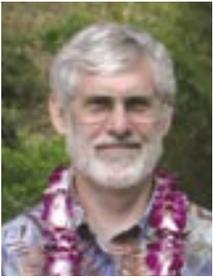


IPRC NEWS

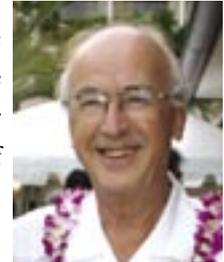


Julian McCreary stepped down from the IPRC directorship on April 1, 2008. McCreary, who had served for fifteen years as Dean of the Oceanographic Center at Nova Southeastern University in Florida, became IPRC's first director in February 1999. Under McCreary's leadership, the

IPRC grew into a climate research center of international acclaim, increasing from 15 scientists to nearly 50. McCreary's professional awards include the Sverdrup Gold Medal of the American Meteorological Society (AMS) and election to Fellow of the AMS and of the American Geophysical Union. McCreary remains as professor in the IPRC and the Oceanography Department.

Lorenz Magaard, Associate Executive Director since IPRC's inception in 1997, stepped down on April 1, 2008. Magaard has been at the University of Hawai'i since 1975 as Professor of Oceanography. He has served as Oceanography Department Chair from 1984 to 1990 and again from 2005 to 2006, and as Associate Dean of the School of Ocean and

Earth Science and Technology for the period 1992–2000. He continues as the Director of the International Center for Climate and Society and as Professor of Oceanography.



Kevin Hamilton is IPRC Interim Director. Hamilton, a former Research Meteorologist with the NOAA Geophysical Fluid Dynamics Laboratory at Princeton University from 1988 to 2000, joined the IPRC in 2000 as Leader of the Impacts

of Global Environmental Change research and as Professor of Meteorology. Hamilton served as Meteorology Department Chair from 2004 to 2007. Hamilton's professional awards include the Meisinger Award of the American Meteorological Society (AMS), the Jule Charney Lectureship of the American Geophysical Union, and election to Fellow of the AMS.

IPRC Scientific Advisory Committee Meeting

The IPRC Scientific Advisory Committee met on December 19 and 20, 2007. The IPRC had just had its 10th birthday, and the 10-member team of leading scientists from Japan and the United States reviewed and praised IPRC's scientific

accomplishments. The committee discussed how the IPRC, unique as an international research center that is focused on Asia-Pacific climate, can contribute to the climate-research challenges of the coming decade.



Scientific Advisory Committee: (seated) Roberto Mechoso, Toshiyuki Hibiya, Masahisa Kubota, Humio Mitsudera (Japan co-chair), Masahide Kimoto, (standing) Peter Cornillon, Harry Hendon, Jerry Meehl (US co-chair), Julian McCreary, Susan Wijffels, and Clara Deser.



IPRC CELEBRATES 10 YEARS!

To celebrate completion of 10 years of research achievements, the IPRC held a special anniversary version of its annual symposium on May 5 and 6, 2008, at the East-West Center. The symposium opened with a welcome by Interim Director **Kevin Hamilton**, followed by a message from the Consul General of Japan **Toshio Kunikata** delivered by Consul **Yukie Kawai**, and remarks by JAMSTEC Executive Director **Kiyoshi Suyehiro**, NASA Program Manager **Eric Lindstrom**, and UH Vice Chancellor for Research and Graduate Education **Gary Ostrander**.

Professor **Toshio Yamagata** from the University of Tokyo then spoke on “IPRC viewed from its prehistory: Success produces new challenges.” Yamagata was a major force in the founding of the IPRC and has been a steadfast supporter through its lifetime. For the opening of the second day of the symposium, University of Maryland Professor **Antonio Busalacchi**, long-time US chair of the IPRC Scientific Advisory Committee, gave his retrospective on IPRC accomplishments and the impact that IPRC science has made on climate research.

