

MONDAY, MAY 25

Special Invited Lecture:

8:45 - 10:00

Chair: Peter Guttorp, University of Washington, USA

Linda O. MEARNS, NCAR, USA

The effect of spatial and temporal resolution of climate change scenarios on changes in frequencies of climatic extremes

Discussants: Francis Zwiers, Environment Canada, Victoria, Canada
Roger Davidson, University of Victoria, Canada

Allan Murphy Memorial Session:

10:30 - 12:45

Chair:

Robert L. WINKLER, Fuqua School of Business and Institute of Statistics, USA
Probability Forecasting: The Legacy of Allan Murphy

Richard W. KATZ, NCAR, USA

Economic value of weather and climate forecasts: contributions of Allan Murphy

Barbara G. BROWN, NCAR, USA

The evolution of forecast verification concepts and practices through the contributions of Allan Murphy

Seijo KRUIZINGA, Royal Meteorological Institute, The Netherlands
Allan Murphy, footprints in Europe

Francis ZWIERS, Environment Canada

Contributions at the interface between atmospheric and statistical science

Discussants: Dan Wilks, Cornell University, USA

Martin Ehrendorfer, University of Wien, Austria

Contributed session: Homogenization:

10:30 - 11:45

Chair:

Nathaniel B. GUTTMAN, National Climatic Data Center, USA

Constructing a homogeneous time series for the calculation of U.S. climatic normals

Ramon A. QUINTANA-GOMEZ, Universidad Nacional Experimental de los Llanos
Ezequiel, Venezuela
Changes in evaporation patterns detected in northernmost South America. Homogeneity testing

Vicky SLONOSKY, University of East Anglia, UK
A comparison of homogenization techniques

Tamas SZENTIMREY, Hungarian Meteorological Service, Hungary
Multiple analysis of series for homogenization (MASH)

Lucie A. VINCENT, Environment Canada
Assessment of the technique for identification and adjustment of inhomogeneities in Canadian temperature series

Contributed Session: Ensembles:

11:45 - 13:00

Chair:

Won-Tae KWON, Meteorological Research Institute, Korea
Seasonal forecasting experiments over Korea using linear regression model

Vincent MORON
An analysis of a super-ensemble

Xiaolan WANG, Canadian Centre for Climate Modelling and Analysis, Canada
Interannual variability in an ensemble of GISSST simulations conducted with the CCC GCM2

Michael WEHNER, Program for Climate Model Diagnosis and Intercompa_____,
USA
How large do ensembles of climate simulations need to be?

Elena YULAEVA, University of California at San Diego, USA
Ensemble Seasonal Climate Prediction: Model Intercomparison and Likelihood Estimation

Christine ZIEHMANN
Comparison of the ECMWF ensemble with an ensemble consisting of four operational models

Contributed session: ENSO-related phenomena:

10:30 - 11:45

Chair:

Judit BARTHOLY, Eotvos Lorand University, Hungary
Comparing ENSO related PNA and NAO signals

Christine MARTINEU, EDF/DER/Environment Dept., France

Relations between NAO, PNA, and ENSO oscillations in seasonal winter simulations with four AGCMs

Olga C. PENALBA, University of Buenos Aires, Argentina
The Southern Oscillation impact on rainfall in the central-east of Argentina

Amir SHABBAR, Environment Canada
ENSO-related precipitation characteristics in Canada

Risheng WANG, Environment Canada
Characteristics of El Nino-La Nina variability in a low dimensional phase space derived from observational data

Takmeng WONG, NASA/Langley Research Center
Analysis of ENSO Events using Earth Radiation Budget Experiment Observations

Contributed Session: Climate Modeling I: 11:45 - 12:35

Chair:

Ulrich ACHATZ, Institute for Atmospheric Physics, Germany
A quasigeostrophic model with empirical linear corrections and reduced order for climate simulations

Juergen GRIESER, J.W. Goethe-University, Germany
Signal analysis of global and hemispheric mean temperature variations by means of an energy balance model

Robert JACOB, University of Wisconsin-Madison, USA
Decadal and multi-decadal variability in a coupled ocean-atmosphere model

