Dr. Mayewski’s primary research interest is the interaction between climate change and changes in the chemistry of the atmosphere. He founded the Climate Change Research Center at the University of New Hampshire, and moved to the University of Maine in 2000, where he is professor and co-director of the Institute for Quaternary and Climate Studies. He has received numerous awards and honors for his work including the international Scientific Committee for Antarctic Research Medal for Excellence in Research, an honorary doctorate from Stockholm University, and is a Fellow of both the American Geophysical Union and the Explorers Club, an international multidisciplinary professional society dedicated to the advancement of field research.

He is a world leader in the collection and analysis of ice cores that provide a record of environmental conditions over thousands of years. Since his first trip to Antarctica in 1968, Mayewski has led more than 35 Antarctic, Arctic and high-mountain expeditions, and accumulated a treasure trove of snow samples and ice cores from Antarctica, the Arctic, Andes, New Zealand and the Himalayas and Tibetan Plateau. Chemicals and dust trapped in these ice cores offer clues about the sources of moisture, the temperature of the air and the direction of the wind over geological time scales.

Some of his current research activities include: The International Trans Antarctic Scientific Expedition, a reconstruction of Antarctic climate and chemistry of the atmosphere over the last 200 years; ice core collection and analysis on Mt. Everest, Mt. Logan (Yukon Territory) and Patagonia, and calibration of ice core records using instrumental records to investigate the past behavior of ENSO, the North Atlantic, Oscillation, the Indian Monsoon and the Antarctic Oscillation.

SUGGESTED READINGS


Semester in Environmental Science
2006 Distinguished Scientist Seminar Series

FRIDAY, 29 SEPTEMBER, 3:00 PM REDFIELD AUDITORIUM

Stream Ecosystem Structure and Function in Urbanizing Landscapes
Margaret Palmer – Chesapeake Biological Lab., Univ. of Maryland

Dr. Palmer is professor and director of the Chesapeake Biological Laboratory of the University of Maryland Center for Environmental Science. The broad objective of her research is to understand what controls stream ecosystem structure and function. She specifically focuses on restoration ecology and how land use, hydrology and geomorphology influence the health of running-water ecosystems. Her recent work has concentrated on: 1) synthesizing the scientific status of river restoration nationally; 2) understanding how increased urbanization influences stream fauna and ecosystem processes through changes in the riparian zone, the hydrology, and channel characteristics; 3) studying the interactive effects of land use and climate change on stream ecosystem services. She has published >100 journal articles and co-authored the 2006 book, Foundations of Restoration Ecology.

Palmer is one of the principle organizers of the National River Restoration Scientific Synthesis (NRRSS) project, which involves in-depth research at eight geographic regions in the United States, with the goal of providing scientific synthesis that can be used to inform policy at local, regional, and national levels. She has served and continues to serve on many scientific advisory boards, including: International S.C.O.P.E. Biodiversity and Ecosystem Function in Soils and Aquatic Sediments Project, the National Science Foundation (NSF) National Center Ecological Analysis & Synthesis (2001 – 2005), the Center for Watershed Protection, National Center for Earth Surface Dynamics, and Chesapeake Bay Recovery Partnership. She chaired the advisory Board of Scholars for the NSF project on Women and Scientific Literacy (1996 – 2000). She also served as a Network Design team member for the NSF National Ecological Observatory Network (NEON 2005 – 2006). Finally, she serves as Associate Editor of two scientific journals, Freshwater Biology and Limnology & Oceanography.

She has received numerous awards including nomination as a Fellow of the American Association for the Advancement of Science, an Aldo Leopold Leadership Fellow, a Lilly Fellow, a Distinguished Scholar Teacher, and she received the Ecological Society of America Distinguished Service Award.

SUGGESTED READINGS


Dr. Bond is Ruth H. Spaniol Chair of Renewable Resources in the department of Forest Science at Oregon State University (OSU). She is also lead principle investigator of the H.J. Andrews Forest Long-term Ecological Research program at OSU. Her research focuses on physiological processes in forests, especially water and carbon relations at whole plant, canopy, and ecosystem scales. She is interested in the mechanisms responsible for declining growth in old trees and has developed approaches to assess the physiological status of forests (e.g. foliar chlorophyll and nitrogen content) using remote sensing and stable isotopes. She is also interested in the relationship between vegetation water use and stream flow in small watersheds, as well as the impact of exotic tree species on water resources. Currently, she heads an interdisciplinary team to study airsheds of mountain ecosystems.

Dr. Bond has had a non-traditional career path and proudly lists “motherhood” among her biographical highlights. She received her B.S. in biological science with honors from U.C. Irvine, then gained a teaching certification in secondary science and math education and began her career as a 7th/8th grade math and science teacher (1975-77). She earned her M.S. in terrestrial plant ecology in 1984 and Ph.D. in plant physiology and forest science in 1992 from Oregon State. She began her research career at Oregon State University, where she has held a diverse array of positions, starting as a research assistant in plant pathology (1977-79), then project leader for a program in forest and environmental education curriculum development (1981-84), followed by research assistant in hardwood silviculture (1985-88), research associate (1992-94), assistant, and associate professor. She became full professor at Oregon State in 2003. She received the College of Forestry Dean’s award for outstanding achievement in teaching, mentoring and advising undergraduate and graduate students in 2001, and has twice (1994, 2000) been chosen by the graduate students in the department of forestry at Oregon State to receive the Outstanding Faculty Award. She was awarded a visiting Fulbright professorship to the University of Buenos Aires, Argentina and Universidad de la Republica, Montevideo, Uruguay in 2001.

