



CIC NEWSLETTER

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Center for International Cooperation
Ocean Research Institute
The University of Tokyo



Annual Summary Report of the Center for International Cooperation in FY2007

Mitsuo UEMATSU

Professor and Director, Center for International Cooperation

As the director of the Center for International Cooperation (CIC), I would like to report on our accomplishments in this fiscal year of 2007 and to relate our capabilities and directions in this era of global ocean science.

The year 2007 was an important year for the CIC because an international affairs committee of the Ocean Research Institute (ORI) was established after taking the occasion of the university's transformation into a University Corporation as an opportunity actively to promote a program of internationalization. Therefore our institute established the ORI international affairs committee to succeed the ORI international exchange committee. Corresponding to this opportunity, the acceptance rules of the ORI Foreign Researchers were changed and we could invite three distinguished scientists from the United States and the United Kingdom without the rule of a 3-month stay requirement in FY2007. It is critical to invite active scientists to ORI for stimulating interactions with faculty members and graduate students. This change will surely enhance the internationalization of ORI. Our director's office was also refurbished into a CIC meeting room and a visiting researcher room in 2007 for increasing our activity.

ORI has developed formal agreements on scientific cooperation with 10 research and educational institutions around the world. Further agreements are under consideration. The academic exchange between the Woods Hole Oceanographic Institution and ORI was renewed in April until January 2009. This agreement has been maintained since 1989. We have also organized and supported international activities such as the international workshop for seismic investigation in

June, the seminar on "Coastal Marine Science," the Multilateral Core University Program supported by the Japan Society for the Promotion of Science (JSPS) at Yogyakarta in August, the ASEAN Symposium at Bangkok in November, and a joint symposium on ocean and coastal sciences between ORI and the University of Hawaii in March 2008 as well as other coordination of meetings.

In November, one of our CIC faculty members, Dr. Yutaka Michida (Physical Oceanography) was promoted to Professor at the International Coastal Research Center. He joined the CIC in 2000 and has been serving for various international affairs and cooperative scientific projects, especially for the Intergovernmental Oceanographic Commission (IOC) of UNESCO. We are grateful to him for his great accomplishments for the CIC and we are expecting his continued support with his expertise for our activities. However, now we urgently need his successor at the CIC. As a domestic visiting researcher at the CIC, Dr. Hiroaki Saito of the Tohoku National Fisheries Research Institute joined and stimulated us for one year. We are also grateful to him for his scientific contributions and constructive suggestions to ORI.

Scientists representing the spectrum of marine sciences work together in the CIC, and the center leads international research endeavors through planning, coordinating, and promoting international cooperative studies and research programs. The CIC strives to fulfill a unique role in enhancing the quality of ocean science disseminating from ORI to Asia and the world beyond. The CIC's activities received a very positive evaluation by the committee members of the ORI External Review Assessment in March 2008.

International Workshop for Seismic Investigation along the Arc-Backarc Basin-Continent Transect

Jin-Oh PARK

Associate Professor, Center for International Cooperation

An international workshop for seismic investigation along the arc-backarc basin-continent transect was held at the Ocean Research Institute (ORI), University of Tokyo, on June 14-15, 2007. The goal of this workshop was to review recent scientific results of controlled source seismic investigations along the arc-backarc basin-continent transect, and then to clarify both what we know and what we do not know about deep crustal structure of the Asian arc-backarc basin-continent system. Many seismic experiments by individual countries were carried out in the western Pacific marginal basins so far. Through this workshop, we aimed to construct an Asian crustal seismologist network for establishing international collaborative research, which combines crustal seismology with drilling earth science in terms of an Integrated Ocean Drilling Program (IODP).

