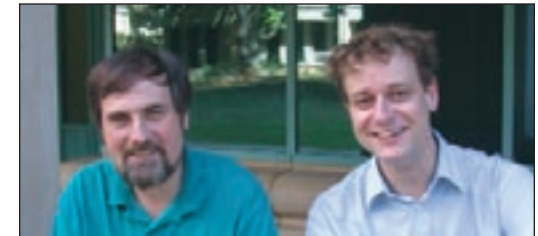


From left to right: Hitoshi Hotta, Toshio Yamagata, Saji Hameed (who obtained his Ph.D. with Professor Yamagata), Julian McCreary, and Lorenz Maggaard.

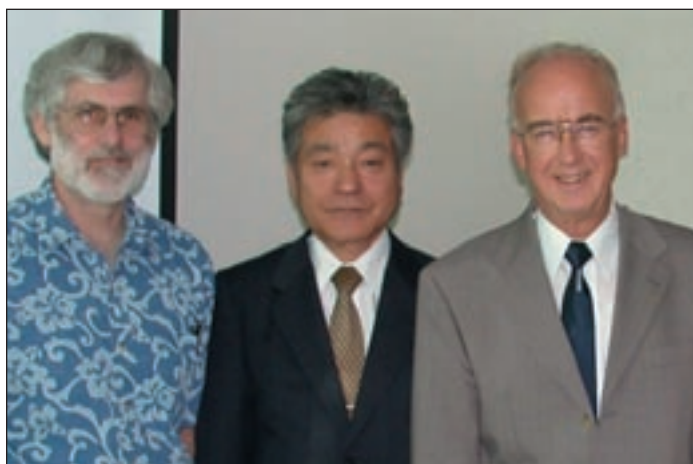
Kevin Hamilton (left), team leader of the Impacts of Global Environmental Change research at IPRC, has been appointed Chief Editor for the book series *Atmospheric and Oceanographic Sciences Library* by Kluwer Academic Publishers. **Gert-Jan Geraeds**, the publishing editor of this publishing house, visited Hamilton in February 2004 to discuss plans for this scientific monograph series.



Toshio Yamagata, Professor in the Department of Earth and Planetary Science, Graduate School of Science, University of Tokyo, and Director of Climate Variations Research, Frontier Research Program for Global Change, JAMSTEC, visited the IPRC in January 2004 after receiving the Sverdrup Gold Medal at the American Meteorological Society Annual Meeting in Seattle. At the IPRC, Yamagata gave a seminar, "The role of the Indian Ocean in climate forecasting with a particular emphasis on summer conditions in East Asia." A small gathering followed his talk.

IPRC's Japan-US Relation Renewed

Conceived under the "US-Japan Common Agenda for Cooperation in Global Perspective," the IPRC was established October 1997 through an agreement between the University of Hawai'i and the Japan Marine Science and Technology Center



IPRC Director Julian P. McCreary (left) with JAMSTEC Executive Director Masato Chijiya and IPRC Executive Associate Director Lorenz Magaard.

IPRC Bids Sayonara

Takuji Waseda has taken a professorship at the University of Tokyo, with a split-appointment between the Department of Systems Innovation and the Department of Environmental and Ocean Engineering. In the latter department he will be teaching in English a graduate course in environmental fluid modeling, which is part of a joint program between the University of Tokyo and the University of Sydney. Waseda was the first Frontier scientist to join the IPRC in October 1997. In collaboration with Humio Mitsudera, he conducted numerical modeling research that showed that the collision of an anticyclonic eddy with the Kuroshio could be a meander trigger. Waseda contributed significantly to the development of the Asia-Pacific Data-Research Center at the IPRC, and, during this past year, he was co-leader of the IPRC Regional Ocean Influences research team.

Fumiaki Kobashi, who joined the IPRC as a Frontier researcher in Summer 2002, has taken a position as tenured assistant professor in the Faculty of Marine Technology at

(JAMSTEC) and the National Space Development Agency of Japan. As of April 1, 2004, the cooperation between JAMSTEC and UH is renewed under a somewhat different framework that reflects the reorganization of JAMSTEC into the Japan Agency for Marine-Earth Science and Technology (retaining the acronym JAMSTEC) as an autonomous Japanese research and development institution, established under a special law but still funded by the Japanese Government. The new JAMSTEC President **Yasuhiro Kato** and UH President **Evan S. Dobelle** have signed a Memorandum of Understanding covering the next 5 years as well as a Cooperative Agreement for the first year (April 2004–March 2005), which was signed also by JAMSTEC Executive Director **Masato Chijiya**. In conjunction with the renewal, Chijiya visited the university on March 10, meeting with Interim Vice Chancellor for Research and Graduate Education **Rolf-Peter Kudritzki** and Interim Dean of the School of Ocean and Earth Science and Technology **Klaus Keil**, as well as with IPRC Director **Julian McCreary**, and Executive Associate Director **Lorenz Magaard**.

