



Celebration of the 20th anniversary of the Center for International Collaboration

Mitsuo UEMATSU

Professor and Director, Center for International Collaboration

The Center for International Cooperation was established for the promotion of international cooperation in marine sciences in 1994. In 2010, the Center for International Cooperation was reorganized and renamed the Center for International Collaboration (CIC).

On March 3rd, 2015, the 20th anniversary commemoration ceremony for the Center for International Collaboration was held at the AORI auditorium with over 70 attendees. After the opening address by Dr. Hiroshi NIINO (Director of AORI), congratulatory addresses were given by Dr. Masashi HANEDA (Vice president of UTokyo), Mr. Masashi AKIBA (Secretariat of Culture, Sports, Science and Technology Minister), Mr. Hisashi KATO (Manager of International Division, Japan Society for the Promotion of Science), and Dr. Keisuke TAIRA (Former director of AORI).

Subsequently, Memorial Lectures were given regarding international activities in the Republic of Korea by Dr. Gi-hoon HONG (President of KIOST: Korea Institute of Ocean Science and Technology); contributions of Asian countries to Intergovernmental Oceanographic Commission (IOC) activities by Dr. Sang-Kyung BYUN (Chairperson of UNESCO/IOC); and what WESTPAC wishes for Japan with respect to international exchanges and contributions, including capacity development and research, by Dr. Somkiat KHOKIATTIWONG (Chairperson of IOC/WESTPAC: Sub-Commission for the Western Pacific). Although Prof. Gordon GRAU (Former Chairperson, External Evaluation Committee of AORI, University of Hawaii) was not able to attend the ceremony, Prof. Yoshio TAKEI read his message, which implored the importance of international collaborative research with AORI.

We have received a number of valuable opinions, pieces of advice, and expectations regarding the future of our Center. We would like to extend our gratitude to everyone who has supported our activities for many years.



Congratulatory address by Mr. Hisashi KATO who supported the establishment of the JSPS Coastal Marine Science program



Lecture given by Dr. Gi-hoon HONG (President of KIOST)

Contents



- Celebration of the 20th anniversary of the CIC
- Prof. Michida awarded the 8th National Maritime Award
- 3. Activities related to the IOC
- 4. International Training Workshop: "Marine Zooplankton Photography"
- The 5th International Symposium of Oryzias Fish in Thailand and the Oryzias Fish workshop in Indonesia
- 6. Agreement of Academic Exchange between AORI and the Bjerknes Center for Climate Research
- 7. Renovating our partnership with Scripps Institution of Oceanography
- University of Tokyo and University of Hawaii the 3rd Joint Symposium

Joint symposium between UTokyo-AORI and IONTU

- 9. A new international research initiative, SIMSEA, launched under Future Earth
- 10. PALSEA2 2015 Workshop
- 11. Russia-Japan Joint Workshop
- 12. Visit of the Norwegian Minister of Fisheries
- 13. Visiting Professors

Visiting professors' reports

Prof. Michida awarded the 8th National Maritime Award

Yutaka MICHIDA Professor, Center for International Collaboration

Prof. Yutaka Michida was awarded the 8th National Maritime Award in July 2015. He was one of eight awardees. The government of Japan established this award in 2008, in response to the Basic Act on Ocean Policy adopted in 2007, to honor



individuals and organizations for their outstanding achievements in promoting ocean-related activities. The contributions of Prof. Michida were described as 'raising the international position of Japan in the field of the ocean.' He served as a vice-chair of the IOC from 2011–2015. He was the second Japanese oceanographer elected to this position during the 50-year history of the IOC, following the election of the late Professor Ken Sugawara 40 years ago. He has also been serving as one of the co-chairs of the International Oceanographic Data and Information Exchange (IODE) since March 2015 and is the first oceanographer from an Asian member state to take this position. The award ceremony was held at the Prime Minister's official residence on July 16, 2015.





Prof. Michida (second from the left on the front row) at the award ceremony for the 8th National Maritime Award at the Prime Minister's official residence on July 16, 2015

Activities Related to the Intergovernmental Oceanographic Commission (IOC)

Yutaka MICHIDA

Professor, Center for International Collaboration

he 23rd Session of the IOC Committee on International Oceanographic Data and Information Exchange (IOC/IODE) was held March 17–20, 2015, in Brugge, Belgium. Prof. Yutaka Michida participated in the meeting as a vice-chair of the IOC and led the discussion at a sessional working group on the restructuring of IODE. The meeting adopted four Decisions and five Recommendations, including the establishment of an inter-sessional working group on the restructuring of IODE, for which Prof. Michida would assume responsibility as a co-chair. Prof. Michida was elected as one of the co-chairs of IODE for the next two years.

