



CLIVAR-ICTP Workshop on Decadal Climate Variability and Predictability: Challenge and Opportunity

International Centre for Theoretical Physics (ICTP), Trieste, Italy
16-20 November 2015

MONDAY, NOVEMBER 16, 2015

8:30 Registration

Opening Session

Chair: In-Sik Kang

- 09:00 - 09:10 Welcome - In-Sik Kang (Seoul National University, Rep. of Korea)
09:10 - 09:20 ICTP/ESP Introduction: Filippo Giorgi (ICTP, Italy)
09:20 - 09:40 Workshop Objectives and the CLIVAR DCVP Research Focus - Yochanan Kushnir (U. Columbia, USA)
09:40 - 09:45 Outline of post-workshop Training Activity - Fred Kucharski (ICTP, Italy)

Session 1

General Introduction to Decadal Climate Variability (DCV)

Chair: Yohanan Kushnir

- 09:45 - 10:05 Decadal climate variability and predictability: Overview and challenges - Mojib Latif (GEOMAR, Germany)
10:05 - 10:25 Decadal climate variability, attribution and prediction - Rowan Sutton (U. Reading, UK)
10:25 - 10:45 Climate shifts versus decadal-to-centennial variability - Edwin Schneider (COLA/George Mason University, USA)

10:45 - 11:00 GROUP PHOTO

11:00 - 11:30 COFFEE BREAK

- 11:30 - 11:50 Decadal climate variability during the Last Millennium from high-resolution proxies - Ed Cook (U. Columbia, USA)
11:50 - 12:10 Consistency Between planetary energy balance and ocean heat storage - Karina von Schuckman (MERCATOR, France)
12:10 - 12:30 Ocean heat content and Earth's energy imbalance: insights from climate models - Matthew Palmer (Met Office, UK, *remote talk*)

12:30 - 14:30 LUNCH BREAK

- 14:30 - 14:50 Forced aspects of decadal climate variability - Gavin Schmidt (NASA GISS, USA)
14:50 - 15:10 Volcanically forced decadal climate variability: A historical perspective based on ensemble climate simulations - Davide Zanchettin (U. Venice, Italy)
15:10 - 15:30 Irreducible uncertainty in near-term climate projections - Ed Hawkins (U. Reading, UK)

15:30 - 16:00 COFFEE BREAK

16:00 - 16:20 An overview of decadal climate variability in the historical record - Clara Deser (NCAR, USA, *remote talk*)

16:30 - 17:30 Discussion Session

17:30 - 20:00 POSTER SESSION

18:30 – 20:00 WELCOME RECEPTION

TUESDAY, NOVEMBER 17, 2015

Session 2

The Cryosphere and DCV

Chair: Paul Kushner

- 08:40 - 09:00 Between trend and chaos: the evolution of Arctic and Antarctic sea ice - Dirk Notz (MPI, Germany)
- 09:00 - 09:20 The Arctic sea ice forecast horizon: how do we get there? - Jonathan Day (U. Reading, UK)
- 09:20 - 09:40 Impact of Low Frequency Variability of the Atlantic Ocean on Arctic Sea Ice Extent - Rong Zhang (NOAA/GFDL, USA)
- 09:40 - 10:00 The challenge of modelling liquid-bearing clouds in the Arctic and implications for DCV - Amy Solomon (NOAA/ESRL, USA)
- 10:00 - 10:20 Understanding the response of polar ice sheets to oceanic (and atmospheric) forcing - Patrick Heimbach (U. Texas at Austin, USA)

10:20 - 11:00 COFFEE BREAK

Session 3

Atlantic Decadal Climate Variability

Chair: Amy Solomon

- 11:00 - 11:20 The Atlantic Meridional Overturning Circulation and its connection to Atlantic Multi-decadal Variability in ocean and coupled climate models- Gokhan Danabasoglu (NCAR, USA)
- 11:20 - 11:40 The impact of the North Atlantic Oscillation on climate through its influence on the Atlantic Meridional Overturning Circulation - Thomas Delworth (NOAA/GFDL, USA)
- 11:40 - 12:00 The impact of volcanic activity on Atlantic Meridional Overturning Circulation variability - Juliette Mignot (IPSL, France)

