The Third Workshop on High-resolution and Cloud Modeling – Tropical Cyclones and Climate

December 2-4, 2008

University of Hawaii at Manoa, Honolulu, Hawaii, USA

Day 1 (Tuesday, December 2, 2008)

8:30-9:00 Registration and Continental Breakfast

9:00-9:15 **Opening ceremony**
Chair: **Yuqing Wang**

Welcome and an introduction to IPRC, **Kevin Hamilton**, IPRC Interim Director
A historical review of the workshop series, **Masaki Satoh**, CCSR, University of Tokyo

09:15-10:15 Session 1 High-Resolution Modeling: General Issues
Chair: **Greg Holland**, **Teruyuki Nakajima**

09:15-09:45 *Overview of Cloud-Resolving-Model Development within CMMAP*, **David Randall**, Department of Atmospheric Science, Colorado State University, Fort Collins, CO

09:45-10:15 *Year of Tropical Convection (YOTC):* A Joint WWRP and WCRP Activity to Address the Challenges of Tropical Cyclones and Multi-Scale Organized Convection, **Duane Waliser**, JPL/Caltech

10:15-10:45 Coffee Break (+ Group Photo)

10:45-11.15 *Mesoscale Organization of Maritime Tropical Convection: Large-Eddy Simulation*, **Marat Khairoutdinov**, Stony Brook University, NY

11:15-11:45 *Multi-scale structure of an MJO event simulated by a global cloud-system resolving model*, **Tomoe Nasuno**, FRCGC, JAMSTEC

11.45-12:15 *Tiling Domain Technique of the Cloud-Resolving Model and its Application to a High-Resolution Simulation of Typhoons*, **Kazuhisa Tsuboki**, Hydrospheric Atmospheric Research Center, Nagoya University

12:15-13:30 Lunch – on your own

13:30-15:30 Session 2 Cloud Systems: Modeling and Satellite Observations
Chair: **Dave Randall**, **Tetsuo Nakazawa**

13:30-14:00 *A study of aerosol interaction with cloud system using satellite remote sensing and high resolution modeling*, **Teruyuki Nakajima**, CCSR, University of Tokyo

14:00-14:30 *Using Multi-scale Modeling Systems and satellite simulator to Study the Precipitation Processes*, **Wei-Kuo Tao**, NASA/GSFC

14:30-15:00 *Dynamical and thermodynamic controls on tropical and subtropical convective activity inferred from three dimensional latent heating distributions with TRMM SLH beta-version data*, **Yukari Takayabu**, CCSR, University of Tokyo

15:00-15:30 Coffee Break

15:30-16:00 *An Application of TRMM and CloudSat Observations to Global Model Diagnosis*, **Hirohiko Masunaga**, Nagoya University

16:00-16:30 *Ice initiation in hurricane convection and dependencies on insoluble aerosol*, **Vaughan Phillips**, University of Hawaii at Manoa, Honolulu, HI

16:30-17:00 *Modulation of tropical cyclone activity by ENSO and MJO*, **Suzana J. Camargo**, Lamont-Doherty Earth Observatory, Columbia University, Palisades, NY

18:30-20:30 Reception Dinner at Ala Moana Hotel

Day 2 (Wednesday, December 3, 2008)

08:30-09:00 Continental Breakfast

09:00-10:00 Session 3 Large-Scale Aspects of Tropical Cyclones
Chair: **Wayne Schubert**, **Kevin Walsh**

09:00-09:30 *Wave Accumulation, Tropical Cyclone Genesis and Climate Variability*, **Greg Holland**[1], James Done[1], and Asuka Suzuki-Parker[2], [1]National Center for Atmospheric Research Boulder, CO, [2]Georgia Institute of Technology, Atlanta, Georgia

09:30-10:00 *Tropical cyclogenesis within a tropical wave critical layer: Easterly waves, physical basis, and high resolution numerical simulations*, **Michael Montgomery**, NOAA/Hurricane Research Division, Miami, FL, and U.S. Naval Postgraduate School, Monterey, CA

10:00-10:30 Coffee Break

10:30-11:00 *Analysis and Modeling of Tropical Cyclones in Relation to Multi-scale Oscillations over the Northwest Pacific Ocean*, Chung-Hsiung Sui and **Ming-Ren Yang**, National Central University

11:00-11:30 *Case studies of tropical cyclone genesis using a global high-resolution model, NICAM*, **Wataru Yanase**, CCSR, University of Tokyo