Frank KWASNIOK, Max-Planck Institute for Meteorology, Germany
Quasigeostrophic low-order models of large-scale atmospheric flow

Special Invited Lecture: 14:15 - 15:30

Chair: Francis Zwiers, Environment Canada

Mark BERLINER, Ohio State University, USA
Bayesian methods in atmospheric sciences

Discussants: Hans von Storch, GKSS, Germany
Richard Lockhart, Simon Fraser University, Canada

Invited Session: Climate Variability and Extremes: 16:00 - 17:45

Organizer: Richard Smith, University of North Carolina, USA

Chair:

Thomas R. KARL, National Climate Data Center, USA
Climate extremes and natural disasters: trends and loss reduction prospects

Clive ANDERSON, University of Sheffield, UK
Linking rainfall extremes of different durations

Richard L. SMITH, University of North Carolina, USA
Trends in meteorological extremes

Invited Session: Analog Methods: 16:00 - 17:45

Organizer/Chair: Hans von Storch, GKSS, Germany

Grant BRANSTATOR, NCAR, USA
Predicting atmospheric transient eddy fluxes given the seasonal mean state

Klaus FRAEDRICH, University of Hamburg, Germany
Analog-forecasting: error recycling and metric adaption

Huug M. van den DOOL, NMC
Review of possibilities and limitations of natural and constructed analogues

Contributed Session: Forecasting: 16:00 - 17:50

Chair:

Frederic ATGER (presented by Olivier TALAGRAND), ECMWF
Reliability and resolution of probabilistic forecasts based on Ensemble Prediction Systems

Harold E. BROOKS, NOAA/ERL/National Severe Storms Laboratory
Practical upper and lower bounds on skill of forecasts of hazardous weather

Chen JUYING, Chinese Academy of Meteorological Sciences
Discussion of the successful prediction method on floods/droughts in regions of China

Josip JURAS, Geophysical Institute
Persistence-climatology forecasts for meteorological elements with irregular empirical distributions

I. Lozano, University de Alcala, Spain
Classification of storms off the north coasts of the Iberian peninsula

Benyang TANG, University of British Columbia

Seasonal forecasts of sea surface temperatures of tropical Pacific - Comparing neural networks and canonical correlation analysis

Nityanand SINGH, Indian Institute of Tropical Meteorology, India
Variability and prediction of the Indian northeast monsoon

Neelima A. SONTAKKE, Indian Institute of Tropical Meteorology
Climate variability and multi year prediction of SW monsoon rainfall over North East India

Laurence WILSON, Environment Canada
A verification method for ensemble forecasts

TUESDAY, MAY 26

Special Invited Lecture: **9:00 - 10:15**

Chair: Richard Lockhart, Simon Fraser University, Canada

Douglas NYCHKA, NCAR, USA
Spatial statistics, hierarchical models and massive datasets

Discussants: Richard W. Katz, NCAR, USA
Noel Cressie, Iowa State University, USA

Invited Session: Climate Change Detection I: **10:45 - 12:30**

Organizer/Chair: Ben Santer, Lawrence Livermore National Laboratory, USA

Gerald R. NORTH, Texas A&M University, USA
Detecting Forced Climate Signals in the Surface Temperature Field

Simon TETT, Hadley Centre for Climate Prediction and Research, UK

Causes of twentieth century climate change

Myles R. ALLEN, Rutherford Appleton Laboratories, UK
Fingerprinting techniques in the detection and attribution of climate change

Contributed Session: Downscaling I: **10:45 - 12:30**

Chair:

Aristita BUSUIOC, National Institute of Meteorology and Hydrology, Romania
Verifying the validity of statistical downscaling procedures in climate change applications

Dimitrios GYALISTRAS, University of Berne, Switzerland
Temporal downscaling - a method to reduce the climatic input requirements of impact models

James P. HUGHES, University of Washington, USA
Statistical downscaling of precipitation: An example using the AMIP simulations

Julie M. JONES, Climatic Research Unit, University of East Anglia, UK
Investigation of the climatic influence on air and precipitation chemistry over Europe, and applications to a downscaling methodology to assess future acidic deposition