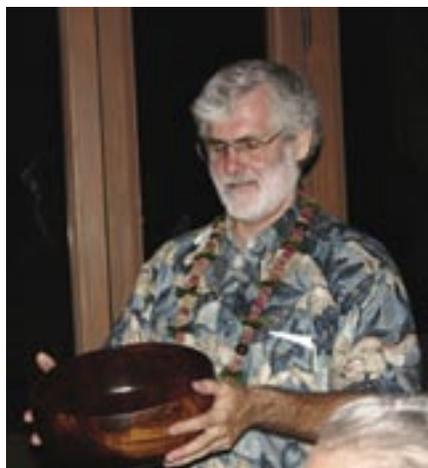


(Front) Kiyoshi Suyehiro, Jay McCreary, Toshio Yamagata, Eric Lindstrom, Lorenz Magaard; (back) H. Annamalai, Jim Potemra, Antonio Busalacchi, Kevin Hamilton, and Brian Taylor.

For the remainder of the symposium, IPRC scientists presented highlights of their research, many with a historical perspective showing the advances they had made over their years at the IPRC in understanding a particular aspect of the climate system.

In honor of **Jay McCreary's** years of leadership and Toshio Yamagata's 60th birthday, a reception and dinner at the Halekulani Hotel ended the first day of the symposium.

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Dinner celebration: Antonio Busalacchi giving a toast, Jay McCreary receiving a koa bowl and Toshio Yamagata a koa paddle from the IPRC.



Shang-Ping Xie giving a lecture at Hokkaido University.

IPRC–Hokkaido University Partnership in Educating Climate Scientists

Visiting the IPRC during his sabbatical leave from Hokkaido University in 2007, **Youichi Tanimoto** discussed with Team Leader **Shang-Ping Xie** the possibility of Hokkaido University graduate students coming to the IPRC. He applied for a grant posted by the president of Hokkaido University for education-exchange programs with overseas universities and received one million yen (~\$10,000) for students to visit the IPRC and for IPRC faculty to give lectures at Hokkaido University.

The grant has helped to support several Hokkaido PhD students in spring 2008: **Shunya Koseki** and **Hiroki Tokinaga** visited the IPRC for 3 months to study the Kuroshio Extension influence on the atmosphere; **Kunihiro Aoki** visited for 6 weeks to study ocean Rossby wave propagation and structure. In March, Xie gave a 2-day lecture series entitled “Dynamics of tropical climate: Role of air-sea interaction” at Hokkaido University. Continuing the exchange program, **Kelvin Richards** will give a lecture series at Hokkaido on ocean mixing.

IPRC Scientists Active in the Climate Research Community

IPRC Team Leader **Bin Wang** is chairing the Science Steering Committee for the project “Asian Monsoon Years” (AMY) together with **Jun Matsumoto** (Tokyo Metropolitan University). The goal of the AMY initiative, which runs from 2007 to 2012, is to improve Asian monsoon prediction by coordinating international research on understanding the variability of this monsoon. The project is part of the International Monsoon Study, a coordinated observation and modeling effort under the leadership of the World Climate Research Programme (<http://www.wcrp-amy.org/>). Wang helped to organize the AMY Implementation Planning Meeting, held at the Frontier Research Center for Global Change in Yokohama on January 26–27, 2008.

The Hawai‘i Conservation Alliance sponsored the forum “Climate Change in Hawai‘i” on March 26, 2008, at the East-West Center in Honolulu. As a partnership of 16 federal and state government agencies and non-profit organizations, the alliance promotes environmental conservation in the Hawaiian Islands. The nine in-

vited talks featured speakers from the University of Hawai‘i, Stanford University, NOAA, the United States Fish and Wildlife Service, and Conservation International. Three of the invited speakers were from the IPRC, attesting to the central role of IPRC in current research on climate change in Hawai‘i. Postdoctoral Fellow **Oliver Timm** spoke on “Statistical Projection of Global Climate Change Scenarios onto Hawaiian Rainfall.” IPRC Interim Director **Kevin Hamilton** spoke on “Late 21st Century Climate Change in Hawai‘i Simulated with a Fine-Resolution Global Model.” Hamilton also gave the talk “Dynamical Downscaling Approach for Hawaiian Regional Climate” for IPRC faculty member **Yuqing Wang**, who was on travel.



