal solid waste incineration residue (MSWIR), pilot plant experiment to confirm effectiveness of organic materials as additives for the dechlorination of MSWIR was conducted by using large lysimeters. During my two months in the RMRC, I carried out numerical simulations in order to estimate chlorine removal efficiency and necessary period for sufficient dechlorination. It was cleared based on my simulation results that the acids are mainly generated in the starting period, which gets the highest level in 10 weeks.

I took part in several seminars, discussions and degree dissertation defense. The researches include sustainability assessment of community, the use of capping technology to prevent the release of organic toxics from river sludge, the vegetation change in Alps related with global warming and green house gas increase.

There are many very interesting researches being carried out now. Maybe some of them have little to do with my own project, but I still can get inspirations from the work of theirs. There is also a routine speech hold every week. Some very outstanding scholars are invited to RMRC to introduce their research work. These scholars always have very strong education background and their research are often in some very advanced field. It's very excited for me to have a face-to-face chance with these researchers.

I would like to impress my appreciation to JSPS ITP program for giving me such a precious opportunity.

During my stay in the RMRC, I got much help from the staff and students. Their kindness and friendship made me have a wonderful time. I also want to express my gratitude to them.

Name: ARSYAD ARDY (3rd year PhD student, Department of Civil and Structural Engineering)

Host Institution: School of Petroleum Engineering, University of Alberta

Program Period: June 29 to Sept. 19, 2011



At North Campus, University of Alberta

I joined the ITP-JSPS internship in the University of Alberta, one of the highest research-intensive universities in Canada with more than 100 years academic experience. The program gave me great opportunity to get involved in a number of research works of the group of Enhanced Oil and Gas Recovery and Reservoir Characterization (EOGRRC), University of Alberta, under supervision of Professor Tayfun Babadagli. I conducted numerical simulations by employing

high speed computing and 3D visualization Lab, where reservoir simulation software available such as ECLIPSE, CMG, and PETRASIM, and FRACA for fracture network analysis such. I spend almost three months to conduct three research works including numerical simulation of hydromechanical response of low permeable rocks during CO₂ injection, development of semi analytical method to determine stress dependent relative permeabilities on low permeability rocks injected with supercritical CO₂, and numerical simulation of field scale CO₂ injection to low permeable rocks.

Other than research works, the ITP program has given good chance to visit Alberta natural resources including Rocky Mountain, oil sand mining Athabasca, and Dinosaurs Valley, even seeing Aurora if we are lucky enough. Experiencing of student life in University of Alberta is also unforgettable moment. Therefore, I would like to acknowledge the Japan Society for the Promotion of Science (JSPS) for financial support through the "International Training Program (ITP) 2011", and the School of Mining and Petroleum Engineering of the University of Alberta, Edmonton Canada for providing computational facilities during the ITP Internship program.

Name: YOUSEFI SAHZABI AMIN (3rd year PhD student, Department of Earth Resource Engineering)
Host Institution: Environmental Research and Studies Centre, University of Alberta
Program Period: Sept. 9 to Nov. 13, 2011



At Quad in front of Athabasca Hall, North Campus, University of Alberta

University of Alberta is a research intensive institution with more than 100 years of history and the second university in Canada for external research funding. I conducted my research at the Environmental Science faculty under supervision of Dr. Debra Davidson, an Associate Professor, and director of the Environmental

Research and Studies Centre (ERSC). My research topic was climate change mitigation strategies and tools based on CO₂ capture and storage (CCS) by considering technology innovation and continue economic growth. In this study, we suggested some approaches and tools for doing early mitigation actions in order to support the implementation of "CO₂ air capture and geological storage" as a possible mitigation option in the future climate policy. The focus of research was exploring the potential sectors and prospective areas for CO₂ reduction, as well as the atmospheric dispersion and concentration modeling of CO₂ for enhancing and facilitating the capture unit site selection activities.

