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The 55th Session of the Executive Council of Intergovernmental Oceanographic Commission (IOC)

Yutaka Michida

Professor, Center for International Collaboration

The 55th Session of the Executive Council of the Intergovernmental Oceanographic Commission (IOC) was held as an in-person meeting from June 14 to 17, 2022, at the UNESCO Headquarters in Paris. Since 2020, all governing body meetings of the IOC, including the 53rd and 54th Executive Council sessions and 31st Assembly, were held online because of the global COVID-19 pandemic; the session in 2022 was the first in-person meeting organized after the 30th Assembly in June 2019. Professor Yutaka Michida, Director of the Center for International Collaboration (CIC) of AORI, participated as the head of the Japanese delegation. Professor Hiroaki Saito also attended the meeting as the alternate. All Member States of the Executive Council were requested to have a maximum of four attendees to prevent the further spread of COVID-19. With this restriction, in addition to the two professors, two government officials attended as part of the delegation from the Ministry of Education, Culture, Sports, Science and Technology (MEXT) and Japan Meteorological Agency (JMA). The Executive Council adopted two resolutions, namely “Implementation of the United Nations Decade of Ocean Science for Sustainable Development (2021–2030)” (IOC Resolution EC-55/1) and “Governance, Programming, and Budgeting Matters of the Commission” (IOC Resolution EC-55/2). For the first resolution, the Member States of the Council agreed on the establishment of Decade coordinating mechanisms, which involves Decade Coordination Office, Decade Collaborative Centers, Decade Implementing Partners, and National Decade Committees. The second resolution contained a set of revision proposals to the Rules of Procedure for the IOC to meet the requirements for organizing online sessions of the governing bodies, and a reporting mechanism for In-Kind Contributions (IKC) from the Member States to better reflect the actual budgetary status and financial condition of the Commission based on the limited amount of regular budget with zero nominal growth.



Figure 1. Japanese delegation to the 55th Session of the IOC Executive Council and related experts. Prof. Saito, Prof. Michida, and Mr. Yuji Nishimae of JMA (Chair of Pacific Tsunami Warning and Mitigation System) (front row from left), Mr. Daiki Ujishi of MEXT, Dr. Kentaro Ando of JAMSTEC (Chair of IOC Subcommittee for the Western Pacific), Mr. Kota Hamada of JMA, and Dr. Toshihiko Chiba of IOC Secretariat (back row from left).

Prof. Michida was appointed as the Chairperson of the Resolutions Committee, one of the statutory sessional committees, to examine the structure and manuscripts of draft resolutions duly submitted by the deadline and to report them to the plenary session of the Council for consideration and adoption. Prof. Saito actively participated in the meeting held by the Intersessional Financial Advisory Group on June 13, a day prior to the Council, and in the Financial Committee, another statutory sessional committee.

Although the session proceeded smoothly, there were times when the atmosphere in the Council differed from previous meetings, reflecting the current complex international situation, including geopolitical tensions due to the ongoing military conflict in Ukraine. We should all be reminded of the advocacy of the Commission, “One Planet, One Ocean.”



Figure 2. Intervention of Prof. Michida at the plenary session.

The third cycle of the United Nations Regular Process for Global Reporting and Assessment of the State of the Marine Environment (WOA-III)

Yutaka Michida

Professor, Center for International Collaboration

The United Nations adopted the resolution A/RES/74/19 at its 74th General Assembly in 2019, launching “the third cycle of the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects,” to cover five years, from 2021 to 2025, following the two previous cycles in 2011–2015 and 2016–2020 for the first (WOA-I)¹ and second (WOA-II)², respectively. Through a selection process, Prof. Michida was nominated as a member of the Group of Experts (GOE) for the current cycle, consisting of 25 members worldwide. The main responsibilities of the GOE include i) overseeing the assessment preparation(s) on the state of the marine environment, including socio-economic aspects, with the final goal of strengthening decision-making at all levels, and ii) developing a series of brief documents outlining specific policy-relevant information from the second world ocean assessment. The GOE has operated fully online since its establishment in the first half of 2021 to achieve the second task.

The first in-person meeting of the GOE was held at the UN Headquarters in New York from May 9 to 13, 2022. The GOE primarily discussed a set of WOA-II policy briefs, deciding to make four documents covering i) Biodiversity, ii) Climate Change, iii) SDG-14, and iv) UN Decade of Ocean Science. Prof. Michida mainly contributed to the document on the UN Decade of Ocean Science, from the Intergovernmental Oceanographic Commission (IOC)’s perspective.