The 10th Session of the IOC Sub-Commission for the Western Pacific (WESTPAC) was held May 11–15, 2015, in Phuket, Thailand. Prof. Mitsuo Uematsu, Director of the Center for International Collaboration at AORI (CIC), participated as the head of the Japanese delegation. Profs. Yutaka Michida and Shuhei Nishida also participated in the meeting as members of the delegation. The meeting adopted five recommendations, including the establishment of the Indo-Pacific Ocean Observations and Services Network (IPON), which aims to promote regional cooperation in marine sciences at the institutional level.

The 28th Session of the IOC Assembly was held June 17–25, 2015, at the UNESCO headquarters in Paris. Prof. Mitsuo Uematsu, Director of CIC, participated as the head of the Japanese delegation. Prof. Yutaka Michida and Associate Prof. Teruhisa Komatsu also participated in the meeting as members of the delegation. Prof. Michida took a leading role in agenda items such as the tsunami programme and oceanographic data and information exchange. Prof. Michida's term as a vice-chair of the Commission was over at the end of the Session according to the rules and procedures of the IOC.

Prof. Michida was also actively involved in a series of IOC-related meetings; the International Tsunami Symposium commemorating the 50th Anniversary of Pacific Tsunami Warning and Mitigation System, which was held in Honolulu April 20–21, 2015; and three meetings in January 2016: the WESTPAC Advisory Group in Yogyakarta, Indonesia; IODE Officers meeting in Oostende, Belgium; and Advisory Group Meeting for Ocean Data and Information Network in WESTPAC in Tianjin, China.



Prof. Michida (right) and Dr. Cyndy Chandler (left;USA), co-chairs of IODE, co-leading the agenda on oceanographic data and information management at the 28th Session of the IOC Assembly in Paris, June 2015

International Training Workshop: "Marine Zooplankton Photography"

Shuhei NISHIDA

Professor, Center for International Collaboration

mong the major activities of the Asian CORE Program of the Japan Society for the Promotion of Science, the international training workshop "Marine Zooplankton Photography", which aims to enhance the capacity of Malaysian researchers to obtain and process zooplankton images for research, education, and outreach, was held at the Institute of Bioscience, Universiti Putra Malaysia (UPM) on November 23-24, 2015. The workshop was convened by Prof. Fatimah M.D. Yusoff (UPM) and Prof. Shuhei Nishida (AORI) and sponsored by the Ministry of Higher Education, Malaysia and the Asian CORE Program. Prof. Jun Nishikawa (Tokai University) and Dr. Masayoshi Sano (AORI), both members of the Asian CORE Program, were lecturers. A total of 17 researchers, including university staff, graduate students, and researchers from companies related to environmental research from different regions of Malaysia, participated in the workshop. On the morning of Day-1, lectures on the theory and practice of optics and photography, both macro- and microscopic, were presented. Afternoon sessions followed, with demonstrations (by the lecturers) of macro- and microscopic photography and picture processing using live zooplankton samples that were collected prior to the workshop. Day-2 was devoted to practical photography and picture processing by the trainees themselves, which were followed by comments from and evaluation by the lecturers and organizers. As the workshop came to a close, it was noted that this workshop was successful in enhancing the capacity of zooplankton research and education in Malaysia.



Opening



Demonstration of photography

The 5th International Symposium of Oryzias Fish in Thailand and the Oryzias FishWorkshop in Indonesia

Koji INOUE

Professor, Division of Marine Life Science and Center for International Collaboration

edaka fishes of the genus *Oryzias* are widely distributed in Asia. Most species of this genus are small, tough, and expected to be useful laboratory animals, as has been demonstrated by a representative species, Japanese medaka *O. latipes. Oryzias* fishes also offer interesting models for comparative and ecophysiological studies because each species has a unique habitat and different adaptability to environmental factors, including temperature and salinity. However, these sober-colored small fishes are not popular in Southeast Asia despite the fact that they are excellent resources for various fields of science.

To promote studies using Oryzias fishes by sharing accumulated knowledge regarding Japanese medaka, a group of scientists, including myself, has been organizing biennial international symposia of Oryzias fishes since 2007. The 5th symposium was held at Mahasarakham University, Maha Sarakham in Thailand on November 12–14, 2015. Eighteen papers were presented during the symposium session, and a field trip to the habitat of Thai medaka O. minutillus and Mekong medaka O. mekongensis was conducted. Participants were from Japan, China, and ASEAN countries (Cambodia, Indonesia, Laos, Malaysia, Thailand, and Vietnam). The number of participating countries has increased since the first symposium in Bangkok, indicating that the network is actually expanding. I hope that these small fishes will further enhance cooperation among Asian scientists in the future. I would like to express sincere thanks to the



Field trip. Thai scientists kindly showed the fish to the participants

chairman, Professor Wichian Magtoon, the organizing committee for their excellent organization of the symposium, and to CIC for supporting our travel.

