

The background of the cover is a photograph of a traditional Japanese stone wall, likely part of a castle or park, with a dense canopy of cherry blossom trees in full bloom behind it. The blossoms are a pale pink color. A dark green pine tree is visible on the right side of the image. The sky is a pale, overcast blue. The text is overlaid on the upper and lower portions of the image.

**INTERNATIONAL PACIFIC  
RESEARCH CENTER  
APRIL 2011 – MARCH 2012 REPORT**

**SCHOOL OF OCEAN AND EARTH SCIENCE AND TECHNOLOGY  
UNIVERSITY OF HAWAII AT MĀNOA**

## CONTENTS

<b>THE INTERNATIONAL PACIFIC RESEARCH CENTER</b>	<b>i</b>
<b>FOREWORD</b>	<b>1</b>
<b>PUBLICATIONS</b>	<b>2</b>
<b>WORKSHOP AND CONFERENCES</b>	<b>6</b>
<b>SEMINARS</b>	<b>7</b>
<b>INFORMAL DISCUSSIONS</b>	<b>10</b>
<b>IPRC VISITING SCHOLARS</b>	<b>12</b>
<b>IPRC RESEARCH SUPPORT</b>	<b>13</b>

## 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), NASA and NOAA. Financial support for our research is also provided by other government agencies in the US and abroad. The IPRC now has an annual budget of roughly 7 million dollars.

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、NASA、NOAAから支援されています。内外のその他の政府機関からも支援を受けており、現在およそ七百万ドルの年間予算により運営しています。

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, 2011–March 31, 2012. 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.

The IPRC now has a scientific staff of over 50 including faculty, researchers, postdoctoral fellows, and long-term scientific visitors. IPRC faculty also supervise several graduate students in the Meteorology 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.

This Annual Report omits the extended narratives on individual projects that had been a feature of earlier reports. Note that selected IPRC **research highlights** are reported quarterly on our web site. Also, starting in 2012, the **list of publications** on our web site has links for easy access to each paper's abstract. Finally the IPRC's semiannual newsletter, *IPRC Climate*, includes brief reports on highlights of ongoing research projects and other activities at the IPRC. Issues of the *IPRC Climate* are available online.

The staff of the IPRC are grateful to our principal supporting agencies JAMSTEC, NASA and NOAA, and to the State of Hawai'i for its sponsorship of the IPRC through the University of Hawai'i.



Kevin P. Hamilton  
Director

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- Zhang, S.-J., W. Liu, S.-P. Xie, and X. Meng, 2011: The formation of a surface anticyclone over Yellow and East China Seas in spring. *J. Meteor. Soc. Japan*, **89**, 119–131, DOI:10.2151/jmsj.2011-202. IPRC-770.
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- Zhou, X., and B. Wang, 2011: Mechanism of concentric eyewall replacement cycles and associated intensity change. *J. Atmos. Sci.*, **68**, 972–988, doi: 10.1175/2011JAS3575.1. IPRC-743.
- Zhou, X., B. Wang, X. Ge, and T.Li, 2011: Impact of secondary eyewall heating on tropical cyclone intensity change. *J. Atmos. Sci.*, **68**, 450–456, doi: 10.1175/2010JAS3624.1. IPRC-735.

## Book

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## THE YEAR'S WORKSHOPS AND CONFERENCES

DATE	TITLE
March 5 - 9, 2012	WCRP Workshop on CMIP5 Climate Models
March 6, 2012	Integrating Multi-model Ensembles in Global and Regional Climate Change Studies: Estimating and Understanding Past, Present, and Future Climate Change
March 1, 2012	Workshop on Using Paleo-climate Model/Data Comparisons to Constrain Future Projections "
January 17 – 19, 2012	Workshop: Tropical Dynamics and the MJO
January 9 –10, 2012	Workshop: Global Monsoon Variability and Change
December 1 – 2, 2011	Fourth OFES International Workshop and Second ESC-IPRC Joint Workshop on Computationally-Intensive Modeling of the Climate System
November 14, 2011	Mitigating the Impact of Tsunami Debris on Coastlines
October 17 –20, 2011	APEC Climate Symposium
September 15, 2011	Eleventh Annual IPRC Symposium
July 7, 2011	Minisymposium on Regional Climate

