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Dr. Adkins received his B.S. in Chemistry from Haverford College in 1990 and his PhD in Chemical Oceanography from the MIT/WHOI Joint Program in 1998. Between these two degrees he worked as a technician in the Geology Department at UC-Santa Barbara. Adkins is an Associate Professor at Caltech with a joint appointment in the Division of Geology and Planetary Sciences and the Division of Engineering. His research uses tracers of past climate to better inform our understanding of future changes. He is an Associate Editor of *Paleoceanography*.

Dr. Becky Alexander

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Professor Alexander received her B.A. degree with honors in chemistry at Colgate University in 1997, and her Ph.D. in Atmospheric Chemistry from the Department of Chemistry and Biochemistry at the University of California, San Diego in 2002 on an EPA STAR graduate fellowship. She was a NOAA and Daly postdoctoral fellow in the Department of Earth and Planetary Sciences at Harvard University from 2003-2005, and has been an Assistant Professor in the Department of Atmospheric Sciences and the Program on Climate Change at the University of Washington since July 2005. Her research interests lie in the feedbacks between atmospheric chemistry and climate change. She makes use of the oxygen isotopic composition of nitrate and sulfate aerosols from aerosol, water, snow and ice samples to study photochemical oxidant chemistry on a variety of timescales. Her research also involves global 3-D chemical transport modeling with emphasis on quantifying the importance of various oxidation pathways using oxygen isotopic tracers.

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Dr. Baker received his B.A. degree in Geology from University of Rochester in 1973, his MS in Geology from Penn State in 1975, and his Ph.D. in oceanography from Scripps Institution of Oceanography in 1981. He is Professor of geochemistry in the Division of Earth and Ocean Sciences in the Nicholas School at Duke University. His present research involves paleoclimate and climate studies of tropical South America and elsewhere.

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Eric J. Barron is dean of the Jackson School of Geosciences at The University of Texas at Austin, where he holds the Jackson Chair in Earth System Science. He began a career in geology as an undergraduate at Florida State University. His interest in geology and oceanography resulted in a master's degree (1976) and a doctorate (1980) in oceanography from the University of Miami. Barron's research interests are in the areas of climatology, numerical modeling, and Earth history. During his career, he has worked diligently to promote the intersection of the geological sciences with the atmospheric sciences and the field of earth system science. Barron is a fellow of the American Geophysical Union, the American Meteorological Society, and the American Association for the Advancement of Science. In 2002, he was named a fellow of the National Institute for Environmental Science at Cambridge University. In 2003, he received the NASA Distinguished Public Service Medal.

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Dr Bentley received his BSc degree in Geology from Edinburgh University in 1991 and then a PhD in Glacial Geology in 1995. He is a Reader in the Department of Geography, University of Durham. His research involves using geological techniques to determine

the long-term (centennial to millennial) history of ice sheets and ice shelves, especially in Antarctica. He serves on the steering committee for the Antarctic Climate Evolution (ACE) project, which is striving to better understand how climate has changed in Antarctica.

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Dr. Bice received her B.S. degree in Geology from the College of William and Mary in 1981, her M.S. in Geology from Vanderbilt University in 1983 and her Ph.D. in Geosciences from Pennsylvania State University in 1997. She is an Associate Scientist in the Department of Geology and Geophysics at Woods Hole Oceanographic Institution. Her research involves the study of past warm Earth climates using general circulation models and geochemical paleoclimate proxy data. She is a member of the Roster of Experts for the United Nations Framework Convention on Climate Change.

Dr. Robert Bindschadler

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Dr. Robert Bindschadler is Chief Scientist of NASA's Hydrospheric and Biospheric Sciences Laboratory, a Senior Fellow of the Goddard Space Flight Center, a Fellow of the American Geophysical Union and a past President of the International Glaciological Society. He maintains an active interest in the dynamics of glaciers and ice sheets, primarily on Earth, investigating how remote sensing can be used to improve our understanding of the role of ice in the Earth's climate. As the leader of fourteen Antarctic field expeditions he has extensive first-hand knowledge of the hazards and challenges of working in the Antarctic environment. Other research has taken him to Greenland and various glaciers throughout the world. During his 28 years at Goddard, he has developed numerous unique applications of remote sensing data for glaciological research including measuring ice velocity and elevation using both visible and radar imagery, monitoring melt of the ice sheet by microwave emissions, and detecting changes in ice-sheet volume by repeat space-borne radar altimetry. He has testified before Congress and briefed the U.S. Vice President on the issue of ice-sheet stability and served on many scientific commissions and study groups as an expert in glaciology and remote sensing of ice. He has published over 130 scientific papers, numerous review articles and has appeared on

television, radio and is often quoted in print media commenting on glaciological impacts of the climate on the world's ice sheets and glaciers.

