Invitation for Comments on the "Short List" Candidates for the Clean Air Scientific Advisory Committee (CASAC) NO_X and SO_X Secondary Review Panel

EPA Science Advisory Board (SAB) Staff Office

The EPA Science Advisory Board (SAB) Staff Office is forming the **Clean Air Scientific Advisory Committee (CASAC) NO_X and SO_X Secondary Review Panel (Panel)**. Nominations for technical experts to supplement the chartered (statutory) CASAC membership were requested in the *Federal Register* (71 FR 44695) on August 7, 2006. The Panel will be charged with providing advice, information and recommendations to the EPA Administrator on the scientific and technical aspects of the secondary (welfare-based) air quality criteria and national ambient air quality standards (NAAQS) for both oxides of nitrogen (NO_X) and sulfur oxides (SO_X). Information on the CASAC, the Panel, and the nomination process appear in the above-referenced *Federal Register* notice, which can be accessed via the SAB Web site at URL: http://www.epa.gov/sab/panels/casac_nox_and_sox_secondary_panel.htm. Per this *Federal Register* notice, the SAB Staff Office requested nominees for this Panel who are nationally-recognized experts in one or more of the following disciplines:

(a) Atmospheric Science. Expertise in physical and chemical properties of nitrogen oxides and sulfur oxides and the atmospheric processes involved in their formation, transformation, and transport on local to global scales, mechanisms and rates of deposition to and movement between media. Also, expertise in the evaluation of natural and anthropogenic sources and emissions of nitrogen oxides and sulfur oxides, pertinent to ambient and deposition monitoring or measurement methods for these pollutants, and spatial and temporal trends in their atmospheric concentrations and deposition rates.

(b) Ecological Effects. Expertise in evaluation of the effects of exposure to nitrogen oxides and sulfur oxides, acid deposition and nitrogen deposition, on agricultural crops and natural ecosystems and their components, both flora and fauna, ranging from biochemical/sub-cellular effects on organisms to increasingly more complex levels of ecosystem organization. Appropriate expertise disciplines include: aquatic chemistry; aquatic ecology/biology; limnology; terrestrial ecology; forest ecology; grassland ecology; rangeland ecology; terrestrial/aquatic biogeochemistry; terrestrial/aquatic nutrient cycling; and terrestrial/aquatic wildlife biology and soil chemistry.

(c) Other Welfare Effects. Expertise in the evaluation of the effects of nitrogen oxides and sulfur oxides and acid deposition on public welfare, including impaired visibility and damage to materials, and also the interactions of these pollutants to affect global climate conditions.

(d) Ecosystem Exposure and Risk Assessment/Modeling. Expertise in deposition modeling across a range of scales from local watershed to landscape to continental, static and dynamic ecosystem response models, integrated assessment models, identification of bio-indicators useful for tracking ecosystem change, methods and approaches available to estimate total loadings of sulfur and nitrogen species to ecosystems, and the current state of critical loads science and application.

(e) Resource Valuation. Expertise in ecological resource and other welfare effects valuation and/or economic benefits assessment approaches and models.

The SAB Staff Office has identified 14 candidates for the CASAC NO_X and SO_X Secondary Review Panel. Brief biographical sketches ("biosketches") on these candidates are provided below. *We hereby invite comments from members of the public for relevant information or other documentation that the SAB Staff Office should consider in the selection of this Panel.* The biosketches for the members of the chartered CASAC may be viewed at URL: http://www.epa.gov/sab/pdf/casac_biosketches_2007.pdf.

The SAB Staff Office will review all the information provided by the candidates, along with any information that the public may provide and information gathered independently by SAB Staff on the background of the candidates. The SAB Staff office will consider the following criteria in forming the Panel: (a) appropriate balance and breadth of expertise needed to address the charge; (b) absence of financial conflicts of interest; (c) absence of an appearance of a lack of impartiality; (d) experience on scientific advisory committees; and (e) availability and willingness to serve.

Please e-mail your comments no later than **March 28, 2007** to Mr. Fred Butterfield, CASAC Designated Federal Officer (DFO), at: butterfield.fred@epa.gov.