11:30-12:00 *Possible control of Madden-Julian Oscillation over a selection of convective regime and tropical cyclogenesis in the boreal summer monsoon period*, **Kazuyoshi Oouchi,** FRCGC/JAMSTEC

12:00-13:15 Lunch – on your own

13:15-15:15 Session 4 High-Resolution Modeling of Tropical Cyclones (1)
Chair: **Wei-Kuo Tao**, **Ming-Jen Yang**

13:15-13:45 *Large Eddy Simulation of an Idealized Hurricane*, **Richard Rotunno**, NCAR, Boulder, CO

13:45-14:15 *The GFDL High-Resolution Atmosphere Model (HiRam) for Short-term forecasts and long-term simulations of tropical cyclones*, **Shian-Jiann Lin**, NOAA/GFDL, Princeton, NJ

14:15-14:45 *Multi-scale interactions on the lifecycle of tropical cyclone simulated by Global Cloud-System-Resolving Model NICAM*, **Hironori Fudeyasu**, International Pacific Research Center, University of Hawaii at Manoa, Honolulu, HI

14:45-15:00 Coffee Break

15:00-16:45 Poster Session

16:45-17:45 Session 4 (Continued)

16:45-17:15 *A very fine-resolution tropical cyclone climate model*, **Kevin Walsh**, School of Earth Sciences, University of Melbourne

17:15-17:45 *Tropical Cyclones in a hierarchy of climate models of increasing resolution*, **Pier Luigi Vidale**, NCAS-Climate, Walker Institute, University of Reading

Day 3 (Thursday, December 4, 2008)

08:30-09:00 Continental Breakfast

09:00-10:00 Session 5 High-Resolution Modeling of Tropical Cyclones (2)
Chair: **Shian-Jiann Lin**, **Pier Luigi Vidale**

09:00-09:30 *Dynamic and thermodynamic aspects of tropical cyclones in vertical shear and the 'stationary band complex'*, **Michael Riemer** and Michael T. Montgomery, Naval Postgraduate School, Monterey, CA, Mel E. Nicholls, University of Colorado, Boulder, CO

09:30-10:00 *Formation and quasi-periodic behavior of outer spiral rainbands in a numerically simulated tropical cyclone,* **Yuqing Wang** and Qingqing Li, International Pacific Research Center, University of Hawaii at Manoa, Honolulu, HI

10:00-10:30 Coffee Break

10:30-11:00 *A Cloud-Resolving Simulation of Hurricane Wilma (2005)*, **Da-Lin Zhang**, Department of Atmospheric and Oceanic Science, University of Maryland, College Park, MD

11:00-11:30 *On the Distribution of Vertical Motion in Hurricanes*, **Wayne Schubert**, Colorado State University, Fort Collins, CO

11:30-12:00 *Performance of JMA Weekly Ensemble Forecast for Nargis*, **Tetsuo Nakazawa**, Meteorological Research Institute

12:00-13:15 Lunch – on your own

13:15-15:15 Session 6 Impact of Global Change on Tropical Cyclones
Chair: **Kevin Hamilton**

13:15-13:45 *Simulated response of Atlantic hurricane activity to projected 21st-century warming*, **Thomas Knutson**, GFDL/NOAA, Princeton, NJ

13:45-14:15 *Simulation of intense Atlantic hurricane activity in a twenty-first century warmed climate, using the GFDL high-resolution, coupled hurricane model*, **Morris Bender**, GFDL/NOAA, Princeton, NJ

14:15-14:45 *Toward Improved Projection of the Future Tropical Cyclone Changes*, **Masato Sugi**, Meteorological Research Institute

14:45-15:00 *Multimodel projection of global warming impact on tropical cyclogenesis frequency over the western North Pacific.* **Yukari Takayabu**, CCSR, University of Tokyo

15:00-15:30 Coffee Break

15:30-16:45 Session 7 Discussion
Chair: **Masaki Satoh**, **Yuqing Wang**

16:45 Closing

Poster Session

P1 *NOAA Hurricane Forecast Improvement Project (HFIP)*, Fred Topefer, National Weather Service Hurricane Forecast Improvement Project (HFIP) Manager, Silver Spring, MD, Frank Marks, NOAA Atlantic Oceanographic and Meteorological Laboratory, Miami, FL, Roger Pierce, Executive Secretariat NOAA HFIP, NOAA's Oceanic and Atmospheric Research (OAR), Silver Spring, MD, **Nelson Seaman**, Pennsylvania State University, University Park, PA