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Dr. Franco Biondi received a Laurea (Italian Doctorate) in forestry from the Università di Firenze in 1985, and a Ph.D. in watershed management and geosciences from the University of Arizona, Tucson in 1994. He is now an associate professor of geography at the University of Nevada, Reno, where he is also the DendroLab Director, and a member of three interdisciplinary graduate programs: Hydrologic Sciences, Atmospheric Sciences, and Ecology, Evolution, and Conservation Biology. He specializes in the application of tree-ring science to the study of climate and forest dynamics, and has additional experience and interests in spatial processes and environmental change. He has conducted research projects in the USA, Mexico, and Italy, and has received funding from the National Science Foundation (including a CAREER award in 2002-2008), the National Oceanic and Atmospheric Administration, the Bureau of Land Management, and the National Geographic Society. He has approximately 110 publications and conference presentations describing results from his research projects. Dr. Biondi received the 2001 Paper of the Year Award from the Climate Specialty Group of the Association of American Geographers, and in 2006 he was a member of the National Academy of Science Committee that authored the book "Surface Temperature Reconstructions for the Last 2,000 Years". In spring 2007 he was appointed Blaustein Visiting Associate Professor in the School of Earth Sciences at Stanford University, and in summer 2007 he was a Guest Professor with the Chair of Forest Ecology at the Swiss Technological Institute in Zurich. More details on his research interests and projects can be found at <http://dendrolab.org>.

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Cecilia Bitz is an assistant professor in Atmospheric Sciences, University of Washington. Her research interests include climate dynamics, climate change, paleoclimate, the role of sea ice in the climate system, Arctic/North Atlantic interactions, global climate modeling, and sea ice model development. The primary tools for her research are a variety of climate models, from simple reduced models to sophisticated climate system models. Dr.

Bitz earned her Ph.D. in atmospheric sciences from the University of Washington in 1997. She serves on the NRC's Climate Research Committee, the advisory board to the Community Climate System Model, and the scientific steering committee for the International Study of Arctic Change.

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Dr. Bryden received his A.B. in mathematics at Dartmouth College and his Ph.D. in oceanography at the Massachusetts Institute of Technology – Wood Hole Oceanographic Institution Joint Program. His research interests include monitoring the Atlantic meridional overturning circulation; the role of ocean heat and freshwater transports in maintaining the global climate system; structure and energetics of western boundary currents; and dynamics of the flow through the Strait of Gibraltar and its control of the circulation in the Mediterranean Sea. Dr. Bryden is the author or co-author of 80 refereed scientific publications. He is an Elected Fellow of the Royal Society and the Personal Chair of the School of Ocean and Earth Science at the University of Southampton.

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Mark Bush received a B.Sc. in Botany and Geography (1979), a post-graduate Certificate of Education, and a Ph.D (1985). in Physical Geography from the University of Hull, UK (1986). He also holds a Masters in Environmental Management (Duke University 1996). He has more than 25 years experience of working on the biogeography and paleoecology of tropical systems. His research focuses on fossil pollen analysis of Neotropical settings and environmental reconstructions of past climates and vegetation communities, and human responses to climate change. He has published >100 papers and 2 books on tropical ecology and climate change. He is an editor of the Journal of Biogeography.

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Ruth Curry is a Senior Research Specialist in Physical Oceanography at Woods Hole Oceanographic Institution on Cape Cod, Massachusetts. She received her B.S. degree in Geology from Brown University in 1980. She then moved to Woods Hole and has been going to sea on research vessels to measure ocean properties and currents around the globe ever since. She is interested in how these are changing with time and their role in the global climate system. A particular focus of her research has been on ocean salinity distributions, shifts in the global freshwater balance, and how these affect the Atlantic meridional overturning circulation. She has authored about 10 peer-reviewed journal papers on this topic. Curry was recently named the *James E. and Barbara V. Moltz Research Fellow* of the Ocean and Climate Change Institute at WHOI. She currently co-chairs the CLIVAR Atlantic Implementation Panel. She was featured in a 2004 Scientific American Frontiers episode “Hot Planet, Cold Comfort” and contributed to Al Gore’s documentary film and book on global warming.