CASAC NO_X AND SO_X SECONDARY REVIEW PANEL CANDIDATE BIOSKETCHES

Dr. Praveen Amar

Dr. Praveen Amar is the Director of Science and Policy at NESCAUM (Northeast States for Coordinated Air Use Management). NESCAUM, located in Boston, Massachusetts, is an interagency association of eight northeastern states (New York, New Jersey, Connecticut, Maine, Massachusetts, Vermont, Rhode Island, and New Hampshire). NESCAUM provides high-level scientific and policy-relevant input to its member states on regional air pollution issues. He received his Ph.D. in engineering from UCLA in 1977. He is a licensed Mechanical Engineer in the State of California.

Dr. Amar's key area of expertise is to "translate" the implications of findings of science and developments in technology into workable and cost-effective policy options for the states in the Northeast. These policy options have involved cost-effective technologies to reduce emissions of oxides of nitrogen, sulfur dioxide, particulate matter, and mercury from large utility boilers, other large industrial sources, and municipal waste combustors; regional control of emissions of oxides of nitrogen and sulfur, including market-based approaches, relative roles of local and regional sources by evaluating local and long-range transport of pollutants, planning for achieving ambient standards for fine particles and ozone, and promotion of environmentally friendly distributed generation technologies. Since 2003, he has been acting as a Co-Principal Investigator at NESCAUM in an EPA-funded joint effort with Georgia Institute of Technology and Massachusetts Institute of Technology on a policy-relevant research project that is evaluating future impacts of global climate and emission changes on regional air quality in the

US (ozone and fine PM). The work includes sensitivity analyses of predicted pollutant concentrations (for Years 2049-2050-2051) to current control measures for NOx, SO2, PM, and VOCs, under future climate change scenarios with their associated uncertainty.

While at NESCAUM, he served as a member of the EPA's New Source Review Advisory Subcommittee (1993-1996) that provided guidance to the EPA's effort to reform the NSR permitting program. He was a member of the Science Advisory Committee (1993-2001) for the EPA-funded, MIT-Caltech-New Jersey Institute of Technology Center on Airborne Organics. He served as a member of the Synthesis Team (1996-2000) for the NARSTO (North American Research Strategy on Tropospheric Ozone) that produced the July 2000 report "An Assessment of Tropospheric Ozone Pollution," and in February 2003, published " Particulate Matter Science for Policy Makers: A NARSTO Assessment." He has made presentation before International Joint Commission (IJC; Canada and US) on control technologies for mercury emissions from coal-fired electric utilities. In 2002, he testified before the US House Science Committee on control strategies for particulate air pollution. In April 2005, he testified before the Democratic Policy Committee of the US Senate on EPA's proposed rule to control mercury emissions from coal-fired utility boilers.

From August 2001 to March 2003, Dr. Amar served as a member representing states, of the EPA's Utility Mercury MACT (Maximum Achievable Control Technology) stakeholders workgroup of the Clean Air Act Advisory Committee (CAAAC). The joint states-industry-environmental organization workgroup advised US EPA on MACT development for coal-fired power plants. From August 2003 to March 2005, he served as a Project Director on an EPA-funded project with Harvard Center for Risk Analysis resulting in NESCAUM's March 2005 report "Economic Valuation of Human Health Benefits of Controlling Mercury Emissions from US Coal-Fired Power Plants." During June-December 2003, he served as a member of the US EPA's Clean Air Scientific Advisory Committee (CASAC)'s Subcommittee on National Ambient Air Monitoring Strategy. Since 1999, he is serving as a member of the Science Advisory Committee for the NYSERDA's (New York State Energy Research and Development Authority) EMEP (Environmental Monitoring, Evaluation and Protection) program. From 2003 to 2006, he has served on a number of external peer review panels that have evaluated EPA ORD's various research programs, including CMAQ and REMSAD models, and combustion and air toxics research programs.

Before joining NESCAUM, Dr. Amar was with the California Air Resources Board for fifteen years (1977-1992) where he managed programs on air pollution research (including research on acid deposition, atmospheric processes and ecological effects), strategic planning, and industrial source pollution control. For over 20 years, he has been a part-time faculty member at the University of California, Davis, California State University at Sacramento, and Tufts University in Boston, teaching undergraduate and graduate courses in atmospheric chemistry and physics of air pollution, fluid mechanics and heat transfer processes, and air pollution policy.

Dr. Amar's work at NESCAUM receives its financial support from its member states (the six New England sates and these states of New Jersey and New York) and through grants from

EPA to member states through “Sections 103 and 105 Grants” given under the Clean Air Act grant programs to states as well as from EPA ORD’s competitive grants process.