In addition to the international symposium, we also organized a training workshop, "Oryzias Fish Workshop," at Hasanuddin University, Makassar, Indonesia on December 12--14, 2015. Hasanuddin University was the venue of the 4th International Symposium of Oryzias Fish; following the symposium, the "Medaka Research Centre" was established in the university. During this workshop, three Japanese scientists (Dr. Masato Kinoshita of Kyoto University, Dr. Yusuke Takehana of National Institute for Basic Biology, and myself) visited the university and instructed nine participants, including students and researchers, in species identification methods using DNA and the basic techniques required for genome editing experiments using the CRISPR/Cas9 system. We hope that the basic and applied techniques introduced in the workshop will help the development of science in Indonesia in the future. I would like to express our thanks to Dr. Irma Andriani who coordinated the workshop and to the staff and students of Hasanuddin University. The travel for Japanese scientists was supported by the Bilateral Joint Research Projects between JSPS and LIPI. The workshop was also reported local in а newspaper (http://makassar.tribunnews.com/2015/12/02/ikan-med aka-bagus-dijadikan-hewan-laboratorium).



Teaching egg handling

Symposium participants

Agreement of Academic Exchange between AORI and the Bjerknes Centre for Climate Research, University of Bergen

Wataru YANASE

Assistant Professor, Division of Ocean-Earth System Science

Polar climate and weather are drawing increasing attention from various perspectives. A polar climate system, including atmosphere, ocean, sea ice, and ice sheets, is closely linked to global climate change. On a daily time scale, intense maritime cyclones called polar lows cause heavy snowfall and marine disasters in the polar regions. Polar lows also develop around Japan during winter. To strengthen polar studies, AORI made an agreement of academic exchange with the Bjerknes Centre for Climate Research (BCCR) on May 25, 2015. BCCR is the largest climate research center in the Nordic countries and comprises four major institutions conducting climate research in Bergen, Norway, including the University of Bergen.

The agreement will promote two existing research

collaborations between AORI and BCCR. Dr. Ayako Abe-Ouchi has collaborated with Dr. Eystein Jansen and Dr. Kerim Nisancioglu on climate system modeling focused on the polar regions. Dr. Hiroshi Niino and Dr. Wataru Yanase have collaborated with Dr. Thomas Spengler on comparative studies of polar lows over the Sea of Japan and the Nordic Seas. These collaborations will develop into a new project, "Partnership between Norway and Japan for excellent Education and Research in Weather and Climate Dynamics (NORPAN)," in March 2016 and will be funded by the Research Council of Norway. It is also expected that the agreement will stimulate further collaboration with Norwegian institutions in a wide range of fields, such as oceanography and fisheries.



A group photo with Dr. Anne Christine Johannessen, the Vice Rector of the University of Bergen (third from the right in the front row); Mr. Erling Rimestad, the Norwegian ambassador (the rightmost in the front row); and the Norwegian delegation at the signing ceremony at AORI on May 25,2015

Renovating partnership with Scripps Institution of Oceanography

Koji HAMASAKI

Associate Professor, Division of Marine Life Science

ORI has just started a new partnership program with Scripps Institution of Oceanography (SIO) since this fiscal year. This program is selected as one of the "Strategic Partnerships" activities under the university-wide program "Constructing a global campus model at UTokyo" funded by Top Global University Project of MEXT. To activate mutual relationship in science and education between AORI and SIO, financial support will be provided for 2 years. There has been a history of cooperation for more than 25 years between these two institutions. In 1988, an agreement of scientific, educational and cultural cooperation was concluded between AORI and SIO as a representative of each affiliating university (UTokyo and UCSD). In the new program, the current agreement and activities are reviewed and renovated to strengthen the partnership and make it more effective for members of both institutions. In addition, this is a joint program with UTokyo Graduate School of Public Policy and UCSD School of Global Policy that also have a history of strong partnership. The idea is to produce synergy effect by integrating two different partnerships in UTokyo and UCSD.

