



2011 USERS' MEETING

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NCAR

Center Green Laboratory 1

LINDA O MEARNS

Linda O. Mearns is Director of the Weather and Climate Impacts Assessment Science Program (WCIASP) within the Institute for Mathematics Applied to Geosciences and Senior Scientist at the National Center for Atmospheric Research, Boulder, Colorado. She served as Director of the Institute for the Study of Society and Environment (ISSE) for three years ending in April 2008. She holds a Ph.D. in Geography/Climatology from UCLA. She has performed research and published mainly in the areas of climate change scenario formation, quantifying uncertainties, and climate change impacts on agro-ecosystems. She has particularly worked extensively with regional climate models. She has most recently published papers on the effect of uncertainty in climate change scenarios on agricultural and economic impacts of climate change, and quantifying uncertainty of regional climate change. She has been an author in the IPCC Climate Change 1995, 2001, and 2007 Assessments regarding climate variability, impacts of climate change on agriculture, regional projections of climate change, climate scenarios, and uncertainty in future projections of climate change. For the 2007 Report(s) she was Lead Author for the chapter on Regional Projections of Climate Change in Working Group 1 and for the chapter on New Assessment Methods in Working Group 2. She has also been an author on two Synthesis Products of the US Climate Change Science Program. She leads the multi-agency supported North American Regional Climate Change Assessment Program (NARCCAP), which is providing multiple high-resolution climate change scenarios for the North American impacts community. She is a member of the National Research Council Climate Research Committee (CRC) and Human Dimensions of Global Change (HDGC) Committee, and the NAS Panel on Adaptation as part of the America's Climate Choices Program. She was made a Fellow of the American Meteorological Society in January 2006.

SÉBASTIEN BINER

Sébastien Biner is a climate simulation specialist for the Ouranos Consortium in Montréal, Canada. As such, he contributes to the production, analysis and improvement of the regional climate simulations used by Ouranos users and partners. Scientifically, he is particularly interested in studies related to the internal variability, added value and uncertainties of Regional Climate Models. He is also strongly involved in maintaining and improving the operational infrastructure at Ouranos and in the distribution of climate simulation data. Sébastien is co-supervising graduate students and supervising interns. He has a M.Sc in atmospheric sciences and a B.Sc in physics from the Université du Québec à Montréal. Sébastien is a father of two and a ski and cycling enthusiast.

MELISSA S. BUKOVSKY

Melissa S. Bukovsky is a post-doctoral fellow at the National Center for Atmospheric Research working directly with the NARCCAP project. Her research revolves around regional climate model credibility and diagnostics. She is interested in the determination of model credibility through process-based analysis and the impact of model bias/error and its propagation in simulations from the present-day to the future. Current, specific areas of research include the ability of the NARCCAP models to simulate central U.S. warm-season precipitation, the North American monsoon, observed trends, and the related processes behind these features. She is also working to further downscale select NARCCAP simulations over western North America.

DANIEL CAYA

Daniel Caya holds a degree in Atmospheric Science from UQAM, and began his career as a consultant in meteorology and atmospheric science with a private firm. After earning his PhD in Environmental Science from UQAM, he headed the Canadian Regional Climate Modelling Network from 1997 to 2001. In 2001, Ouranos appointed him to plan, develop and manage the Canadian climate modeling program. Since then he has been directing the Climate Simulation group, in charge of developing and producing regional climate projections for Canadian scientists. Mr. Caya is also an associate professor at the regional climate study and modeling centre (ESCER) at UQAM, at INRS-ETE and at ISMER (UQAR). He remains very involved in training highly skilled staff to maintain Canadian expertise in regional climate simulation.



PHILIP DUFFY

Dr. Duffy joined Climate Central in 2008 as the Scientific Director of the Palo Alto Office and Senior Research Scientist. Previously he had worked at the Lawrence Livermore National Laboratory, where he was a physicist for 22 years. He is the founder and director of the University of California Institute for Research on Climate Change and its Societal Impacts, and an Adjunct Associate Professor at UC Merced. Dr. Duffy has a A.B. degree from Harvard in Astrophysics, and a Ph.D. from Stanford in Applied Physics. Dr. Duffy is a member of the Nobel-honored Intergovernmental Panel on Climate Change (IPCC). He has published over 50 peer-reviewed papers on many aspects of climate science. His recent work has focused on increasing the spatial resolution of climate projections, to make them more suitable for assessing potential societal impacts of climate change.