Dr. Andrzej Bytnerowicz

Dr. Andrzej Bytnerowicz is an Ecologist and Senior Scientist with the USDA Forest Service Pacific Southwest Research Station in Riverside, California. He obtained his M.Sc. in Food Chemistry from the Warsaw Agricultural University, Poland in 1972 and his Ph.D. in Natural Sciences from the Silesian University in Katowice, Poland in 1981. In 1981-1982 he was a Senior Fulbright Scholar with the Statewide Air pollution Research Center at University of California in Riverside. Dr. Bytnerowicz’s general research interests have been on effects of air pollution and climate change on forests and other ecosystems. In recent years he mainly focused on characterization of large-scale distribution of air pollutants, mainly ozone and nitrogenous compounds in complex mountain terrain and evaluation of nitrogen deposition to forests, chaparral, coastal sage and desert ecosystems. He has led a research team that characterized ambient ozone distribution and its effects in forest of the Carpathian Mountains of Central Europe and Sierra Nevada and San Bernardino Mountains in California.

Dr. Bytnerowicz has published over 160 scientific papers, most of them in the peer-reviewed literature. He has edited several books and conference proceedings volumes. He is a member of the American Association for the Advancement of Science, Sigma Xi, the International Union of Forest Research Organizations (IUFRO), and the American Geophysical Union. He is a member of an editorial board for Environmental Pollution and a deputy coordinator of the IUFRO Research Group “Impacts of Air Pollution and Climate Change on Forest Ecosystems.” He has received the USDA Forest Service Clean Air Award for his research achievements.

Recently Dr. Bytnerowicz has been receiving funding for his research from the USDA Forest Service, the Joint Fire Science Program, the Western Buffalo Environmental Association in Alberta, Canada, and the National Park Service.

Ms. Lauraine G. Chestnut

Ms. Lauraine G. Chestnut is a managing economist at Stratus Consulting Inc. specializing in the quantification and monetary valuation of human health and environmental effects associated with environmental pollutants. She has a B.A. in economics from Earlham College, Richmond, Indiana, and an M.A. in economics from the University of Colorado, Boulder. Ms. Chestnut has over 20 years of experience with Stratus Consulting and its predecessors working for clients including the U.S. Environmental Protection Agency, California Air Resources Board, the National Park Service, Environment Canada, Health Canada, and The World Bank, quantifying the damages of air pollution, including human health effects, visibility aesthetics, materials damages, and crop damage. She has conducted original economic and survey research to estimate the value to the public of protecting human health, visibility aesthetics, and cultural materials from the effects of air pollution; and has conducted epidemiology studies of the effects of particulate matter on human health. She has developed quantification models to estimate the benefits of reductions in air pollutants that have been used to assess provisions of the Clean Air Act in the U.S., proposed Canadian air quality standards, air quality standards in Bangkok, and

elsewhere. From 2006 to 2006, Ms. Chestnut served on the EPA Science Advisory Board's Advisory Council on Clean Air Compliance Analysis. In addition, Ms. Chestnut has served on the board of directors of the Association of Environmental and Resource Economists and is currently serving on California's Air Quality Advisory Committee.

Dr. Charles T. Driscoll

Dr. Charles T. Driscoll is the University Professor of Environmental Systems Engineering at Syracuse University. Dr. Driscoll received his B.S. degree in Civil Engineering from the University of Maine in 1974, and his M.S. in 1976 and Ph.D. in 1980 in Environmental Engineering from Cornell University. Dr. Driscoll's teaching and research interests are in the areas of environmental engineering, environmental chemistry, biogeochemistry and environmental quality modeling.