P2 *High-Resolution WRF Simulation of Hurricane Dennis (2005): Relating Vertical Velocity Distributions and Microphysical Processes to Rapid Intensity Change in the Context of TCSP Observations and NASA Satellite Retrievals*, **Eric Meyers**, University of Illinois at Urbana-Champaign

P3 *Simulation of the MJO-convection onset observed during MISMO*, **Kazuaki Yasunaga**, JAMSTEC

P4 *What determine tropical disturbances to develop or not?* **Lei Wang**[1], Alexis Kai-Hon Lau[2], Qing-Hong Zhang[3], [1]International Pacific Research Center, University of Hawaii at Manoa, Honolulu, HI, [2]Department of Mathematics, Hong Kong University of Science and Technology, [3]Department of Atmospheric Sciences, Peking University, Beijing

P5 *Genesis of Tropical Cyclone Nargis Revealed by multiple satellite observations*, **Kazuyoshi Kikuchi**, International Pacific Research Center, University of Hawaii at Manoa, Honolulu, HI

P6 *Informing statistical regressions of the decay rate of tropical cyclones after landfall using an enhanced event set of storms generated with a mesoscale model*, **A. Colette**[1], V. Daniel[1], N. Leith[1], E. Bellone[1], David S. Nolan[2], [1]Risk Management Solutions Ltd., 30 Monument Street, London EC3R 8NB, United Kingdom. [2]Division of Meteorology and Physical Oceanography, Rosenstiel School of Marine and Atmospheric Science, University of Miami

P7 *Assimilating Doppler Radar Data with a 3DVAR and Cloud Analysis System for the Prediction of Tropical Storm Erin (2007) over Land*, **Ming Xue**, University of Oklahoma, OK

P8 *A High-Resolution Simulation of Typhoon Rananim (2004) with MM5: Model Verification, Inner-Core Shear, and Asymmetric Convection*, **Qingqing Li**, Shanghai Typhoon Institute/CMA

P9 *A High-Resolution Simulation of Asymmetries in Severe Tropical Cyclone Larry (2006)*, **Hamish Ramsay**, Centre for Australian Weather and Climate Research, Australian Bureau of Meteorology

P10 *Typhoon formation and development experiment with a high resolution global model and a mesoscale model*, **Eiki Shindo**, Meteorological Research Institute (MRI)

P11 *Possible change of tropical cyclone intensity and frequency under a greenhouse-warmed climate condition in the global cloud resolving model, NICAM*, **Yohei Yamada**, FRCGC, JAMSTEC

P12 *The Landfalling Characteristics of Typhoon Nari (2001) over Taiwan*, **Ming-Jen Yang**, National Central University

P13 *High Resolution Prediction of Tropical Cyclone 'Nargis' using the WRF*, **Raghavendra Ashrit**, National Centre for Medium range Weather Forecasting, Govt of India

P14 *A numerical study of the effect of Typhoon Songda (2004) on remote heavy rainfall in Japan*, **Yongqing Wang**, Pacific Typhoon Research Center, Nanjing University of Information Science and Technology, Nanjing, and International Pacific Research Center, University of Hawaii at Manoa, Honolulu, HI

P15 *Isotope Ratios of Precipitation and Water Vapor* observed in Typhoon Shanshan, **Kimpei Ichiyanagi**, Kumamoto University/JAMSTEC

P16 *Dynamic and thermodynamic aspects of tropical cyclones in vertical shear and the 'stationary band complex'*, **Michael Riemer** and Michael T. Montgomery, Naval Postgraduate School, Monterey, CA, Mel E. Nicholls, University of Colorado, Boulder, CO

P17 *Modulation of tropical cyclone activity by ENSO and MJO*, **Suzana Camargo**, Lamont-Doherty Earth Observatory, Columbia University, Palisades, NY, James Kossin, Kerry Emanuel, and Daniel Vimont

P18 Dynamical Downscaling of Tropical Cyclones over the Northwest Pacific Using the IPRC Regional Atmospheric Model (IRAM),**Yuqing Wang**[1,2], and Zhizhong Su[2], [1]International Pacific Research Center, University of Hawaii at Manoa, Honolulu, HI, [2]Pacific Typhoon Research Center, Nanjing University of Information Science and Technology, Nanjing