

Himalayan Glaciers, Hydrology, Climate Change, and Implications for Water Security

Committee

Henry J. Vaux, Jr.

Chair

Dr. Henry J. Vaux, Jr. is Professor Emeritus of resource economics at both the University of California in Berkley and Riverside. He is also associate vice president emeritus of the University of California system. He also previously served as director of California's Center for Water Resources. His principal research interests are the economics of water use, water quality, and water marketing. Prior to joining the University of California, he worked at the Office of Management and Budget and served on the staff of the National Water Commission. Dr. Vaux has served on the NRC committees on assessment of water resources research, western water management, and ground water recharge, and currently, sustainable underground storage of recoverable water. He was chair of the Water Science and Technology Board from 1994 to 2001. He received a Ph.D. in Economics from the University of Michigan.

Deborah Balk

Member

Dr. Deborah Balk is Professor at the City University of New York (CUNY)'s Baruch School of Public Affairs and the CUNY Graduate Center (in the Sociology and Economics Programs) and Associate Director of the CUNY Institute for Demographic Research. Her expertise lies in spatial demography and the integration of earth and social science data and methods to address interdisciplinary policy questions. Her current research focus is on urbanization, population, poverty, and environmental interactions, in particular climate change. Prior to joining CUNY in 2006, she was a research scientist at the Center for International Earth Science Information of Network at Columbia University. There she was also lead Project Scientist for the NASA-funded Socioeconomic Data and Applications Center where she worked on large-scale data integration of geographic, survey and administrative data. She received her PhD in Demography from the University of California at Berkeley, and her Master's Degree in Public Policy, and A.B in International Relations, from the University of Michigan, Ann Arbor. She has recently completed service as a member of the International Union for the Scientific Study of Population working group on Urbanisation and to two National Research Council panels. She has co-authored numerous papers on population and climate change, including a recent one on city population forecasts and water scarcity.

Edward R. Cook

Member

Dr. Edward R. Cook is a Ewing Research Professor at Lamont-Doherty Earth Observatory of Columbia University. He co-founded the Tree-Ring Laboratory in 1975, which is dedicated to expanding the use and application of tree-ring research around the world to improve our understanding of past climate and environmental history. His current research concentrates on the use of tree-ring data networks to study regional climate, global climate teleconnections and anthropogenic impacts on forest growth. Dr. Cook received his Ph.D. in Watershed Management from the University of Arizona.

William K. Lau

Member

Dr. William K.-M. Lau is the Chief of the Laboratory for Atmospheres at NASA Goddard Space Flight Center. Dr. Lau's research interests include climate dynamics, atmospheric processes, air-sea interaction, aerosol-water cycle interactions, and climate variability and global change. He received his Ph.D. in Atmospheric Sciences at the University of Washington in Seattle in 1977.

Marc Levy

Member

Dr. Marc Levy is Deputy Director of the Center for International Earth Science Information Network (CIESIN), a unit of Columbia University's Earth Institute. He is also an Adjunct Professor in Columbia's School of International and Public Affairs. He is a political scientist specializing in the human dimensions of global environmental change. His research focuses on climate-security linkages, emerging infectious disease modeling, anthropogenic drivers of global change, sustainability indicators, and vulnerability mapping. He is also leading a project in Haiti to reduce vulnerability to disaster risks by integrating ecology and economic development goals on a watershed scale. He has served on a number of international assessments, and is currently a Lead Author on the Intergovernmental Panel for Climate Change Fifth Assessment chapter on Human Security.

Elizabeth L. Malone

Member

Dr. Elizabeth Malone is a Senior Research Scientist at the Joint Global Change Research Institute. Her interests focus on policy-relevant sociological research in global change issues, developing studies that integrate disparate worldviews, data sources, and scientific approaches. Dr. Malone was an author and review editor for the most recent assessment of the Intergovernmental Panel on Climate Change, both in impacts, adaptation and vulnerability; and mitigation. In recent years she has, with colleagues, developed structured methods for analyzing country, sector, and local vulnerabilities to climate change. Dr. Malone coordinated and developed the science portion of the National Intelligence Assessment on Climate Change and coordinated the development of regional reports on scientific knowledge about climate change. She was the technical lead for a report on glacier melt in the greater Himalayan area, including downstream vulnerabilities and potential interventions for the U.S. Agency for International Development. She received her Ph.D. in Sociology from the University of Maryland in 2004.

