

The CRCES Workshop on Decadal Climate Variability

Co-sponsored by: The NASA-Ocean Physics Program, the NSF-Climate Dynamics Program, The NOAA-Office of Global Programs, and the US-CLIVAR Office

Organizing Committee: Vikram Mehta (CRCES), Judith Lean (Naval Research Lab.), Eric Lindstrom (NASA Headquarters), William Patzert (Jet Propulsion Lab.), Andrey Proshutinsky (Woods Hole Oceanographic Institute), Norman Rosenberg (Joint Global Change Research Institute and CRCES), Paul Schopf (George Mason Univ.), Hans von Storch (Institute for Coastal Research, GKSS Research Centre), Warren White (Scripps Institution of Oceanography), and Janet Wood (CRCES)

The Airlie Center, Warrenton, Virginia, USA
17-20 October 2005

Sunday, 16 October 2005

6:00-7:00 PM **Registration**
7:00-8:00 PM **Dinner in the Airlie Center Dining Room**

Monday, 17 October 2005

7:00 AM **Breakfast in the Airlie Center Dining Room**
 Registration

8:00 AM **Welcome, Workshop Purpose, and Logistics**
8:00 AM Gail Gilbert, Airlie Center
8:15 AM Vikram Mehta, Center for Research on the Changing Earth System
8:30 AM Eric Lindstrom, NASA-Ocean Physics Program
8:45 AM Janet Wood, Center for Research on the Changing Earth System

9:00 AM **The National Research Council Decadal Survey**
 Eric Barron
 Pennsylvania State University
 USA

9:30 AM **The Reorganized US CLIVAR**
 David Legler
 US-CLIVAR Office
 USA

10:00-10:30 AM **Break**

Session 1: Societal Impacts (Chairman: Vikram Mehta)

10:30 AM **Finding the Impacts of Decadal Climatic Variability on Agriculture, Forestry, Water Resources and Unmanaged Ecosystems**
 Norman Rosenberg
 Joint Global Change Research Inst. and Center for Research on the Changing Earth System
 USA

11:00 AM **Impacts on Agriculture and Fire in Southeast US**
 James J. O'Brien

Center for Ocean-Atmosphere Prediction Studies, Florida State University
USA

11:30 AM **Results and Recommendations of a Workshop on "Observational and Modeling Requirements for Predicting Drought on Seasonal to Decadal Time Scales"**
Siegfried Schubert
NASA/Goddard Space Flight Center
USA

12:00 PM **Decadal Variability of Tropical Cyclones: A Review**
Vikram M. Mehta
Center for Research on the Changing Earth System
USA

12:30-1:45 PM **Lunch in the Airlie Center Dining Room**

Session 2: Continental Climate (Chairman: Vikram Mehta)

1:45 PM **Are Summer Climate Variations in North West Europe and West Africa Linked?**
Chris Folland (1), Jeff Knight (1), David Fereday (1), Adam Scaife (1) , Jim Hurrell (2), Peter Baines (3)
(1) Hadley Centre for Climate Prediction and Research, Exeter, UK (2) National Centre for Atmospheric Research, Boulder, Colorado, USA (3) University of Melbourne, Australia

2:15 PM **Modeling of Tropical Forcing of Persistent Droughts and Pluvials over Western North America: 1856-2004**
Richard Seager, Yochanan Kushnir, Celine Herweijer
Lamont Doherty Earth Observatory of Columbia University
USA

Session 3: Poster Presentations (All posters will be displayed from the first day to the last day of the Workshop)

2:45-3:15 PM **Poster Introduction (3 minutes per poster)**

3:15-3:45 PM **Break**

3:45-4:45 PM **Poster Discussions**

Tropical Instability Waves and Decadal Variability in the Tropical Atlantic

Raghu Murtugudde, Markus Jochum
Earth System Science Interdisciplinary Center, University of Maryland
USA

Sea ice drift and its relationship to altimetry-derived ocean currents in the Labrador Sea