She has also served on numerous research and advisory panels and committees including the National Science Foundation’s Ecosystems panel review team (2002-04), the National Center of Ecological Analysis and Synthesis working group for primary productivity decline with stand age (1997-99), the Interagency (NSF/USDA/EPA/NASA) Terrestrial Ecology and Global Change Initiative (TECO) peer review panel (1995), and the NASA committee to develop remote sensing research to complement free air CO₂ enrichment studies.

SUGGESTED READINGS
San Francisco Bay is the geographic landmark of a region that is home to nearly 10 million people. The Bay is valued for its aesthetics, recreational opportunities, its moderation of the local climate, and the habitat it provides for diverse communities of plants and animals. Rapid population growth in California has changed the San Francisco Bay ecosystem. For nearly three decades the U.S. Geological Survey (USGS) has maintained a program of research and observation in San Francisco Bay. The program includes regular measurements of water quality along a 145 kilometer transect spanning the length of the entire estuarine system, from the South Bay to the Sacramento River.

Dr. Jim Cloern is team leader of this long-term investigation of San Francisco Bay that has included study and measurement of: primary production, algal and zooplankton community dynamics, net ecosystem metabolism, the carbon budget, light and nutrient limitation of algae, and grazing by benthic suspension feeders. The program has assessed disturbance by introduced species, impacts of climatic and hydrologic variability, phytoplankton bloom dynamics, and the biogeochemical significance of algal blooms on benthic and pelagic nutrient regeneration. Stable isotopes and lipid biomarkers have been used to characterize sources of organic matter over spatial scales from meters to kilometers. This work is one of the most comprehensive scientific studies of any coastal water-body in existence. Details of the dataset can be found at http://sfbay.wr.usgs.gov/access/wqdata/.

Cloern was trained in zoology, receiving his B.S. at the University of Wisconsin-Madison (1970), his M.S. at University of Wisconsin-Milwaukee (1973), and his Ph.D. at Washington State University (1976). From 1976 to the present he has been Research Scientist at the USGS, Menlo Park, CA. He also holds appointments as Consulting Professor at Stanford University in the Department of Civil Engineering and as Lecturer at the University of California-Santa Cruz in the Department of Earth Sciences. Dr. Cloern has received numerous awards and honors for his work including the U.S. Department of Interior Meritorious Service Award (1991). In 1993-4, he was a Fulbright Research Scholar, and served as Directeur de Recherche, at the Centre d’Océanologie, Université d’Aix-Marseille, France. He was a member of the National Science Foundation’s advisory panel for Ocean Sciences Research in 1989 and 1992. He also has served on the editorial boards of the scientific journals Limnology and Oceanography (1989-92), and Estuaries (1989-94).
Semester in Environmental Science
2006 Distinguished Scientist Seminar Series
FRIDAY, 3 NOVEMBER, 3:00 PM REDFIELD AUDITORIUM
Meeting the Climate-Change Challenge.
John P. Holdren, Woods Hole Research Center

John Holdren is director of the Woods Hole Research Center, as well as Teresa and John Heinz Professor of Environmental Policy and Director of the Program on Science, Technology and Public Policy at the Kennedy School of Government, Harvard University. He is also professor of environmental science and policy in Harvard’s Department of Earth and Planetary Sciences and current president of the American Association for the Advancement of Science.

Holdren was educated at MIT and Stanford in aeronautics/astronautics and theoretical plasma physics, receiving his Ph.D. in 1970. In 1973 he co-founded and co-led until 1996 the interdisciplinary graduate-degree program in energy and resources at the University of California, Berkeley. His work has focused on the causes and consequences of global environmental change, fusion science and technology, comparative analysis of energy options, and ways to reduce the dangers from nuclear weapons and materials.

Dr. Holdren is a member of the National Academy of Sciences (NAS), the National Academy of Engineering (NAE), the American Academy of Arts and Sciences, and the Council on Foreign Relations. From 2002 until the present, he has also been co-chair of the foundation-funded bipartisan National Commission on Energy Policy. He served as a member of President Clinton’s Committee of Advisors on Science and Technology from 1994-2001 and in that capacity, led studies requested by the President on protection of nuclear-explosive materials, the U.S. fusion energy program, U.S. energy R&D strategy for challenges of the 21st century, and international cooperation on energy.

He has received numerous honors for his work including a MacArthur Prize Fellowship, the Tyler Prize for the Environment and the John Heinz Prize for public policy. In 1995, he gave the acceptance speech for the Nobel Peace Prize on behalf of the Pugwash Conference on Science and World Affairs (for which he served as Chair of the Executive Committee from 1987-97).

Suggested Readings