Beside research, it was an opportunity for me to experience the western life style that was totally different from Japan. I also experienced three kinds of weather; from hot sunny days in early September to a moderate weather in October and freezing cold in November. The house was conveniently situated within easy access to the Edmonton downtown and the University. Overall I didn't face any difficulties during my stay.

I would like to thank International Training Program (ITP) of Japan Society for the Promotion of Science (JSPS) for providing financial supports.

Name: Yusuke Matsunami (1st Year Master's Course Student, Department of Earth Resources Engineering)
Host Institution: School of Mining and Petroleum, University of Alberta
Program Period: August 3 to October 19, 2011



Hiking with host family (Matsunami far right)

In order to become a technician engaged in resource development, I believe it is necessary to have both specialized knowledge and language skills, and therefore I participated in the training program at the U. of A.

At the U. of A., I researched gas production from methane hydrate. Setting out to conduct sensitivity analysis of production parameters using a concise analysis

model, I made a comparison to the calculation results of the numerical simulator STARS which was introduced to the university. In particular, I evaluated the effect of heat supply in the case of a permeable boundary and the effect of heat fluctuations from the outside on gas production. I also attended classes at the university, and I found attending lectures on my field of expertise very beneficial. Moreover, seeing the high sense of awareness towards studying of the graduate students in the Petroleum Reservoir Engineering lab affiliated with my department prompted me to look at myself objectively and feel keenly my own immaturity.

During on-site training at Fort McMurray in northern Alberta Province, I was able to see an actual SAGD site where bitumen is produced by steam injection in horizontal wells. Seeing with my own two eyes the vast oil sands resources made me want to try my hand at overseas petroleum development. Also, being able to see Japan's energy resource problems from a different perspective by viewing the big picture, I found the oil industry even more appealing.

The period of 80 days really flew by and was a fruitful, enjoyable, and valuable time. I am very proud to have participated in such a wonderful program and grateful to the ITP staff, Prof. Babadagli, the lab members, and my host family.

Name: Akira Hisae (1st Year Master's Course, Department of Civil and Structural Engineering)

Host Institution: University of Duisburg-Essen

Period of Stay: September 8 to November 30, 2011



With lab members

During my overseas dispatch, I used Germany's AQUAPLAN Co.'s AQUAZIS model to conduct research on ground precipitation amounts, the conventional method of yielding data on precipitation measurements. I compared ground precipitation amounts yielded by Thiessen polygons to precipitation data analyzed by radar-AMeDAS, the focus of much attention recently. The subject of analysis was 20 rainfall events chosen by the researcher who provided guidance to me in the 80 square km vicinity of

Dortmund, a relatively small basin. As a result of examining 6 parameters in detail (total flow, outflow commencement time, outflow completion time, outflow period, peak flow, and peak time), I was able to confirm a rise in accuracy of outflow analysis using the precipitation measurements analyzed by radar-AMeDAS.

Through this ITP-sponsored overseas experience I came to realize the importance of turning one's attention abroad, and the necessity of being able to forge good relationships with people no matter their country as well as being able to communicate on an international level. In my university classes and research, I found students had an attitude in which they took initiative towards their studies and endeavored to link their studies in order to put them into practical use, and I became keenly aware of my own immaturity. Since I spoke English everyday in Germany, in just 3 short months I was able to improve my English conversation ability. Everyday I came into contact with values and knowledge I had never encountered before, and it was a very beneficial, enjoyable, and rich experience. I believe I was able to grow as a person. With these experiences as nourishment and firmly holding on to my principles, I want to set my aims high in order to be able to compete with overseas students with their high level of awareness, and make the most of the rest of my student life. The ITP program is truly a wonderful research program. I hope it continue to give young researchers the same kind of valuable experiences I had.

Name: YU QIAN QIAN (3rd year PhD student, Department of Earth Resource Engineering)

Host Institution: School of Chemistry, University of Birmingham

Program Period: October 1 to November 30, 2011



Many Knights in the campus?