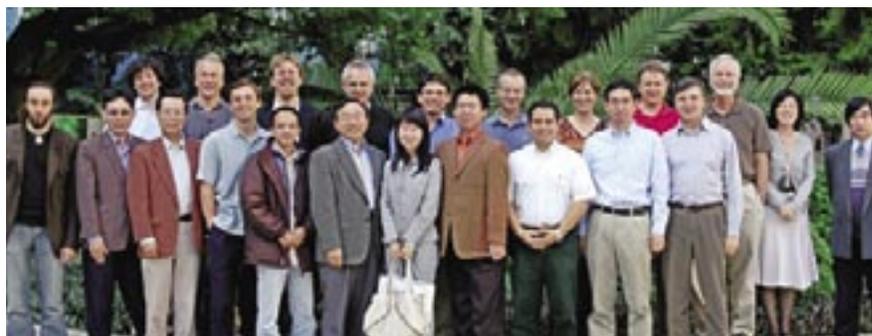
Oliver Timm speaks at the “Climate Change in Hawai‘i” Forum.

Research Team Leader **Tim Li** gave a keynote address at the March 3, 2008, symposium celebrating the renaming of the Taiwan National Central University’s Institute of Hydrological Science to Institute of Hydrological and Oceanic Sciences. The renaming reflects the institute’s research expansion to ocean–atmosphere processes. Li spoke about advances in understanding the role of ocean–atmosphere interaction in Asia-Pacific climate.

As Chair of the International CLIVAR Pacific Panel, **Axel Timmermann** co-organized the workshop on “Western Tropical Pacific: Hatchery for ENSO and Global Teleconnections,” held in Guangzhou, China, on November 26–28, 2007. The workshop dealt with the role of the South China Sea in the climate system, and with ENSO processes, impacts and prediction. Immediately following the workshop, Timmermann held the 4th Session of the CLIVAR Pacific Implementation Panel in Guangzhou on November 29–30.

Kevin Hamilton was reappointed to a third three-year term as an editor of the journal *Atmospheric Chemistry and Physics*, published by the European Geosciences Union. In a notable milestone, the journal earned the highest *Institute of Scientific Information* impact factor for 2006 of any atmospheric science journal—4.362. (www.atmospheric-chemistry-and-physics.net/news_acp_isi_impact_factor.pdf). Hamilton has also been appointed to the inaugural Editorial Advisory Board for the *Open Atmospheric Science Journal*, a new open-source journal published by Bentham Scientific Publishers (www.bentham.org/open/toascj/index).

Research Team Leader **Niklas Schneider** gave invited talks on Pacific Ocean climate variability and circulation at the “Ocean and Climate Forum” in April 2008 at Yale University and on the North Pacific Gyre Mode (a project with Emanuele Di Lorenzo, Georgia Institute of Technology) at the 2007 AGU Fall Meeting in San Francisco.



Participants of the 4th Session of the Pacific Implementation Panel.

IPRC Participates in SOEST Open House

The IPRC took part again in the UH School of Ocean and Earth Science and Technology (SOEST) biennial Open House, which is an occasion for the public to learn about the school’s scientific activities. It was held October 19 and 20, 2007, and IPRC researchers put on a great show, entertaining the public with a series of animations. The HYbrid Coordinate Ocean Model, implemented for the Hawaiian region by IPRC’s **Yanli Jia**, illustrated the circulation around the Hawaiian Islands and seasonal changes in ocean tem-

peratures. An animation created by **Jan Hafner** showed the satellite rain data over the Island of Oahu during the October 31, 2005, storm that caused millions of dollars in flood-damage to the main UH library. The visitors enjoyed also an animation on ice ages generated by our JAMSTEC colleagues and an animation created by **Nikolai Maximenko** from an ocean model on the dispersion of floats over 1000 years. The floats may be seen as representing the journey of garbage dumped into the world’s ocean. Bishop Museum’s **Leon Geschwind** showed animations of climate change on the Magic Planet, a spherical projection system.



Students listening to Postdoctoral Fellow Ingo Richter at the Ice Age station during Open House.

IPRC Scientists Active in the Community



Timmermann and Representative Lyla Berg.