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Dr. Edwards received B.S. degrees in Earth, Atmospheric, and Planetary Sciences and in Art and Architecture from the Massachusetts Institute of Technology in 1976, his M.S. degree in Geosciences from the University of Michigan in 1986, and his Ph.D. in Geochemistry from the California Institute of Technology 1988. He is a Distinguished McKnight University Professor in the Department of Geology and Geophysics at the University of Minnesota. He was awarded the C.C. Patterson Medal in Environmental Geochemistry in 1999 and was elected Fellow of the American Academy of Arts and Sciences in 2004. His research involves reconstruction of past climate history, with a focus on understanding abrupt climate change. He has led efforts to establish the timing of past climate change, pioneering new uranium-thorium dating methods aimed at dating materials that record climate history. He has championed the use of cave deposits to study climate history and has led a ten-year international project aimed at reconstructing the past 500,000 years of Asian Monsoon history. He has authored or co-authored over 100 peer-reviewed publications related to climate change and to the timing of climate change, including more than 20 published in the journals *Science* or *Nature*.

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Sheri Fritz received a B.A. degree in Biology from Macalester College (1974), a MS in Biology from Kent State University (1979), and a Ph.D. in Ecology from the University of Minnesota (1985). Currently, she is a Willa Cather Professor at the University of Nebraska – Lincoln, with a primary appointment in the Department of Geosciences. She also co-directs the university-wide Water Resources Research Initiative, which coordinates and promotes water-related research and education within the University and linkages between the University and regional and national groups concerned with water. Fritz specializes in using lakes to reconstruct natural patterns of climate variation and to evaluate human impact on aquatic ecosystems. She has had long-term research projects on drought history in the Great Plains and northern Rocky Mountains, on climate change in the tropical Andes, and on the biogeochemistry of lakes in mid-continental North America. She has also worked in Greenland, Alaska, Midwestern US, Britain, and Sweden. Fritz is a member of the U.S. National Committee of the International Quaternary Union (INQUA), serves as a councilor on the Commission for Paleocology and Human Evolution in INQUA, and co-directs a PAGES project on lakes, climate change, and salinization. In addition, she is on the editorial boards of the Journal of Paleolimnology, The Holocene, and Palaeo3. She has published approximately 100 papers in the peer-reviewed literature.

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Dr. Yongsong Huang received his B.Sc. degree in Geochemistry from University of Science and Technology of China in 1984, his M.Sc. in analytical chemistry from Chengdu University of Science and Technology in 1987 and his Ph.D. from University of Bristol, UK, in 1996. He did postdoctoral research at Pennsylvania State University from 1997 to 2000 and spent ~5 months at Woods Hole Oceanographic Institution during this time. He became an assistant professor at Department of Geological Sciences and Professor, Brown University on Jan. 1, 2000, and was promoted to associate professor on Jan.1, 2006. He has 77 peer-reviewed publications related to organic geochemistry, late Quaternary climate and environmental change, and carbonaceous chondrites. He directs the stable isotope and organic geochemical laboratory at Brown University. His current research focuses on application of biomarkers and compound specific isotopic ratios of biomarkers to reconstruct the climatic, ecological and environmental change of Earth continents, with emphasis on late Quaternary period.

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Dr. Kennett is Emeritus and Research Professor in the Department of Geological Sciences at the University of California, Santa Barbara. He received his undergraduate degrees at the University of New Zealand and Victoria University of Wellington, and his Ph D. in Geology at Wellington. His research areas include marine geology; paleoceanography; earth system history; micropaleontology; and stratigraphy. Included among his many awards and honors, Dr. Kennett is a Member of the National Academy of Sciences, an Honorary Fellow of the Royal Society of New Zealand, and a Fellow of the American Geophysical Union. He has 250 research papers and 4 books among his publication credits.

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Dr. Michael E. Mann is an associate professor in the Departments of Meteorology and Geosciences, and Director of the Earth System Science Center (ESSC) at Penn State University. He received his undergraduate degrees in Physics and Applied Math from the University of California at Berkeley, an M.S. degree in Physics from Yale University, and a Ph.D. in Geology & Geophysics from Yale University. Current areas of research include model/data comparisons aimed at understanding the long-term behavior of the climate.