Tokyo University of Marine Science and Technology, a new university that has resulted from a merger of Tokyo University of Mercantile Marine and Tokyo University of Fisheries. He will be teaching introductory physical oceanography classes. Interested in the mechanism that generates the North Pacific Subtropical Countercurrent, he conducted research at the IPRC on the North Pacific subtropical gyre, particularly the subsurface subtropical front and subtropical mode water.

Takahiro Endoh, a Frontier researcher at the IPRC since Summer 2001, has taken a postdoctoral research position with the Oceanic and Atmospheric Science Group, Department of Earth and Planetary Science, University of Tokyo. He will be working on a project called "Sustainable Coexistence of Humans, Nature and the Earth." Conducting experiments with an ocean general circulation model, he aims to clarify the global mapping of diapycnal mixing rates in the abyssal ocean, which affect the dynamics of the meridional overturning circulation and hence, climate.

New IPRC Staff



Yan Du joined the IPRC in March 2004 as a postdoctoral fellow. Upon completing his undergraduate work in physical oceanography at the Ocean University of Qingdao (now the Ocean University of China), Du continued graduate work in this field at

Qingdao. He recalls his supervisor, Professor Guo Peifang: “He was a specialist on ocean waves and the application of satellite altimeter data. From him, I learned the significance and purpose of ocean research, how to deal with *in situ* and remote sensing data, and how to analyze information from observations. One project, especially, taught me research procedures and made me aware of the importance of collaboration.”

In spring 1999, after finishing his Ph.D. coursework, Du began work with Professors Shi Ping and Wang Dongxiao at the Laboratory of Tropical Marine Environmental Dynamics at the South China Sea Institute of Oceanology. Just after having arrived at Guangzhou, he took part in a research cruise of the South China Sea. “From that voyage, I got an understanding of the South China Sea...currents, waves, tides, temperature and salinity structure. It made me realize the importance of *in situ* observation.”

Collaborating with others at the institute, he wrote several papers on the ventilated thermocline and the mixed layer of the South China Sea and wrote his dissertation, The seasonal dynamics of the mixed layer and the thermocline in the South China Sea. “Looking back, those five doctoral years put me in touch with a field of physical oceanography that interests me, and they gave me experiences in the ocean dynamics of the monsoon area...from observation to theory, to stratification and circulation interactions, and numerical modeling.”

After obtaining his Ph.D. from the Ocean University of Qingdao in 2002, Du stayed at the South China Sea Institute and extended his research to ocean stratification adjustment and planetary waves—the ocean dynamics important in the monsoon dominated region.

At the IPRC, working with Tangdong Qu and the Regional Ocean Influences research team, Du is studying upwelling and its impact on sea surface temperature in the East Indian Ocean. “I personally think ocean dynamics are especially important in the seasonal and annual variability of the Asian-Australian monsoons, which in turn affect Asian climate and even the global climate.”

Andrei Natarov came as a postdoctoral fellow to the IPRC in January 2004. “I loved the physics competitions, the challenge of solving the problems,” he recalls from the time he was growing up in the historical city of Belgorod, in Russia. “If I didn’t solve a problem, I’d keep on thinking about it.” After



visiting the Moscow Institute of Physics and Technology, he knew he wanted to study there, “because the students were having so much fun.” Once at the institute, he quickly settled on fluid mechanics: This could be felt and seen, in contrast to

abstract quantum mechanics; and since he needed to focus on a subject, he chose the ocean. Analytical modeling became his field. “There you can capture the interplay among parameters in a single stroke. Analytically solvable models generate a lot of useful information.”

Interested in research in the United States, Natarov spent 1994 at the University of Michigan’s Department of Atmospheric, Oceanic, and Space Sciences. He liked Michigan so much, and he must have impressed his professors, that as soon as he graduated from the Moscow Institute in 1996, he returned to Michigan on a Regent Scholarship. Focusing on the very stable equatorial Kelvin waves for his dissertation research, he confirmed mathematically the conjecture of John Boyd, his supervisor, that when the phase speed equals the current velocity, these waves will be destabilized by horizontally sheared flow.

After completing his Ph.D. at Michigan in 2001, Natarov headed to Hawai‘i to work on the dynamics of internal waves with Peter Müller, professor of oceanography at the University of Hawai‘i. Internal waves caught his interest, he says, “Because they are a curious phenomenon, they behave so differently from regular waves. For example, when a wave with small amplitude reflects off the ocean bottom it may suddenly have a large amplitude.”

Now at the IPRC, Natarov is exploring inertial instability, double diffusion, and equatorial interleaving with Kelvin Richards, leader of the Regional Ocean Influences research team. Why? “Increasing resolution of equatorial ocean models has not improved model outputs as expected. Some important physics are missing that should be parameterized”...a good hunch is that the missing physics have to do with equatorial lateral mixing. Natarov plans to find out!