On 13th November of last year, Prof. Yutaka Michida, Vice Director of AORI and I visited SIO and had a meeting with Dr. Margaret Leinen, Director of SIO to explain the program and intention of AORI. Prof. Hideaki Shiroyama and Prof. Hiroshi Suzuki, representative members of Graduate School of Public Policy are in delegates. It was a successful meeting, as Dr. Leinen agreed to initiate the program suggesting some issues of possible cooperation such as El Nino event, climate change issues and ship-time sharing etc. After the meeting at Director's office, we moved to



Meeting with SIO scientists at the Martin Johnson House



Meeting with Dr. Margaret Leinen, Director of SIO

Martin Johnson House to meet SIO scientists who have specific interest in possible cooperation with AORI scientists. Dr. Arthur J. Miller arranged the meeting as a contact person of SIO. About 10 scientists covering broad fields in Oceanography and Atmospheric Science joined the meeting. Martin Johnson House, one of the earliest buildings in the SIO campus, was originally built in 1916! In a cozy room of this historic oceanfront cottage, SIO scientists presented their specific interest and expectation to collaborative works. After the meeting, they invited us a guided tour of famous "Scripps Pier". Since it's Friday, I went to TG (http://siotgif.org), a weekly social event at SIO lasting over 40 years!, and enjoyed a chat with SIO students at a beautiful surfside house.

The program was successfully launched starting from the visit to SIO in last November. The next issue is to revise the agreement between AORI and SIO in a few months. Also, a joint symposium and exchange of young scientists are planned as specific activities in the next fiscal year. I believe that the new partnership with SIO provides an exciting opportunity to facilitate our activities in both science and education.

University of Tokyo and University of Hawai'i The 3rd Joint Symposium on Ocean, Coastal, and Atmospheric Sciences

Susumu HYODO

Associate Professor, Department of Marine Bioscience

The 3rd Joint Symposium on Ocean, Coastal, and Atmospheric Sciences was held March 10–12, 2015, with support from the Strategic Partnership Program of the University of Tokyo and the University of Hawai'i Sea Grant College Program. AORI established an academic exchange agreement with the School of Ocean and Earth Science and Technology (SOEST) at the University of Hawai'i at Manoa beginning in 1991, and collaborative research has been conducted in various fields of atmospheric sciences, ocean-earth system sciences, and marine life sciences between AORI and SOEST. To facilitate further exchange and promote new collaborations, the 1st Joint Symposium was held at Nakano campus in 2008 and the 2nd Symposium in Hawai'i in 2012. For the 3rd Symposium, we invited 11 established and up-and-coming researchers from Hawai'i, while 25 young scientists from AORI, including graduate students, presented during the oral and poster sessions. These joint symposia have led to significant collaboration between AORI and SOEST researchers, including joint grants and peer-reviewed publications. It is highly expected that our partnership will continue to contribute to the further promotion of new academic exchanges and collaborations by the younger generation of scientists. The 4th Joint Symposium is scheduled to be held in 2017 or 2018 in Hawai'i.



A group photo at the end of symposium. The third from the right in the front row is Dr. Darren Lerner, co-organizer of the joint symposium.

Joint symposium between UTokyo-AORI and IONTU

Asuka YAMAGUCHI

Assistant Professor, Department of Ocean Floor Geoscience

s part of the strategic partnership between the University of Tokyo (UTokyo) and National Taiwan University (NTU), a joint symposium entitled "UTokyo-NTU Ocean Science Seminar 2015-Academic and educational exchanges between UTokyo-AORI and IONTU" was held on December 10, 2015. Prior to the symposium, Prof. A. Tsuda, Prof. Y. Michida, and A. Yamaguchi visited Institute of Oceanography, National Taiwan University (IONTU) on October 25–27 to discuss the current state of each

institute and exchange ideas regarding possible future collaboration. On the morning of December 10, 16 participants from IONTU toured the facilities of AORI, such as the machine shop and Accelerator Mass Spectrometry (AMS) laboratory. The symposium started after a group lunch. One to two representatives of each university talked about topics including physical oceanography, marine biology and fisheries, marine geology and geophysics, and chemical oceanography and marine geochemistry. Discussions



Greeting from Dr.Ching-Ling Wei, Director of IONTU

were active and fruitful, revolving around many common subject areas such as marine sciences in the Kuroshio region, geosciences in the southwestern Ryukyu arc, and bioresources in oceans around Japan and Taiwan. After the symposium, IONTU visitors also joined AORI's annual Christmas Party and enjoyed the warm atmosphere of our institute.

A new international research initiative, SIMSEA, launched under Future Earth

Mitsuo UEMATSU

Professor and Director, Center for International Collaboration



he International Geosphere-Biosphere Programme (IGBP) held a landmark synthesis event at the AGU Fall Meeting 2015 in San Francisco in December. The event celebrated the work and achievements of IGBP over the past three decades and included around 100 co-sponsored scientific sessions. IGBP's eight core projects that are ocean related (i.e., IMBER, LOICZ and SOLAS) were transferred to Future Earth.