A principal research focus of Dr. Driscoll's research has been the effects of disturbance on forest, aquatic and coastal ecosystems, including air pollution (acid rain, mercury), land-use change and elevated inputs of nutrients and trace metals. Dr. Driscoll uses a variety of research approaches to study these perturbations, including field investigations, laboratory studies, long-term field measurements, whole-ecosystem manipulations, and the development and application of models. Dr. Driscoll has authored or co-authored more than 275 peer-reviewed articles and has been acknowledged by the Institute for Scientific Information (ISI) as one of the most highly cited researchers in both engineering and environmental science. He has received external funding for more than 70 research projects, mostly obtained from competitive research programs such as the National Science Foundation and the Environmental Protection Agency. He is currently the principal investigator of the National Science Foundation's Long-Term Ecological Research project at the Hubbard Brook Experimental Forest, New Hampshire. In 1984, the National Science Foundation designated Dr. Driscoll as a Presidential Young Investigator. He has provided expert testimony to U.S. Congressional and State committees. Dr. Driscoll has served on many local, national and international committees, including the National Research Council Panel on Process of Lake Acidification, the Committee of Air Quality Management, and the Committee on CLEANER and NSF's Environmental Observations. In addition, Dr. Driscoll currently serves on the EPA Science Advisory Board's Advisory Council on Clean Air Compliance Analysis.

Dr. Paul J. Hanson

Dr. Paul J. Hanson is a Senior Research and Development Scientist of the Environmental Sciences Division, Oak Ridge National Laboratory (ORNL), Oak Ridge, Tennessee. He graduated summa cum laude with a B.A. degree in biology from St. Cloud State University, St. Cloud, Minnesota, in 1981. Dr. Hanson also received M.S. and Ph.D. degrees from the University of Minnesota, St. Paul in the fields of plant and forest tree physiology, in 1983 and 1986, respectively.

Dr. Hanson has conducted research on the impacts of air pollutant oxidants (ozone and hydrogen peroxide) on forest plant physiology and growth, the deposition of gaseous nitrogen compounds to plant surfaces, and the exchange of mercury vapor between terrestrial surfaces and the atmosphere. As a part of his work on the impact of ozone on northern red oak

photosynthesis, ozone exposure and uptake response curves were evaluated. Dr. Hanson's current research focuses on the impacts of climatic change on the physiology, growth, and biogeochemical cycles of eastern deciduous forest ecosystems. He has authored or co-authored over 100 journal articles and book chapters, and has recently co-edited (and authored) a book titled "North American Temperate Deciduous Forest Responses to Changing Precipitation Regimes" published in 2003 as volume 166 of the Springer Ecological Studies series. Dr. Hanson was a contributing author to EPA's Air Quality Criteria Document (AQCD) for Particulate Matter (1994-1996), and the AQCD for Oxides of Nitrogen (1988-1990).

Dr. Hanson served as an Associate Editor of the Journal of Environmental Quality for six years (1995-2000), and is a long-standing member of the editorial review board of Tree Physiology. He is a current member of the U.S. Department of Energy's National Technical Advisory Committee for the National Institute of Global Environmental Change (NIGEC), and has served on a number of peer-review panels for the evaluation of scientific proposals. Dr. Hanson received the 1995 Distinguished Scientific Achievement Award from the Environmental Sciences Division, Oak Ridge National Laboratory. In addition, Dr. Driscoll currently serves on the EPA Clean air Scientific Advisory Committee (CASAC) Ozone Review Panel.

Dr. Hanson's recently-funded grant proposals are as follows: (1) Regulation of carbon sequestration and water use in an Ozark Forest: Proposing a new strategically located Ameriflux tower site in Missouri; U.S. Department of Energy, 2003-2005; $1.4 million over three years; (2) Identifying Critical Thresholds for Plant/Ecosystem Response to Moisture Stress; U.S. Department of Energy, 2002-2004; $900,000 over three years; (3) Enriched Background Isotope Study (EBIS); U.S. Department of Energy, 2002-2004; $2.7 million over three years; (4) Mechanisms of forest ecosystem adjustments to altered precipitation: the Walker Branch Throughfall Displacement Experiment (TDE); renewal proposal 2002-2006; $2,200,000 over five years.

Dr. Rudolf B. Husar

Dr. Rudolf B. Husar is currently Professor of Mechanical Engineering, Director of Center for Air Pollution Impact and Trend Analysis (CAPITA), Washington University, St. Louis. In the early 1970s he was a post-doctoral fellow at the California Institute of Technology, Pasadena, CA. Dr. Husar's Ph.D. is in Mechanical Engineering from the University of Minnesota, Minneapolis, in 1966. He received a Dipl. Ing. in Mechanical Engineering from Technical University, Berlin, FRG. His past research includes: atmospheric aerosols; regional and global air pollution transport and chemistry; biogeochemical cycles; environmental trend analysis; monitoring network evaluation and design. His interests include environmental informatics (the application of information science, engineering, and technology to environmental problems) as well as scientific support to air quality.