## THE YEAR'S SEMINARS

DATE	SPEAKER	AFFILIATION	TITLE
March 19, 2012	Samantha Stevenson	IPRC	<i>Mechanisms of the ENSO Response to CO2 Increases</i>
March 13, 2012	Scott Power	Bureau of Meteorology, Sydney, Australia	<i>Increasing Information Content of 21st Century Projections; and Decadal Climate Variability in the South-west Pacific</i>
March 12, 2012	Rob Chadwick,	Met Office Hadley Centre, United Kingdom	<i>Patterns of tropical rainfall, SST, and circulation change in idealized CO2 removal experiments</i>
*February 28, 2012	Noel Davidson	Center of Australian Weather and Climate Research (CAWCR), Sydney, Australia	<i>Tropical Cyclone Research at CAWCR</i>
February 28, 2012	Peter G. Black	SAIC Inc./ Naval Research Laboratory Monterey, California	<i>Typhoons Fanapi and Megi from ITOP2010: Ocean interaction and extreme-wind boundary layers</i>
**February 10, 2012	Yign Noh	Department of Atmospheric and Environmental Sciences, Yonsei University, Korea	<i>Investigation of Mixing Process in the Upper Ocean Using LES</i>
*February 8, 2012	Sarah Kang	Ulsan National Institute of Science and Technology, Korea	<i>Impact of Polar Ozone Depletion on Mean and Extreme Precipitation</i>
February 3, 2012	Ingo Richter,	Japan Agency for Marine Earth Science and Technology	<i>Two modes of variability in the equatorial Atlantic: ENSO-like vs. off-equatorially forced events</i>
**February 2, 2012	Ali Belmadani	IPRC	<i>Wind-forced baroclinic beta-plumes, and an application to the Hawaiian Lee Countercurrent.</i>
*February 1, 2012	In-Sik Kang	Seoul National University, Seoul, Korea	<i>Some Thought and Attempt of Cloud Microphysics in a GCM</i>
**January 26, 2012	Niklas Schneider,	IPRC and Department of Oceanography UHM	<i>The response of the atmospheric Ekman layer and Ekman pumping to sea surface temperature fronts</i>
January 11, 2012	Tomoki Tozuka,	The University of Tokyo, Tokyo, Japan	<i>Roles of the South China Sea Throughflow in the Global Climate as Revealed by a CGCM</i>
January 9, 2012	Pedro Vélez-Belchiacute,	Scripps Institution of Oceanography, La Jolla, California	<i>Eddy-induced Kuroshio intrusions in the East China Sea shelf</i>
January 6, 2012	Seok-Woo Son	McGill University, Montreal, Canada	<i>The Effect of Topography on Storm Track Intensity and its Implication on Midwinter Suppression of the Pacific Storm Track</i>
December 16, 2011	Gerald A. Meehl	National Center for Atmospheric Research, Boulder, Colorado	<i>Understanding the U.S. east-west differential of heat extremes in terms of record temperatures and the "warming hole"</i>

