International Pacific Research Center

April 2015 - March 2016

School of Ocean and Earth Science and Technology
University of Hawai‘i at Mānoa

CONTENTS

The International Pacific Research Center

Conceived under the "US–Japan Common Agenda for Cooperation in Global Perspective," the International Pacific Research Center (IPRC) was established in 1997 within the School of Ocean and Earth Science and Technology at the University of Hawai'i at Mānoa. The IPRC mission is "To provide an international research environment dedicated to improving mankind's understanding of the nature and predictability of climate variations and change in the Asia-Pacific region, and to developing innovative ways to utilize knowledge gained for the benefit of society." The core support for the IPRC comes from the State of Hawai'i through the University and from the principal supporting agencies: the Japan Agency for Marine-Earth Science and Technology (JAMSTEC), and NOAA. Financial support for our research is also provided by other government agencies in the US and abroad.

Asia and the Pacific region are home to over half the world's people, all of whom are affected by variations in the climate system. IPRC researchers conduct modeling and diagnostic studies to document these variations and understand their causes, whether such causes are purely natural or have a human component. Through advances in basic research, the IPRC contributes to improving environmental forecasting for the Asia-Pacific region. One focus of IPRC investigations is the understanding of key phenomena rooted in the tropics, such as the El Niño-Southern Oscillation of the ocean-atmosphere system, monsoon circulations, interannual variability in the Indian Ocean, intraseasonal oscillations of the tropical atmosphere, and tropical cyclones. Other examples of important issues for IPRC study include the nature of decadal variability in the extratropical North Pacific Ocean, the dynamics of the very strong Kuroshio and Oyashio ocean currents in the western North Pacific and the role of marginal seas in the climate system. Concerns about climate change are addressed through modeling studies of past climate and through assessment of model predictions for future trends in climate.

国際太平洋研究センター

国際太平洋研究センター（IPRC）は、「地球的展望に立った協力のための日米共通課題」のもと、1997 年にハワイ大学マノア校の海洋地球科学技術学部内に設立されました。その使命は、「国際色豊かな研究環境を創り、アジア・太平洋地域の気候変動及び変化について、その性質と予測可能性に対する人類の理解を向上させ、そして得られた知見を社会に役立てるために活用する革新的な手段を生み出すこと」です。IPRC の研究費は主に、ハワイ大学を通してハワイ州から、また主要支援機関である海洋研究開発機構、NOAA から支援されています。さらに米国内外のその他の政府機関からも支援を受けています。

アジア・太平洋地域は世界人口の半分以上が居住する地域で、気候系の変動はこれらの人々すべてに影響を及ぼします。そのような気候変動には純粋な自然現象であるものも人類活動が関係したものもありますが、IPRC では、それらを記述し原因を探るため、モデルによる研究や診断的研究を実施しています。このような基礎研究を進展させることでアジア・太平洋地域の環境予測の改善に大きく貢献しています。現在 IPRC では、エルニーニョ・南方振動、モンスーン循環、インド洋の経年変動、熱帯大気の季節内振動、そして熱帯低気圧といった、熱帯起源の現象に注目して研究を行っています。その他の重要な課題として、北太平洋亜熱帯域における十年規模変動の性質、西部北太平洋の強い海流である黒潮・親潮の力学、気候系での縁辺海の役割に関する研究を行っています。さらに、過去の気候のモデル研究やモデルによる将来予測の評価により、気候変化に関する様々な課題に取り組んでいます。

Foreword

This report summarizes the activities of the International Pacific Research Center for the period April 1, 2015–March 31, 2016. The IPRC performs research to enhance understanding of the nature and mechanisms of climate variability and change, and to improve the tools for modeling and forecasting the climate system.

Brief reports on a number of selected IPRC research highlights during this period are available on the IPRC website (iprc.soest.hawaii.edu). Easy access to the abstracts of papers is also available at the website via the List of Publications.

The IPRC has a scientific staff of over 50, including faculty, researchers, postdoctoral fellows, and long-term scientific visitors. IPRC faculty members also supervise graduate students in the Atmospheric Sciences and Oceanography departments of the University of Hawai‘i at Mānoa.

