

**Reviewers for Climate Change Science Program Synthesis and Assessment Product 2.2:  
North American carbon budget and implications for the global carbon cycle  
June 2006**

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Dr. Blain received her BSc in physical geography in 1986, her MSc in biogeography from York University in 1989, and her PhD in forestry in 1996 from the University of Toronto. She is currently senior land use, land-use change and forestry specialist with Environment Canada, and has been responsible since 2000 for the preparation and submission of Canada's annual GHG inventory in this sector. She contributed to two reports by the Intergovernmental Panel on Climate Change on greenhouse gas estimation methodologies; reviewed a number of national greenhouse gas inventories under the Framework Convention on Climate Change; and currently serves as a member on the editorial board of the UNFCCC secretariat's emission factor database. She has a particular interest in the integration of remotely sensed information to land use and land-use change, and GHG estimation methodologies; and in studying carbon dynamics at the watershed level.

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Dr. Bockheim received his B.S. in Forest Management from the University of Maine in 1966, his M.S. in Plant and Soil Sciences from the University of Maine in 1968, and his Ph.D. in forest soils from the University of Washington in 1972. He is professor of soil science and forest ecology and management and is an affiliate in the Nelson Institute for Environmental Studies at the University of Wisconsin. His research deals with pedology of polar regions, in particular carbon pools in high-latitude soils, and environmental biogeochemistry. He has over 100 publications in refereed journals. He is co-chair of the International Permafrost Association working group and Scientific Committee on Antarctic Research expert group on Permafrost and Periglacial Environments. He is also a participant in the Vulnerability of Carbon in Permafrost group, sponsored by the National Center for Ecological Analysis and Synthesis.

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Dr. Bourbonniere received his B.A. in Chemistry from Northeastern University (Boston) in 1971, an M.S. in Oceanic Science in 1976 and a Ph.D. in Organic Geochemistry in 1979, both from the

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Dr. Josep Canadell received his Ph.D. in terrestrial ecology from the University A. of Barcelona, Spain. Following graduate school, he was a Research Associate at Stanford University, California and served as Scientific Officer for the Global Change and Terrestrial Ecosystems core project of the International Geosphere-Biosphere Program. He then became the executive director of the Global Change and Terrestrial Ecosystems core project of the International Geosphere-Biosphere Program. Since 2001, he has served in his current capacity as the Executive Director of the Global Carbon Project. The scientific goal of the project is to develop a complete picture of the global carbon cycle, including both its biophysical and human dimensions together with the interactions and feedbacks between them.

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Dr. Dickinson received his PhD in Meteorology from the Massachusetts Institute of Technology in 1966. After that he was employed at the National Center for Atmospheric Research until 1990; from 1990-1999, he was Professor and Regents Professor at the University of Arizona; and has been at Georgia Tech since 1999, and has a chair endowed by Georgia Power and the Georgia Research Alliance. He is currently is a lead author for the IPCC WG I AR4 assessment. His awards and recognitions include:

2005: Einstein Lectureship, Chinese Academy of Sciences, Institute of Remote Sensing  
2004: Honorary Membership in the European Geosciences Union (EGU)

2003: ISI Web of Knowledge, *ISI Highly Cited.com*  
2002- Present Georgia Research Alliance/Georgia Power, Endowed Chair  
2002: National Academy of Engineering, Member  
1996: American Geophysical Union; Roger Revelle Medal  
1996: American Meteorological Society, Rossby Award  
1995: G. Unger Vetlesen, Lamont-Doherty Earth Observatory of Columbia University  
1988: American Meteorological Society, Jule G. Charney Award  
1988: National Academy of Science, Member  
1987: American Geophysical Union; Fellow  
1984: American Association for the Advancement of Science, Fellow  
1973: American Meteorological Society; Meisinger Award,  
American Geophysical Union, Fellow

He is currently on the following committees:

2006- DOE BERAC Advisory committee.  
2006 – NRC Committees: Climate Change Science Program Committee; Committee on Surface Temperature Reconstructions.  
2005-2009: Institutional Trustee of the University Corporation for Atmospheric Research  
2004-2007 American Institute of Physics (AIP) Governing Board, Member, AIP Audit Committee,  
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2004 - LTER National Advisory Board (NAB)  
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George C. Eads is a Vice President in the Washington DC office of CRI International, an economics, finance, and business consulting firm that works with businesses, law firms, accounting firms, and governments in providing a wide range of services. He received his Ph.D. in Economics from Yale University in 1968 and has held full-time faculty positions at several leading US universities. Between 1979 and 1981 Dr. Eads was a Member of President Carter's