DATE	SPEAKER	AFFILIATION	TITLE
December 7, 2011	Pierre Augier	KTH Royal Institute of Technology, Stockholm, Sweden	<i>Turbulence in strongly stratified fluids: Cascade processes</i>
*December 7, 2011	Neven S. Fuckar	IPRC	<i>On the role of extratropical ocean circulation in the tropical-extratropical and interhemispheric interaction</i>
November 28, 2011	Yosuke Yamashiki	Disaster Prevention Research Institute, Kyoto University, Kyoto, Japan	<i>Biwa 3D circulation model and its application for impact assessment under global climate change</i>
*November 2, 2011	Yanping Li	IPRC	<i>Excitation of Rainfall Over the Tropical Western Pacific</i>
**October 19, 2011	Lu Wang	Visiting Scholar, IPRC	<i>Intraseasonal SST Variability and Air-Sea Interaction over Kuroshio Extension Region during Boreal Summer</i>
October 17, 2011 IPRC Public Lecture in Climate Science	Rosina Bierbaum,	University of Michigan School of Natural Resources and Environment, Ann Arbor, Michigan	<i>Climate Change and Development: Avoiding the Unmanageable and Managing the Unavoidable</i>
***October 14, 2011	Jagadish Shukla	George Mason University and Institute of Global Environment and Society, Calverton Maryland	<i>On the Role of Unforced Multidecadal Variability in Twentieth Century Global Warming</i>
*October 12, 2011	Pang-Chi Hsu	IPRC	<i>Role of the Boundary Layer Moisture Asymmetry in Causing the Eastward Propagation of the Madden-Julian Oscillation</i>
**September 29, 2011	Francois Ascani	IPRC and Department of Oceanography, UHM	<i>Do submesoscale processes inject nitrate pulses into the euphotic zone around station ALOHA?</i>
September 26	Tommy G. Jensen	Naval Research Laboratory, Stennis Space Center, Mississippi	<i>Wave-current interaction in the Florida Current in a coupled atmosphere-ocean-wave model</i>
*September 21, 2011	Kevin P. Hamilton	IPRC and Department of Meteorology, UHM	<i>The QBO Story: From the Shrewd Intuition of a 19th Century Honolulu Amateur Scientist to Terraflop Numerical Simulations</i>
**September 1, 2011	Ryo Furue	IPRC and Department of Oceanography, UHM	<i>Density-driven flow along an eastern-boundary continental margin in an inviscid, variable-density layer model</i>
*August 31, 2011	Jae N. Lee	Jet Propulsion Laboratory, Pasadena, California	<i>Two Satellite Remote Sensing Applications: (i) MISR Cloud/Aerosol and Their Variability Through ENSO, and (ii) MLS Diagnosis of CO and H2O Transport</i>
August 30, 2011	Matthew England	Climate Change Research Centre (CCRC), University of New South Wales, Sydney, Australia	<i>Role of Ocean Gateways in Regional Climate and Rainfall</i>

DATE	SPEAKER	AFFILIATION	TITLE
August 26, 2011	Masaki Satoh	RIGC, JAMSTEC, Yokosuka, and The University of Tokyo, Tokyo, Japan	<i>Global Nonhydrostatic Simulations by a Nonhydrostatic Icosahedral Atmospheric Model, NICAM: Intra-Seasonal Oscillations and Tropical Cyclones</i>
*August 25, 2011	Jiming Sun	Department of Meteorology, UHM	<i>A new explanation for the cumulus cloud formation with cloud droplet spectral broadening and ice particle multiplication</i>
May 16, 2011	Yuko M. Okumura	National Center for Atmospheric Research, Boulder, Colorado	<i>Low-frequency Climate Variability over Antarctica and Linkages to the Tropics: Analysis of Instrumental Data and Ice Core and Coral Records for the Past 100-200 Years"</i>