WILLIAM GUTOWSKI

William J. Gutowski, Jr. is Professor of Atmospheric Science in the Department of Geological and Atmospheric Sciences at Iowa State University. His research concentrates on the role of atmospheric dynamics in climate, with a focus on the dynamics of the hydrologic cycle and regional climate. Dr. Gutowski's research program entails a variety of modeling and data analysis approaches to capture the necessary spatial and temporal scales of these dynamics and involves working through the Regional Climate Modeling Laboratory at Iowa State University. His work also includes regional modeling of Arctic, African, and East Asian climates, in which he collaborates with scientists from these regions.

Dr. Gutowski currently serves as an Editor for the Journal of Hydrometeorology. He was a Lead Author for two U.S. Climate Change Science Program reports (CCSP 3-1, Climate Models: An Assessment of Strengths and Limitations; CCSP 3-3, Weather and Climate Extremes in a Changing Climate) and a contributing author to the IPCC Third and Fourth Assessment Reports. In addition, he was a member of the U.S. National Academy/Transportation Research Board panel to study the impacts of climate change on transportation. Dr. Gutowski received a Ph.D. degree in meteorology from the Massachusetts Institute of Technology and a Bachelor of Science degree in astronomy and physics from Yale University.

ISAAC HELD

Dr. Isaac Held is a Senior Research Scientist at NOAA's Geophysical Fluid Dynamics Laboratory, where he conducts research on climate dynamics and climate modeling, and is head of the Weather and Atmospheric Dynamics Group. He is also a lecturer with rank of Professor at Princeton University, in its Atmospheric and Oceanic Sciences Program, and is an Associate Faculty member in Princeton's Applied and Computational Mathematics Program and in the Princeton Environmental Institute. Dr. Held is a Fellow of the American Meteorological Society (1991) and the American Geophysical Union (1995), and a member of the National Academy of Sciences (2003). He recently received the AMS Carl Gustav Rossby Gold Medal (2008). He was a lead author of Ch.11 of the WG1 AR4 report on regional projections. He is particularly interested in the connections between planetary scale aspects of climatic responses and regional issues. He has coordinated the contribution of GFDL to NARCCAP, working with Bruce Wyman both to provide time-resolution output from GFDL's AR4 model (CM2.1) for downscaling and to provide data over North America from a time slice simulation with a ~50km version of AM2.1, the atmospheric component of the GFDL model.

RICHARD JONES

Richard Jones is manager of regional predictions at the Meteorological Office Hadley Centre. His main responsibilities are to provide state of the art regional climate modeling systems and to provide and analyze regional climate change scenarios and advice on these as required under contracts for various UK government departments and international bodies. He developed regional climate modeling in the Hadley Centre involving development of a consistent GCM/RCM modeling system; domain-size experiments; climate simulations driven by numerical weather prediction analyses; multi-decade regional climate change experiments; development of GCMs to provide high quality boundary conditions for RCMs; ensemble regional climate change experiments. He is a lead or major contributing author to many publications in regional climate modeling and was a lead author of the IPCC Assessment Reports Three and Four. He led the development of the regional climate modeling system PRECIS, has worked with many European institutes and is currently working with institutes across all continents in the fields of climate prediction and climate scenario development and application. In the NARCCAP project he is responsible for providing boundary conditions from Hadley Centre global climate model projections for downscaling by NARCCAP RCMs, for downscaling the GCMs used in NARCCAP with PRECIS and assisting with interpretation of the model projections.