Future Earth is a new 10-year international research initiative that will develop the knowledge required to respond effectively to the risks and opportunities of global environmental change and to support transformation towards global sustainability in the coming decades. Future Earth will mobilize thousands of scientists, while strengthening partnerships with policy-makers and other stakeholders, to provide sustainability options and solutions in the wake of Rio+20.

Under Future Earth, the Sustainability Initiative in the Marginal seas of South and East Asia (SIMSEA) was established as a program developed in Asia to meet the need for transformative change towards global sustainability in Asia and the Pacific. Its objectives are:

- To co-design an integrative program that would establish pathways to sustainability of the marginal seas of South and East Asia; and
- To play a catalytic role among other projects and programs, facilitate cooperation, and close gaps in science for the benefit of society

Program development was initiated by the Regional Office and its partners: the Japan Agency for Marine-Earth Science and Technology (JAMSTEC) and the Marine Science Institute of the University of the Philippines, Diliman. The Center for International Collaboration (CIC) of AORI has also been supporting the program as a partner. SIMSEA will promote the development of an international alliance of scientists working together to generate policy- and community-relevant knowledge regarding sustainability of the marginal seas of South and East Asia.

The SIMSEA Japan sub-committee, under the SCOR Japan committee, was approved by the Science Council of Japan (SCJ), and the 1st meeting was held October 15, 2015. Prof. Emeritus Toshio YAMAGATA was selected as Chair of the committee, and Prof. Mitsuo UEMATSU accepted the position of Vice-Chair. There is a possibility of establishing a new office for SIMSEA Japan activities at the CIC of AORI. We are also discussing the collaboration of SIMSEA with Coastal Marine Science in Southeast Asia (COMSEA), which is supported by the Japan Society for the Promotion of Science (JSPS), as a new direction for CIC.

PALSEA2 2015 Workshop: Data-Model Integration and Comparison

Yusuke YOKOYAMA

Professor, Analytical Center for Environmental Study

Understanding past sea level changes could provide clues to understanding future trajectories under the current global warming climate. Recent advancements in both analytical techniques to decipher past changes as well as hindcasting using mathematical modeling will greatly improve our understanding of the system. The PALSEA2 international workshop was held in Kashiwa to promote collaboration between "data researchers" and "modelers" to meet the goal of integrating data and model-based past reconstructions of the climate, cryosphere, and sea level (Date: July 22–24, 2015).

More than 50 participants from over 15 countries, ranging from graduate students to senior scientists, participated and discussed a wide range of topics related to sea level and ice sheet changes. Particular emphasis was repeatedly given during the conference to clarify the uncertainties of various data and model



outputs. This highlighted the importance for the entire community to be more quantitative when reporting and explaining uncertainties. This will lead to the integration of the interpretation and application of climate, cryosphere, and sea level reconstructions. This will also be critical to advancing the data-model comparisons that were the focus of this workshop, as well as other interdisciplinary collaborations within the broader research community. Active discussions continued during coffee breaks and the workshop dinner. Some participants also enjoyed a lab tour of both the aquarium and AMS building.

Abe-sensei and I hosted the workshop together with members of each lab. Tours of the aquarium and AMS building were organized by Hyodo-sensei and the Center for Cooperative Research Promotion.



PALeo constraints on SEA level rise 2 (PALSEA2) 2015 Workshop: "Data-Model Integration and Comparison" 22-24 July, 2015 Atmosphere and Ocean Research Institute, The University of Tokyo, Japan

Russia–Japan Joint Workshop on Environmental Investigations in West Siberia and the Arctic

using a synergy of Russian Airplane-Laboratory and Japanese Satellites

Ryoichi IMASU

Associate Professor, Division of Climate System Research

The Arctic, including West Siberia, is the most sensitive region in the world to the global warming. Continuous and comprehensive monitoring of the atmospheric environment has been desired for this region. For this and related purposes, airplanes are extremely useful for environmental observation. Recently, the Federal Service for Hydrometeorology and Environmental Monitoring (ROSHYDROMET) has deployed a new airplane, the Yakovlev-42D, a so-called "Airplane-Laboratory", and has entrusted the Central Aerological Observatory (CAO) with its operation. Japanese organizations have on-going and future satellite missions. Professors of AORI are leading these missions. It is expected that the synergetic use of the satellite data and the "Airplane-Laboratory" can contribute to comprehensive monitoring of the Arctic environment. To promote the synergetic operation of the satellites and the airplane, AORI and CAO entered an agreement for scientific cooperation on November 7, 2014.