12:00 – 13:30 LUNCH BREAK

- 13:30 - 13:50 The generation and application of novel records of North Atlantic variability over the last millennium - David Reynolds (U. Cardiff, UK)
- 13:50 - 14:10 Multi-proxy reconstruction of Tropical Atlantic sea surface temperature variability since 1360 - Halimeda (Hali) Kilbourne (Chesapeake Biological Laboratory, USA)
- 14:10 - 14:30 Mid-Latitude Ocean-Atmosphere Interactions - Noel Keenlyside (U. Bergen, Norway)
- 14:30 - 14:45 A recent reversal of trends in the N. Atlantic - Jon Robson (U. Reading, UK)

14:45 - 15:00 Extra-tropical origins of Equatorial Atlantic decadal variability - Hyacinth Nnamchi (U. Nigeria, Nigeria)

15:00 - 15:30 COFFEE BREAK

15:30 - 15:45 Interference between Forced and Unforced Climate Variability: Implications for the North Atlantic and the Arctic - Neil Tandon (U. Toronto, Canada)

15:45 - 16:00 A coupled decadal-scale air-sea interaction theory: the NAO-AMO-AMOC coupled mode and its impacts - Jianping Li (GCESS/BNU, China)

16:00 - 16:15 Skillful North Atlantic predictability beyond decadal time scale - Daniela Matei (MPI, Germany)

16:15 - 16:30 Atlantic Multi-decadal Variability in an ensemble of multi-century climate simulations - Irene Mavilia (CMCC, Italy)

16:30 - 16:50 The Atlantic Multidecadal Oscillation without a role for ocean circulation - Amy Clement (RSMAS, USA, *remote talk*)

16:50 - 18:00 DISCUSSION SESSION

WEDNESDAY, NOVEMBER 18, 2015

Session 4

Pacific Decadal Climate Variability

Chair: Mat Collins

08:30 - 08:50 Coral Records of IPO and ENSO Variability in the South Pacific: New Results from the Expanding Coral Network - Brad Linsley (U. Columbia, USA)

08:50 - 09:10 Observed strengthening of the Walker Circulation and limitations of CMIP5 models - Scott Power (BoM, Australia)

09:10 - 09:30 The Pacific Decadal Oscillation revisited - Matt Newman (NOAA/ESRL, USA)

09:30 - 09:50 Estimating the continental response to global warming using pattern-scaled sea surface temperatures and sea ice - Paul Kushner (U. Toronto, Canada)

09:50 - 10:05 Pacific inter-decadal variability driven by tropical-extratropical interactions - Riccardo Farneti (ICTP, Italy)

10:05 - 10:20 Effects of volcanism on tropical modes of variability - Nicola Maher (UNSW, Australia)

10:30 - 11:00 COFFEE BREAK

11:00 - 11:15 Tropical oceans drive hemispheric hydroclimate patterns during North American mega-drought - Sloan Coats (U. Colorado, USA)

11:15 - 11:30 Influence of 21st Century climate change on internal atmospheric variability and precipitation predictability over the Southwestern US - Nikolaus Buenning (USA)

11:30 - 11:45 Studying interdecadal Pacific variability using a perfect model framework - Simon Borlace (IPSL, France)

11:45 - 13:00 DISCUSSION SESSION

13:00 - 14:30 LUNCH BREAK

Session 5

The Recent Hiatus and Atlantic/Pacific Decadal Variability Connection

Chair: Scott Power

- 14:30 - 14:50 Hiatus and acceleration of surface global warming due to tropical Pacific decadal variability - Yu Kosaka (U. Tokyo, Japan)
- 14:50 - 15:10 Tropical Pacific decadal variability and the likelihood of a continued global warming hiatus - Mat Collins (U. Exeter, UK)
- 15:10 - 15:30 Modulation of air-sea fluxes by extra-tropical variability and its contribution to the warming hiatus - Franco Molteni (ECMWF, UK)
- 15:30 - 15:45 Impact of initial conditions and atmospheric model resolution in predicting 'climate hiatuses' - Susanna Corti (CNR, Italy)