In addition, through our Asia-Pacific Data-Research Center (APDRC), the IPRC operates a web-based server system that makes data resources readily accessible to IPRC researchers, the international climate community, and the wider public.

The staff of the IPRC are grateful to JAMSTEC as well as to NOAA and other US and foreign science agencies for their continued support of our activities. We also acknowledge the State of Hawai‘i for its sponsorship of the IPRC through the University of Hawai‘i.

Kelvin J. Richards
Director

The Year's Publications

Published

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Xing, W., B. Wang, and S.-Y. Yim: Peak-Summer East Asian Rainfall Predictability and Prediction Part I: Southeast Asia. *Clim. Dyn.*, IPRC-1091.

Yang, S., and T. Li: Intraseasonal variability of air temperature over the mid-high latitude Eurasia in Boreal Winter. *Clim. Dyn.*, IPRC-1163.

Zhu, Z., and T. Li: The statistical extended-range (10-30-day) forecast of summer rainfall anomalies over the entire China. *Clim. Dyn.*, IPRC-1172.

The Year's Seminars

2016

March 28 — Yi Ming, GFDL/NOAA and Princeton University
Sahel rainfall response to a uniform ocean warming; Recent advances in idealized modeling

March 15 — Gerald Meehl, National Center for Atmospheric Research (NCAR), Boulder Colorado
Hiatus or not? Understanding the climate of the early 21st century

March 9 — Yoshimitsu Chikamoto, IPRC
*Dynamical Climate Prediction and Application****

February 16 — Yoo-Geun Ham, Earth System and Environmental Science, Chonnam National University, South Korea
*Inter-model diversity on the ENSO simulation****

February 9 — Christopher Roach, IPRC
*Estimating Horizontal Mixing in the ACC from Argo Trajectories***

January 27 — Tim Li, IPRC Professor
*Cause of Evolution Asymmetry between El Nino and La Nina****

January 20 — Bin Wang, IPRC Professor
*From Matsuno-Gill theory to Madden-Julian Oscillation theory****

January 5 — Ali Belmadani, University of Concepcion, Concepcion, Chile
*Stationary and transient striations as a hint for an organized mesoscale eddy field in the eastern South Pacific***

2015

October 27 — Franziska Hanf, Alfred Wegener Institute, University of Potsdam, Germany
*Moist dynamical processes during breaks of the South Asian summer monsoon: A modelling study with the atmospheric regional climate model HIRHAM5**

October 6 — Flavio Lehner, Climate and Global Dynamics Laboratory, NCAR
*Climate and carbon cycle response to forcing during the last millennium and some issues of model-data comparison**

September 23 — Jennifer Griswold & Fei-Fei Jin, UH Atmospheric Sciences; Tim Li & Yuqing Wang IPRC
*Atmospheric Research at UH Manoa, Round 2****

September 17 — Axel Timmermann, IPRC Professor
*Transbasin Climate Connections: Implications for Western Pacific Sea-Level Acceleration, California Drought and the Global Warming Hiatus*****

August 27 — H. Annamalai, IPRC
*Monsoon and the Indian Ocean: a two-way interactive system*****

August 24 Xuhua Cheng, South China Sea Institute of Oceanology
Intraseasonal-to-semiannual variability of sea-surface height and eddy activity in the Bay of Bengal

August 20 Long Cao, Zhejiang University of China
Model ocean carbon cycle and acidification under global warming and geoengineering

August 19 Laurie Menviel, University of New South Wales, Australia
Antarctic Bottom Water influence on the last glacial and deglaciation

April 28 Tangdong Qu, IPRC
*Sea surface salinity variability in the equatorial Pacific**

April 27 Peter Black, Science Application International Corporation, Monterey, California
Hurricane outflow structure observed using dropsondes deployed from high-altitude manned and unmanned research aircraft

April 21 Chunxi Zhang, IPRC
*Dynamical downscaling of the climate for the Hawaiian Islands: Present-day and future change**

