

New IPRC Staff



Saichiro Yoshimura, chosen by JAMSTEC and NASDA as the new liaison officer between the Frontier Research System for Global Change and the IPRC, joined the IPRC in July 2002. For most of his professional career, thirty years now, he has been an administrative officer in the Japanese government.

Yoshimura's professional life began with an undergraduate degree in engineering, electronics to be specific, from The University of Tokyo. The next step led him to the United States on a fellowship of the Japanese government for administrators and to two years of graduate study in business administration at the Wharton Graduate School of Business, University of Pennsylvania, in Philadelphia, where he obtained a master's degree in business administration. There he was exposed to US scientific-management philosophies, decision-making procedures, and their application to the real business world. He recalls, "The kind of theoretical problem-solving methods I learned about at Wharten were rejected at the time by Japanese industry on the pretext that life in Japan with its long history and unique traditions would not allow the efficient application of theories created in the United States." He adds, "It is interesting to note that now, 30 years later, many sectors of Japanese industries have learned that they are not exempt from such universal theories."

Yoshimura moved to Paris as a scientific attaché, stationed with the Japanese delegation to the Organization of Economic Co-operation and Development (OECD), an international organization of developed countries. He tells of how he enjoyed his three years there ... particularly the diplomatic privileges that translated into no parking tickets. He returned to France, to Strasbourg, in 1991 as Deputy Secretary-General of the Human Frontier Science Program Organization, an international granting agency for brain and molecular biology study. The organization was supported by the then G7 countries and was given an annual budget on the scale of \$60 million. He recalls, "It was a rare opportunity to observe real-life, active, first-rate, international scientists working on the peer-review panels during this five-year assignment. I was impressed

that even Nobel laureates on the panel were easily voted down during the scientific reviews, which was, and still is, inconceivable in Japan."

His administrative work with the Japanese government has included such different fields as nuclear energy, space development, information sciences, brain research and robotics. He says that after these varied experiences he is curious about climate research and is looking forward to the opportunity of meeting and working with the IPRC scientists. As liaison officer, Yoshimura will facilitate communication and coordination between the IPRC and JAMSTEC, NASDA, and Frontier. He likens his mission to that of a diplomat.



Kelvin Richards joined the IPRC in September 2002 as a professor of oceanography. He received his Ph.D. in 1978 from the University of Southampton, England. He recalls, "My thesis was on the formation of sand ripples. But, having developed a theory for their formation, I decided it was time to quit the field. The problem of the interaction of turbulence and moving sand grains was just too difficult. Now I wonder, is climate any easier?"

After completing his Ph.D., Richards worked as a Royal Society Research Fellow in the Department of Applied Mathematics and Theoretical Physics, University of Cambridge. There he studied atmospheric boundary-layer problems, principally stratified turbulent flow over hills and the dispersion of pollutants. In 1980, he moved to the Institute of Oceanographic Sciences at Wormley, in the leafy countryside of Surrey. Working for the institute, he had his first experience in taking scientific measurements at sea, deploying 'Swallow' floats in the Madeira Abyssal plain.

In 1985, Richards returned to Southampton as a faculty member in the then Department of Oceanography. He taught courses in basic fluid dynamics, geophysical fluids, and physical oceanography. To date, he has seen 16 graduate students get their Ph.D.

His research interests, though broad, have the underlying theme of how stirring and mixing affects the dynamics

of Earth's environment system. They include turbulent boundary layers, eddy-mean flow interaction, the dynamics of gyres, equatorial flows and the Antarctic Circumpolar Current, plumes from hydrothermal vents, the transport of tracers, and the impact of physical processes on the marine ecosystem. Recently, he has started to look at the role oceanic processes play in the interaction between the fluid environments of the ocean and atmosphere.

"What I enjoy about oceanographic research," he confides, "is that it allows me to mix theory, numerical modeling, and getting my hands dirty at sea. Last spring, I was on a cruise of the UK Marine Productivity program investigating the effects of the changing physical environment on the zooplankton *Calanus finmarchicus* in the subpolar gyre of the North Atlantic. This involved taking measurements amongst the ice floes on the east Greenland Shelf."