J. P. PALUTIKOF, Climatic Research Unit, University of East Anglia, UK
Multi-site multi-variable climate change scenarios

Budong QIAN, University of Lisbon, Portugal
Downscaling of precipitation from HADCM2 Regional Weather Regimes

D. S. WILKS, Cornell University, USA
Statistical downscaling of daily precipitation using stochastic weather models

Contributed Session: Time Series Analyses: **10:45 - 12:30**

Chair:

Alan CHIANG, University of Wisconsin-Madison
Comparison of climate model output and historical global temperatures via smoothing spline ANOVA

Stefan GUESS, GKSS Research Centre, Germany
Cyclo-stationary maximum cross covariance analysis

Hauke HEYEN, GKSS Institute of Hydrophysics, Germany
Detecting possible relationships between the interannual variability in ecological timeseries and climate records using a multivariate statistical approach - a case study on Helgoland Roads zooplankton

Jianping HUANG, Atmospheric Environment Service, Canada

Multiresolution spectral analysis and its application to studying the relationship between NAO and ENSO

Lynne SEYMOUR, University of Georgia, USA
A trend analysis of United States temperatures

Xuebin ZHANG, CBB, Atmospheric Environ Service, Canada
Interannual and interdecadal variability of Pacific SST as revealed by singular spectrum analysis

Xiaogu ZHENG
Structural time series models and trend detection in global and regional temperature series

Special Invited Lecture: **14:00 - 15:15**

Chair: Peter Guttorp, University of Washington, USA

Peter J. GREEN, University of Bristol, UK
Markov chain Monte Carlo methods

Discussants: Paul D. Sampson, University of Washington, USA
James P. Hughes, University of Washington, USA

Invited Session: Climate Change Detection II: 1 **5:45 - 17:30**

Organizer/Chair: Ben Santer

Gabriele HEGERL, University of Washington, USA
Detection of anthropogenic climate change: Results and problems

Francis W. ZWIERS, Canadian Climate Center, Canada
Climate Change Detection: A Review of Techniques and Applications

Contributed Session: Extreme Values: **15:45 - 17:30**

Chair:

Connely BALDWIN, Utah
Non-parametric forecasting of snowpack in Utah, USA

Roger R. DAVIDSON, University of Victoria, Canada
Statistical prediction of seasonal cold temperature for locations in British Columbia

Marjana GAJIC-CAPKA, Meteorological and Hydrological Service, Croatia
Variability and trend in precipitation extremes

D. GELLENS, Royal Meteorological Institute of Belgium

Trend analysis of k-day extreme precipitation over Belgium by means of principal components

B. C. HEWITSON, University of Cape Town, SA
Climate change and circulation modes related to extreme events

Alberto Solana ORTEGA, SCIC, Spain
Entropy Based Inference of Models for Recurrence of Extreme Events Applied to Climate Variability Analysis

Heikki TUOMENVIRTA, Finnish Meteorological Institute, Finland
Long-term changes in Nordic and Arctic extreme temperatures

Martin A.J. Van MONTFORT, Wageningen Agricultural University, The Netherlands
Evaluating EVI-techniques for estimating upper quantiles of TCEV-data

Contributed Session: Multivariate:

15:45 - 17:30

Chair:

Ulrike BURKHARDT, Department of Meteorology, UK
Measuring the intensity of a storm track - An EEOF approach

Rosa Hilda COMPAGNUCCI, University of Buenos Aires, Argentina
Principal sequence patterns of 1000 hPa geopotential height fields

Joel REYNOLDS, University of Washington, USA
Adjusting surface ozone for meteorology: incorporating regional information using the SVD

C. A. GLASBEY, BioSS, USA
Modelling multivariate spatio-temporal weather data using latent Gaussian processes

Arthur M. GREENE, Columbia University, USA
Multivariate analysis of mountain glacier equilibrium-line altitudes using gridded climate data

Wendy MEIRING, NCAR, USA
Functional data analysis of vertical ozone profiles

Belen Rodriguez de FONSECA, Universidad Complutense de Madrid, Spain
Cross validation of different discriminant analysis methods used in statistical climatology