* IPRC Symposium
**IPRC Discussion/Seminar
*** Joint IPRC-Atmospheric Sciences Seminar
**** Joint IPRC-Oceanography Seminar

The Year's Workshops and Conferences

2016

March 29 — *IPRC 15th Annual Symposium*
East-West Center, Asia Room, Hawai'i Imin International Conference Center, University of Hawai'i at Mānoa, Honolulu, Hawai'i

January 19-21 — *Workshop on Mission Concepts for Marine Debris Sensing*
East-West Center, Asia Room, Hawai'i Imin International Conference Center, University of Hawai'i at Mānoa, Honolulu, Hawai'i

2015

Nov, 2014-Oct — *IPRC 14th Annual Symposium*
Pacific Ocean Science & Technology Building, Room 414 (POST 414)

Visiting Scholars

2016

Stephan Obrochta	Akita University, Japan	3/14 – 3/20
Hioyuki Murakami	Geophysical Fluid Dynamics Laboratory	3/8 – 3/25
Per Knudsen	Technical University of Denmark	2/29 – 3/18
Paul Spence	Climate Change Research Center, Australia	2/29 – 3/4
Taoyong Peng	World Meteorological Organization, Switzerland	2/14 – 2/26
Jong-Seong Kug	Pohang University of Science and Technology, South Korea	2/14 – 2/18
Yoo-Guen Ham	Chonnam National University, South Korea	2/14 – 2/18
June-Yi Lee	Pusan National University, South Korea	1/25 – 2/5
Mary Crowley	Ocean Voyages Institute	1/19 – 1/21
Kara Lavendar Law	Sea Education Association	1/19 – 1/21
Thomas Mace	Mace Geospatial LLC	1/19 – 1/21
Delwyn Moller	Remote Sensing Solutions	1/19 – 1/21
John Arveson	Cirrus Digital Systems	1/19 – 1/21
Ved Chirayath	Stanford University	1/19 – 1/21
Yi Chao	Remote Sensing Solutions	1/19 – 1/21
Gregory Asner	Carnegie Institution	1/19 – 1/20
Ali Belmadani	University of Concepción, Chile	1/4 – 1/15

2015

In-Sik Kang	Seoul National University, South Korea	12/18 – 1/18
Takuya Sagawa	Center for Marine Environmental Studies, Ehime University, Japan	12/21 – 12/27
Masafumi Kamachi	JMA/MRI, Japan	12/17 – 12/19
Motoki Nagura	JAMSTEC, Japan	10/26 – 11/7
Franziska Hanf	Alfred Wegener Institute, Germany	10/20 – 11/30
Xi Guo	Nanjing University, China	10/16 – 11/15
Flavio Lehner	Climate and Global Dynamics Laboratory, NCAR	10/5 – 10/15
Matthew England	Climate Change Research Center, University of New South Wales, and ARC Centre of Excellence for Climate System Science, Australia	10/5 – 10/8
Long Cao	Zhejiang University, China	8/16 – 8/22
Laurie Menviel	University of New South Wales, Australia	8/10 – 8/21
Yoshio Kawatani	JAMSTEC	8/3 – 8/7
Soon-Il An	Yonsei University Seoul, South Korea	7/24 – 8/9
Hae-Jeong Kim	APEC Climate Center, Busan, South Korea	7/13 – 7/31
Ying Liu	Laboratory for Climate studies, National Climate Center, China Meteorological Administration	7/1 – 9/30

Oliver Elison Timm	University of Albany	6/19 – 6/30
Fabian Schloesser	University of Rhode Island	6/15 – 6/19
David Pollard	Penn State University	6/5 – 6/24
Li Zhou	Chinese Academy of Sciences	6/1 – 9/30
Melanie Vianna Alencar	Monterey Bay California Stae University	5/25 – 7/17
Wenju Cai	Commonwealth Scientific and Industrial Research Organisation, Australia	5/4 – 5/11
Peter Black	Naval Research Laboratory/Science Applications International Corporation	4/27 – 4/30
Bruce Cornuelle	University of California, San Diego	4/16 – 4/17
Jin Zhang	Ocean University of China, Qingdao	11/16/14 – 5/15