Within that framework, we co-organized the workshop on 23-24 November 2015, positioning it as a kick-off meeting for collaboration. The first day, four scientific sessions were convened: "Opening Session with Keynotes," "Aircraft Observations," "Satellite Missions," and "Simulation Studies," with 14 oral presentations in all. The more than 30 participants included 10 Japanese researchers from 8 organizations. On the second day, a tour of the aircraft at an airport had been originally scheduled. However, because of the influence of a terrorist act that occurred in Paris the prior month, airport access was prohibited. Therefore, we changed the schedule to include a tour of the CAO laboratories and held a general discussion on future cooperation between the Russian and Japanese scientific communities. To conclude the workshop, we composed a statement of mutual agreement for cooperation on studies using data obtained using the Russian airplane and Japanese satellites.



"Airplane-Laboratory"(Yakovlev-42D) of ROSHYDROMET (photograph provided by CAO)



Group photograph of the workshop

Visit of the Norwegian Minister of Fisheries

Shinichi ITO

Professor, Division of Fisheries Environmental Oceanography

The Norwegian Minister of Fisheries, Ms. Elisabeth Aspaker, visited the Atmosphere and Ocean Research Institute (AORI) on November 27, 2015, with seven people, including the Ambassador Erling Rimestad. This visit to Japan by the Minister was to congratulate the first world champion of "The Global Sushi Challenge." Although the Minister's schedule in Japan was very busy, she visited AORI because she anticipates further development of collaborative investigations on climate, ocean ecosystems, and fisheries management between Norwegian institutes and AORI. These collaborations began with the agreement of academic exchange between the Bjerknes Center of Climate Research (Norway) and AORI, which was initiated on May 25, 2015.

Discussion with the Minister began with a welcome speech by the Director of AORI, Atsushi Tsuda. He recommended that the Minister try some of the special sushi available in the restaurant "Hama," which is located on the ground floor, on her next visit to Japan. The Director of the Center for International Collaboration, Mitsuo Uematsu, briefly explained AORI. Shinichi Ito described the results of a collaborative study of the influences of climate change and variability on fish and fisheries, in which researchers from the Norwegian Institute of Marine Research participated. He also introduced a study on the reproduction strategy of squid conducted by Assistant Professor Yoko Iwata as an example of basic research that is important for the future prediction of climate effects



The Norwegian Minister of Fisheries, Ms. Elisabeth Aspaker, listening to the description of the fish rearing facilities by Prof. Inoue.

on fish and fisheries. Then, Professor Koji Inoue guided the Minister to the fish rearing facilities, and Associate Professor Juichiro Ashi showed the Minister the facility house and explained the self-navigation-type sample collection system (NSS).

Ms. Aspaker showed deep interest in marine research and asked a variety of interesting questions. Thanks to the elaborate preparations made by the Administration Office staff, the Minister and Norwegian guests seemed to enjoy AORI. Further international collaborative investigations between Norway and Japan are anticipated to develop through mutual contacts, such as those initiated during this visit.



The guests from the Kingdom of Norway, including the Minister of Fisheries, Ms. Elisabeth Aspaker; the Director of AORI, Prof. Tsuda; and the Director of the Center for International Collaboration, Prof. Uematsu.

Visiting Professors

Name / Affiliation	Nationality	Length of stay	Subject for study
DHAKA, Surendra Kumar Rajdhani College, University of Delhi Associate Professor	India	2014/5/1-2014/6/30	Sudden stratosphere and its influence on the tropical dynamics based on high resolution satellite observations
PINTI, Daniele L. <i>University of Quebec at Montreal</i> <i>Professor</i>	Canada	2014/6/1-2014/9/30	Dating carbonate fossils by U-Th- 4He:the chronometry of the global climate change
LI, Yuanyou (李 遠友) Shantou University Professor	China	2014/7/1-2014/8/29	Role of unsaturated fatty acids in fish osmoregulation
WEI, Ke Chinese Academy of Sciences, Institute of Atmospheric Physics, Center for Monsoon System Research Associate Professor	China	2014/7/1-2014/12/31	Variability of 3-dimentional propagation of wave flux between stratosphere and troposphere
WEBSTER, Jody Michael <i>School of Geosciences, the University of</i> <i>Sydney</i>	Australia	2014/9/4-2014/10/5	Reconstruction of sea level and climate change along the East Australian margin and its impact on tropical and subtropical reef evolution
DOUBOVIK,Oleg Laboratoite d'Optique Atmospherique CNRS, Universite de Lille Research Director of 1 class	France	2014/11/17-2015/1/15	A research on the atmospheric aerosol remote sensing from ground-based and space-borne radiometers
LIU, Guosheng (劉 国勝) Florida State University Professor	USA	2015/1/7- 2015/3/31	Understanding the Structural, microphysical and Radiative Characteristics of Cold Season

*Visiting professors' reports of Division of Climate System Research are included in the CCSR NEWS.