RUBY LEUNG

Ruby Leung is a Laboratory Fellow at the Pacific Northwest National Laboratory (PNNL) and an Affiliate Scientist at the National Center for Atmospheric Research. She received her MS and Ph.D. in Atmospheric Science from the Texas A&M University in 1988 and 1991. She has performed much of her research using regional climate models since the early 1990s when she developed a regional climate model with special features that account for the subgrid scale effects of topography, lake and vegetation. Her model enables the coupling of climate and hydrologic processes in regions with complex orography. Since then Dr. Leung has led several projects to examine the impacts of climate variability and change and the effects of aerosols on the regional hydrological cycle. In 2001, Dr. Leung organized the Workshop on "Regional Climate Research: Needs and Opportunities" co-sponsored by the National Science Foundation and Department of Energy to examine various approaches to modeling regional climate. In 2005, she organized the Workshop on "Research Needs and Directions of Regional Climate Modeling Using WRF and CCSM". The workshop identified the needs to develop capability for high resolution modeling, regional earth system modeling and up scaling. More recently, she is leading an effort to use a hierarchical evaluation approach to assess global high resolution, global variable resolution, and regional climate models for modeling climate at the regional scale. She is a member of the NRC study committee on "A National Strategy for Advancing Climate Modeling". Dr. Leung is a fellow of the American Association for the Advancement of Science and American Meteorological Society.

LARRY MCDANIEL

Larry McDaniel is a software engineer who has worked on climate, climate change and climate impact on agriculture for the past twenty years here at NCAR. He prepares data sets (observed and model output) for use in agricultural models, heat wave studies as well as other projects. He writes code to analyze and validate model output with observed data sets..

Larry plans to use the NARCCAP data for the above purposes as well as for health and heat waves.

SETH MCGINNIS

Seth McGinnis has worked as an Associate Scientist in ISSE at NCAR since 2003, shortly after he received his Ph.D. in geophysics from CU-Boulder. He has a strong background in computer programming and works on a variety of projects related to making atmospheric science data accessible and usable to end-users of all types. His role in NARCCAP, along with Larry McDaniel, is to quality check (QC) the model data as it is submitted for archiving and publication, checking for errors and ensuring that it meets the formatting and metadata requirements of the project.

DON MIDDLETON

Don E. Middleton leads the Visualization and Enabling Technologies Section in NCAR's Computational and Information Systems Laboratory. He is responsible for developing and managing an emerging technologies program that encompasses data and knowledge management, analysis and visualization, collaborative visual computing environments, Grid computing, digital preservation, and education and outreach activities. Don's professional interests center on the frontiers of managing, preserving, and analyzing large, complex earth system datasets and communication using advanced visual technologies. Don is currently serving in a PI or co-PI capacity on a number of projects, including: the Earth System Grid, the Earth System Curator, the Virtual Solar Terrestrial Observatory, the North American Regional Climate Change Assessment Program, the Cooperative Arctic Data and Information Service, and NCAR's Cyberinfrastructure Strategic Initiative. Don recently completed a term on a National Research Council committee for NEES/NEESGrid and Earthquake Engineering and was a contributing author for the new publication, The Visualization Handbook.

ANA NUNES

Dr. Ana Nunes is a weather/climate modeler at the Experimental Climate Prediction Center (ECPC) at the Scripps Institution of Oceanography. Formerly, she worked with the Modeling Development Division of the Center of Weather Prediction and Climate Studies at the National Institute for Space Research in Brazil, which is considered one of the most prestigious scientific institutions in South America. One of the subjects of her research is improving our understanding of atmospheric dynamics, and dynamical downscaling in particular, via the assimilation of precipitation, as well as the applications of precipitation assimilation to water cycle modeling.

Dr. Nunes is a member of the NARCCAP team, and in charge of the ECPC-Regional Spectral Model (RSM) participation in this program.



JOHN ROADS*

Dr. John Roads is a Senior Scripps Research Meteorologist, Sr. Lecturer and Director of the Experimental Climate Prediction Center (ECPC) at the Scripps Institution of Oceanography, University of California, San Diego. He is also the co-chair of the Global Energy and Water-cycle Experiment (GEWEX) Coordinated Energy and water-cycle Project (CEOP). Dr. Roads was a previous chair of the National Centers For Environmental Research (NCEP) Regional Reanalysis Scientific Advisory Committee, several international Regional Spectral Model workshops, and the National Research Council GEWEX committee. He has also been a Principal Investigator on many NOAA, NASA, USFS; and other US agency grants. He is a Fellow of the AMS and has published more than 140 refereed articles. Dr. Roads is the ECPC principal investigator in charge of contributing the Regional Spectral Model (RSM) simulations to NARCCAP.