Robert McDonald

Member

Dr. Robert McDonald is a Vanguard Scientist for The Nature Conservancy. Dr. McDonald works for the Conservancy's Analysis Unit, working on issues related to energy, agriculture, and ecosystem services. Dr. McDonald has recently led a NCEAS Working Group into how global urban growth and climate change will affect urban water availability and air quality. He also researches the effect of U.S. energy policy on natural habitat and water use. Prior to joining the Conservancy, he was a Smith Conservation Biology Fellow at Harvard University, studying the impact global urban growth will have on biodiversity and conservation. Dr. McDonald has also taught landscape ecology at Harvard's Graduate School of Design, helping architects and planners incorporate ecological principles into their projects. He earned his Ph.D. in Ecology from Duke University.

Drew Shindell

Member

Dr. Drew Shindell is a Senior Scientist at the National Aeronautics and Space Administration's Goddard Institute for Space Studies. Dr. Shindell researches climate change, with a focus on atmospheric chemistry. An expert on modeling the impact of emissions changes, Shindell's work has investigated how the atmospheric chemical system has important effects on humans through pollutants such as smog or particulates, through acid rain, and through stratospheric ozone change, and how climate can be altered by greenhouse gases, solar variability, volcanic eruptions, aerosols, and ozone, and what impacts changes in climate and air quality may have on society. Dr. Shindell serves as a coordinating lead author for the Intergovernmental Panel on Climate Change's Fifth Assessment Report on global climate change. He earned his Ph.D. at Stony Brook University.

Lonnie G. Thompson

Member

Dr. Lonnie G. Thompson (NAS) is a Professor at The Ohio State University's School of Earth Sciences and Senior Research Scientist at the Byrd Polar Research Center. His research focuses on searching glacial ice for clues to global warming, and he uses new technologies in the emerging science of paleoclimatology. Dr. Thompson made his first expedition to glaciers in December 1973 to Antarctica and he has been on more than 50 glaciological research expeditions since then. Dr. Thompson pioneered studies of Quaternary climate change recorded in low-latitude alpine icecaps. His work on ice cores led to a fundamental shift in thinking about the importance of the tropics in global climate change. He was elected to the advisory board of the International Glaciological Society in 1999. Dr. Thompson was elected a fellow of the American Geophysical Union in 2001 and was named a 2002 Distinguished University Professor from The Ohio State University and elected to the National Academy of Sciences in 2005 and received the National Medal of Science in 2007.

James L. Wescoat, Jr.

Member

Dr. James L. Wescoat is an Aga Khan Professor at the Massachusetts Institute of Technology. His research concentrates on water systems in South Asia and the US from the site to river basin scales. He has served on the NRC Water Science and Technology Board, including committees for the Review of Lake Ontario-St. Lawrence Studies; Downstream: Adaptive Management of Glen Canyon Dam and the Colorado River; and A New Era for Irrigation. He has contributed to studies of climate, water, and food security in the Indus basin; and to historical research on waterworks of the Mughal period in India and Pakistan. In 2003, he co-authored *Water for Life: Water Management and Environmental Policy* with geographer Gilbert F. White. Dr. Wescoat received his Ph.D. in Geography from The University of Chicago.

Mark W. Williams

Member

Dr. Mark W. Williams is a Professor of Geography and Fellow of the Institute of Arctic and Alpine Research at the University of Colorado, Boulder. Dr. Williams' research interest is the processes that determine the hydrology, hydrochemistry and biogeochemistry of high-elevation basins including the storage and release of solutes from the snowpack, biogeochemical modifications of snowpack runoff, nutrient cycling, surface/groundwater interactions, and hydrologic pathways and residence time. Current projects include the Rocky Mountains, Andes, European Alps, Central Asian areas of Kazakhstan and Kirghizia, western China including Tibet, and the Himalayas. He received his Ph.D. in Biological Sciences with an emphasis in ecology and hydrology from the University of California at Santa Barbara in 1991.