Richards is looking forward to working with colleagues both within the IPRC and the broader SOEST community. "My first work-day at the IPRC coincided with the arrival of the *Kilo Moana*, the new UH research ship," he recalls. "I hope the coincidence is prophetic, and it is not too long before I have the chance to sail with her to the tropical Pacific." His immediate plans are to consider the impact of mixing processes in the equatorial ocean on the ocean's response to atmospheric forcing, and the coupling between the ocean and atmosphere. "My philosophy," he says, "is to tackle a problem from both ends, looking closely at the mixing processes themselves as well as with GCMs to quantify their larger-scale effect. I hope to extend my studies in biogeochemical modeling, looking at what controls 'patchiness' and changes to basin-scale ecosystem dynamics induced by the ever-changing climate."



Niklas Schneider joined the IPRC as an associate professor of oceanography in October 2002. Growing up on a tiny island in the North Sea, he was intrigued already as a child by the power and moods of the ocean, and when he entered the University of Hamburg, he knew from the start that he wanted to become an oceanographer. After spending his undergraduate years at the University of Hamburg and completing his "Vordiplom," something between a bachelor's and a master's degree, he turned to the University of Hawaii (UH) and a balmy ocean for graduate studies in oceanography.

Upon receiving his Ph.D. in 1992 from UH, he moved to Scripps Institution of Oceanography (SIO), La Jolla, California. There he first worked as postdoctoral fellow with T. Barnett and, using ocean and atmosphere models, he studied the role of buoyancy forcing in the dynamics of El Niño and the western Pacific warm pool.

In 1995, he joined the staff at the Climate Research Division of SIO as an assistant researcher, and in 2001, he became an associate researcher and permanent member. His work, in collaboration with colleagues at SIO, the National Center for Atmospheric Research, and the Max-Planck Institute for Meteorology in Hamburg, has spanned tropical coupled ocean-atmosphere dynamics, the dynamics and role of the Indonesian Throughflow in the climate system, and decadal climate variability of the Pacific. The latter research has documented, with observations and model simulations, the generation and subsurface evolution of decadal temperature anomalies. Among other things, he has found that decadal variability in a coupled-model solution appeared to rely on advection of water-mass anomalies from within the tropics to the equator.

Recently, he has studied decadal dynamics and the predictability of the wind-driven circulation of the North Pacific. This work involved the analysis of long integrations of a coupled model and its comparison with the short instrumental record. A highlight was finding that winter-temperature anomalies in the ocean off the Japan coast appear predictable from simple oceanic Rossby-wave dynamics and measurements of Pacific-wide wind-stress anomalies.

At the IPRC, Schneider plans to continue his quest to understand the ocean's role in decadal climate variability and change. In particular, he plans to study the role of water-mass anomalies, the role of the southern Pacific and Indian Oceans (which includes a return to studies of the Indonesian Throughflow), and the role of ocean heat transports on the atmosphere.



Fumiaki Kobashi joined the IPRC in August 2002 as an assistant researcher from the Frontier Research System for Global Change. He received his Ph.D. in physical oceanography in March 2002 from Tohoku University, Japan.

His dissertation research focused on mesoscale sea-surface-height (SSH) variability in

the regions of the North Pacific Subtropical Countercurrent (STCC) and the Hawaiian Lee Countercurrent (HLCC), and on how this variability may impact Kuroshio variability, such as its path and volume transport. An analysis of altimeter data showed SSH varied greatly in the STCC and HLCC regions. Results of a linear stability analysis based on newly constructed climatological monthly-mean hydrographic datasets suggest that mesoscale variability in SSH is generated by baroclinic instability and by their nonlinear interactions with the resulting eddies. Kobashi noted that such mesoscale disturbances propagate westward in the STCC region and sometimes cause fluctuations in the volume transport in the upstream Kuroshio, with cyclonic eddies being related to transport decreases and anticyclonic eddies to transport increases. These variations in transport have the same period as the disturbances. He also found evidence to suggest that when anticyclonic disturbances approach the Kuroshio, warm water is advected from the STCC to the Kuroshio.

