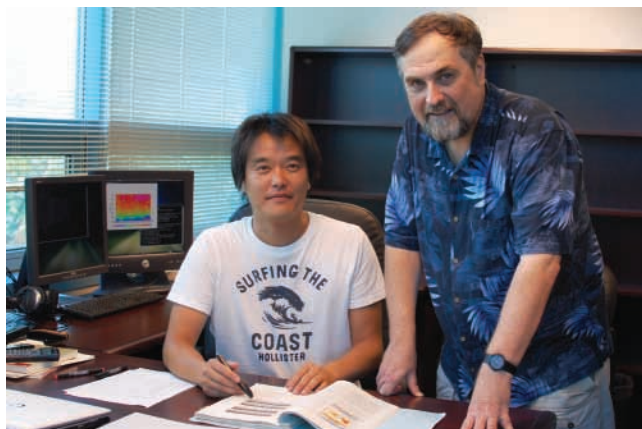


V I S I T I N G S C H O L A R S

Modeling the Stratosphere

Yoshio Kawatani, senior scientist with the Global Change Projection Research Program of JAMSTEC's Research Institute for Global Change (RIGC), visited IPRC for several weeks in August and then again in October. Kawatani is collaborating with IPRC Director **Kevin Hamilton** on projects that involve modeling of the dynamics and composition of the stratosphere. The focus in these recent visits was on modeling the stratospheric response to global warming and on the question of whether observations support their model simulations of long-term stratospheric climate trends.



Yoshio Kawatani with Kevin Hamilton.

Tokyo Storm Runoff Model

Akira Kawamura of the Tokyo Metropolitan University, Japan, visited the IPRC from August 22 to September 14, 2012. Hosted by IPRC's **Yuqing Wang**, Kawamura had extensive discussions with IPRC scientists on the hydrometeorology of rainstorms. In urban areas such events often lead to disastrous floods. The scientists also explored possible collaborative research in the areas of hydrometeorology and water resources in Asia and Pacific regions.

During his visit, Kawamura gave an IPRC seminar on urban floods entitled "Introduction of the distributed urban storm-runoff model [Tokyo Storm Runoff – (TSR) model] with an advanced GIS (geographical information system) catchment delineation." In his presentation, he introduced the comprehensive flood-control measures being taken in Tokyo. The measures include both structural and non-structural approaches. He explained details of the TSR model

proposed by his research group. The TSR model precisely describes the spatial characteristics of an urban catchment that traces with precision the rainfall runoff and inundation processes.

Kawamura's visit to IPRC was funded by the Tokyo Metropolitan Government, Japan, under the research project "Solutions for the water-related problems in Asian Metropolitan areas" with Kawamura as the representative.



Akira Kawamura with Yuqing Wang.

Astronomical Theory of Climate

In June, IPRC's paleoclimate research team, led by **Axel Timmermann**, welcomed **André Berger**, Université Catholique de Louvain, Belgium, and his colleague **Quizhen Yin**. Berger is well known for his pioneering work on the Astronomical Theory of Paleoclimate and the impact of solar insolation on the ice-age cycles during the last 2.5 million years. While at the IPRC, he gave a public lecture entitled "Astronomical Theory of Climate: A Review."

Berger discussed with the paleoclimate team the latest developments in numerical Earth-System-modeling on the beginning and termination of ice ages. Berger and Yin are currently working on the puzzling question why Antarctic ice-core records show cooler interglacial periods in the earlier parts of the 800,000-year-long proxy records than in the more recent interglacial periods. Discussions also centered around the latest developments in IPRC's paleoclimate model LOVECLIM, which now includes interactively coupled 3-dimensional thermomechanical ice-sheets for the Northern Hemisphere and Antarctica.

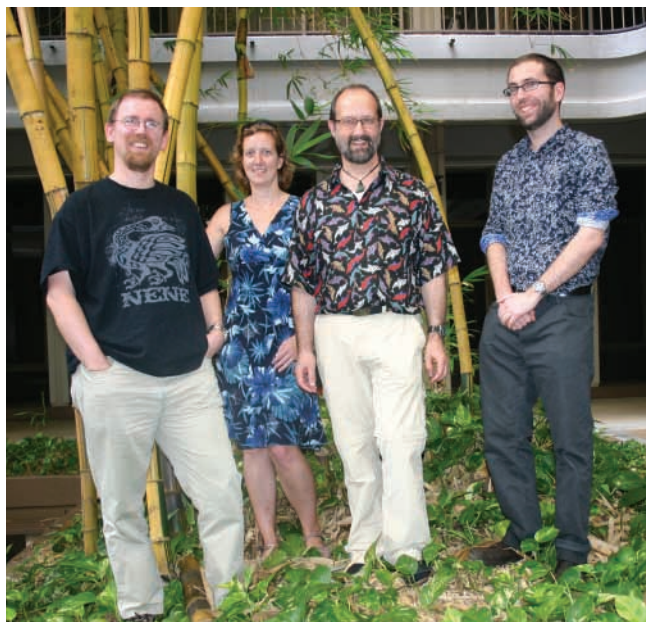
Berger also met individually with Postdoctoral Fellow **Tobias Friedrich**, JAMSTEC visitor **Megumi Chikamoto**, and PhD student **Michelle Tigchelaar**, exchanging ideas and results on marine carbon-cycle dynamics and Antarctic ice-sheet-ocean interactions. Both processes are fundamental active components of the Earth Climate System that translate the astronomical forcing into changes in the hydrological and carbon cycles on land and in the ocean.



André Berger and Axel Timmermann.

Past Ocean Climates

In late November, the paleoclimate group welcomed several scholars working in the areas of past ocean climates and ice-core-sediment data archives. **Tom Russon**, University of Edinburgh, gave a seminar titled “The extent of



From left, Axel Timmermann, Natalie Woods, Gerhard Kuhn, and Tom Russon.

unforced ENSO changes over the last millennium.” Gerhard Kuhn from the Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany, is a co-author with IPRC’s **Axel Timmermann** and **Tobias Friedrich** and IPRC’s JAMSTEC visitor **Megumi Chikamoto** on an article dealing with the millennial-scale variability of the Antarctic Ice Sheet throughout the last deglaciation. **Nathalie Dubois** (Woods Hole Oceanographic Institute) also has research interests in paleoceanography and in climate-related changes in the ocean circulation and their impact on marine ecosystems.

New Black Sea Climatology

IPRC’s Senior Scientist **Nikolai Maximenko** is working with **Gleb Pantelev** (International Arctic Research Center, University of Alaska, Fairbanks) and with scientists from the P.P. Shirshov Institute of Oceanology in Moscow on a project that synthesizes the wealth of satellite and in situ observations in a data-assimilating numerical model of the Black Sea. The project will provide the first high-quality estimate of the mean state of the Black Sea, including a three-dimensional climatology with dynamically consistent fields of temperature, salinity, and currents. The new climatology will be available on the APDRC website and is expected to have multiple scientific, operational, and managerial applications.

Funding for the project comes from the US Civil Research & Development Foundation and the Russian Foundation for Basic Research.



Nikolai Maximenko with Gleb Pantelev.