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Dr. Gerbig received his Diploma (M.S.) in Physics from University of Wuppertal, Germany and from Technical University Aachen, Germany, in 1993 and his Ph.D. in Atmospheric Chemistry from University of Wuppertal, Germany, in 1997. After several years at the Division of Engineering and Applied Sciences of Harvard University in Cambridge, MA, as a Research Associate, he became Research Scientist in the Biogeochemical Systems Department at the Max-Planck-Institute for Biogeochemistry in Jena (Germany). His research involves experiments and inverse modelling with focus on atmospheric trace gas distributions, emphasizing biosphere-atmosphere exchange on regional to continental scales. He has approximately 70 publications and conference presentations relating to atmospheric modelling and measurements at the regional and continental scale. He is a Principal Investigator in the Integrated Project CarboEurope-IP, which assesses the European Terrestrial Carbon Balance. While in the US, he has participated in the CO<sub>2</sub> Budget and Rectification Airborne studies (COBRA), and has contributed to the North American Carbon Plan (NACP), which focuses on measuring and understanding sources and sinks of CO<sub>2</sub>, CH<sub>4</sub>, and CO in North America and adjacent oceans.

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A forest ecologist with field experience that extends from the Sahel of Africa to the Amazon of South America to the Sierra Nevada of California, Dr. Gonzalez serves as Scientist for the Global Climate Change Initiative of The Nature Conservancy. He analyses the impacts of climate change on forest ecosystems, the integration of climate change factors into natural resource management, plans, and at field sites in Brazil, California, Chile, and Peru, spatial and temporal patterns in forest carbon. His published research produced the first documentation of a shift of the Sahel, Sudan, and Guinea ecoregions in Africa due to climate change and desertification. Dr. Gonzalez serves on the Intergovernmental Panel on Climate Change (IPCC) and the Rosters of Experts for U.N. Framework Convention on Climate Change and the U.N. Convention to Combat Desertification. He earned a B.S. at Cornell University, a M.S. at Stanford University, and a Ph.D. at the University of California, Berkeley.

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His recent work involves simulation of the global carbon cycle using the inverse approach, characterizing fossil fuel CO<sub>2</sub> in North America and investigations into the linkages between terrestrial carbon exchange and climate variability. He also has worked extensively on climate policy and has worked with NGOs and negotiators for almost a decade at the United Nations Climate Change Framework Convention and the Kyoto Protocol. Gurney continues to coordinate the TransCom Atmospheric CO<sub>2</sub> Inversion Intercomparison Experiment, a network of carbon cycle scientists engaged in inverse approaches to closing the atmospheric CO<sub>2</sub> budget.

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Dale W. Johnson is currently Professor of Soils in the Department of Environmental and Resource Sciences, College of Agriculture, University of Nevada, Reno. Dale W. Johnson received his Ph.D. from the University of Washington in Forest Soils in 1975. After a brief post-doc at Washington, he joined the Environmental Sciences Division of Oak Ridge National

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Mr. Kinsman's environmental career has spanned over 25 years, including the last 18 years at EEI, where he addresses the issues of multi-emission policy, acid rain, ozone, particulate matter, visibility, mercury and global climate change. He works with different constituencies to obtain reasonable environmental laws and regulation, and then assist the industry in compliance. His degrees in environmental science are from the University of Virginia and George Mason University.

On the issue of climate change, Mr. Kinsman's main interests lie in carbon sequestration, starting with a published a paper in 1989 with co-author Gregg Marland of the Oak Ridge National Laboratory. In 1993, Mr. Kinsman conceptualized and led establishment of the Utility Forest Carbon Management Program, a group of 55 electric utility companies addressing carbon sequestration issues. This program led to formation beginning in 1995 of the non-profit UtiliTree Carbon Company, which is funding ten projects. Mr. Kinsman serves as Secretary and administrator for UtiliTree. In 2002, Mr. Kinsman led establishment of, and now administers, the PowerTree Carbon Company, LLC, a group of 25 electric power generators funding tree planting projects in the Lower Mississippi River Valley. Mr. Kinsman has served on advisory groups to The World Bank and American Forests. Mr. Kinsman has served as a member of the editorial board of Mitigation and Adaptation Strategies for Global Change, Environmental Science and Policy, and Environmental Manager (EM). He served as Technical Program Chair for the Air & Waste Management Association's Global Climate Change Specialty Conference in 1998.

William L. Fang is the Deputy General Counsel of the Edison Electric Institute in Washington, D.C. He directs the global climate change issue for EEI. Mr. Fang's primary responsibilities are in policy, legislative and regulatory activities affecting the electric utility industry. His areas of expertise include energy and environmental issues as well as regulated industry issues. Prior to joining EEI in 1982, Mr. Fang was an attorney with the U.S. Department of Energy and with the U.S. Postal Service.

Mr. Fang has written and spoken on legal and policy topics relating to global climate change, sustainable development, technology development, regulatory reform and risk assessment, water issues, and excess generating capacity. In May 2004 the National Journal profiled him as one of 12 national policy experts on global warming.