Axel Timmermann was invited by Hawai'i State House Representative **Lyla Berg** to speak at a district community forum held in Kahala, Honolulu. His talk, "Global Warming, Is It Real?" sparked much discussion. The youngest in the audience were high school students, who listened attentively and asked questions about what they can do to prevent further rise in greenhouse gas emissions.

Timmermann also participated in the radio show "Native America Calling" that had as topic global warming and how it might affect native peoples around the world. Part of the voice stream is available on the IPRC news web site.

Kevin Hamilton participated in a forum on global warming, held as part of the International Association of Defense Counsel's (IADC) midyear meeting in February at the Waikoloa Fairmont Orchid Resort on Hawai'i. The IADC is an association of corporate lawyers, and the forum came about because of their interest in legal implications of manmade global environmental effects.

Partnerships in Tropical Cyclone Research

Tropical cyclone research at the IPRC is getting a boost from the partnerships IPRC's **Yuqing Wang** is forging. In December 2007, **Chun-Chieh Wu**, a tropical cyclone expert with the Department of Atmospheric Sciences, National Taiwan University (NTU), visited the IPRC to plan a project using the IPRC Regional Atmospheric Model (iRAM) to determine the impact of global warming on western Pacific tropical cyclones. NTU graduate student **Yi Lu**, therefore, came to the IPRC for 4 weeks in January–February to learn about iRAM. During his visit, Lu helped create an algorithm that automatically tracks tropical cyclones in iRAM.

As Overseas Director of the Pacific Typhoon Research Center (PTRC) at Nanjing University of Information Science and Technology (NUIST), **Yuqing Wang** is helping to develop international partnerships and train NUIST researchers and students. Two post-doctoral fellows from PTRC are visiting the IPRC for one year: **Yongqing Wang** is analyzing the remote effects of

tropical cyclones over the western Pacific on precipitation in Japan, and **Jinhua Yu** is studying the impact of global warming on the potential maximum intensity of global tropical cyclones.

Qingqing Li, a visitor from Shanghai Typhoon Institute, has expertise in modeling tropical cyclones with the Fifth-Generation NCAR/Penn State Mesoscale Model (MM5) and the Weather Research and Forecasting (WRF) Model. At the IPRC, he is investigating the dynamics of the tropical cyclone inner core and the processes that control tropical cyclone structure and intensity changes.

Lastly, **Haiming Xu**, an IPRC post-doctoral fellow from 2002 to 2005 and now Associate Dean and Professor in the School of Atmospheric Sciences at NUIST, is an expert in regional climate modeling. He returned to the IPRC for 2 months during early 2008 in order to improve the IPRC Regional Coupled Model (iROAM) and configure it for the South China Sea. He will be using the model to study the air–sea interaction associated with the South China Sea summer monsoon and the tropical cyclone formation associated with the tropical intraseasonal oscillation.



Tropical cyclone researchers from left: Jinhua Yu, Jia Hu, Yuqing Wang, Chun-Chieh Wu, Yongqing Wang, and Li Zhou.

Visitors

The IPRC welcomed in January a group of JAMSTEC scientists who are developing high-resolution numerical climate models: **Akio Ishida**, **Nobumasa Komori**, **Akira Kuwano-Yoshida**, **Yoshikazu Sasai**, and **Hideharu Sasaki**. The scientists discussed recent developments in the general circulation models for the Earth Simulator - AFES, OFES, and CFES - and planned experiments and analyses of model runs (see High-Resolution Modeling Workshop). Hideharu Sasaki stayed on to work with IPRC Team Leader **Kelvin Richards** and Ocean-mixing Specialist **Andrei Natarov** on an OFES project dealing with equatorial interleavings and to work on OFES and CFES improvements with **Ryo Furue** and **Niklas Schneider**.



Ryo Furue (left), Hideharu Sasaki, and Niklas Schneider discussing OFES results.

