Progress and Priorities of US Weather Research and Research-to-Operations Activities

Committee

Walter F. Dabberdt

Chair

WALTER F. DABBERDT is Director of Strategic Research at Vaisala Inc. Previously he worked at Stanford Research Institute where he focused on problems of optical propagation in the planetary boundary layer and atmospheric dispersion modeling and experimentation and at the National Center for Atmospheric Research where he focused on development and application of in situ and remote sensing instrument systems, and dispersion modeling research employing wind tunnel and computational fluid dynamics simulations. Dr. Dabberdt has served on numerous advisory committees for the Environmental Protection Agency, the National Science Foundation, and the Department of Energy. He has served as editor for several atmospheric and environmental journals and authored two books, more than 60 journal articles, and more than 100 technical reports. Dr. Dabberdt received his Ph.D. in Meteorology from the University of Wisconsin-Madison.

Richard E. Carbone

Member

RICHARD (RIT) E. CARBONE is a Senior Scientist and current & founding director of the The Institute for Integrative & Multidisciplinary Earth Studies Institute at the National Center for Atmospheric Research in Boulder, Colorado. He has authored more than 100 scholarly works. A pioneer in Doppler radar, he has published on physical processes in clouds and storms, topographically-influenced circulations, predictability of warm season rainfall, convection on tropical islands, and severe storms. Dr. Carbone led the United States Weather Research Program until 1999. He chaired the World Meteorological Organization's World Weather Research Programme (Geneva, CH) from 1994 - 2001 and served as vice-president for the International Union of Geodesy & Geophysics. He earned an S.M. (Atmospheric Physics, '69) at the University of Chicago and was elected Fellow of the American Meteorological Society in 1994. Among other honors, in 2001, Dr. Carbone received the Cleveland Abbe Award, for Distinguished Service to Atmospheric Science by an Individual. Dr. Carbone was cited for "building consensus in the weather research community on problems of major national and international importance, and for fostering the conduct of collaborative and coordinated weather research." He is also the recipient of the NCAR Publication Prize in 2002 "Inferences of predictability associated with warm season precipitation episodes".

Shuyi S. Chen

Member

SHUYI S. CHEN is a Professor of Meteorology and Physical Oceanography at the Rosenstiel School of Marine and Atmospheric Science (RSMAS) of the University of Miami. Professor Chen is a widely published author whose research interests include mesoscale and tropical meteorology, air-sea interactions, high-resolution coupled atmosphere-wave-ocean modeling of tropical cyclones, and numerical weather prediction. She served as an Editor for Weather and Forecasting journal of the American Meteorological Society. Professor Chen leads a research group at RSMAS/UM that has developed a high-resolution, fully coupled atmosphere-wave-ocean, vortex-following, nested-grids model for hurricane research and prediction. These efforts contribute directly to the development of the next-generation hurricane forecasting models. Professor Chen is a lead scientist for the Coupled Boundary Layer Air-Sea Transfer (CBLAST)-Hurricane modeling team sponsored by the Office of Naval Research. She is also a lead principal investigator for the National Science Foundation funded Hurricane Rainbands and Intensity Change Experiment (RAINEX) using three Doppler radar aircraft collected unprecedented in-situ data in Hurricanes Katrina, Rita, and Ophelia during the 2005 Hurricane Season. Currently she is a lead scientist for one of the largest international program to study the tropical cyclones in the West Pacific. Her research has received broad national and international recognition. She was invited by the National Academy of Engineering as a Keynote Speaker at the Indo-US Frontiers Symposium in 2006 and recently a Keynote Speak at the First US-China Symposium on Meteorology in 2008. In 2006, Professor Chen was awarded the NASA Group Achievement Award. Professor Chen served on a panel of experts for the Congressional Briefing on the National Hurricane Initiative at the U.S. House and Senate in July 2007. She testified as a witness at the Joint Hearing on: The State of Hurricane Research and the National Hurricane Research Initiative Act of 2007, before the Subcommittee on Energy and Environment and the Subcommittee on Research and Science Education, Committee on Science and Technology of United States House of Representatives on 26 June 2008. Dr. Chen received her Ph.D. in Meteorology from the Pennsylvania State University in 1990.

Gregory S. Forbes

Member

GREGORY S. FORBES is a Severe Weather Expert for The Weather Channel, Inc. Dr. Forbes deals with dangerous thunderstorm weather hazards such as tornadoes, damaging winds, hail, floods, and lightning. He studied tornadoes and severe thunderstorms under Dr. T. Theodore Fujita-- world-famous for his invention of the F-scale used to rate tornadoes and for his discovery of intense thunderstorm downdrafts called micro bursts. Dr. Forbes served as Field Manager for Project NIMROD, the first measurement program to study damaging thunderstorm winds from downbursts and micro bursts. He then joined the faculty in the Department of Meteorology at Penn State in 1978, where he taught courses in weather analysis and forecasting, natural disasters, and other topics until joining The Weather Channel, Inc. in June 1999. Dr. Forbes has had a variety of experiences outside of the classroom, including surveying the damage paths left by about 300 tornadoes and windstorms, among them Hurricane Andrew and Typhoon Paka. He has done collaborative research and consulting with the National Weather Service in the United States and with the national weather services in South Africa, Spain, and the Netherlands. He spent three summers performing studies to improve lightning forecasting at the Kennedy Space Center. He has written numerous papers on tornadoes, severe thunderstorms, and other meteorological topics and has co-authored and co-edited two books: Natural and Technological Disasters and Images in Weather Forecasting-- the latter of which deals with the use of satellite and radar imagery in weather forecasting.