S. Häkkinen and D.J. Cavalieri
NASA-Goddard Space Flight Center
USA

Regime Shift in Global SSTs

Sayaka Yasunaka, Kimio Hanawa
Tohoku University
Japan

Decadal to Secular Time Scales Variability in Temperature Measurement over France and Europe and its Relation with Climatic Indices

R. Abarca del Río (1), Olivier Mestre (2)

(1) Departamento de Geofísica (DGF), Universidad de Concepcion, Casilla 160-C, Concepcion, Chile; (2) Météo-France, Ecole Nationale de la Météorologie, 31057 Toulouse Cedex, France

Predicting Decadal-Scale Drought/Flood Climate in Northern China

Geli Wang, Yang Peicai, Wang Yongqing , Zhu Yafen

Propagating Decadal Variability in the Pacific over the Past 100 Years

Christina Holland, Rob Scott

Institute for Geophysics, University of Texas

USA

Inter- and Multi-decadal Oscillations of the Thermohaline Circulation

Xiuhua Zhu(1,2), Johann Jungclaus(2), Jochem Marotzke(2)

(1)International Max Planck Research School on Earth System Modelling(IMPRS-ESM); (2) Max Planck Institute for Meteorology

Germany

Session 4: Discussion: Societal Impacts (Water, Agriculture, Health, Salinity and Sea Level, Extreme Events)

4:45-5:45 PM

Chairman: Hans von Storch

1. What we know and can explain;
2. What we do not know and would like to know;
3. Where should (and should not) the research and resources be focused in the near (1-2 years), medium (2-5 years), and long (5-10 years) terms; and
4. What fractions of effort should be devoted to empirical data collection and analysis, and to model experiments and analysis

6:00-7:30 PM **Icebreaker in the Whistling Swan**

7:30-8:30 PM **Dinner in the Airlie Center Dining Room**

Tuesday, 18 October 2005

7:00-8:00AM **Breakfast in the Airlie Center Dining Room**

Session 5: Forcings and Responses (Chairman: Zhengyu Liu)

8:00 AM **Solar Forcing of Decadal Climate Variability**
Judith Lean
Naval Research Laboratory, Washington, DC
USA

8:30 AM **Radiative and Dynamical Impact of Volcanic Aerosols on Climate**
Georgiy Stenchikov
Department of Environmental Sciences, Rutgers University, New Brunswick, NJ
USA

9:00 AM **Ocean Surface Heat and Momentum Fluxes**
W. Timothy Liu, Xiaosu Xie, Wenqing Tang
Jet Propulsion Laboratory
USA

9:30 AM **Response of Tropical Global Ocean Temperature to the Sun's Quasi-Decadal UV Radiative Forcing of the Stratosphere**
Warren B. White
Scripps Institution of Oceanography
USA

10:00 AM **Forced versus Inherent Decadal Variability and the Mid-1970s Climate Shift**
Gerald Meehl, Aixue Hu
National Center for Atmospheric Research
USA

10:30-11:00 AM **Break**

11:00 AM **Oceanic Response to Idealized Net Atmospheric Freshwater in the Pacific at the Decadal Timescale**
Boyin Huang, Vikram Mehta, Niklas Schneider
The Center for Research on the Changing Earth System
USA

11:30 AM **Freshwater Flux Variations and Impacts on the North Pacific Ocean**
Roger Lukas
University of Hawaii
USA

12:00 PM **Bad Statistics-Somewhat of a Review**
James J. O'Brien
Center for Ocean-Atmosphere Prediction System, Florida State University
USA

12:30-1:15 PM **Lunch in the Airlie Center Dining Room**

1:15 PM **Noise Forcing and Coupled Feedbacks in Low Frequency North Atlantic SST Variability**
Edwin K. Schneider, Zhaohua Wu, Meizhu Fan, Ben Kirtman
George Mason University/COLA

USA

1:45 PM **Modes of North Atlantic Annual Mean SST Variability**
Dietmar Dommenges, Joerg Wegener
IFM-GEOMAR, Kiel
Germany