He is a member of the American Bar Association, and has been a Vice Chair of the American Bar Association's Sustainable Development, Ecosystems and Climate Change Committee since 1992.

Mr. Fang received a J.D. degree from the University of Virginia in 1975 and a B.S. degree in journalism from Northwestern University in 1972. He is admitted to the bars of Virginia, the District of Columbia, the U.S. Supreme Court, the Court of Appeals for the D.C. and Third Circuits, and the Temporary Emergency Court of Appeals.

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Dr. Ingeborg Levin is senior research scientist and professor at the Faculty of Physics at the University of Heidelberg. She received here PhD in Environmental Physics in 1985. Since then she has been working on experimental and modelling studies of the regional, continental and global carbon cycle as well as on budgets of other greenhouse gases including isotopic studies. She has published more than 60 papers on related topics in peer-reviewed international journals. I. Levin has participated in a large number of nationally as well as European Union funded projects in the past and is currently part of CarboEurope-IP, EUROHYDROS as well as a national project funded by the German Science Foundation.

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Dr. Lucier is Senior Vice President with the National Council for Air and Stream Improvement, Inc. (NCASI) in Research Triangle Park, North Carolina. NCASI is a nonprofit environmental research organization serving the forest products industry since 1943. Dr. Lucier manages NCASI's forestry programs and overall research planning process. During the 1990s, he initiated and managed NCASI's Global Climate Program including studies of forest responses to climate and the roles of forests in the global carbon cycle. Dr. Lucier received his Ph.D. from the College of Natural Resources at North Carolina State University and has worked in the forest products industry in research positions since 1981. Dr. Lucier is co-founder and chairman of the



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Dr. Lutzenhiser received his B.A. (1971) and M.A. (1976) degrees in Sociology from the University of Montana, and his Ph.D., also in Sociology (1988), from the University of California, Davis. His teaching interests include environmental policy and practice, energy and society, technological change, urban environmental sustainability, research design, and the built environment. His research focuses on the environmental impacts of socio-technical systems, particularly how urban energy/resource use is linked to global environmental change. Recent studies have considered variations across households in energy consumption practices, the effects of the 2001-2002 California energy crisis, how energy-using goods are procured by government agencies, and how commercial real estate markets work to develop both poorly-performing and environmentally exceptional buildings. He is widely published in social science, policy, and applied journals. His recent professional service includes a National Research Council panel on environmental decision-making, the editorial boards of two major sociological journals (Social Problems and Contemporary Sociology), and planning for an OECD multi-national study of household consumption.

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Susann Nordrum is the team leader of Chevron's Carbon Capture and Sequestration Team. Previously, she was the company focal point for greenhouse gas emissions inventory issues, and a recognized industry expert in the field. She has been working on the climate change issue for the last five years, most recently focused on developing and implementing the SANGEA™ System, Chevron's publicly available energy and greenhouse gas emissions estimating system. She chaired the API Greenhouse Gas Emissions Estimating Work Group from 2002-2005, is a Lead Author on the IPCC 2006 Guidelines for Development of National Greenhouse Gas Inventories and is co-chair of an industry-wide effort to develop common reporting guidelines for petroleum industry emission reduction projects. Prior to her work on the climate change issue, Susann created and implemented a process to incorporate environmental issues into Chevron's capital projects during the early design stages. She has also worked in refining, and has worked very closely with upstream and midstream operations in Chevron. Susann holds a Bachelor's degree in Chemical Engineering from Michigan Technological University.

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Naomi Pena holds a Masters in City and Regional Planning from the University of North Carolina, Chapel Hill. Her career has been devoted to analyzing the economic and environmental impacts of proposed policies, regulations, and projects. For the past seven years she has worked at the Pew Center on Global Climate Change. In addition to analyzing general policy options to address climate change, she has specialized in the role of land use and land use change (LULUCF) in climate change mitigation, and the technologies and policies needed to capture and sequester in geological reservoirs waste carbon dioxide from industrial sources, particularly coal-fired utilities. Prior to working at the Pew Center, Ms. Pena has worked both internationally and domestically for a number of governmental organizations and private consultants.

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**Dr. Lee Schipper**

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Dr. Lee Schipper is Chief of Research of *EMBARQ*, the World Resources Institute (WRI) Center for Transport and Environment. Dr. Schipper earned his Ph.D. in astrophysics, but has devoted his career to earthly problems of energy and environment as an energy economist. He came to *EMBARQ* at its founding in April, 2002. His current projects at *EMBARQ* include testing of clean fuels in Mexico, and development of indicators of sustainable transportation in a number of Asian cities, including Hanoi, Pune, Shanghai and Xi'an. *EMBARQ* is the World Resources Institute's Center for Transport and Environment. *EMBARQ*'s mission is to bring clean transportation solutions to people in cities in the developing world.