W. C. THACKER, Atlantic Oceanographic and Meteorological Laboratory, USA
Principal Predictors for Low-Dimensional Modelling

Michael TOBIS, Argonne National Laboratory, USA
New technologies for very large empirical decompositions of simulated climate

WEDNESDAY, MAY 27

Special Invited Lecture:

9:00 - 10:15

Chair: Francis Zwiers, Environment Canada

Noel CRESSIE, Iowa State University, USA
New directions in space-time modeling with applications to atmospheric Science

Discussants: Gabi Hegerl, University of Washington, USA
Ian Jolliffe, University of Aberdeen, UK

Invited Session: Variational Methods:

10:45 - 12:30

Organizer: Grace Wahba, University of Wisconsin, USA

Chair: Doug Nychka, NCAR, USA

Joseph J. TRIBBIA, NCAR, USA
Variational applications in atmospheric dynamics and prediction

Andrew F. BENNETT, Oregon State University, USA
Testing climate models using variational assimilation

Grace WAHBA, University of Wisconsin, USA
Variational methods in three and four dimensional climate data analysis problems

Contributed Session: Climate Variability I:

10:45 - 12:30

Chair:

P. ANTICO, University of Buenos Aires, Argentina
Monthly anomalies in geopotential height fields over southern South America

F. BIONDI, Scripps Institution Oceanography, University of California at San Diego, USA
Evolutionary and Moving Response Functions in Dendroclimatology

Albert R. BOEHM, Nichols Research Corporation, Nichols Research Group, USA
The climatological probability of clouds at altitude

Manon FAUCHER, University of British Columbia, Canada
On the climatology of surface marine winds near the western coast of Canada

George GRUZA, Institute for Global Climate and Ecology, Russia
Indices and indicators of climate variability and changes

Donald V. HANSEN, CIMAS/University of Miami, USA
Statistical estimation of salinity profiles

J. I. JIMENEZ, University of Granada, Spain
Contribution to the study of the climatic variability patterns in the South of Spain

T. A. KABANDA, University of Venda, SA
Climatic variation and malaria epidemic in South Africa

Matilde RUSTICUCCI, University of Buenos Aires, Argentina
Cold and heat waves over Argentina: Interannual to interdecadal variability

Contributed Session: Precipitation I: 10:45 - 11:45

Chair:

A. C. CHIPANSHI, University of Botswana
Nature of rainfall variability in Botswana over the 1961 to 1990 period

Annick DOUGUEDROIT, Institute of Geography, France
Evolution of the Mediterranean Basin Rainfall Precipitation

Sultan HAMEED, Institute for Terrestrial and Planetary Atmosphere, USA
Variation of precipitation and soil moisture in the lower Yellow River Valley 1736-1911

E. KLOPPER, South African Weather Bureau, SA
Prediction of the 1997/98 rainfall season in South Africa

C. Rodriguez PUEBLA, Titular University, Spain
Winter precipitation variability over the Iberian Peninsula and its relationship to atmospheric circulation indices

Contributed Session: Climate Change Detection: 11:45 - 12:45

Nina M. DATSENKO, Hydrometeorological Research Centre of Russia
Detection and attribution of the current warming by means of wavelet transforms of the hemispheric and regional temperature time series

Shaleen JAIN, Utah State University, USA
Changes in the midwestern U.S. precipitation: observations and modeled greenhouse warming scenarios

Esther RANKOVA, Institute for Global Climate and Ecology, Russia
Climate change during the 20th century for the Russian Federation

J. F. GONZALEZ-ROUCO, Astromia and Astrofisica II, Spain
Simulated and observed trends of precipitation in south-western Europe: evidence for climate change?