At the IPRC, Kobashi is working with **Humio Mitsudera** (IPRC Theme 2 Co-Leader) on the dynamics of the North Pacific subtropical ocean with a focus on the STCC. He plans to analyze a combination of satellite remote-sensing data and in-situ data to obtain insights into how the STCC is formed and to examine the seasonal-to-interannual STCC variability and its relationship to changes in the large-scale atmospheric and oceanic circulations. Kobashi is also planning to examine Japan Marine Science and Technology Center (JAMSTEC) mooring data in the Tokara Strait, in order to investigate further the effects of mesoscale disturbances on the Kuroshio.



Shinya Yarimizo joined the IPRC as a computer systems engineer in April 2002. Born and raised in Yokohama, Japan, Yarimizo came to the US in 1991. Until he was well into his third year in college, he didn't have a clue about computers—he literally hadn't used a computer!

"Upon transferring from a junior college to the University of California at Davis," he says, "I somehow managed to slip myself into the College of Engineering, majoring in Computer Science and Engineering. This is where I was dragged into the computer world. From then until I graduated in 1997 with a Bachelor of Science, I spent more time

in front of the computer screen than I care to think about. I spent my college days as a hard-core nerd," he admits, but likes to think it has paid off.

After earning his degree, Yarimizo worked as a software engineer for a computer graphics production company called *Square USA*, where he was involved in producing the fully computer-generated feature film *Final Fantasy: The Spirits Within*. At the company, he was a "jack-of-all-trades," doing everything from moving furniture to writing serious amounts of code. One of his significant software contributions was the development of a batch-job-queuing system, which controlled thousands of CPU-intensive jobs every day on a thousand-node Linux cluster. Besides writing and maintaining his (and often others') software, he was responsible for managing the users' computing environments, and he worked closely with the systems administration team. It was from this experience that he learned so much about working with computer systems, and about helping people with their computer and software frustrations.

Now at the IPRC, Yarimizo works with **Ronald Merrill** in computer systems administration, assisting in planning and purchasing computers and related equipment, the configuration of new equipment, and the maintenance and upgrading of installed hardware and various software. This translates into working with anyone at IPRC who uses a computer—that is, everyone. He has turned himself into a one-stop computer help department, a miracle worker in solving the many varied and complex computer problems of the IPRC staff. He says he enjoys working with people—and his ever-willing, patient way with people and their computer puzzles confirms this. His wide knowledge and intuition on how software programs work are a most valuable asset for this role.

In spite of the very time-consuming everyday tasks at IPRC, Yarimizo maintains his interests in computer graphics and entertainment, open-source and collaborative development, and computer-based automation.

Visitors

Professor **Akimasa Sumi**, Director of the Center for Climate System Research, University of Tokyo, and Mr. **Tsuguhiko Katagi**, Assistant Executive Director of the Office of Satellite Technology, Research and Applications at the National Space Development Agency of Japan (NASDA), visited the IPRC on July 22, 2002. They paid a courtesy call to IPRC Director **Jay McCreary**. Liaison Officer **Saichiro Yoshimura** and Dr. **Riko Oki**, Associate Senior Engineer at the Satellite Program and Planning Department of the NASDA Office of Satellite Technology, joined the meeting.

The visitors also had the opportunity to come together with several IPRC researchers and with the young scientists from NASDA and JAMSTEC (Japan Marine Science and Technology Center), who are currently working at the IPRC, as well as with graduate students from Japan who are studying with Professor Shang-Ping Xie

and are supported by the IPRC. **Peter Hacker**, Manager of the Asia-Pacific Data-Research Center (APDRC), described the mission and activities of the APDRC, which links data-management and data-preparation activities to research and provides one-stop shopping of climate data and climate products to the IPRC researchers and collaborators and to the national and international climate research communities (see *IPRC Climate*, Vol. 2, No.1). **Shang-Ping Xie**, Theme 1 Co-Leader and Professor of Meteorology at the University of Hawaii, presented his research that deals with the far-reaching effects of the tall mountains of the Hawaiian Islands on the ocean and atmosphere. **Masami Nonaka** from NASDA reported on changes in the Kuroshio paths and associated regional changes in the winds (see p. 3, this volume); **Takahiro Endoh** from JAMSTEC described his modeling research on the Kuroshio.