I was dispatched to School of Chemistry, University of Birmingham supported by JSPS ITP Program. The purpose of my visiting was to study structural characterization of lithium ion sieve synthesized from biogenic Mn oxide. The school holds enough equipments and software for my purpose. The host researcher, Dr. Adrian J Wright, who belongs to the school, is an expert in crystallography of inorganic materials. I have contacted with him about the subject mostly for one year.

My research in the school included an important part in my PhD thesis. During two month, I mostly focused on collecting data, analysis, and preparation of manuscript to submit to some journals. I have learnt the Rietveld method and other analytical techniques using X-ray diffraction and neutron diffraction data. It is important for writing my thesis in the near future. Also, I got new knowledge about material chemistry. Furthermore, I joined the floor meeting which was hold every two weeks, and I made presentation there. Students and professors joint and share ideas about researches. A student makes a presentation about his/her research topic.

I enjoyed my stay in Birmingham City located at the west midland in the near future. Unfortunately day time during my stay was very short because of winter season. People start working from 9:00 am and stop it until 5:00 pm. Very few people will go to campus on weekend. There is a coffee-break at 3:30 pm in the department of chemistry every day. There are many international students from French, Italian, middle-east, Japanese, Chinese, Korean, Indian etc., study in University of Birmingham. It was pleasure for me to talk with them on different issues.

Two month's experience in University of Birmingham gave me deep impressions on my research and my life, and it has broadened my view. I greatly appreciate financially-supported JSPS program (International Training Program: ITP) giving me valuable experience in University of Birmingham.

Name: Tomohiro Matsushita (1st Year Master's Course Student, Department of Earth Resources Engineering, Graduate School of Engineering)
Host Institution: Lund University, Sweden
Program Period: August 20, 2011 to January 12, 2013



Practical training for analysis of sewage treatment facility

Lund University is located in south of Sweden and the university was founded in 1666, that is the second oldest in Sweden. The university is one of the high rank universities in Sweden, which is ranked as a top 100 universities in the world.

I am a Double Degree student between Kyusyu University and Lund University. The total duration of the program is 3 years, and I can eventually get two different Degrees after 3years.

I had studied about Water Resources in Lund University from sustainable water resources Management to fluid mechanics, which are related to water. The list that I got credits in Lund University is as follows;

1. Integrated Water Resources Management
 The main target place is developing countries. We had learned how to manage sustainable development, for

- example flood disaster, drought and so on.
 2. Urban Water
 I studied about the mechanism of water supply and sewerage systems.
 3. Ground Water Engineering
 I studied about the system of ground water and chemical reaction between water and surrounding rocks.
 4. Ground Water Modeling and Contaminant Transport
 We used a computer model for investigating ground water flow and we had solved many tasks about ground water problems.
 5. GIS
 I applied GIS for flood management and sedimentation problem in Sweden.
 6. Hydromechanics
 Basically, We studied about mathematic for fluid flow, and I solved a lot of problem.
 7. Rainfall Runoff Modelling
 Rainfall Runoff means that how the water moves on surface or in ground. The study is important for management for dam construction.
 8. Environmental Hydraulics
 I solved many problems about how to manage polluted water from factory or heating water from nuclear power plant, and we approached these problems by mathematical concept.
- I feel that the program gives me a lot of precious things, like English skill, technical knowledge for water and nice friends. I had spent a fulfilling years in Lund.

Name: Shinya Karasuda (1st Year Master's Course Student, Department of Civil Engineering)
Host Institution: University of New Hampshire
Program Period: September 5 to November 30, 2012



With Mr. Xavier from France



Asphalt sample

I stayed at the University of New Hampshire. It is located in the town of Durham on the east coast of the United States. Public security was good, so I've never felt dangerous. I couldn't meet any Japanese and there was only sushi which tasted bad, so I was able to feel the direct American culture. In addition, the holiday, a friend of the lab took me to watch the game of ice hockey. The level was very high, so I was very excited.