Following the GOE meeting in New York, a series of regional workshops have been organized with the aims of informing scoping for the third cycle assessment(s), raising awareness and providing information, receiving feedback, and generating interest for the regional scientific community. The first workshop was held in Dar es Salaam, Tanzania, from July 19 to 27, 2022, succeeded by workshops held in Kingston, Jamaica, and Buenos Aires, Argentina, in September and in Hague, The Netherlands, in October.

The 5th Regional Workshop was conducted in Belitung, Indonesia, from December 13 to 15, 2022, which Prof. Michida attended as a GOE member from the Asia-Pacific region (Figure 1). The workshop included presentations by the UN Secretariat and the GOE members regarding generic ideas and views on the third

cycle, followed by 14 presentations by regional and international representatives on ongoing projects and programs and regional interests in the WOA-III, including suggestions with regional perspectives. After these presentations, participants were invited to join one of the five breakout meetings to discuss and exchange brainstorming ideas regarding, for example, the regional priority areas, expected outcomes from the next assessment, and forms of WOA-III products. Prof. Michida was requested to give a short presentation summarizing the workshop discussions and outcomes at the plenary session on December 15 (Figure 2).

The second GOE meeting will again be held in New York in February 2023 to deepen the discussions on the content and format of the WOA-III, based on the inputs from the regional workshops.

1 <https://www.un.org/regularprocess/content/first-world-ocean-assessment>

2 <https://www.un.org/regularprocess/woa2launch>



Figure 1. Participants of the Regional Workshop held in Belitung, Indonesia from December 13 to 15, 2022. Prof. Michida is located at the back row, in front of the letters 'ld' in the banner flag.



Figure 2. Prof. Michida presenting a summary of the Regional Workshop outcomes at the plenary session on December 15, 2022.

PICES-2022 Annual Meeting

Mitsutaku Makino

Professor, Center for International Collaboration

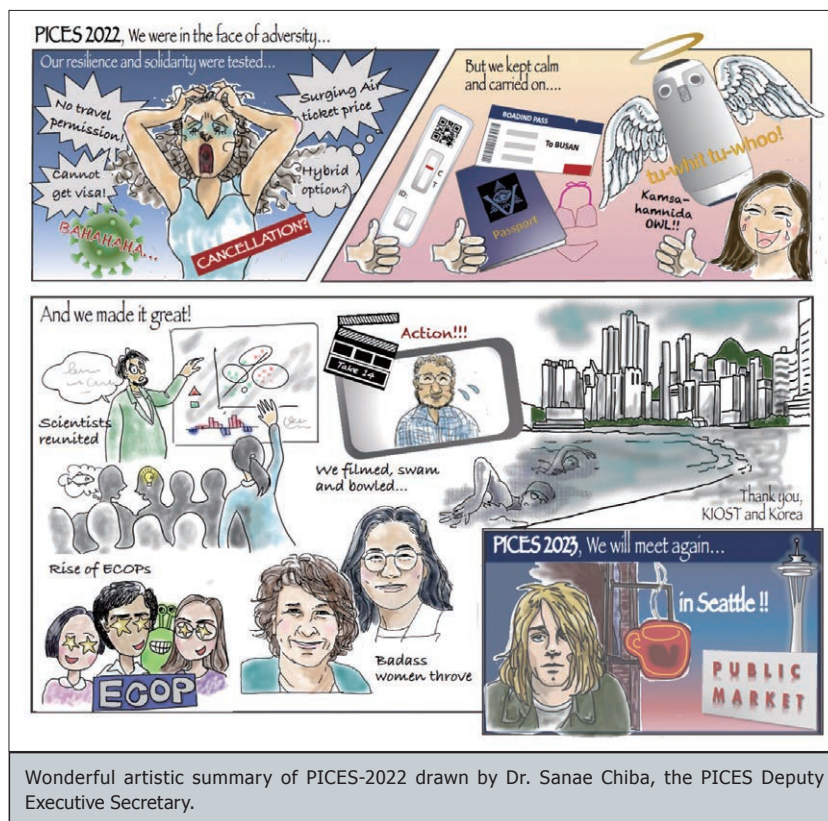
The PICES-2022 Annual Meeting hosted by the Korean Institute of Ocean Science and Technology (KIOST) was physically held in Busan from September 23 to October 2, with the theme “Sustainability of Marine Ecosystems through Global Knowledge Networks during the United Nations Decade of Ocean Science for Sustainable Development.” Both familiar and new faces finally gathered after two virtual annual meetings in 2020 and 2021. With over 270 participants from 13 countries, the attendance was quite smaller than the normal annual meetings held before the COVID-19 pandemic. However, more Early Career Ocean Professionals (ECOP) attended compared with previous years. One hundred and eleven individuals, which was over 30% of the total number of participants, were ECOP, with many claiming that PICES-2022 was their first in-person international event. This was excellent and encouraging news for the future of PICES.