Yumi Nakayama, science reporter for *Asahi Shimbun*, visited the IPRC on April 1, 2008. Nakayama participated in the International Visitors Leadership Program of the U.S. State Department and was hosted in Hawai'i by the Pacific and Asian Affairs Council. Nakayama has a longstanding interest in environmental issues and recently spent 14 months in Antarctica with the 46th Japanese Antarctic Observation Wintering Team. Nakayama was interested in the climate re-



Yumi Nakayama, *Asahi Shimbun* science reporter, with Kevin Hamilton.



Sha Li with Research Systems Specialist Yingshuo Shen and APDRC Manager Peter Hacker.

search at the IPRC and in the challenges in predicting details of climate change in the tropical Pacific.

Sha Li, Director of the Information Service Center of the South China Sea Institute of Oceanology (SCSIO), Chinese Academy of Sciences, visited the IPRC for 6 months to learn more about the ocean-atmosphere database of IPRC's Asia-Pacific Data-Research Center (APDRC) and to build a partnership with the APDRC scientists. This partnership will benefit the climate research on Asia-Pacific at both SCSIO and IPRC.

Ken Sperber is joining the IPRC from March to August 2008, while on sabbatical leave from Lawrence Livermore National Laboratory. Sperber and IPRC's **H. Annamalai** are evaluating long climate simulations to test such theories of the initiation of the intraseasonal oscillation as extratropical incursions into the tropical Indian Ocean region, SST induced convection, and Kelvin-wave forcing. In these simulations, they will investigate monsoon predictability by testing the null hypothesis that the predictability is limited by chaotic intraseasonal variability. Analyses of the models may yield further insight into predictors of intraseasonal rainfall variations.



H. Annamalai with Ken Sperber.

Richard “Rit” Carbone, Director of The Institute for Integrative and Multidisciplinary Earth Studies (TIIMES) at the National Center for Atmospheric Research in Boulder, visited the IPRC during April 2008. He discussed the latest TIIMES research initiatives with Interim Director **Kevin Hamilton**, who is a member of the TIIMES external advisory committee. Carbone talked also about his own research on the dynamical mechanisms controlling midlatitude warm-season rainfall and his concerns whether these mechanisms are adequately represented in coarse-resolution global climate models. This concern struck a chord with Hamilton, who notes similar issues in modeling rainfall over tropical islands such as the Hawaiian Islands.



Kevin Hamilton with Rit Carbone.

Published!

“Influence of the Gulf Stream on the Troposphere” appeared as the cover article of the March 13 *Nature* issue. **Shoshiro Minobe** (Hokkaido University) is the lead author, and JAMSTEC’s **Akira Kuwano-Yoshida** and **Nobumasa Komori**, and IPRC’s **Shang-Ping Xie** and **Justin Small** are co-authors. The study showed that the heat released by the Gulf Stream affects the upper troposphere, where it could have far-reaching impacts on climate (see p. 3).



Axel Timmermann was the co-author on **Lowell Stott’s** (University of Southern California) “Southern Hemisphere and Deep Sea Warming Led Deglacial Atmospheric CO₂ Rise and Tropical Warming,” which appeared in the September 28, 2007, issue of *Science*. The paper reported that oxygen isotope variations in microfossils show the Southern Ocean warmed before the rise in atmospheric CO₂ seen in ice-core records, an indication that an increase in Southern Hemisphere insolation triggered the warming, which was then enhanced by released CO₂.

Tangdong Qu spearheaded the work for the article “Subduction of South Pacific Waters” with **S. Gao**, **I. Fukumori**, **R. A. Fine**, and **E. J. Lindstrom** in the January issue of

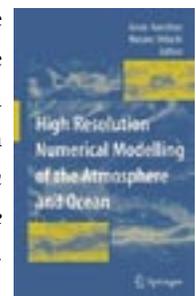
Geophysical Research Letters. The article, selected by the American Geophysical Union for its *Highlights*, reveals that the South Pacific subtropical cell, a sparsely charted circulation, contributes significantly more than had been suspected to the formation of climate-important water layers in the equatorial Pacific El Niño region.

“Mapping High Sea Winds from Space,” featuring the gale-wind frequency maps developed by **Takeaki Sampe** and

Shang-Ping Xie, appeared in the December 2007 issue of the *Bulletin of the American Meteorological Society*. The maps show that sea surface temperature fronts, such as the Gulf Stream and the Kuroshio, and tall coast lines are regions favorable to high winds. The maps, the first of their kind, are important for such things as selecting shipping routes and oil rig placement, and for such scientific purposes as charting air–sea fluxes.