\* Joint IPRC-Meteorology Seminar

\*\* Joint IPRC-Oceanography Seminar

\*\*\* Joint IPRC-Meteorology-Oceanography Seminar

## INFORMAL DISCUSSIONS

DATE	SPEAKER	AFFILIATION	TITLE
March 1, 2012	Rui-Xin Huang,	Woods Hole Oceanographic Institution, Woods Hole, Massachusetts	<i>Adiabatic Density Surface and Mixing Path</i>
March 1, 2012	De-Zheng Sun,	NOAA/CIRES, Boulder, Colorado	<i>The Effect of ENSO Events on the Tropical Pacific Mean Climate</i>
February 27, 2012	Nils Fischer,	Max-Planck Institute for Meteorology Hamburg, Hamburg, Germany	<i>Evolution and Variability of Ocean Circulation in a Transient Holocene Simulation</i>
February 27	Dr. Peter G. Black	SAIC Inc./ Naval Research Laboratory Monterey, California	<i>Typhoons Fanapi and Megi from ITOP2010: Ocean interaction and extreme-wind boundary layers</i>
January 13, 2012	Kelvin Richards	IPRC and Department of Oceanography, UHM	<i>Mixing over the thermocline ridge in the Indian Ocean: Preliminary results from CINDY</i>
December 19, 2011	Talgat R. Kilmатов,	Far Eastern Federal University, Vladivostok, Russia	<i>Climatic ocean trends and possibility of structural instability</i>
November 9, 2011	Oceana Francis	International Arctic Research Center, University of Alaska, Fairbanks, Alaska	<i>Ocean wave conditions in the Chukchi Sea from in situ and satellite observations</i>
November 9, 2011	Gleb Panteleev,	International Arctic Research Center, University of Alaska Fairbanks, Alaska	<i>Performance of the adjointless 4dVar technique with community models</i>
September 14, 2011	Shoshiro Minobe	Hokkaido University, Sapporo, Japan	<i>New global gridded nutrient and oxygen datasets: Basic properties and trend-detection application</i>
September 23, 2011	Tommy G. Jensen	Naval Research Laboratory, Stennis Space Center, Mississippi	<i>Coupled Modeling of Air-sea Interaction in the Indian Ocean during an MJO</i>
June 24, 2011	Tsubasa Kodaira	University of Tokyo, Tokyo, Japan	<i>Numerical analysis on wake instability and vortex street in the geostrophic flow</i>
	Tomoya Nishida,	University of Tokyo, Tokyo, Japan	<i>Optimization of integrated weather routing system for sailing cargo ship</i>
	Takuji Waseda	University of Tokyo, Tokyo, Japan	<i>GPS-based wave observation using a moored oceanographic buoy in the deep oceans</i>
April 13, 2011	Peter Gleckler	Lawrence Livermore National Laboratory, Livermore, California	<i>Exploring the impact of model and data uncertainties in the detection and attribution of upper-ocean warming</i>

## IPRC VISITING SCHOLARS

The IPRC has a visiting scholar program. From April 2011 to March 2012, the following scholars visited the IPRC for one week or longer.

NAME	AFFILIATION	DATES
Harry Hendon	Bureau of Meteorology Research Centre, Melbourne, Australia	4/18/11–4/22/11
Toshiyuki Hibiya	University of Tokyo, Tokyo, Japan	4/18/11–4/22/11
Jee-Hoon Jeong	University Gothenburg, Gothenburg, Sweden	6/14/11–6/27/11
Yoshio Kawatani	JAMSTEC, RIGC, Yokosuka, Japan	7/19/11–8/24/11
Matthew England	University of New South Wales, Sydney, Australia	8/01/11–9/30/11
Jian Liu	Chinese Academy of Sciences, Beijing, China	8/01/11–10/31/11
Masaki Sato	University of Tokyo, Tokyo, Japan	8/02/11–8/28/11
Shayne MCGregor	University of New South Wales, Sydney, Australia	8/8/11–8/12/11
Hyung Jin Kim	JAMSTEC, RIGC, Yokosuka, Japan	8/29/11–9/02/11
Shoshiro Minobe	Hokkaido University, Sapporo, Japan	9/13/11–9/16/11
Tommy Jensen	Naval Research Laboratory, St. Louis, Mississippi	9/15/11–9/27/11
Akira Kuwano-Yoshida	JAMSTEC, ESC, Yokohama	10/3/11–12/20/11
Rosina Bierbaum	University of Michigan, Ann Arbor, Michigan	10/14/11–10/19/11
Jagadish Shukla	George Mason University, COLA, Calverton, Maryland	10/14/11–10/21/11
Chin-Seung Chung	APEC Climate Center, Busan, Korea	10/17/11–10/20/11
Soon-Chang Yoon	Seoul National University, Seoul, Korea	10/17/11–10/20/11
In-Sik Kang	Seoul National University, Seoul Korea	10/17/11–10/21/11
Young-Mi Min	APEC Climate Center, Busan, Korea	10/31/11–11/22/11
JunHyeok Son	Busan National University, Busan, Korea	10/31/11–11/22/11
Pierre Augier	KTH Royal Institute of Technology, Stockholm, Sweden	11/29/11–12/7/11
Erik Lindborg	KTH Royal Institute of Technology, Stockholm, Sweden	11/29/11–12/7/11
Bunmei Taguchi	JAMSTEC, ESC, Yokohama, Japan	11/29/11–12/13/11
Talgat Kilmатов	Far East Federal University, Vladivostok, Russia	12/3/11–12/13/11
Jung-Eun Chu	Pusan National University, Busan Korea	12/26/11–1/13/12