During the opening ceremony on the first day, the Wooster Award was presented to Dr. Hal Batchelder (USA) for his sustained excellence in the research and instruction of marine science in the North Pacific Ocean. The PICES Ocean Monitoring Service Award (POMA) was given to the work on Japanese monitoring research activities on mesozooplankton for its long time series of mesozooplankton monitoring that began in 1949, with more than 17,000 zooplankton tows. This work has contributed to our knowledge of the mechanisms concerning the long-term variability of fisheries productivity.



Scenes at PICES-2022 courtesy of the PICES Secretariat.

Fourteen scientific sessions, ten workshops, and a poster session were organized, totaling 170 oral presentations, of which eight speakers were invited, and 68 poster presentations. During the closing ceremony of the final day, Early Career Presentation Awards were presented for each scientific session. We congratulate the three students from AORI, Ms. Naya Sena, Mr. Hajime Tanaka, and Ms. Hana Matsubara, for receiving awards. The next annual meeting will be held in Seattle, USA.



JSPS International Project CREPSUM

Hiroaki Saito

Professor, Center for International Collaboration

AORI has spearheaded international collaborations and activities between Japan and Southeast Asian (SEA) countries for over two decades. One of its leading initiatives is a multinational research and education program funded by the Japan Society for the Promotion of Science (JSPS). In autumn 2019, after the termination of the previous JSPS program, Research and Education Network on Coastal Ecosystems in Southeast Asia (RENSEA) 2016–18, AORI held an international planning workshop to discuss emergent issues in SEA coastal ecosystems. In acknowledgment of the discussions and common interests of the attendees, we launched a new international project called *Collaborative Research and Education Project in Southeast Asia for Sustainable Use of Marine Ecosystems* (CREPSUM) that began in the spring of 2020 and was funded by the JSPS Core-to-Core Program. Over 200 scientists have since gathered under CREPSUM, hoping to achieve the following transdisciplinary goals: 1) establishing an international science and educational network for SEA marine ecosystems, 2) progressing marine ecosystem studies addressing emergent issues in conservation and the sustainable use of SEA marine ecosystem services, and 3) contributing to the UN Decade of Ocean Sciences and UN SDG 14: *Life below water* efforts by imparting the best scientific knowledge on marine ecosystems.

Unfortunately, the anticipated launch of CREPSUM coincided with the global COVID-19 pandemic. During 2020–2021, most of the planned field research activities and training courses were canceled. Under these difficult conditions, the CREPSUM scientists instead published field guides on sea creatures (e.g., pufferfish, mollusks, jellyfish) and review papers concerning past collaborative activities through online discussions.



One highlight from the CREPSUM activities was the publication of *General Management Guide for Harmful Jellyfish Stings in the Western Pacific and Adjacent Areas* (<https://www.crepsum.com/post/new-book-general-management-guide-for-harmful-jellyfish-stings>) (Fig. 1), based on the *Jellyfish Identification Workshop* held in March 2022 about jellyfish biology and taxonomy (Fig. 2). This book targets not only scientists but also medical doctors and public health officers as it demonstrates a first aid guide for venomous jellyfish stings, which is a serious concern for people who use coastal marine ecosystems for fishery and tourism. This is a good example of using scientific knowledge for social issues in SEA countries.

In response to the relaxation of international travel regulations of member countries, we resumed the conduct of field activities in the summer of 2022. To relay the progress of CREPSUM activities during the last three years and discuss future collaborations between Japan and SEA countries, an in-person CREPSUM Joint Seminar will be held at AORI, UTokyo, in March 2023. We look forward to meeting with the CREPSUM scientists.