From left to right, back row: Saichiro Yoshimura, Tsuguhiko Katagi, Akimasa Sumi, Jay McCreary, Takahiro Endoh, Masami Nonaka, Riko Oki, Yuko Okumura; front row: Toru Miyama, Bunmei Taguchi, Shang-Ping Xie, and Hideki Okajima.

Visiting Scholars

The IPRC has an active visitor program. Our visiting scholars give seminars and work with IPRC research staff. From April 2002 to October 2002, the IPRC sponsored the scientists named below for visits of one week or longer.

Ming Feng

Commonwealth Scientific and Industrial Organization, Marmion Marine Laboratories, Marmion, Australia

Wolf-Dieter Grossmann

Center for Environmental Research Leipzig/Halle and GKSS-Forschungszentrum Geesthacht, Germany

Silvio Gualdi

Istituto Nazionale di Geofisica e Vulcanologia, Bologna, Italy

Leland Jameson

Lawrence Livermore National Laboratory, Livermore, California

Mu Mu

Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China

Dmitri Nechaev

Department of Marine Science, Stennis Space Center, Mississippi

Tomohiko Tomita

Department of Environmental Science, Kumamoto University, Kumamoto, Japan

Willie Soon

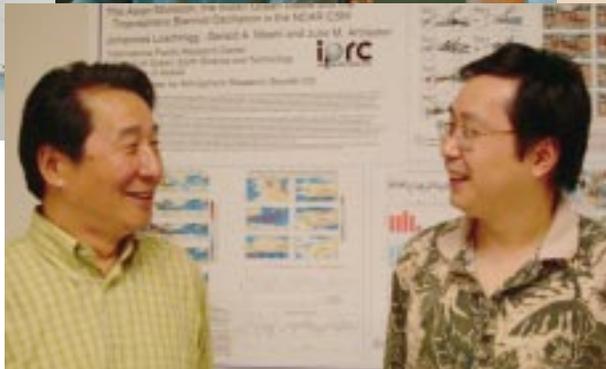
Harvard-Smithsonian Center for Astrophysics, Cambridge, Massachusetts

Quian Xie

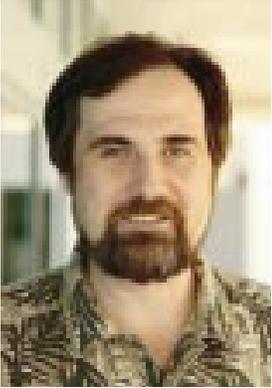
South China Sea Institute of Oceanology, Chinese Academy of Sciences, Guangzhou, China

Yong-Ti Zhu

Shanghai Meteorological Bureau, Shanghai, China



News of IPRC Scientists



Kevin Hamilton, IPRC Theme 4 Leader and Professor of Meteorology, is serving on the editorial board of a new and innovative scientific journal, *Atmospheric Chemistry and Physics*, published by the European Geophysical Society. The journal consists of two parts: a web-based electronic journal, *Atmospheric Chemistry and Physics Discussions (APCD)*,

and a standard, hardcopy journal. Papers are submitted electronically and are given a rapid anonymous peer review. Papers that pass this initial review are posted on the web in the *APCD*, and an eight-week period is opened on the website for comments from the official reviewers, the general scientific community, and for responses from the authors. The original papers and comments are preserved permanently on the *APCD* web site, so this provides an ideal forum for discussion of controversial ideas. After this comment period, papers judged by the editors to merit hardcopy publication are scheduled to appear in the journal's paper version.

The journal started accepting papers late in 2001, and the first paper issues have recently appeared. The journal is currently meeting very ambitious targets in terms of rapid publication, with an average of 8 weeks from submission to appearance on the *APCD* web site, and 25 weeks from submission to appearance in the hardcopy journal. Even more impressive has been the volume and quality of the discussions that have appeared on the *APCD* web site, far outstripping the typical "comment and discussion" sections in traditional journals.

A subscription is required to receive the hardcopy journal, but access to the *APCD* web site will hopefully remain free of charge. More details are available at <http://www.copernicus.org/EGS/acp>.