NAME	AFFILIATION	DATES
Pedro Vélez-Belchí	Scripps Institution of Oceanography, La Jolla, California	1/9/12–1/13/12
Tomoki Tozuka	University of Tokyo, Tokyo, Japan	1/10/12–1/13/12
Kunihiro Aoki	Hokkaido University, Sapporo, Japan	1/10/12–3/15/12
In-Sik Kang	Seoul National University, Seoul, Japan	1/13/12–2/13/12
Sarah M Kang	Ulsan National Institute of Science and Technology, Ulsan, Korea	1/13/12–2/13/12
Hisayuki Kubota	JAMSTEC, RIGC, Yokosuka, Japan	1/15/12–3/24/12
Toru Miyama	JAMSTEC, RIGC, Yokosuka, Japan	1/16/12–1/27/12
Ingo Richter	JAMSTEC RIGC, Yokosuka, Japan	1/23/12–2/10/12
Yign Noh	Yonsei University, Seoul, Korea	2/7/12–2/11/12
Ralf Bennartz	University of Wisconsin at Madison, Madison, Wisconsin	2/20/12–3/22/12
Yusuke Yokoyama	University of Tokyo, Tokyo, Japan	2/27/12–3/26/12
Yan Du	South China Sea Institute of Oceanology, Guangzhou, China	2/29/12–3/10/12
Jian Huang	Gangzhou Institute of Tropical & Marine Meteorology, Gangzhou, China,	3/1/12–5/31/12
Sasaki Yoshinori	Hokkaido University, Sapporo, Japan	3/5/12–3/10/12
Kenneth Sperber	Lawrence Livermore National Laboratory, Livermore, California	3/12/12–3/16/12

## IPRC RESEARCH SUPPORT

PROPOSAL TITLE	P.I. NAME	CO-P.I.	Funding Agency	Proposal Amount	Contract Years
Pacific Islands Climate Science Center	K. Hamilton		DOI / USGS	3,580,235	3/1/12 - 2/28/17
Near-Surface Measurements and Analysis of Temperature, Salinity, Wind Speed, and Rainfall in SPURS: the Maintenance of Subtropical Salinity Maximum	N. Maximenko		Univ. of Washington	139,741	3/1/11 - 2/28/14
Monitoring the North Pacific Marine Debris Through the Content of Ship Engine Filters	N. Maximenko		EPA	15,000	2/1/12 - 4/30/13
Organizing, Setting up, and Sponsoring the CMIP5 workshop	K. Hamilton		CSIRO	10,000	12/1/11 - 6/30/12
Detectability of Changes in the Walker Circulation in Response to Global Warming	P. DiNezio		NSF	29,951	1/9/12 - 3/31/13
Studies on Predictability of the Intraseasonal Variability in the East Asian Monsoon System	B. Wang	J.Y. Lee	Pusan Nat'l University	43,518	7/8/11 - 2/29/12
Global Monsoon Climate Change: Understanding, Prediction, and Adaptation	B. Wang	J.Y. Lee, J. Fu, K. Kikuchi, J.Y. Moon	Pusan National University	136,364	12/14/11 - 7/31/17
Capacity Building for an APCC Operational ISO MME System	B. Wang	J. Shukla, I.S. Kang, J.Y. Lee, X. Fu, B. Xiang	APCC	225,000	9/2/11 - 3/31/12
Collaborative Project: Ocean-Atmosphere Interaction From Meso- to Planetary-Scale: Mechanisms, Parameterization, and Variability	N. Schneider		DOE	241,876	7/1/11 - 6/30/14
Analysis and High-Resolution Modeling of Tropical Cyclogenesis during the TCS-08 and TPARC Field Campaign	T. Li		ONR	188,486	4/1/11 - 12/31/13
Developing Regional Climate Change Scenarios for Maldives	H. Annamalai		RIMES	20,000	8/2/11 - 12/1/11
Application of DYNAMO/AMIE...	J. Fu		NOAA	232,942	9/1/11 - 8/31/14
JAMSTEC Year 15	K. Hamilton		JAMSTEC	2,097,000	4/1/11 - 3/31/12
Enhancement of Data and Research Activities for Climate Studies at the International Pacific Research Center (IPRC)	K. Hamilton		NOAA	250,000	7/1/11 - 9/30/11
Collaborative Research: Downstream Impacts of the South Pacific Tropical Water	T.Qu		NSF	439,893	10/1/11 - 9/30/14