During the first day of this workshop, distinguished scientists from Korea, Canada, United States, and Japan delivered 13 oral presentations covering multichannel seismic reflection studies, ocean bottom seismograph (OBS) wide-angle reflection/refraction studies, marine gravity and magnetics studies, onland geology, and IODP proposals. Most of the presentations were stimulating and fostered much discussion. On the 2nd day of the workshop, we discussed a future collaborative seismic experiment across the Japanese Islands and

Korean Peninsula, which was never realized despite its great scientific importance. We agreed that we will continue discussing the possibility of a collaborative seismic experiment combined with the IODP-related deep drilling study.

Finally, all participants firmly believe that this workshop provided an excellent opportunity to promote scientific cooperation and collaboration in deep crustal seismology along the Asian arc-backarc basin-continent transect.



Prof. H. Tokuyama (ORI, Univ. of Tokyo) giving a talk at the international workshop for seismic investigation along arc-backarc basin-continent transect

Participation in Meetings of the IOC

Yutaka MICHIDA

Professor, International Coastal Research Center

As one of the important missions of the Center, staff members of the Center have regularly participated in some of the meetings of the Intergovernmental Oceanographic Commission (IOC) of UNESCO. The 24th Session of IOC Assembly was held in UNESCO Headquarters, Paris, June 19-28, 2007, in which Assoc. Prof. Michida participated as a member of the Japanese delegation. The IOC has been fulfilling a leading role in promoting international cooperation and coordination of oceanographic activities since its establishment in 1961. One of the major issues discussed at the 24th Assembly was 'The future of IOC', based on the Assembly's recognition of emerging importance of the IOC within the UN system regarding the scientific studies



Prof. Terazaki, the head of delegation of Japan to 24th Session of IOC Assembly (left), and Prof. Michida (right), at UNESCO Headquarters, Paris, June 2007

of global climate change and integrated coastal zone management. The Assembly adopted a resolution on the establishment of an intergovernmental working group to make in depth discussions on the future perspectives of the IOC. Following the resolution, the first session of the working group was held at the UNESCO Headquarters, Feb. 19-20, 2008. Prof. Uematsu, the

Director of CIC, participated in the meeting of the working group, together with some members of the Japanese National Committee for IOC, including Prof. Michida of the International Coastal Research Center, ORI. The Center will continue to contribute to such an important international discussions on oceanography.

More than 160 Participants Gathered at The 3rd Multilateral Core University Program Seminar in Yogyakarta

Koji INOUE

Associate Professor, Center for International Cooperation

The 3rd Seminar of The Japan Society for the Promotion of Science (JSPS) Multilateral Core University Program “Coastal Marine Science (CMS)” was held, as the “LIPI-JSPS Joint Seminar on Coastal Marine Science”, at the Inna Garuda Hotel in Yogyakarta, Indonesia on 3-5 August, 2007. CMS is an international research program launched in 2001, involving Japan and five Asian countries (Indonesia, Malaysia, Thailand, Philippines and Vietnam). It encompasses four major projects: “Water circulation and the process of material transport in the coastal areas and marginal seas of East and Southeast Asia” (Project 1); “Ecology and oceanography of harmful marine microalgae” (Project 2); “Biodiversity studies in the coastal waters of East and Southeast Asia” (Project 3); and “Pollution of hazardous

chemicals in the coastal marine environment and their ecological effect” (Project 4), and Project 3 contains four subgroups, “Fish Group”, “Plankton Group”, “Benthos Group”, and “Algae Group”. The Ocean Research Institute (ORI) has played a central role in this program.

More than 160 scientists attended the seminar and presented their scientific activities as approximately 120 oral and 40 poster presentations. In the opening session, on behalf of organizing committee of this project, Prof. Nobuyuki Miyazaki made opening remarks. Opening address was also made by Prof. Dr. Umar Anggara Jenie, M.Apt., the chairman of LIPI, and Dr. Suharsono, the chief of the local organizing committee. Then Dr. Jin-Oh Park, an associate professor of the Center for International Cooperation, ORI, made a special lecture



Taking a group photo at the 3rd Seminar of the JSPS Program “Coastal Marine Science”

on earthquakes, mentioning the Sumatra-Andaman Earthquake in 2004 and 2005. In the plenary session of the third day, Ms. Ayako Maesawa, Head of the Asian Program Division of the International Program Department of JSPS made a speech on the activities of the project and also had discussions with national coordinators about the improvement of the organization of the program (picture on the right).