Hans VISSER and Jeljer HOEKSTRA, DEMA Sustainable, The Netherlands
Identifying key sources of uncertainty in climate change projections over 1990-2100

THURSDAY, MAY 28

Special Invited Lecture: **9:00 - 10:15**

Chair: Richard Lockhart, Simon Fraser University, Canada

Vladimir KRASNOPOLSKY, NCEP, NOAA
Neural networks for the empirical solution of remote sensing problems

Discussants: Eduardo Zorita, GKSS Research Centre, Germany
Doug Nychka, NRAC, USA

Invited Session: Neural Networks: **10:45 -12:30**

Organizer: Jean Thiebaut

Chair: Vladimir Krasnopolsky

D. M. TITTERINGTON, University of Glasgow, UK
Neural networks and statistics

Mark FRENCH, University of Kentucky, USA
A neural network for environmental applications: incorporating theory and domain knowledge

Stephane COTE, HMR Inc., Canada
Measurement of sea-surface velocities from sequential satellite sensor images using the Hopfield neural network

Louis KEINER, World Data Center, USA
A neural network as a chlorophyll estimation algorithm for ocean color imagery

Dimitris TSINTIKIDIS, University of California at San Diego, USA

Rainfall estimation from spaceborne microwave data using neural nets

Invited Session: Ensemble Forecasting: 10:45 - 12:30

Organizers: Dennis Shea and Rol Madden, NCAR, USA

Chair: Dennis Shea, NCAR, USA

Martin EHRENDORFER, University at Wien, Austria

Ensemble forecasting for the prediction of the uncertainty of numerical weather forecasts

Zoltan TOTH, National Weather Service, USA

Operational aspects of ensemble forecasting

Olivier TALAGRAND, Ecole Normale Supérieure, France

Evaluation of meteorological ensemble prediction systems

Contributed Session: Climate Variability II: 10:45-12:00

Scott M. ROBESON, Indiana University, USA

Comparison of temporal and unresolved spatial variability in multiyear averages of air temperature

H. Y. TSENG, ANWS OAA, R.O.C.

Using the GMS digital data to analyze the variation of cloud amount in the west Pacific and southeast Asia area

Ole Einar TVEITO, Norwegian Meteorological Institute, Norway

Climatological analysis for Norway by spatial statistics supported by GIS

Brandon WHITCHER, University of Washington, USA

Bivariate wavelet analysis with application to the Madden-Julian oscillation

Igor ZVERYAEV, Russian Academy, Russia

Decadal and longer changes of the winter sea level pressure and related synoptic activity over the North Atlantic

P. ALLERUP and H. MADSEN, Danish Meteorological Institute, Denmark

Estimation accuracy on models for correcting precipitation

Special Invited Lecture: 14:00 - 15:15

Chair: Francis Zwiers, Environment Canada

David R. BRILLINGER, University of California at Berkeley, USA

Point and marked point processes in meteorology

Discussants: Andy Solow, Woods Hole Oceanographic Institute, USA
Peter Guttorp, University of Washington, USA

Invited Session: Multivariate Methods: 15:45-17:00

Organizers: Peter Guttorp, University of Washington, and Hans von Storch, GKSS
Chair: Peter Guttorp, University of Washington, USA

Christopher S. BRETHERTON, University of Washington, USA
Effective degrees of freedom and significance testing for data with strong spatial and temporal correlations

Hans WACKERNAGEL, Centre de Géostatistique, France
Checking multiple time series for intrinsic correlation

Hans von STORCH, GKSS, Germany
Redundancy analysis as a downscaling tool

Contributed Session: Neural Nets: 15:45 -16:25

Chair:

William W. HSIEH, University of British Columbia, Canada
Connecting neural network models and dynamical models via adjoint data assimilation and spectral analysis

Adam H. MONAHAN, University of British Columbia, Canada
Nonlinear principal component analysis

Andreas WALTER, J.W. Goethe University of Frankfurt, Germany
Simulation of global and hemispheric temperature variations and signal detection studies using neural networks

Contributed Session: Spatial Statistics: 16:25 - 17:35

Chair:

Gerard BIAU, Université Montpellier II, France
Rainfall estimation by kriging in the EOF space of the SLP field

Mirosław MIETUS, Institute of Meteorology and Water Management, Poland
Past, present and future wave climate in the Proper Baltic Sea Basin

David NOTT, University of New South Wales, UK
Analysis of spatial covariance structure from monitoring data