PROPOSAL TITLE	P.I. NAME	CO-P.I.	Funding Agency	Proposal Amount	Contract Years
Developing the Pacific Islands Ocean Observing System (PacIOOS): Pacific Circulation Modeling	N. Maximenko		NOAA	27,170	6/1/11 - 5/31/16
Comparison of Structure and Evolution Characteristics of Boreal Summer and Winter Intraseasonal Oscillations Derived from Reanalysis Products and Sate	T. Li		NOAA MAPP Program	58,674	9/22/11 - 8/31/12
Upscale Feedback of Tropical Synoptic-scale Variability to Intraseasonal Oscillations	T. Li		NSF	370,034	9/1/11 - 8/31/14
Type 2-L02170124 Collaborative Research: Investigating Decadal Climate Predictability and Climate Impacts (IDCPI) on the Western US	A. Timmermann	N. Schneider	NSF	598,771	4/1/11 - 3/31/16
Assessing ENSO regime changes in a changing climate	F.F. Jin	A. Timmerman	DOE	617,272	1/1/11 - 12/31/13
Near-Surface Measurements and Analysis of Temperature, Salinity, Wind Speed, and Rainfall in SPURS: the Maintenance of Subtropical Salinity Maximum	S. Riser	J. Nystuen, N. Maximenko	NASA	2,203,608	1/1/11 - 12/31/13
A Study of OTEC Environmental Interactions	G. Nihous	K. Richards	Lockheed Martin Corp	149,392	1/1/11 - 3/31/12
Early Life Stage Dispersal of Yellowfin Tuna (Thunnus Albacares)	K. Richards		NOAA / PFRP	121,984	7/1/09 - 9/30/12
High Resolution Dynamical Projections of Climate Changes for Hawaii and other Pacific Islands	K. Hamilton		US Fish and Wildlife Service / Dept of Interior	130,026	10/1/10 - 9/30/13
Climate Adaption Partnership for the Pacific (CAPP)	K. Hamilton		E.W. Ctr / NOAA	706,623	9/1/10 - 8/31/15
Pacific Decadal Variability and Central Pacific Warming El Nino in a Changing Climate	N. Schneider		DOE	268,250	10/15/10 - 9/14/13
Precipitation Climatology Projections for the Mid and Late 21st Century for the Main Hawaiian Islands	K. Hamilton		US Geological Survey / Dept of Interior	50,000	9/1/10 - 12/31/11
Intraseasonal to decadal variability and role of eddies in the low-latitude western boundary current off the Philippines	T. Qu		NSF	398,318	10/1/10 - 9/30/13
Dynamics of the boreal summer Intraseasonal oscillation: Multi-scale interaction	B. Wang	X. Fu, K. Kikuchi	NSF	597,427	8/15/10 - 7/31/13