CMS has succeeded to build up a large and unique network of Asian scientists working on various fields of sciences. We hope that the network will be utilized to cope with various international issues, e.g., changes in coastal environments and biodiversity caused by global warming. We would like to express sincere thanks to the host Dr. Suharsono, the LIPI staff, and the local organizing committee members.



A Functional Network among ASEAN Countries will be Organized as a Result of the Conference “Conservation on the Coastal Environment” held in Bangkok, Thailand

Nobuyuki MIYAZAKI

Professor, Center for International Cooperation

The number of the people in the world is more than 6.6 billion. About 60% of the human population lives in coastal areas and this proportion is expected to increase in the future. It seems that rapid population growth, industrialization, and urbanization in coastal regions will cause serious deterioration of environmental conditions and will damage the coastal ecosystem. It is obvious that international cooperation is necessary for conservation of the coastal environment. I organized, with Dr. Gullaya Wattayakorn of Chulalongkorn University, Thailand, The ASEAN International Conference “Conservation on the Coastal Environment” to help find solutions for such coastal environmental issues in ASEAN countries, whose population comprises almost one tenth of the global human population. The conference was held at Chulalongkorn University, Bangkok, Thailand on November 12-13, 2007, with cooperation of the ASEAN Foundation and the Ministry of Foreign Affairs of Japan. The organizing committee invited nine keynote speakers and their lectures were published as a book entitled “The ASEAN International Conference: Conservation on the Coastal Environment”. In addition to keynote lectures, about 60 participants from ten ASEAN countries and Japan exchanged important information on current environmental issues and discussed future directions based on scientific evidence. I hope that a functional network system among ASEAN countries will be established through the meaningful discussions at this conference, where participants were able to exchange new information and also enhance the education and training of young

scientists. I sincerely appreciate Mr. Apichai Sunchindah and Mr. Aprianto Masjhur of the ASEAN Foundation, Mr. Satoshi Abe of the Ministry of Foreign Affairs of Japan, and Mr. Yasuho Tadokoro of the Japan food Research Laboratory, Mr. Seiji Sugimura, Ms. Yasuko Chika, Mr. Keisuke Sumiya and other administrative staff of the Ocean Research Institute, The University of Tokyo for their strong support of the conference. I am grateful to Dr. Monthip Sriratana Tabucanon, Ministry of Natural Resources and Environment of Thailand, Prof. Piamsak Menasveta, Dean of Faculty of Science, Chulalongkorn University, and Dr. Gullaya Wattayakorn, for giving us an opportunity to have the conference in Chulalongkorn University, Thailand.



The ASEAN International Conference on “Conservation on the Coastal Environment”

The International Symposium of *Oryzias* Fishes: New Asian Resources for Basic and Applied Science

Koji INOUE

Associate Professor, Center for International Cooperation

The Japanese “medaka”, *Oryzias latipes* is a small fish species, which has advantageous features as an experimental model such as small size and easiness of rearing in laboratory, short generation time, daily spawning, development visible through a transparent egg membrane, availability of special mutant strains, and use of transgenic techniques, and so on. Recently, the whole genome sequences also became available in this species and thus it is recognized as one of the most useful vertebrate models for molecular biology and genetics. However, it is not well known that this species has nearly 20 related species of the same genus in Asia. Each species exhibits a specific pattern of geographic distribution and has different adaptability to environmental conditions such as salinity. Thus, we expect these *Oryzias* species offer a unique opportunity for interdisciplinary studies on speciation, evolution, ecology, physiology, and so on. In addition, as some species such as the Javanese medaka (*O. javanicus*) and