I carried out a study of asphalt mixed with recycled asphalt. In the United States, the aging of the highway has become more serious in recent years, because there is a need for reupholster of asphalt paving material. However, it also extends to the U.S. highway of several tens of thousands kilometers, using the brand new asphalt to asphalt paving all of its impact on the environment and finance. Therefore, it is necessary to use again the asphalt pavement materials. I felt strongly the need for such a study, since aging highways have progressed in recent years also in Japan. During my stay, I had a rare experience of Hurricane attacking the east coast and giving huge damage

on lifelines.
 Living abroad for the first time was very meaningful for me. I feel it was a short period of three months, and did a little getting used to life abroad and the courage to speak in English.

Name: Masataka Iwasaki (1st Year Master's Course Student, Department of Civil and Structural Engineering, Graduate School of Engineering)
Host Institution: University of Alberta, Canada
Program Period: August 18 to November 20, 2012



At a farewell party for me held by my friends

I stayed at University of Alberta this time and this is located in Edmonton, where is a capital city of the State of Alberta. Edmonton is one of the coldest cities in the world. -46.1 °C was recorded in recent years on December 13, 2009. In

cities with a population of about 1 million, it ranks with Siberia cities which record nearly -50 °C, such as Novosibirsk, Krasnoyarsk, etc. in Russia.

Under Professor Dave Chan, I studied about the "Geotechnical engineering" which is my major field. Although I planned to study about the unsaturated soil which is my subject of research, it was not actually able to start, because there are some problems. For example, I didn't have enough time or there are any equipment I wanted to use. So we decided to start studying about "Evaporation" with a student who studies under Professor Dave Chan. Reading some English papers, discussion in English, carrying out the experiment with English and doing presentation in English made me have a very important time.

Moreover, even when it is private, I got many friends, and it is thought that it led also to improvement in my "sociality" and "communications skills" by experiences with them.

Name: Yuta Yoshioka (1st Year Master's Course Student, Department of Earth Resources Engineering, Graduate School of Engineering, Kyushu University)
Host Institution: University of Alberta
Program Period: August 3 to October 17, 2012



On the job training at JACOS

In Alberta province in Canada where I visited, oil sands development enthusiastically increases recently. At present, JACOS which is a subsidiary company of JAPEX is developing the oil sands as the operator. The objective of my training is to learn oil sands and petroleum and to progress my research. In this training, I did my research in University of Alberta and I visited JACOS for 2 days. In University of Alberta, I conducted numerical simulations of bitumen combustion experiments which I had conducted in Kyushu University before I visited U of A and I attempted to get the kinetic parameters in relation to reaction rate

of bitumen combustion reactions. In my experiments, bitumen weight after the experiments and produced CO gas concentration were measured. I did history matching of these experimental results by numerical simulations. According to the numerical simulation results, bitumen combustion experimental results could be reproduced by calculating two chemical reactions which are bitumen thermal cracking reaction and High Temperature Oxidation (HTO) reaction. In addition, I actively took classes about oil and oil sands and I could learn more knowledge about my research.

In JACOS, I visited Calgary office and Hangingstone field to study oil sands development. In Calgary office, I learned oil sands development by using SAGD method and methods which investigate oil and gas reserves and predict oil and gas production. In addition, in Hangingstone, I visited the facilities for treating water and generating steam.

I could progress my research and learn about oil sands and oil more detail through this training. In addition, I could discuss my research and the other things with people of various countries and I knew the enjoyment of discussing with the people who have different way of thinking. Furthermore, I could learn heavy oil production from oil sands reservoir by SAGD method and I could know about SAGD method more detail for two days training. In addition, I could discuss simulator which I usually use on my research with an employee of JACOS and I could learn a lot of knowledge by this training.