Session 6: Poster Presentations

2:15-2:45 PM **Poster Introduction (3 minutes per poster)**

2:45-3:15 PM **Break**

3:15-4:15 PM **Poster Discussions**

A Simple Mechanism for ENSO Residuals and Asymmetry

Paul Schopf
George Mason University
USA

Origins of the Decadal Climate Variability in the Pacific Basin

Daniela Matei, Mojib Latif, Johann Jungclauss
International Max Planck Research School on Earth System Modelling, Max Planck Institute for Meteorology
Germany

Local Atmospheric Responses of CCM3 to the Prescribed SST Anomalies in the Mid-latitude North Pacific

Xuguang Sun and Xiuqun Yang
Institute of Severe Weather and Climate, Nanjing University
China

Causes of the 1976/77 North Pacific Climate Regime Shift

Lixin Wu, Dong Eun Lee, Zhengyu Liu
College of Physical and Environmental Oceanography, Ocean University of China, Qingdao, China and Center for Climatic Research, University of Wisconsin-Madison, USA

Decadal North Pacific Bred Vectors in a Coupled General Circulation Model

Iouri Vikhliakov, Ben Kirtman, Paul Schopf
Center for Ocean-Land-Atmosphere Studies
USA

Observed Relationships Between the El Niño/Southern Oscillation and the Extratropical Zonal-Mean Circulation

Michelle L'Heureux, David WJ Thompson
NOAA/NWS/NCEP/Climate Prediction Center
USA

Decadal and Interdecadal Variability in Atmospheric Angular Momentum

R. Abarca del Río (1), A. Dai (2), G. Garric (3), C. Cassou (4)
(1) Departamento de Geofísica (DGEO), Universidad de Concepción, Casilla 160-C, Concepción, Chile; (2) Global Dynamics Division, National Center for Atmospheric Research, Boulder, Colorado, USA; (3) MERCATOR, Ramonville St Agne - FRANCE; (4) CERFACS-SUC

Long-term Variability of Free Atmosphere in the Polar Regions

Alexander Makshtas (1), Valentina Maistrova (1), Sergey Shoutilin (1), Vladimir Alexeev (2)
(1) Arctic and Antarctic Research Institute, (2) International Arctic Research Center, University of Alaska
USA

Session 7: Discussion: Observations

4:15-5:15 PM

Chairman: Vikram Mehta

1. What we know and can explain;
2. What we do not know and would like to know;
3. Where should (and should not) the research and resources be focused in the near (1-2 years), medium (2-5 years), and long (5-10 years) terms; and
4. What fractions of effort should be devoted to existing data collection and analysis, and future data collection

7:00-8:00 PM **Dinner in the Airlie Center Dining Room**

Wednesday, 19 October 2005

7:00-8:00AM **Breakfast in the Airlie Center Dining Room**

Session 8: Global, Arctic, and Atlantic Variability (Chairman: Yochanan Kushnir)

8:00 AM **Modeling the Variability of Midlatitude Storm Activity on Decadal to Century Time Scales**
Hans von Storch, Irene Fischer-Bruns
Institute for Coastal Research, GKSS Research Center
Germany

8:30 AM **Errors in Sea Level Rise Estimates due to Decadal Variability**
Gary Mitchum
College of Marine Science, University of South Florida
USA

9:00 AM **Observations of Decadal Sea Level Variability**
R. Steven Nerem, D. P. Chambers, T. Jakub, E. W. Leuliette , Gary Mitchum
University of Colorado
USA

9:30 AM **Decadal Variability of the Arctic Ocean Based on Integration of Model Results with Observations**
Andrey Proshutinsky
Woods Hole Oceanographic Institution
USA

10:00 AM **Mechanisms behind decadal variability of North Atlantic Deep Water in models of the Arctic-North Atlantic Oceans**
David A. Bailey, Peter B. Rhines, Sirpa Hakkinen, Paul Schopf
George Mason University, Climate Dynamics Program
USA

10:30-11:00 AM **Break**

11:00 AM **Polar Amplification: Definitions, Interpretations, and Problems**
Dmitry Dukhovskoy, Andrey Proshutinsky, James O'Brien, Steven Morey
Center for Ocean-Atmosphere Prediction Studies, Florida State University
USA