Fig. 2 On-line workshop for Jellyfish Identification, March 2022. High-quality microscope images/videos (left) were shared on-line with attendees and lecturers (right).

The EarthCARE and Modeling Workshop, February 16–18, 2022

Masaki Satoh, *Professor, Division of Ocean-Earth System Science*
 Kentaro Suzuki, *Professor, Division of Climate System Research*



The EarthCARE satellite mission.

A new satellite called EarthCARE (Earth Clouds, Aerosols and Radiation Explorer) will soon be launched as a joint European and Japanese mission. The EarthCARE satellite is intended to observe the atmosphere's cloud, aerosol, and radiation processes and improve climate models by better understanding the processes with these observations. At the time of the meeting, the launch was scheduled for 2023.

To enhance collaboration between the EarthCARE observations and modeling, the EarthCARE Modeling Workshop was held as an online meeting on February 16–18, 2022. The workshop was organized by Profs. Masaki Satoh and Kentaro Suzuki (AORI/The University of Tokyo), Prof. Bjorn Stevens (Max Planck

Institute for Meteorology), Prof. Hajime Okamoto (Kyushu University), and Dr. Takuji Kubota (Japan Aerospace Exploration Agency). About 20 experts were invited for 15-min oral presentations on the EarthCARE satellite projects, numerical modelers actively studying the satellite data of global storm-resolving model evaluations or conventional climate models, satellite simulators, and cloud/convective processes. In this workshop, we first introduced EarthCARE to modelers, then discussed the key topics concerning the evaluation and improvement of models' cloud/convection/aerosol processes using EarthCARE observations. Rapporteurs prepared daily



Snapshot of the online meeting showing a group photo of the workshop attendees (February 16, 2022).

summary reports of these discussions.

With the successful conduct of the workshop, the EarthCARE science teams of Japan and Europe have taken the outcomes and have made continuous efforts to enhance the EarthCARE studies. The second EarthCARE and Modeling Workshop will be held in Japan on March 27–29, 2023, to further deepen discussions and use the EarthCARE observations for modeling.

The presentation material and summary reports are available at https://www.eorc.jaxa.jp/EARTH/CARE/event/Modeling_ws2022/.

Visiting Professors

Name / Affiliation	Nationality	Length of stay	Subject for study
LEICHTER, James Scripps Inst. Of Oceanography Professor	USA	2021/10/2-12/12	A Japan-U.S. collaborative study on the environmental and community dynamics in coastal marine ecosystems
MILLER, Patrick University of St Andrews Professor	USA	2021/10/17- 2022/2/17	Use of biologging techniques to study the behaviour, physiology, and body condition of diving animals

Visiting Professors' report

James Leichter

*Scripps Institution of Oceanography
University of California San Diego
Professor*

With very kind support from the AORI Administrative Office, University of Tokyo, and Prof. Toshi Nagata and assistant Kotoko Ogawa I was able to arrange a visit from October to December 2021. The office and staff were all very helpful in arranging the more complicated international travel occurring still during the restrictions associated with the covid-19 responses. The visit was very successful and provided opportunities to connect scientifically again with Prof. Nagata and his research group. A main scientific theme of our discussions and continuing interests are the roles of currents and mesoscale eddies interacting with coastal ecosystems. New field work and internal travel within Japan was not possible during the time period, but this was a productive time to work on manuscripts and interact scientifically. I was

also able to continue collaborations with former AORI postdoctoral research, Prof. Alex Wyatt, and a manuscript from that work is now in press at Nature Communications. In this new analysis of long-term time series observations on coral reefs we describe evidence that mesoscale eddies modify thermocline depths and the resulting cooling by internal waves that can either protect deeper water corals from bleaching, for example as observed in 2016 and some earlier years, or in cases when internal waves are disrupted can cause enhanced bleaching as we observed in 2019. We suggest that variability on the time scale of 'ocean weather' may be an important component of biological responses including large scale coral bleaching. This work follows directly from our earlier publication in Nature Geosciences in which we described internal wave cooling at sites across the eastern, central, and western Pacific. We hope and anticipate in future to have opportunities to return to our field sites in Okinawa and Iriomote for

continued investigations. I am very grateful for the opportunity to continue productive collaborations with colleagues at AORI University of Tokyo and extend again my invitation for colleagues to visit our researchers and facilities at Scripps Institution