I appreciate Prof. Babadagli and JACOS employees for their kind supports on my study.

Name: Katsutoshi Shiota (1st Year Master's Course Student, Department of Urban Environment System Engineering, Graduate School of Engineering)
Host Institution: Institute Technology Bandung of Indonesia (ITB)
Program Period: September 10 to November 30, 2012



Member of Institute Technology Bandung

I spent about 3 months in Bandung in Indonesia. I have studied logistics in Kyushu University, so I wanted to learn logistics of earth resource in abroad.

My study in Indonesia was quantitative evaluation of railway location. In fact, the new railway project in Indonesia has started, so I evaluated this railway location by using railway engineering.

I had studied logistics at Institute Technology Bandung (ITB) in Bandung in Indonesia. The university is very famous

in Indonesia and many researchers cooperates Indonesia companies to research and develop many problems. And Bandung city is one of famous city in Indonesia because the city locates high place and its temperature is less than other area in Indonesia. In addition, I also went to PT Bukit Asam which is company about coal mining to get railway data.

In my study, first, I collected railway data for railway location. For example, it was 1 year amount of coal transportation, 1 day amount of coal transportation, gradient of railway and so on. From these data, I calculated momentum, loss of energy about railway location and conversion railway extension.

Furthermore, in survey of mining, I didn't only collect these data but also study mining method, logistic method, usage rules of mining machine, operation system. And I could go to port which has role to connect mining area to other place. In this port, I could study conversion system and quality control of coal and coal management. From these experience, I felt that this industry has very big scale and the logistic system is efficiency. I couldn't only theory about logistic but also study practical science about logistic.

From this program, I could broaden my knowledge and outlook. In addition, I also could study natural features, customary law, sense of values about Indonesia. Moreover, student in Indonesia has studied very hard and has a desire to improve themselves. This fact makes me feel that I have to study more hard compared with the past. Finally, I could study many things and make something satisfactory.

Name: HIROAKI TAKAYAMA (1st Year Master's Course Student, Department of Urban and Environmental Engineering, Graduate School of Engineering)
Host Institution: Universitate Dusiburg Essen (UED)
Program Period: September 19 to December 17, 2012



The basic experiment in Essen Universitate

I learned waste management in Germany by the reading reports, city observation and field trip.

In Germany, garbage is divided into burnable waste, non burnable waste and recycled paper. The box that contains garbage is set and supplier collect garbage once a week. And many garbage box are set in the city (perhaps the distribution density of that is on the same level with vending

machine in Japan), so interesting of waste management is found high level. On the other hand the supplier mix the garbage when they collect that (they said that after mixing they re-divide but it is unbelievable) and there are many amount of gum on the street and there are burnable and non burnable garbage in the street garbage box. Therefore the people don't have interesting in waste management at the level of individual psychology. In Germany, 40million ton garbage is discharged in a year, and 33% and 50% in the value of then is package waste. So government requires the companies to recover the package waste a certain level and if it cannot achieve that level, that company may be imposed upon the penalty. From this deposit system is taken in. This system is that pet bottle and bin has costs of recovery in advance. This system achieves the high quality recovery with artificial effect. The deposit charge is only 15-25c per a bottle or bin, but I live actually, I could not negligible and most of people join this system. And shopping bag is not also free, so almost people bring their bags when they go to shopping. It is seems that Japan is more superior in dividing and collection, but in Germany the idea of waste avoid is the most important, and conducted waste management for the future. There are ideas that Japan should take in like a deposit system of the pet bottles and bins, and this internships was very valuable internship.