Efi Foufoula-Georgiou

Member

EFI FOUFOULA-GEORGIOU is a University of Minnesota McKnight Distinguished Professor in the Department of Civil Engineering and the Joseph T. and Rose S. Ling Chair in Environmental Engineering. She is Director of the NSF Science and Technology Center “National Center for Earth-surface Dynamics” (NCED), and has served as Director of St. Anthony Falls Laboratory at the University of Minnesota. She received a diploma in Civil Engineering from the National Technical University of Athens, Greece, and an M.S. and Ph.D. (1985) in Environmental Engineering from the University of Florida. Her area of research is hydrology and geomorphology, with special interest on scaling theories, multiscale dynamics and space-time modeling of precipitation and landforms. She has served as associate editor of Water Resources Research, J. of Geophysical Research, Advances in Water Resources, Hydrologic and Earth System Sciences, and as editor of J. Hydrometeorology. She has also served in many national and international advisory boards including the Water Science and Technology Board, NSF, NASA and EU proposal review panels, and in several NRC studies. She is currently the chair of the Board of Directors for CUAHSI (Consortium of Universities for the Advancement of Hydrologic Sciences), a member of the Board of Trustees of UCAR (University forporation for Atmospheric Research), and a member of the Advisory Council of the GEO directorate of NSF. Professor Foufoula has been the recipient of the John Dalton Medal of the European Geophysical Society and the AGU Hydrologic Sciences Award. She is a fellow of the American Geophysical Union and American Meteorological Society, and a member of the European Academy of Sciences.

Rebecca E. Ellis

Member

Rebecca E. Morss is a Scientist III at the National Center for Atmospheric Research in Boulder, CO, with appointments in the Mesoscale and Microscale Meteorology Division and the Integrated Science Program. She studies meteorological, socioeconomic, and public policy aspects of weather forecasts, floods, hurricanes, and related topics. Her recent research includes studies of meteorological and oceanographic observing network design; the use of weather and climate information in decision making; scale interactions in atmospheric predictability; and communication of uncertainty in weather forecasts. Through disciplinary and interdisciplinary work, she aims to integrate atmospheric science and socioeconomic/policy perspectives to provide information for the benefit of society. Dr.
Morss received a B.A. from the University of Chicago and a Ph.D. in atmospheric science from the Massachusetts Institute of Technology.

John T. Snow

Member

JOHN T. SNOW is Dean of the College of Atmospheric and Geographic Sciences, Director of Oklahoma Weather Center Programs and Professor of Meteorology. Dr. Snow's current professional interest is in “Earth System Science”, the integration of the best available knowledge from the Earth and Life Sciences to provide a holistic picture of “how the world works”. His primary research area for many years has been in the dynamics of columnar vortices, ranging in scale from small dust devils to tornadoes. Dr. Snow's second area of research is in meteorological measurements. He has published widely in these and related areas, and made numerous presentations at professional and scientific meetings. Dr. Snow is a Fellow of the American Meteorological Society and a member of the Royal Meteorological Society of the United Kingdom. He is a Certified Consulting Meteorologist. He recently finished serving on the NOAA Science Advisory Board.

Xubin Zeng

Member

XUBIN ZENG is a professor of atmospheric science (since 2004) and the Director of the Climate Dynamics and Hydrometeorology Center (CDHC, since 2008) at the University of Arizona in Tucson. Zeng's research in the past 20 years, through over 90 peer-reviewed publications, has covered atmospheric turbulence (theory, parameterization, its interaction with clouds and radiation, and large-eddy simulations), mesoscale modeling of atmospheric flow over complex terrain, chaos theory and its applications to the atmosphere, global land-atmosphere interactions, ocean-atmosphere interactions, sea ice-atmosphere interactions, monsoon dynamics, remote sensing, and most recently, nonlinear dynamics of vegetation. In the past ten years, he has focused on the land-atmosphere-ocean-sea-ice interface processes of the earth's climate system by integrating global modeling with remote sensing and in-situ data. He has extensive experience with most satellite land products and some experience with satellite atmosphere and ocean products. He has acted as a bridge linking the remote sensing and field experiment community to the weather and climate modeling community. He has given over 70 invited talks at conferences and institutions. His research products (including models, algorithms, and value-added datasets) have been used worldwide by numerous groups (including NCAR, NCEP, ECMWF). Zeng earned his Ph.D. in atmospheric sciences from Colorado State University in 1992.