Organizers, invited speakers and staff of the symposium

Indian medaka (*O. dancena*) have high adaptability to seawater, they are expected to be models of seawater fish for various kinds studies including environmental monitoring. “The International Symposium of *Oryzias* Fishes” was held at Srinakharinwirot University, Thailand on November 12-14, 2007 to exchange current information about *Oryzias* species and to enhance the research activities on these unique species. Thai, Japanese, Malaysian and Indian scientists presented their scientific activities, and participants also visited the habitat of the Thai medaka (*O. minutillus*) after the session on the last day. I believe these small fish species that are endemic to Asia, have a potential to accelerate science in Asia and thus it is important to have international meetings regularly in the future. We appreciate Dr. Wichian Magtoon and the staff of Srinakharinwirot University for their enormous efforts in preparation and management of the symposium.

University of Hawaii and University of Tokyo Joint Symposium on Ocean and Coastal Sciences

Koji INOUE

Associate Professor, Center for International Cooperation

Since the “Agreement of Scientific Education Cooperation between the School of Ocean and Earth Science and Technology, University of Hawaii and the Ocean Research Institute, the University of Tokyo” was made in 1991 (“Academic Exchange Agreements between the University of Tokyo and University of Hawaii” since 2004), collaborative studies have been performed among laboratories or scientists of both organizations. To enhance the partnership at the organizational level, the “University of Hawaii and University of Tokyo Joint Symposium on Ocean and Coastal Sciences” was held on March 13-15, 2008 at



Ocean Research Institute (ORI). The symposium started with the business meeting that included introductions of School of Ocean and Earth Science and Technology (SOEST) and ORI and discussions on future cooperation. Then 10 speakers from Hawaii and 9 from ORI, and 2 guest speakers, Dr. Atsushi Suzuki of the National Institute of Advanced Industrial Science and Technology and Dr. Akihide Kasai of Kyoto University, presented their scientific activities in three sessions, which were “Diversity, physiology and ecology of marine animals: from gene to behavior”, “Coral

Biology” and “Biogeochemistry and oceanographic structures: environmental factors affecting biodiversity and cycling of nutrients”. On the last day, group sessions were held on specific subjects and practical plans for future cooperation were discussed.

This symposium between the University of Hawaii and the Ocean Research Institute was held as a “CIC symposium” using the budget of CIC. We also appreciate the Hawaii Sea Grant for their financial support. The next symposium will be held in Hawaii three years later.

Visiting Professors' Reports



Randall W. DAVIS

*Visiting Professor
Professor, Department of Marine
Biology Texas A&M University*

I worked at the Ocean Research Institute from September to December of 2007 as a Visiting Professor. My wife and daughter were also able to join me, which made the visit even more enjoyable. My daughter is a student of Architecture at Texas A&M University and was able to obtain financial support for a study of Japanese architecture during her stay. Our visit was arranged by Dr. Miyazaki, who was greatly aided by his secretary (Domoto-san), colleagues, former students now with their own research positions at ORI, and current graduate students. This was my second visit to Japan. My first visit in 2003, which was very short, was to attend the first Biologging Conference hosted by Dr. Naito at the Japanese Polar Research Institute. As our apartment in Tokyo was not available when we first arrived in September, we spent two enjoyable weeks at the ORI laboratory in Otsuchi. Dr. Sato, who I had met previously at scientific meetings, hosted us at the lab. Dr. Sato, his family and students were very kind to us as we began to explore Japan and its culture. On one evening we attended a concert at a local temple. The event was a Japanese artist who played the biwa and sang old Japanese ballads. Although we could not understand the lyrics, the music and singing were charming. We also got to experience a typhoon that swept through the area and visited a traditional spa. When we returned to Tokyo, we lived at the International Lodge in Shirokanadai, which was a very nice neighborhood. It took me about an hour to get from my apartment to ORI, mostly on the train. I was amazed at the efficiency of Japanese public transportation, and enjoyed exploring the large stations such as Shinjuku. At ORI, I spent much of my time