At the recent meeting of the Pacific Congress on Marine Science and Technology (PACON International) in Chiba, Japan, **Lorenz Magaard**, Professor of Oceanography and Executive Associate Director of the IPRC, was chosen as the president-elect for 2002 to 2004, with his presidential term running from 2004 to 2006. Magaard has been an active

member of PACON from its inception and at the 2000 Congress in Honolulu, he received the prestigious International Award of the Pacific Congress on Marine Science and Technology for his significant contribution to the advancement of ocean science and technology.

PACON International is a dynamic network of marine scientists, engineers and policy makers organized for the purpose of sharing insights and breakthroughs in ocean scientific research, and in state-of-the-art marine technology. The members of this international, nonprofit organization are active in promoting scientific, technical, and environmentally sound use of ocean resources in a developmentally sustainable way. While the organization is Honolulu based, it concerns itself with the entire Asia-Pacific marine environment, and its membership and sponsors are worldwide.

The Making of a Climatologist

As part of its collaboration with Japan, the IPRC educates young climate researchers. Below is the story of Bunmei Taguchi, who came to the University of Hawaii in Fall 2000 as a graduate student with financial support from the IPRC.

There seems nothing unusual about **Bunmei Taguchi**, a graduate meteorology student at the University of Hawaii (UH) at Manoa. He fits right in with both the local and the many foreign students. But how he came to be at UH, doing climate research in the meteorology Ph.D. program is worth a story.

After majoring in applied physics in Japan, Taguchi wanted to study something more real—meteorology. "You can feel the wind, the rain, and see the clouds." Thus, for his master's research, he investigated the heat exchange between the atmosphere and land covered by snow. Upon completing his master's meteorology degree, Taguchi worked for a private company in Japan as a scientific computer programmer. He was assigned to help researchers in government institutions develop codes for their computer programs on environmental simulations, usually to address the environmental impact of construction projects (e.g., power plants). Among his projects was determining the possible destructive effect of a tsunami on a planned power plant.

His tsunami work experience must have been the reason that his company dispatched Taguchi to the Japanese Marine Science and Technology Center (JAMSTEC) to work with **Humio Mitsudera** (now IPRC Theme 2 Co-leader), who was developing ocean models for his research. Taguchi's task was to configure the Princeton Ocean Model (POM) as a high-resolution model of the Kuroshio and its

extension. It took two to three years until the adaptation of POM as a high-resolution model for the Kuroshio region began to yield realistic simulations. "Fixing the codes to get reasonable results was painful," Taguchi recalls. And just as the model became useful to study interesting phenomena, Mitsudera left for Honolulu and for the IPRC. This departure, however, did not stop their collaboration.

When visiting Honolulu and the IPRC in 1999, Taguchi got the idea that he would like to work at the IPRC. His company, though, wanted him back to work on another project. Taguchi then did much soul searching: Should he leave the security of a good job to follow his research interests? The wish to understand the workings of the Kuroshio and to do his own research tipped the scale. He resigned, and in June 2000, he came to Honolulu to continue his work with Mitsudera.

The financial support of the IPRC allowed him to apply as a graduate student to the UH and to pursue a Ph.D. in meteorology with **Shang-Ping Xie** (Theme 1 Co-leader and Professor of Meteorology). The transition from a computer engineer in Japan to a graduate student in the US was not easy. Learning English was a challenge. The first months at UH, he took English courses. Sharing his experiences with the many other students from Japan helped. "Best of all," he thinks, "is the friendship with international students in meteorology and oceanography. They are special for me because we share the same wish to study the ocean and atmosphere and have the same language and cultural difficulties."

About his course work, Taguchi says, "I found graduate work very difficult and challenging, the courses tough and time-consuming, but enjoyable. The classes are excellent and very useful in getting a solid foundation in both oceanography and meteorology, and I get to attend the lectures of famous researchers." Now, after two years, he feels much more comfortable in Hawaii. He still takes every opportunity to expand his knowledge of English, realizing that English is the universal scientific language and mastering it will help him read and publish in international scientific journals and stay on top of cutting-edge science in his field.

Although life has been tough in graduate school, Taguchi has no regrets about leaving his good job: He is now able to continue to pursue his real interest—scientific research. He is excited about his current research project that investigates how the fine structure of the Kuroshio varies with variations in the large-scale ocean circulation and how this variability can affect North Pacific climate.



Bunmei Taguchi "hanging out" with his international graduate-student friends.