11:30 AM **Inter-decadal Changes in the North Atlantic Oscillation**
Adam Scaife, Jeff Knight, Geoff K. Vallis, Chris K. Folland
Hadley Centre for Climate Research and Prediction, Met Office
UK

12:00-1:15 PM **Lunch in the Airlie Center Dining Room**

1:15 PM **The Atlantic Multidecadal Oscillation: A Signature of Thermohaline Circulation Cycles in Observed Climate**
Jeff Knight, Rob Allan (1), Chris Folland (1) , Michael Vellinga (1) and Michael Mann (2)
(1) Hadley Centre for Climate Prediction and Research, UK (2) Department of Environmental Sciences, University of Virginia, USA

1:45 PM **Coupled Ocean-atmosphere Response to the Tropical North Atlantic: Tropical Atlantic Dipole and ENSO**
Lixin Wu, Feng He, Zhengyu Liu
College of Physical and Environmental Oceanography, Ocean University of China, Qingdao, China and Center for Climatic Research, University of Wisconsin-Madison, USA

Session 9: Pacific Variability (Chairman: Jerry Meehl)

2:15 PM **Exploring the Remote Climate Impact from the North Pacific Ocean**
Zhengyu Liu, Lixin Wu, Yun Liu, Qingyu Liu, Xiaodong Liu
University of Wisconsin-Madison
USA

2:45 PM **Tropical Forcing of North Pacific Decadal Variability**
Matt Newman
NOAA-CIRES Climate Diagnostics Center
USA

3:15-3:45 PM **Break**

Session 10a: Discussion: Modeling

3:45-4:45 PM
Chairman: Paul Schopf

1. What we know and can explain;
2. What we do not know and would like to know;
3. Where should (and should not) the research and resources be focused in the near (1-2 years), medium (2-5 years), and long (5-10 years) terms; and
4. What fractions of effort should be devoted to analysis of existing model output, and to future model experiments and analysis

Session 10b: Discussion: Predictability and Prediction

4:45-5:45 PM
Chairman: Vikram Mehta

1. What we know and can explain;
2. What we do not know and would like to know;
3. Where should (and should not) the research and resources be focused in the near (1-2 years), medium (2-5 years), and long (5-10 years) terms; and
4. What fractions of effort should be devoted to statistical predictability and prediction studies, and dynamical predictability and prediction studies

7:00-8:00 PM **Dinner in the Airlie Center Dining Room**

Thursday, 20 October 2005

Session 11: Pacific Variability (Chairman: Jerry Meehl)

7:00-8:00 AM **Breakfast in the Airlie Center Dining Room**

8:00 AM **Decadal-multidecadal Variability of El Niño Events in the Northern Hemisphere Winter and its Impacts on the Global Climate**
Vikram Mehta and Carolina Fayos
The Center for Research on the Changing Earth System
USA

8:30 AM **Decadal Variability of ENSO in a Hybrid Coupled Model**
Robert J. Burgman
George Mason University/COLA
USA

9:00 AM **Multiplicity of ENSO modes**
Fei-Fei Jin
Department of Meteorology, Florida State University
USA

9:30 AM **Decadal Changes in the Temperature of Subsurface Water Entrained into the Mixed Layer and its Effect on ENSO Evolution**
Rong-Hua Zhang, Antonio Busalacchi, Ragu Murtugudde
Earth System Science Interdisciplinary Center, University of Maryland
USA

10:00-10:30 AM **Break**

10:30 AM **Interdecadal Variations in Tropical ENSO Teleconnections: Statistical Evidence and Possible Cause**
Yochanan Kushnir, Richard Seager, John C.H. Chiang, Victor H. de la Peña
Lamont Doherty Earth Observatory of Columbia University
USA

11:00 AM **On the Connection Between South Pacific Subtropical Spiciness Anomalies and Decadal Equatorial Variability in an Ocean GCM**
Yiyong Luo, Lewis Rothstein

Session 12: Presentation and Discussion of Revised Draft (Chairman: Vikram Mehta)

11:30 AM **Presentation and Discussion of Revised Draft**

1:00-2:00PM **Lunch in the Airlie Center Dining Room**

End of Workshop