Patrick Miller

*Sea Mammal Research Unit; School of Biology
University of St Andrews; Scotland UK
Professor*

I was very fortunate to have been able to attend AORI as a visiting professor (客員教授) from October 2021 to April 2022. My hosts in the Department of Marine Bioscience were Professor Katsufumi Sato and Assistant Professor Kagari Aoki. Because of our strong ongoing collaborative research efforts, I have had the good fortune to have been invited as a visiting professor on several previous occasions, including 2011 and 2015. Thus, the chance to visit AORI again in 2021-2022 was a chance to renew and strengthen already long-lasting relationships, and to explore the future of collaboration in terms of institutional cooperation, research projects and cutting-edge tools, and human interactions to define future scientific horizons in our field.

On the institutional level, I am proud to have served as a coordinator to extend a formal Memorandum of Understanding (MoU) between AORI and my own School of Biology at the University of St Andrews. This MOU was first established in March 2007 by AORI director Professor Makoto Terazaki and Head of the School of Biology Professor David Paterson, to promote cooperation through exchange of faculty and research staff, conducting joint research, and exchange of academic information and publications. As a sign of the strength of our interactions on this institutional level, the MOU was extended previously in 2012 and 2017 – and during my own visit in 2022 it was extended again for 5 more years by AORI director Professor Tomohiko

of Oceanography in California USA. International collaborations are very scientifically productive and intellectually stimulating experiences. I thank you again for the opportunity and the support.



Photo 1: Enjoying scientific discussions at Hama Sushi Restaurant, outside AORI, University of Tokyo. From right to left: Visiting professor Patrick Miller, AORI host Professor Katsufumi Sato, AORI host Assistant Professor Kagari Aoki, and Dr Takashi Iwata (now Assistant Professor at Kobe University). Assistant Professors Aoki and Iwata previously held overseas JSPS postdoctoral positions in the Miller lab in the School of Biology at the University of St Andrews. We took off face masks only when taking pictures.

Kawamura and Head of School of Biology Professor Frank Gunn-Moore. The MOU represents a formal affirmation of what has long existed as a strong collaboration between my own lab and that of my AORI hosts, with numerous jointly authored papers from 2006 to present, exchange of researchers including several overseas JSPS postdoctoral researchers working in my lab, including Drs Aoki and Iwata (Photo 1).

It is always an honour for me to participate as visiting professor in the diverse scientific research being undertaken at AORI. My collaborative research with the Department of Marine Science is focused on Biologging Science – what we can learn about animals and their environments by attaching data-recording loggers to them. Because of the challenge to observe marine animals, the key to advancing this research is constant improvement and refinement of the Biologging tools that we attach to animals. One of the world's leading



Photo 2. Discussing Biologging technologies at Little Leonardo Corporation. From right to left: Visiting Professor Patrick Miller; Little Leonardo President Michihiko Suzuki; Little Leonardo Engineer Kazuo Yamaguchi; Little Leonardo Koichiro Ikeda; NIPR Associate Professor Akinori Takahashi and NIPR Professor Emeritus Yasuhiko Naito. We took off face masks only when taking pictures.

producers of Biologging recorders is a company in Tokyo known as Little Leonardo (<http://l-leo.com>). During my time as Visiting Professor, my collaborators at AORI and I visited Little Leonardo to describe our ongoing research, and plans to use Little Leonardo products in our next set of research project, which will assess the effects of underwater noise on cetaceans in Norway and Hawaii, USA. Collaborating researchers from the Japanese National Institute of Polar Research (NIPR) also participate in these discussions, including emeritus Professor Yasuhiko Naito (photo 2), who continues to inspire myself and future researchers in our field.

Despite the numerous restrictions in place due to the Coronavirus pandemic, I am very grateful to



Photo 3: Patrick Miller in the AORI lobby.

have been invited to be a visiting professor at AORI, and to be part of the productive scientific environment of the institute. Through lectures to students, supervision meetings, seminar presentations, and personal interactions with AORI staff at all levels - I am proud to have contributed in a positive manner to AORI. My lab has solid plans for a next phase of research working with AORI, including a just-funded collaborative research proposal led by the National Institute of Polar Research (NIPR), to assess the growing impacts of human activity on marine animals. Our ongoing collaborations will be ever more strong thanks to AORI support of personal academic exchange via the Visiting Professor program.

Thank you very sincerely, and I hope to see you soon at AORI (photo 3)!!

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