writing or preparing lectures that I presented at various universities, colleges and research institutes in Japan. During the week, my wife and daughter explored Tokyo, and then they would take me to their favorite locations (e.g., the Imperial Palace, Ebisu, Omote-sando and Asakusa) on the weekends. In November, Dr. Miyazaki and his wife took us on a lecture tour to the University of Kyoto, Kobe College, and the University of Kinki. We were hosted by many people who showed us their campus and the surrounding area. We were extremely fortunate to arrive in Kyoto at the height of the autumn tree colors. The city and temples were awash in red and yellow tree leaves that created stunning scenery. Aside from working at ORI, I had the chance to learn a little about Japanese culture embodied in concepts such as Shizenbi, Wa, Wabi Sabi and Kaizen. These ideas resonate with many people, but are found most commonly in Japanese culture. We ended our stay during the Christmas season, which was great fun. Reluctantly, we departed Japan on December 29 and returned to Texas. I am grateful to Dr. Miyazaki and the University of Tokyo for providing this opportunity to initiate collaborative research at ORI. Hopefully, Dr. Miyazaki, Dr. Naito, Dr. Sato and I will collaborate on a couple of new research projects in Gulf of Mexico (marlin) and South America (Southern sea lions). I look forward to my next visit to Japan.





Richard J. BALMENT

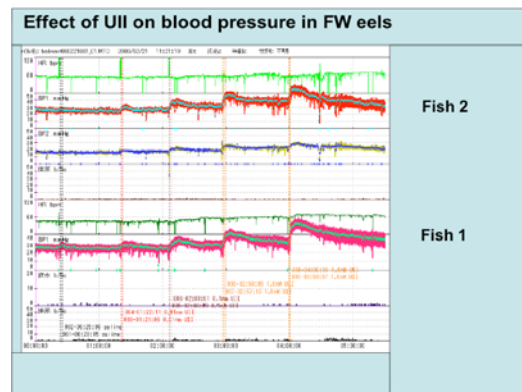
*Visiting Professor
Professor Emeritus, University of
Manchester*

I joined the Ocean Research Institute on 14th February, 2008 to work for 1 month in the laboratory of Professor Yoshio Takei to investigate the evolution of body fluid regulation in vertebrates during transition from aquatic to terrestrial life. I presented 3 seminars during my visit and enjoyed discussions of ongoing research projects with individual research students and postdoctoral workers. With the assistance of Dr Shinegori Nobata I was able to exploit the excellent fish physiology facilities to study specifically the actions of a novel peptide hormone system – Urotensin II (UII). The unique surgical preparation of the eel in this laboratory allowed simultaneous measurement of ventral and dorsal aortic blood pressures, drinking rate and urine production.

The major findings of the research were that UII is an extremely potent vasoconstrictor, profoundly increasing blood pressure in the dorsal aorta and much more so in the ventral aorta. These effects were dose-dependant and were inhibited by a recently developed mammalian UII receptor antagonist (Urantide). This latter observation bodes well for future exploitation of this pharmacological tool as further studies attempt to understand the mechanisms of UII action. Effects of UII

and a further novel Urotensin related peptide (URP) were examined and contrasted in FW and SW adapted eels, with apparent altered responses in these different physiological states. The one month visit was extremely productive and the huge data files from recordings for some twenty 8-10h experiments remain to be fully analysed. However, the initial findings are clear and will be presented and published at the European Conference of Comparative Endocrinologists, in Genoa, later in 2008.

I would like to thank the University of Tokyo for providing this opportunity for collaborative research at ORI. I would also like to thank particularly Professor Takei, my host, and his students and colleagues who made my visit so enjoyable and productive.