Nikolai Maximenko authored with **Oleg Melnichenko** at IPRC, **Peter Niiler** at Scripps, and **Hideharu Sasaki** at the Earth Simulator Center “Stationary mesoscale jet-like features in the ocean,” which describes mysterious currents, flowing in an alternating east–west pattern. These currents were detected in a combined analysis of direct ocean observations, satellite images, and computer simulations. The study created a sensation in the media before it was even published in the April issue of *Geophysical Research Letters*. It was cited in such newspapers as *The Scotsman*, *die Welt*, *Oceanographers.cu*, *South Asia News*, and in the prominent science news magazines *New Scientist*, and *ScienceNOW*.

Kevin Hamilton and his colleague **Wataru Ohfuchi**, group leader at the JAMSTEC Earth Simulator Center in Yokohama, published in January with Springer Verlag their edited volume *High Resolution Numerical Modelling of the Atmosphere and Ocean*. The book presents exciting developments in simulation of atmospheric and oceanic flows with very fine-resolution computer models. The findings are applicable to daily weather forecasting and to simulation of longer-period climate variations.



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NEW IPRC STAFF

Hae-Kyung Lee Drbohlav joined the IPRC as postdoctoral fellow in January 2008. She became interested in meteorology because Earth science, particularly atmospheric science, was the most tangible of all the science subjects taught in high school: “The weather is something I live with every day, and this is what led me to study meteorology at university.”



Hae-Kyung Lee Drbohlav

Originally from Korea, Drbohlav received both her MS (1997) and PhD (2002) from the Meteorology Department at the University of Hawai‘i. For her dissertation she investigated the initiation of the intraseasonal oscillation in the South Asian monsoon and its northward propagation. Wishing to see whether the eastward propagating Kelvin–Rossby wave packet was critical to the northward propagation, she excluded this wave packet in her model experiment. The model still simulated the northward propagation. The model showed that when strong convection develops under the easterly vertical shear in the seasonal mean background winds, the rising motion at the center of convection advects the seasonal mean background winds vertically, inducing barotropic westerly winds. The Coriolis effect on these strong westerly flows generates the barotropic divergence (equivalent to the tropospheric divergence) that results in boundary-layer moisture convergence north of the precipitation.

Drbohlav continued her research as postdoctoral fellow first with **Antonio Navarra**’s group in Bologna, Italy, and then at the Center for Ocean-Land-Atmosphere Studies in Maryland. Throughout, her goal has been to identify and verify the processes that produce variations in the intraseasonal monsoon oscillation, the Indian Ocean dipole mode, and the South Asian summer monsoon by analyzing observations and model outputs of these climate phenomena.

At the IPRC, she is working with **H. Annamalai** on the project “Future projections of the Asian summer monsoon and Indian Ocean climate systems.” She will be studying the monsoon response to global warming scenarios in simulations with coupled general circulation models.

Hironori “Hiro” Fudeyasu joined the IPRC in January 2008 as a postdoctoral fellow. His research interests are tropical cyclones. During his studies for his master’s and doctoral degrees, he became fascinated by the mysterious pressure dip, the rapid decrease and subsequent increase in surface pressure occasionally observed in Japan during



Hironori Fudeyasu

a tropical cyclone that can cause unusually severe damage. Though the phenomenon has been known for over 50 years, the formation and structure of pressure dips have remained poorly understood. Fudeyasu, therefore, decided to focus his dissertation research on the pressure dip and tropical cyclones. He received his PhD from Kyoto University in 2003.

He then worked at Japan’s National Research Institute for Earth Science and Disaster Prevention as a postdoctoral fellow and continued to study the pressure dip and the impacts of El Niño and the monsoon on tropical cyclones.