Visiting professors' reports

Jody WEBSTER

Associate Professor Geocoastal Research Group, School of Geosciences

The University of Sydney, NSW, 2006, Australia

It has been a huge pleasure and honor to be a Visiting Professor at AORI for one month (Sep-Oct) in 2014 and to work closely with my colleague Professor Yusuke Yokoyama and his very active research group. I am deeply appreciative of all the kind support and opportunities I received while at the AORI. It is an amazing place, with world class scientists and



facilities, combined with a warm and collegial atmosphere. While my primary scientific objective in Japan was to work closely with Yusuke on finalizing the International Ocean Discovery Program (IODP) Expedition 325 (Great Barrier Reef Environmental Changes) sea level results, my associated activities were both varied and exciting.

When I first arrived at the AORI, I attended the Annual meeting of Japan Association for Quaternary Research. This was a highly enjoyable conference and I learnt a great deal about the latest paleoclimate research ongoing in Japan and around the world. I was also fortunate enough to present a paper, "Response of the Great Barrier Reef to sea level and environmental changes over the last 30 ka", that was well received but more importantly I was able to network with numerous colleagues and discuss potential future collaborations.

I then visited the Kochi Core Center to re-sample and re-log the Exp. 325 fossil reef cores archived there in order to fill in the last remaining data gaps in the new relative sea level curve Yusuke and I are building. I was joined at the Kochi Core Center by colleagues from the University of Nagoya (Dr. Marc Humblet) and Tohoku University (Professor Yasufumi Iryu). This trip was highly successful and laboratory analyses on these new samples have already been completed and these results are being incorporated into several new publications planned for this year. We also completed the 3D CT scans of the same cores while at the Kochi Core Center using their new instrument. These data will also us to "see into" the cores and quantify the coralgal frameworks, bioerosion and other features in unprecedented detail and will form the basis for several exciting new research directions.

Another real highlight of my trip was the opportunity to visit Kanazawa and meet with emeritus Professor Kenji Konishi. It has been over 20 years since I first visited the Kanazawa where I spent 18 months as a Monbusho student while undertaking part of my PhD studies under the kind and careful supervision of Prof. Konishi. I was treated to a wonderful tour and then lunch at the Department of Earth Sciences at Kanazawa University. It was a real pleasure to see Professor Konishi, meet the faculty and some of my former student colleagues (now Professors!) again. My time at Kanazawa University was the foundation on which my career as a coral reef geologist was built so it was an amazing personal experience to stroll the beautiful streets of Kanazawa, the campus and the famous Kenrokuen gardens after so long.

Upon returning to Tokyo, I was able to work closely again with Yusuke on the IODP. Exp. 325 data. This period was highly productive and his team was able to generate several hundred new C14-AMS ages from fossil reef cores that we have been working on to understand sea level changes and reef responses of the Great Barrier Reef over the past 30 ka. We were able to make enormous progress on constructing a new, highly accurate relative sea level curve that will represent a major advance in our understanding of global sea level changes and ice sheet dynamics. The new relative sea level curve is almost complete and will result in several new publications planned for this year.

My family arrived for the last two weeks of my stay in Japan. It was my wife and daughter's first visits to Japan and they thoroughly enjoyed the experience. We were able to visit Kyoto and Hiroshima while also exploring Tokyo. In summary, my trip to the AORI and Japan was both very productive and successful and one that my family and I will never forget.

Yuanyou LI

Professor

Director in the Marine Biology Institute & Guangdong Provincial Key Laboratory of Marine Biotechnology, Shantou University, China