Data on the effect of Urotensin II on eels

Richard ARIMOTO

*Visiting Professor
Senior Scientist /Environmental Scientist, Carlsbad
Environmental Monitoring & Research Center, New
Mexico State University*

Born a sansei, one might say my deepest roots are in the soils of Japan, and so the opportunity to work at ORI as a Visiting Professor was a welcome chance for me to learn a little about the country and its people and to experience what it is like to work as a scientist in Japan. Before the trip began, I was concerned that five weeks might be too long a time away from home (largely for personal reasons), but I came to realize that it was in fact too short a time.

Most of my time at ORI was spent working on scientific papers—one of these was with my old friend and the host for my visit, Prof. Mitsuo Uematsu. While we have known each other since our post-doc days at the Graduate School of Oceanography, University of Rhode Island some 25 years ago, we've never actually written a scientific paper together, and this visit was a great way to fill in that gap in my resumé. I particularly enjoyed working with several students from his group on their



Dr. Arimoto is at the center of the picture. At Nikko, with the members of Uematsu Lab.

papers, and I was able to pass along some general suggestions (not "rules") for writing scientific papers*.

- *(1) sentences should be ≤ 3 lines long
- (2) paragraphs \leq one-half page in length
- (3) conclusions should not be a simple rehashing of the results but rather an explanation of what the study showed and why the results are important

While we were not able to finish these papers, I think we made good progress, and I am looking forward to seeing the papers in print in not too distant future.

In addition to working on the manuscripts and presenting two seminars at ORI, I give talks at the Meteorological Institute in Tsukuba and at the Institute of Low Temperature Science, University of Hokkaido. Beyond work, I was able to sample a little of the Japanese culture; in Tokyo I went to the sumo tournament, and I spent some time at several

museums—I particularly enjoyed touring the Edo-Tokyo museum. In addition, I was able to take in the snow festival in Sapporo, and I visited the beautiful shrine at Nikko with the Uematsu group. For both professional and personal reasons, I consider my visit to ORI as a high point in my scientific career, and I am grateful that I had the opportunity to do this. Finally, I would like to extend my kindest regards and most sincere thanks to all of those at ORI helped me during my visit.

Hiroaki SAITO

*Visiting Associate Professor
Chief, Biological Oceanography Section, Tohoku
National Fisheries Research Institute, Fisheries
Research Agency*

Increasing anthropogenic forcing is changing the oceans and degrading marine ecosystem services in many parts of the world. As our society is dependent on the services, finding a way for the developing human society to live in harmony with marine ecosystems is an urgent priority for the scientific community. In order to respond to this need, it is essential to provide a comprehensive understanding of, and accurate predictive capacity for, ocean responses to anthropogenic forcing, especially as accelerating global changes, are having major effects on human society.

IMBER (Integrated Marine Biogeochemistry and Ecosystem Research) is one of the core projects of the IGBP (International Geosphere-Biosphere Programme) that is co-sponsored by SCOR (Scientific Committee on Oceanic Research) to investigate the sensitivity of marine biogeochemical cycles and ecosystems to global change. One of the characteristics of IMBER is interdisciplinary research between marine biogeochemical and ecosystem studies. Finding unified research issues to be solved, which has been different



between these disciplines, is the first step for the implementation of IMBER sciences. I have been served as a chair of the IMBER-Japan National Committee under the Science Council of Japan and held a couple of ORI symposiums focused on IMBER sciences, which were purposeful chances to meet biogeochemists and biological oceanographers together and for developing the IMBER-Japan science plan.

I am grateful to the University of Tokyo for offering me this opportunity to discuss with scientists of ORI, especially those who contributed to the other international research projects such as SOLAS, GEOTRACES, GLOBEC, and to develop a research proposal for the integrated understanding of marine biogeochemical and ecosystem processes as a visiting scientist. I sincerely thank Professor Mitsuo Uematsu, Director of the CIC, for arranging this opportunity.

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