Joining the JAMSTEC Institute of Observational Research for Global Change in 2006, he became a member of the group that studied the stable oxygen and hydrogen isotopes and other meteorological data of tropical cyclones. Observations of these isotopes can be used to yield information on the atmospheric moisture cycle in tropical cyclones and to get clues to the intensity of the storm. His group succeeded in recording the stable isotope ratios in rainfall and water vapor during the passage of a tropical cyclone on a small island in subtropical Japan. The project yielded the first realistic record of the isotope ratios in water vapor, and thus of the water cycle inside the eye wall.

“To understand the link between the atmospheric moisture cycle and the intensification of tropical cyclones over the ocean,” Fudeyasu says, “is the captivating subject of my work at the IPRC with Dr. **Yuqing Wang**.”

Axel Lauer joined the IPRC as a postdoctoral fellow in September 2007. He recalls, “I’ve always been fascinated by the weather and climate and especially by the question whether meteorological observations of recent years could still be considered normal. My interest in climate change, the Antarctic ozone



Axel Lauer

hole, and air pollution made me decide to go into meteorology instead of generic physics.” After obtaining a master’s degree in meteorology at the University of Munich, Germany, Lauer started his dissertation on global aerosol modeling at the German Aerospace Center (DLR) and received his PhD from the Free University of Berlin in 2005.

He continued at DLR as a postdoctoral fellow in the young investigators group SeaKLIM, where he studied the impact of ship emissions on aerosols, clouds, and Earth’s radiation budget. The group found that emissions from international shipping have a much larger impact on the short-wave cloud forcing and therefore on climate than previously thought. Model results suggested that this kind of anthropogenic emission increased considerably the number of cloud condensation nuclei in low maritime stratus clouds.

At the IPRC, Lauer is working with **Kevin Hamilton**, **Yuqing Wang**, and **Vaughan Phillips** (UH Meteorology) on cloud modeling. Using the IPRC Regional Atmospheric Model, they are studying maritime stratocumulus clouds in the eastern Pacific and the indirect aerosol effect on these clouds.

Yoshinori Sasaki joined the IPRC as a postdoctoral fellow in April 2008 after receiving his PhD from the Graduate School of Science at Hokkaido University, Japan. He recalls, “When I started out at university, I wanted to study meteorology. But then I attended lectures by Shoshiro Minobe at the Graduate School of Science, and he was so interesting and had such a pleasant personality, that I decided to join his laboratory and study physical oceanography and climate instead.”



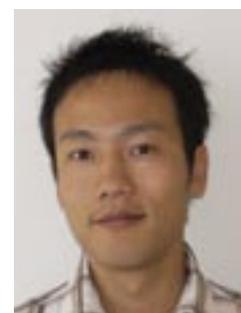
Yoshinori Sasaki

Sasaki conducted his dissertation research on interannual sea-ice variability in the Bering and Okhotsk Seas and decadal sea-level variability in the South Pacific. In the Bering Sea, he found that surface-wind fluctuations are related to large-scale atmospheric circulation variations associated with the Aleutian Low and with local atmospheric fluctuations over Alaska. Regarding the Okhotsk Sea, Sasaki found that late-autumn atmospheric conditions still affect sea-ice extent 4 months later, in late winter, through heat stored in the sea ice and the ocean. Previous studies had suggested that atmospheric conditions affect sea ice for only one month.

Regarding the South Pacific, Sasaki statistically investigated sea-level variability and related oceanic changes in a hindcast of the Ocean General Circulation Model for the Earth Simulator (OFES). He found that the trend in sea-level rise after 1992 in the central and western South Pacific, which attracted much attention in association with global warming, is not part of a continuous long-term trend but due to decadal ups and downs. The sea-level fluctuations accompany decadal changes in the subtropical gyre, the western boundary current, and eddy activity. Moreover, in OFES, the corresponding atmospheric variations are associated with decadal variations in the El Niño–Southern Oscillation.

At the IPRC, Sasaki is working with research team leader **Niklas Schneider** on low-frequency processes and air-sea interaction in the Kuroshio Extension.