Dr. Mann was a Lead Author of the Intergovernmental Panel on Climate Change (IPCC) Third Scientific Assessment Report, and has served as chair for the National Academy of Sciences 'Frontiers of Science'. He has received the outstanding publication award from NOAA, and in 2002 was selected as one of the 50 leading visionaries in science and technology by *Scientific American*. He is author of more than 100 peer-reviewed and edited publications.

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Dr Meier received his B.S. in Electrical Engineering in 1949 and his M.S. in Geology from the University of Iowa. He received his PhD in Geological Sciences and Applied Mechanics from Caltech in 1957, and further study in Meteorology and Geophysics at the University of Innsbruck in Austria 1955-56. From 1956-1985 he led glaciological research for the U. S. Geological Survey in Tacoma, Washington, and was Research Professor in the Geophysics Program at the University of Washington. In 1985 he became Director of the Institute of Arctic and Alpine Research and Professor of Geological Sciences at the University of Colorado at Boulder, and retired from these positions in 1996-99. Dr Meier has led field investigations on ice sheets and glaciers in many parts of the world since 1950, concentrating on glacier and ice sheet dynamics, remote sensing of snow and ice, glacier hydrology and meteorology, as well as analytical studies of climate change, glacier mass balances, and sea-level rise. He has produced more than 200 publications, and was involved in the formation of programs in the International Geophysical Year, the International Hydrological Programme, and was a Lead Author of the Sea Level Changes chapter of the Intergovernmental Panel on Climate Change 1996. He has received a satisfying number of medals and other honors from nations and international scientific organizations for his research accomplishments.

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Dr. Oppo received a B. S. in Mathematics from the State University of New York at Albany in 1981 and a Ph. D. in Geology from Columbia University in 1989. She is a Senior Scientist in the Department of Geology and Geophysics at the Woods Hole

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Dr. Rea received his AB in Geology from Princeton University in 1964, MS in Sedimentation and Stratigraphy from the University of Arizona in 1967 and his PhD in Geological Oceanography from Oregon State University in 1974. He has recently retired after spending 32 years on the faculty at the University of Michigan. Rea's research involves deep-sea sediments and how the land-derived mineral component of those sediments record both the environmental conditions in their continental source region and the various transport processes that bring the mineral grains to the sea floor. Much of this work has been on eolian dust which provides a dual record of continental climate and wind intensity. Rea has over 150 reviewed publications on these and other topics of marine geology and paleoceanography. He has served as member and chair of several committees of the Ocean Drilling Program, in administrative capacities at the University of Michigan including department chair, and as a rotator at the National Science Foundation. Rea is currently a Fellow of the Geological Society of America, the American Association for the Advancement of Science, and the American Geophysical Union.

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Dr. Ruddiman received his B.A. degree in Geology at Williams College in 1964 and his Ph. D in Marine Geology at Columbia University in 1969. He was a Doherty Senior Scientist at Lamont-Doherty Earth Observatory from 1976 until 1991. He was professor of Environmental Science at the University of Virginia from 1991 until his retirement in 2001. His research involves climate change on tectonic, orbital and early anthropogenic

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Dr. Gavin Schmidt received his First Class BA (Hons) in Mathematics from the University of Oxford in 1998 and his PhD in Applied Mathematics (University College London, 1994). He was a postdoctoral fellow at the Center for Climate Change Research, McGill University from 1994 to 1996, and subsequently a NOAA Postdoctoral Fellow in Climate and Global Change until 1998 at the NASA Goddard Institute for Space Studies in New York. He is currently employed by NASA at the same institute. His research is related to modeling the impacts of forcings and events on climates of the past, present and future. He was instrumental in leading the GISS contributions to IPCC AR4 and further development of GISS Earth System Modeling. He has over 50 peer reviewed publications. He is an associate editor for the Journal of Climate and co-chair of the PAGES/CLIVAR Intersection Panel.

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Eli Tziperman is a professor of physical oceanography and applied physics at Harvard university. Dr. Tziperman's research interests include large scale ocean and climate dynamics, including ENSO, abrupt climate change, glacial cycles and equable climate dynamics. His research is based on the use of observations, and a hierarchy of modeling tools, from toy models to coupled GCMs.