PROPOSAL TITLE	P.I. NAME	CO-P.I.	Funding Agency	Proposal Amount	Contract Years
Improved Extended Range Prediction through a Bayesian Approach: Expoliting the Enhanced Predictability...	S.P. Xie		NOAA	74,000	8/1/10 - 7/31/13
Interannual variability of ocean vector winds near ocean fronts and coastal orography	S.P. Xie		NASA	556,370	7/22/10 - 7/21/14
Enhancement of data and research activities for climate studies at the International Pacific Research Center (IPRC)	K. Hamilton	P. Hacker J. Potemra	NOAA	1,489,789	7/1/10 - 9/30/11
Multi-model ensemble forecasts of Madden-Julian Oscillation	B. Wang	D. Waliser	NOAA / CTB	734,618	7/1/10 - 6/30/13
Collaborative Research: Mixing in the Equatorial Thermocline (MIXET)	K. Richards	G. Carter, E. Firing, A. Natarov	NSF	997,185	9/1/10 - 8/31/14
Climate Change Impacts on Critical Ecosystems in Hawaii and US Pacific Islands Territories	O. Elison Timm	T. Giambelluca	US Fish and Wildlife Service / Dept of Interior	232,233	9/24/10 - 12/31/12
Southern Hemisphere climate and carbon cycle response to orbital forcing during the last ~400,000 years	A. Timmermann		NSF	427,199	9/1/10 - 8/31/13
Dynamics of near-surface eastward flows in the South Indian Ocean	J. McCreary	R. Furue, J. Potemra	NSF	446,113	7/1/10 - 06/30/13
Determining natural and anthropogenic influences on ocean acidification across Micronesia	A. Timmermann		The Nature Conservancy	30,000	6/8/10 - 7/31/11
Improvement of APCC Seasonal Prediction and Assessment of characteristics and forecast of 2009/2010 Climate Anomalies	B. Wang	J.Y. Lee, J. Fu	APEC Climate Center	128,221	5/1/10 - 4/30/11
Estimating Ocean Mixing and Form Drag in the tropical Pacific	J. McCreary	R. Furue, P. Muller, K. Richards, N. Schneider	NASA	343,161	2/1/10 - 1/31/14
Initialization of Tropical Cyclone Structure for Operational Applications	T. Li		ONR	189,000	5/1/10 - 4/30/13
Sustaining rice production in a changing climate: Testing climate uncertainties and validating selected adaptation techniques on farmers fields	H. Annamalai		Norwegian Embassy	153,728	1/19/10 - 4/3/13
Basin-scale circulation and mesoscale dynamics of the Black Sea: implications for climate	N. Maximenko	A. Zatsepin	US CRDF	16,000	12/1/09 - 5/31/12
Assessing the Quality of Aquarius Sea Surface Salinity Measurements Using an Ocean State Estimation System	T. Qu		JPL / NASA	145,248	10/01/09 - 9/30/13