Dr. Schipper has authored over 100 technical papers and a number of books on energy economics, use and conservation around the world. Dr. Schipper has been a guest researcher at the OECD Development Centre in Paris, transport advisor to the Shell Foundation, and staff senior scientist at the Lawrence Berkeley Laboratory. While chief scientist at the International Energy Agency (IEA), he developed indicators of economy-wide energy use and carbon emissions and wrote "Flexing the Link", an important book on urban transport and carbon

emissions. His focus on transport ranges from fuels and transport industry to non-governmental organizations. He led an IEA effort to develop indicators of sustainable transport, writing '[The Road from Kyoto](#),' a report on the transport and carbon dioxide policies of six member countries.

Dr. Schipper was a member of the Swedish Board for Transportation and Communications Research for four years, and is currently part of the US Transportation Research Board's Committee on Sustainable Transport. He takes part in numerous prestigious international panels and studies on energy and transportation, and is on the editorial boards of five major journals in the fields. Dr. Schipper brings a unique twist to the transport and energy worlds, having obtained his BA in Music from Berkeley in 1968. He still leads a jazz quintet from time to time, and recorded "the Phunky Physicist" in Sweden in 1973.

**Jeffrey B. Tschirley**

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Mr. Tschirley is Chief of the Environment and Natural Resources Service at the Food and Agriculture Organization of the United Nations (FAO). He is responsible for technical programmes related to environment and sustainable development and was closely involved in preparations for the UN Conference on Environment and Development.

Mr. Tschirley began his career in Washington DC where he worked for the White House Council on Environmental Quality and subsequently for the US Department of State and the Department of Interior on environment and natural resources programmes.

He has degrees from Colorado State University (BA) and the University of London (MSc) with a major field of study in economics.

**Dr. John R. Trabalka**

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Dr. Trabalka received his B.S. in Physics in 1964 and his Ph.D. in Environmental Health Sciences in 1971 from the University of Michigan. He has more than 33 years of professional experience, including both individual and team research as well as project and program management within multidisciplinary environmental programs, deriving primarily from his tenure at Oak Ridge National Laboratory (ORNL) during 1971–2003. His professional interests, experience, and publications are primarily in the biogeochemistry and effects of environmental pollutants, including anthropogenic effects on the global carbon cycle. He managed the ORNL Global Carbon Cycle Program, a major component of the Department of Energy's Global Change Research Program in the mid-1980s, and was cited for his service as both the editor and a major contributor to the 1985 state-of-the art report "Atmospheric Carbon Dioxide and the Global Carbon Cycle." He joined SENES Oak Ridge Inc., following his retirement from ORNL.

**Dr. Susan M. Wachter**

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Dr. Susan M. Wachter is the Richard B. Worley Professor of Financial Management and Professor of Real Estate and Finance at The Wharton School of the University of Pennsylvania. Dr. Wachter served as Assistant Secretary for Policy Development and Research at HUD, a President appointed and Senate confirmed position. The Chairperson of the Wharton Real Estate Department from 1996 to 1998, Dr. Wachter is the author and editor of over 100 publications. Dr. Wachter served as President of the American Real Estate and Urban Economics Association and coeditor of *Real Estate Economics*, the leading academic real estate journal. Dr. Wachter currently serves on multiple editorial boards, and is the Founder and Director of the Wharton Geospatial Initiative, Co-Director of the Science Impact Lab for Urban Systems and the Co-Director of the Penn Institute for Urban Research.

**Dr. Douglas W.R. Wallace**

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Professor Wallace received his B.Sc. (Hons.) in Environmental Sciences from the University of East Anglia (Norwich, UK) in 1978 and his PhD in Chemical Oceanography from Dalhousie University (Halifax, Canada) in 1985. After a postdoctoral appointment in Canada, he worked as Scientist in the Oceanographic and Atmospheric Sciences Division of Brookhaven National Laboratory for 11 years. During this time, he was Technical Director for the DOE-supported Global Survey of CO<sub>2</sub> in the Oceans. In 1998, he accepted the appointment of Professor at the University of Kiel in Northern Germany, and became Director of the Marine Chemistry Department. Later he was appointed Director of the Marine Biogeochemistry Research Division and is also a Deputy-Director of the IFM-GEOMAR institute. A major part of his research deals with atmosphere-ocean exchange of trace gases, including CO<sub>2</sub>. He has been involved extensively in large-scale measurement programs designed to characterise the oceanic carbon sink.

Professor Wallace is a member of numerous national and international Advisory and Review committees, is a Theme Leader in the European Integrated Project Carboocean, and was a co-author of the Carbon Cycle chapter for the IPCC Third Assessment Report.