It has been a great pleasure and honor for me to visit AORI as a visiting professor in July and Aug of 2014. Actually, that was my third visit to Japan. My first visit to Japan lasted for two years from Nov. 2000 to Nov. 2002, when I did my post-doctoral research as a JSPS Fellow under the guidance of Professor Yoshio Takei at the Laboratory of Physiology of ORI. From that time on, I have been keeping communication with Prof. Takei, who was invited to visit Shantou University in 2009 and appointed to a guest professorship for a period of two years. My second visit was from July 29 to Aug 4, when I and five professors from my university visited several Japanese universities and institutes including AORI. During my stay in summer of 2014 at AORI, I did a cooperative research with prof. Takei on "Role of unsaturated fatty acids in the osmoregulation of Japanese eel". It is generally thought that freshwater fish have the ability to produce long-chain polyunsaturated fatty acid (LC-PUFA) *in vivo* by a series of desaturation and elongation reactions from the 18C PUFA precursors, while such ability is absent or weak in marine teleost. Besides, it is reported that salinity can affect the ability of LC-PUFA biosynthesis in some teleost such as Atlantic salmon and rabbitfish, and LC-PUFA can influence the osmoregulation of teleost. However, to our knowledge, there is no report really concerning the relationship between LC-PUFA biosynthesis and osmoregulation in fish. In the cooperative research, therefore, we tried to investigate such a relationship and the potential mechanisms in eel, a euryhaline teleost which can acclimate to various salinities from fresh water to seawater. The *in vivo* experiments and some of the sample analysis were done in AORI, and the remained samples were determined in China. Now, the collaborative paper entitled "LC-PUFA biosynthetic regulation, a potential strategy involved in osmoregulation for Japanese eel *Anguilla japonica*" is almost ready to be submitted.

In all, from the current visit to AORI, our cooperative research was further strengthened, and it also let me once again feel the excellent service from AORI, and the kind friendship from Japanese.

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I was delighted and honored to be a Visiting Professor at the Atmosphere and Ocean Research Institute of the University of Tokyo for 4 months in summer 2014. This period coincided with the beginning of my sabbatical leave from UQAM. I joined the Marine Analytical Chemistry staff directed by Prof. Yuji Sano.

It is not the first time in Japan. I have a 21-years experience with the country started at Osaka University in 1995 when I reached the Graduate School of Earth and Space Science for my postdoctoral studies. I meet first time Dr. Sano even before, when I was a young PhD fellow at Université de Paris 6 and Dr. Sano was visiting our lab directed by his friend and my mentor, Dr. Bernard Marty. Then in 2006 we started to collaborate on several issues from paleoclimatology to groundwater resources passing through volcano hazards and mantle geochemistry. The common denominator of these studies is noble gas geochemistry, for which Dr. Sano is a worldwide renowned expert. Noble gases are inert and trace elements, two characteristics that make them excellent tracers of practically any geological process on Earth (and the Solar System!). Indeed, noble gas geochemistry is one of the most



versatile fields geochemistry, pervading cosmochemistry, Earth sciences, climatology and environmental sciences. Dr. Sano has an impressive record of publications on any field of application of noble gas geochemistry, from meteorites to volcanoes.

I really enjoyed working at the Marine Analytical Chemistry division of AORI. You can really breathe great science and be breed with stimulating ideas. The atmosphere is very friendly but you feel that everybody is working hard to reach the goal and you can have stimulating conversations with the junior fellows and senior staff. During my stay, we could progress on several ongoing projects, from helium dating of carbonates to groundwater research. The main research topic was to advance in calibrating radiogenic ⁴He (which is produced by U and Th in rocks) in order to test if we can obtain reliable U-Th/4He ages for carbonate precipitates older than 350 ka (i.e. the age limit of the U-Th disequilibrium dating method). This would be extremely useful for obtaining chronology of speleothems, fossil shells or corals in pre-Quaternary paleoclimate studies.

During my stay at AORI, at my regret, I couldn't embark with the group for a scientific cruise to Okinawa for personal problems. But I had my chance in the following winter, during a 2-months visiting professorship at Osaka University. I indeed joint briefly the Dr. Sano's group on Ontake volcano to sample bubbling gas. This activity was carried out, in a common effort of monitoring the activity of the volcano, especially since the deadly eruption of September 2014. Dr. Sano organized also a 2-day workshop for his group on the flanks of the Fuji, in Hakone at the end of September 2014 where I was invited as lecture guest. We enjoyed good science, food and rotemburo! I was also invited as keynote speaker at the DCO (Deep Carbon Observatory) section at the 61th Annual Meeting of the Geochemical Society of Japan that was held in Toyama in September 2014. It was my first visit, in 21 years of Japan, on the Japan Sea side and I could enjoy nice weather, good fish, sake and of course, good science (not in this order I guess!).

In conclusion, in the numerous occasions that I joint AORI I had great time in a very stimulating scientific environment. Dr. Sano is an excellent host and his laboratory is often the meeting point of numerous foreign scientists, a real "melting pot" where exchange of ideas and experiences is highly prolific. Thanks again to Dr. Sano, the direction of AORI and its administrative team for making this sojourn unforgettable.

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