16:00 - 16:30 COFFEE BREAK

16:30 - 17:30 **ICTP COLLOQUIUM**

Problems, Methodology and Philosophy in Climate Dynamics - Geoff Vallis (U. Exeter, UK)

17:30 - 18:30 **Reception and Poster Session**

THURSDAY, NOVEMBER 19, 2015

Session 6

Monsoon and Teleconnections

Chair: Fred Kucharski

- 09:00 - 09:20 Decadal variability of the Asian Monsoon - Tianjun Zhou (LASG/IAP, China)
- 09:20 - 09:40 Interplay between the Indian Ocean, ENSO and the Monsoon in a warming environment - Roxy Mathew Koll (IITM, India)
- 09:40 - 10:00 Decadal variability of the West African Monsoon and eastern equatorial Africa - Alessandra Giannini (IRI, USA)
- 10:00 - 10:15 20th Century decadal variability of Sahel rainfall and moisture budget analysis - Catherine Pomposi (U. Columbia, USA)
- 10:15 - 10:30 Decadal Prediction of Sahel rainfall using dynamics based indices - Elsa Mohino (UCM, Spain)

10:30 - 11:00 COFFEE BREAK

12:05 - 13:00 DISCUSSION SESSION

13:00 – 14:30 LUNCH BREAK

Session 7

Predictability and Prediction

Chair: Francisco Doblas-Reyes

- 14:30 - 14:50 Beyond CMIP5 Decadal Predictions and the role of aerosols in the warming slowdown - Doug Smith (UK Met Office, UK)
- 14:50 - 15:10 Decadal predictability associated with the Atlantic Meridional Overturning Circulation - Rym Msadek (CERFACS, France)
- 15:10 - 15:30 The role of ocean data assimilation in initialized decadal climate prediction - Alicia Karspeck (NCAR, USA)
- 15:30 - 15:45 Drift dynamics in a coupled model initialized for decadal forecasts - Emilia Sanchez (CERFACS, France)

15:45 - 16:15 COFFEE BREAK

- 16:15 - 16:30 A comparison of two ensemble generation methods based on oceanic singular vectors and atmospheric lagged initialization for decadal predictions - Iuliia Polkova (U. Hamburg, Germany)
- 16:30 - 16:45 Initialized Decadal Predictions by LASG/IAP Climate System Model FGOALS-s2: Evaluations of Strengths and Weaknesses - Bo Wu (IAP, China)
- 16:45 - 17:00 Is the PDO predictable? - Rosemary Eade (Met Office, UK)
- 17:00 - 17:15 Decadal predictions (2010-2040) using pattern scaled Sea Surface Temperature and Sea-Ice concentration - Adeline Bichet (LGGE, France)
- 17:15 - 17:30 Towards impact-relevant climate projections: the challenge of internal variability - Claudio Saffioti (ETHZ, Switzerland)

17:30 - 18:30 DISCUSSION SESSION

FRIDAY, NOVEMBER 20, 2015

Session 8

Decadal Climate Variability and Predictability: Challenge and Opportunity

Chair: Yochanan Kushnir, Christophe Cassou

Plenary Discussion

- 09:00 - 09:30 Decadal predictability and prediction in a complex international context - Francisco Doblas-Reyes (IC3, Spain)
- 09:30 - 10:00 CMIP6 Pace Maker Experiments - Christophe Cassou (CERFACS, France)

10:00 - 10:30 COFFEE BREAK

10:30 - 12:00 Discussion

12:00 - 12:30 Workshop Close