PROPOSAL TITLE	P.I. NAME	CO-P.I.	Funding Agency	Proposal Amount	Contract Years
Aquarius salinity calibration error quantification, signal-to-noise analyses, and resolution studies	N. Maximenko	J. Potemra, P. Hacker	NASA	538,206	10/1/09 - 9/30/13
Improve the Representation of Convection-PBL Interactions in Two Global General Circulation Models (CAM & ECHAM)	X. Fu	B. Wang	DOE	491,580	9/15/09 - 12/31/11
Collaborative Research: Eddy Dynamics and Impacts of Low-Frequency Variations in the California Current System (supplemental)	N. Schneider		NSF	382,619	8/19/09 - 2/28/13
Next generation aerosol-cloud microphysics for advanced high-resolution climate predictions	K. Hamilton		Univ. of Wisconsin / DOE	292,426	8/15/09 - 8/14/12
Mechanisms and effects of tropical Indian Ocean variability	S.P. Xie		NSF	525,408	8/15/09 - 7/31/13
Evaluation and Improvements of Cloud and Precipitation Physics in the Operational Hurricane WRF Model at NOAA/EMC	Y. Wang	V. Phillips	NOAA / JHT	184,547	8/1/09 - 7/31/12
Enhancement of data and research activities for climate studies at the International Pacific Research Center (IPRC)	K. Hamilton	P. Hacker J. Potemra	NOAA	1,742,160	7/1/09 - 9/30/11
Remote versus local forcing of intraseasonal variability in the IAS region: Consequences for prediction	S.P. Xie		NOAA/CPPA	132,174	7/1/09 - 6/30/13
Collaborative Research: Toward Improved Projections of Abrupt Response to Anthropogenic Forcing: Combining Paleoclimate Proxy and Instrumental Observations with an Earth System Model	A. Timmermann		NSF	228,675	6/15/09 - 5/31/13
Study of tropical cyclone intensity change and genesis with EOS observations and WRF model	B. Wang	H. Su, B Kahn	NASA	646,197	1/1/09 - 3/25/14
A Tropical Cyclone Genesis Forecast Model	T. Li		ONR	176,400	2/16/09 - 5/31/12
Dynamics of the descending branch of the Atlantic Meridional Overturning Circulation	J. McCreary	R. Furue, A. Timmerman	NSF	443,595	6/1/09 - 5/31/13
Toward reducing climate model biases in the equatorial Atlantic and adjacent continents	S.P. Xie	I. Richter	NOAA / CPO	342,124	7/1/08 - 6/30/13
Precipitation Climatology Projections for Mid and Late 21st Centuries for the Main Hawaiian Islands	K. Hamilton		USGS	84,855	6/1/08 - 12/31/11
Changes of tropical Pacific climate variability during the last millennium	A. Timmermann	O. Timm	NOAA	191,850	7/1/08 - 6/30/13
Dynamics of anisotropic mean and time-varying structure of ocean circulation	N. Maximenko	E. Di Lorenzo, N. Schneider	NASA	719,963	10/1/08 - 4/30/13

PROPOSAL TITLE	P.I. NAME	CO-P.I.	Funding Agency	Proposal Amount	Contract Years
Study of Processes Leading to Tropical Cyclone Structure and Intensity Changes	Y. Wang		NSF	398,016	4/1/08 - 3/31/13
Analysis and High-Resolution Modeling of Tropical Cyclogenesis during TCS-08 and TPARC Field Campaign	T. Li	M. Peng	ONR	231,243	1/1/08 - 12/31/13
Scale Interactions in the equatorial ocean	K. Richards	J. McCreary	NSF	595,444	5/1/08 - 4/30/13
Development of an Extended and Long-range Precipitation Prediction System over the Pacific Islands	H. Annamalai		NOAA	443,586	7/1/08 - 3/31/13
Climate change and persistent droughts: Impacts, vulnerability and adaption in rice growing subdivisions on India	H. Annamalai		Norwegian Embassy	127,053	12/7/07 - 4/30/11
Evaluation and Improvement of NOAA Climate GCM Air-Sea Interaction Physics: An EPIC/VOCALS Synthesis Project	Y. Wang	S.P. Xie, S. de Szoeke	NOAA / OGP/CPPA	275,384	8/1/07 - 7/31/11
Understanding Annual Cycle-ENSO Interactions in Climate Change Simulations	N. Schneider	A. Timmermann	DOE	440,724	8/15/07 - 8/14/12
Collaborative Research: Impacts of ocean physics on the Arabian Sea oxygen minimum zone	J. McCreary	K. Richards, Z. Yu	NSF	385,570	10/01/07 - 09/30/12
Developing the Hawaii-Pacific Ocean Observing and Information System	B. Taylor	J. Potemra, et al.	NOAA	371,929	10/01/07 - 12/31/11
Data-Intensive Research and Model Development at the IPRC	K. Hamilton	P. Hacker, S-P. Xie	NASA	5,250,000	3/01/07 - 2/28/13