Name: Masafumi Fujimoto (2nd Year Master's Course Student of Earth Resources Engineering, Graduate School of Engineering, Kyushu University)
Host Institution: Department of Water Resources Engineering, Lund University
Program Period: September 7 to December 1, 2012



Professor Ronny Berndtsson

I carried out research activities as a Guest Student at Lund University in Sweden under the guidance of Professor Ronny Berndtsson (Supervisor) of the Department of Water Resources. In the research activities, I constructed a numerical simulation model to reproduce the behavior of the heat exchange of geothermal heat pump systems that actually exist in Stockholm, Sweden. Using the model, I evaluated the effect of heat exchange on the ground temperature. Sweden is one of the countries where

geothermal heat pump systems have become popular and there are many case studies of the system for single-family houses. However the influence of using the system in a residential area on the surrounding ground has not been well studied in Sweden. According to my understanding, few students who are studying engineering know about geothermal heat pump systems. So it did not seem that there was proportional relationship between penetration and visibility. In the research activities, I studied in a room given to PhDs. The majority of the day was a sedentary but I took part in the coffee-time when professors and PhD gather twice a day. I could communicate with them through daily conversation and discussion of research where I felt the difference with Japan. In addition, master degree students in Lund University do not have laboratories, I felt there is a need for power to proceed with research on their own initiative.

In private life I was living in a dormitory owned by Lund University. There are many opportunities to interact with roommates and the conversations with them of different nationalities and cultures were a significant time. I also participated in meeting for students who want to learn Japanese and I could study Swedish and English through conversation with them and we have become good friends. In addition, I was able to make friends by participating in the futsal tournament, which was held in the Faculty of Engineering. When I was on the overseas in this way, I was able to notice that there are many opportunities to interact with various people. Now I'm trying to challenge a lot of things in a broader perspective after studying abroad.

Name: Wenyu Yang (3rd Year Doctor's Course Student, Department of Earth Resources Engineering, Graduate School of Engineering)
Host Institution: Technical University of Ostrava (VŠB-TUO), Czech Republic
Program Period: September 26 to December 26, 2012



Prof. Adamus, VSB-Technical University Ostrava (Left)

The three-month internship was carried out in the Technical University of Ostrava where the research on coal mining is very advanced. Professor Adamus is responsible for my stay in the university. His research topic is the study on the indicator gases of spontaneous combustion in underground mines. Spontaneous combustion is the main threat in OKR (Ostrava-Karvina Coal Field). The indicator gases can be various in different coal seams due to different geology conditions. Which gas can be considered as the indicator

gases of the coal seam and how much the gas released from the coal seam can be considered as dangerous is the main research purpose. Hence the simulation experiment should be carried out in the laboratory test to see the gas released from a coal sample in different temperature. I joined the experiment in those days. The results show C_2H_4 and C_3H_6 will be released when the temperature is about $130^{\circ}C$. Hence if C_2H_4 and C_3H_6 are found in the working face, it means the high-temperature-area existed in the gob areas and safety action must be taken.

I had the chance to visit the Central Mines Rescue Station in Ostrava and see the advanced rescue equipment such as emergency response vehicles, breathing apparatus, measuring instrument up to five gases and breathing simulators and other equipment. Moreover, I also visited the CSM underground coal mine. The deepest point of CSM mine is 1122 meters. I had the chance to see the central air-conditioning room, German local cooling system, coal-cutting machine and Polish supporting system. The safety instruction, such as the cap lamp must be checked two times, impressed me very much.

The three-month internship in Technical University of Ostrava gave me the chance to experience the European culture. The great experience will be very useful in my research and my life. Finally, I would like to express my gratitude for the financial supports offered by International Training Program (ITP) of Japan Society for the Promotion of Science (JSPS).

JSPS ITP Stealing Committee, Faculty of Engineering, Kyushu University
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Department of Civil and Structural Engineering
Department of Earth Resources Engineering

Project: FY2008 to FY2012

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Main Building, Lund University



Who ?



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Environmental System Research Institute Inc.
(ESRI)



Kyushu University



ITP Sterling Committee, Faculty of Engineering, Kyushu University

<http://itp.mine.kyushu-u.ac.jp/about.html>