Hiroki Tokinaga joined the IPRC as a postdoctoral fellow in October 2007. He focused his dissertation research at Hokkaido University on the air–sea interactions in the Kuroshio Extension and the Brazil-Malvinas Confluence regions, which are both remarkable sea-surface temperature fronts in the extratropics. He took part in the



Hiroki Tokinaga

winter 2003–2004 and summer 2005 cruises in the Kuroshio Extension that were conducted by a partnership among Hokkaido University, The University of Tokyo, and the IPRC. The atmospheric soundings with GPS radiosondes, which Tokinaga helped to take, showed that the sea-surface temperature front created by the warm current affects the atmospheric boundary layer, impacting the structure of the

marine-atmosphere boundary layer as well as the formation of low-level clouds and sea fog.

Regarding the Brazil-Malvinas Confluence, his analyses of high-resolution satellite data and in situ observations support the notion that the near-surface atmospheric stability associated with the Brazil-Malvinas Confluence affects surface-wind variability on seasonal to interannual timescales.

After receiving his PhD from Hokkaido University in 2005, Tokinaga joined the JAMSTEC Institute of Observational Research for Global Change as a postdoctoral fellow to analyze the surface heat-flux variability in the Kuroshio Extension. In 2007, he participated in the winter cruise of *R/V Mirai* to deploy the JAMSTEC Kuroshio Extension Observatory (JKEO) mooring buoy, a cooperative project with the NOAA Pacific Marine Environmental Laboratory. Together with a second buoy, the JKEO is expected to yield in situ surface heat-flux data for the Kuroshio Extension.

Working now with IPRC's **Shang-Ping Xie**, Tokinaga is analyzing satellite data and in situ observations to gain a better understanding of tropical and extratropical air-sea interactions and how global warming may affect these interactions.

Shengjun Zhang joined the IPRC as a postdoctoral fellow in January 2008. He received his PhD in 2002 from the Chinese Academy of Meteorological Sciences (CAMS), where he continued doing research until coming to Hawai'i.

He believes that his studying meteorology was arranged by fate. As a high school student, he had been interested in astronomy, but when he started his studies at Nanjing Institute of Meteorology (now the Nanjing University of Information Science & Technology), he was attracted to lectures on weather and soon came to love meteorology.

For his dissertation, Zhang analyzed the dynamics of typhoons that follow two different tracks: typhoons that move westward toward the South China Sea and then turn northward, and typhoons that move northward toward the East China Sea and then turn westward. Based on dynamical differences between the typhoons taking these different tracks, he devised a new "bogus" typhoon initialization scheme for a typhoon-track prediction model. The scheme resulted in



Shengjun Zhang

simulating more realistic tracks than previous schemes. At CAMS, he also studied the assimilation of wind-profiler data and its effect on numerical simulation of typhoon tracks. This research showed him the need for remote sensing data in determining such things as the structure, track, and intensity of tropical cyclones. He is therefore now working on assimilating satellite data into models in order to improve the numerical simulation and forecasting of typhoons.

At the IPRC, Shengjun Zhang is working with **Tim Li** on 4D-variational satellite data assimilation. He believes this focus will help him to understand better the evolution of typhoons.

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IPRC Bids Sayonara!

Postdoctoral Fellow **Yan Du**, who joined the IPRC in 2004, has returned as research scientist to the South China Sea Institute of Oceanology in Guangzhou. Visiting Researcher **Richard "Justin" Small**, who joined the IPRC as postdoctoral fellow in 2001, took a position in February with the Naval Research Laboratory (NRL), Stennis Space Center, Mississippi. One of three NRLs, the Stennis laboratory specializes in oceanography and modeling. Postdoctoral fellow **Yang "Ed" Yang**, who joined the IPRC in 2006, took a position with the National Institute of Water & Atmospheric Research in New Zealand. Atmospheric Specialist **Yongsheng Zhang**, who joined the IPRC as postdoctoral fellow in 1999, took a position in January 2008 with the Satellite Oceanography Group at the National Oceanographic Data Center in Silver Springs, Maryland. Data Assimilation Specialist **Xin Zhang**, who joined the IPRC as postdoctoral fellow in 2004, took a position in February 2008 as Software Engineer with the Data Assimilation Group at NCAR, where he develops and maintains the WRF 3D/4D-Var system.

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