*Regrettably, Dr. John Roads died in June, 2008

STEPHAN R. SAIN

Stephan R. Sain is the head of the Geophysical Statistics Project in the Institute for Mathematics Applied to Geosciences at the National Center for Atmospheric Research. He received undergraduate degrees in mathematical sciences and statistics as well as a masters and PhD in statistics from Rice University in Houston, TX. His research focuses on developing statistical methodology for analyzing the complex, multivariate data that are typical in the geosciences. His current work centers around the analysis of regional climate model output, the assessment of the impact of climate change, and the design and analysis of computer experiments. These projects bring together a broad range of statistical areas: spatial and spatial-temporal methods, hierarchical models, statistical computing, and methods for analyzing extremes. As a NARCCAP co-Pi, he is responsible for the development of statistical methodology to assess and quantify uncertainties in the NARCCAP regional climate model ensemble.

LISA SLOAN

Lisa Sloan is a Professor of Earth and Planetary Sciences and the Director of the Climate Change and Impacts Laboratory the University of California Santa Cruz (UCSC). She is also the Vice Provost and Dean of Graduate Studies at UCSC. Sloan received her B.S. from Allegheny College and her Ph.D. from Pennsylvania State University, and did postdoctoral work at the University of Michigan. Sloan joined the faculty at UCSC in 1995. Sloan has been the National Secretary of the American Geophysical Union's Ocean Sciences Section, a scientific Fellow of the David and Lucile Packard Foundation, Editor-in-Chief of the international journal *Global and Planetary Change*, editor of the international journal *Paleoceanography*, and has co-chaired the National Center for Atmospheric Research's Paleoclimate Working Group. She has served and continues to serve on and many national scientific advisory boards that deal with past and future climate change as well as scientific computing challenges. Sloan's research is concentrated in two broad areas: (1) understanding the mechanisms of climate changes in the geologic past and (2) studying and modeling future climate change at regional scales and investigating the possible impacts of future climate change on human and natural systems. She has authored or coauthored more than 60 peer-reviewed articles and book chapters, and is a frequent public speaker in California on issues of climate change.

For more information, see <http://www.es.ucsc.edu/~lcsloan/>

EUGENE S. TAKLE

Eugene S. Takle is professor of Atmospheric Sciences and Agricultural Meteorology at Iowa State University.

Eugene's current climate-related research includes both basic research on climate change and impacts of climate change. Basic research centers on how the features of the earth surface influence turbulent flow and exchange processes that influence surface momentum, energy, and moisture fluxes. Research on climate-change impacts includes assessing the interactive roles of climate and land-manager choices on land-use/land-cover change in agricultural area, development and evaluation of downscaling tools for near-surface flow and impacts of climate change on wind power, evaluating effects of climate changes on Midwest agroecosystems using a climate-crop coupled model, and assessment of variability and trends in Iowa climate data on pavement performance by use of a mechanistic-empirical pavement design model. The land-use/land-cover project uses SWAT (Soil and Water Assessment Tool) to simulate stream flow in large complex watersheds in agricultural areas under current and future scenario climates. Changes in surface wind speed and wind power over the 20th and 21st Centuries are explored through use of statistical downscaling and regional climate models. By coupling crop models with regional climate models we explore the impact of crop selection on carbon uptake and evapotranspiration over the Midwest during the growing season. Roadways in Iowa have been designed under assumptions of average climate conditions that do not reflect actual climate variability or future climate change. Working with civil engineers we are using a standard pavement design model to explore expected changes in various roadway failure modes under actual variability and projected trends in climate over the next 60 years.

Eugene's role in NARCCAP is as part of the ISU team organizing and analyzing the reanalysis-driven runs and contributing to the scenario-driven runs. A central focus is promoting appropriate and effective use of regional climate model information in impacts studies.