Sam SHEN, University of Alberta, Canada
Optimal estimation of climate parameters

Thomas M. SMITH, NOAA, USA
Averaging of Surface Temperature

D. M. SONECHKIN, HMC, Russia
Scaling analysis of the spatial-temporal variations of the surface air temperatures of the northern Euroasia

Contributed Session: Downscaling II: 15:45 - 17:10

Anatoly CHAVRO, INM RAS,
Statistical model of an inverse problem in theory of climate

Ulrich CALLIES, CKSS Research Centre
Comparing downscaling schemes: sufficiency and evaluation of relative information

Radan HUTH, Institute of Atmospheric Physics, Czech Republic
Statistical downscaling of daily local temperature from large-scale upper-air fields: Intercomparison of methods

William H. KLEIN, USA
Reconstruction of monthly mean 700 mb heights from surface data by reverse specification

Ricardo M. TRIGO, University of East Anglia, UK
Downscaling of precipitation, Tmax and Tmin over Portugal using a neural network model approach

Robert L. WILBY, NCAR, USA
Evaluating GCM predictors for statistical downscaling

Eduardo ZORITACKSS Research Centre, Germany
The analog method a a simple statistical downscaling techniques: comparison with linear, classification and neural network methods

Special Invited Lecture: 17:45 -19:00

Chair: Peter Guttorp, University of Washington, USA

Jin-Song von STORCH, GKSS, Germany

Variability of the present-day thermohaline circulation: spectral shapes and spatial scales

Discussants: Myles Allen, Rutherford Laboratories, UK

David Brillinger, University of California at Berkeley, USA

FRIDAY, MAY 29

Special Invited Lecture:

8:45-10:00

Chair: Richard Lockhart, Simon Fraser University, Canada

Anthony G. BARNSTON, NOAA, USA

The North Atlantic Oscillation: Definition, Climate Effects, Interaction with ENSO

Discussants: Chris Bretherton, University of Washington, USA

Hans Wackernagel, Centre de Geostatistique, France

Invited Session: Short Term Forecasting:

10:30 - 12:15

Organizer/Chair: Barbara Brown, NCAR, USA

Judit BARTHOLY, Eötvös Loránd University, Hungary

Retrospective summary of long-range forecasting in the central European region

Neville NICHOLLS, Bureau of Meteorology, Australia

Statistical climate prediction in the Southern Hemisphere

Andrew SOLOW, Woods Hole Oceanographic Institute, USA

A Bayesian scheme for El Niño prediction

Invited Session: Classification and cluster analysis: 10:30 - 12:15

Radan HUTH, Institute for Atmospheric Physics, Czech Republic

Applications of circulation classification methods in general circulation model studies

Gil H. ROSS, UK Meteorological Office, UK

Clustering an ensemble into meaningful patterns for forecasters

Kayo IDE, University of California at Los Angeles, USA

Mixture model clustering for multiple regimes in the northern hemisphere winter atmosphere

Ian JOLLIFFE, University of Aberdeen, UK

Cluster analysis: some recent developments and their relevance to climatology

Contributed Session: Precipitation II:

10:30-12:10

S. D. DAHALE, Indian Institute of Tropical Meteorology

Stochastic modeling of shorter time scale rainfall over India

Anne-Catherine FAVRE, Swiss Federal Institute of Technology, Switzerland

The Neyman-Scott Rectangular Pulses Model for precipitation : parameter estimation and confidence interval determination

Paul NORTHROP, University College London, UK
A stochastic model for spatial-temporal rainfall data

Nora E. RUIZ, University of Buenos Aires, Argentina
Some aspects of 200 hPa circulation over Argentina in relation to precipitation

Martin WIDMANN, University of Washington, USA
Relations between trends in Swiss wintertime precipitation and large-scale pressure and temperature changes

D. S. WILKS, Cornell University, USA
Low-frequency characteristics of several stochastic daily precipitation models

Abebe YESHANEV, National Meteorological Services Agency, Ethiopia
Specification and prediction of Ethiopian rainfall using S-mode component and canonical correlation analysis based on global sea surface temperature anomalies

Abdesselam ZAROUGUI, Universidad Complutense de Madrid, Spain
Regionalization of daily rainfall in Morocco.