Dr. Husar has served as an executive editor of the journal Atmospheric Environment, and on the boards of five other international journals, including as Associate Editor, Atmospheric Systems; The Scientific World, (2001-present), member of Editorial Board, Environmental Monitoring and Assessment, (2000-present). He is a member of the Hungarian Academy of Sciences and served on five committees of the U.S. National Academy of Sciences. Dr. Husar has also served on numerous national and international panels and committees dealing with

various aspects of atmospheric sciences and air quality management. He was a contributor to EPA's Particulate Matter Criteria Document Panel in 1996. In addition, Dr. Husar currently serves on the EPA Clean air Scientific Advisory Committee (CASAC) Ambient Air Monitoring and Methods (AAMM) Subcommittee.

Recent publications include articles (with others) in the Journal of the Waste Management Association, Atmospheric Environment, and the Journal of Geophys. Res. (all in 2001). Another article, "Sulfur and Nitrogen over North America, Global Aspects of the Environment," is available from the Elgar Reference Collection, Cheltenham, UK, and Northampton, USA (1999).

Dr. Husar's sources of recent grant and/or other contract support funding include: National Science Foundation (NSF), Collaboration through Virtual Workgroups, 9/01/01-8/31/03; NSF, Digital Government: An Integrated Fire, Smoke and Air Quality Network, 6/01/02-5/31/06; EPA, A Web-based Visibility Information System, 5/98-5/03; EPA, Ozone and PM Air Quality Analysis in Support of Public Needs, 5/98-5/03; MARAMA-EPA, Source Apportionment of Air Quality Monitoring Data: Pair Aerosol/Trajectory Database Analysis Tool Development, 8/02-7/03; MCNC-EPA, Intercontinental Transport, 12/02-12/03; EPA, St. Louis-Midwest Particulate Matter (PM) Supersite, Monitoring Support, 1/00-12/03.

Dr. Dale W. Johnson

Dr. 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 Laboratory as a Research Associate in 1977, and eventually became a Biogeochemical Cycling Group Leader there. In 1989, he took a joint appointment with the Biological Sciences Center (BSC) at the Desert Research Institute (DRI) and the Department of Environmental and Resource Sciences, College of Agriculture, University of Nevada in Reno (UNR). He served as Deputy Director of BSC from 1990 to 1999. In September 2001, Dr. Johnson accepted a full-time position at UNR. His research interests are in soil chemistry and nutrient cycling.

Dr. Johnson's research has included studies on the effects acid deposition, fertilization, harvesting, municipal sludge application, and CO2 enrichment, nitrogen fixation, and fire on soils and forest ecosystems. He has been a Fellow of the American Association for the Advancement of Science since 1985 and a Fellow of the Soil Science Society of America since 1995. He received the Scientific Achievement Award from Environmental Sciences Division, Oak Ridge National Laboratory in 1983, Publication Awards from Martin Marietta Energy Systems in 1985 and 1987, Technical Achievement Award from Martin Marietta Energy Systems in 1986, the Dandini Medal of Science from the Desert Research Institute in 1993, the Regent's Researcher Award from the University and Community College System of Nevada in 1999, and outstanding Researcher of the Year, College of Agriculture, Biotechnology and Natural Resources, University of Nevada, Reno, 2001.

Dr. David F. Karnosky

Dr. David F. Karnosky is a Professor in the School of Forest Resources and Environmental Science at Michigan Technological University. Dr. Karnosky received his B.S. (1971), M.S. (1972), and Ph.D. (1975) from the University of Wisconsin-Madison. He is a member of the American Association for the Advancement of Science (AAAS), the Ecological Society of America (ESA), the International Society of Arboriculture (ISA), the International Union of Forest Research Organizations (IUFRO), and the Society of Sigma Xi.

Dr. Karnosky has studied the impacts of air pollution (O_3, SO_2, acid deposition) and atmospheric change (CO_2) on forest tree growth, reproduction, and on ecosystem structure and function. Dr. Karnosky was Michigan Technological University's Researcher of the Year in 1993 and Michigan Tech University Board of Governor's Distinguished Scientist in 1993. In 2005, Dr. Karnosky received the IUFRO Scientific Achievement Award, and in 2006, Dr. Karnosky received an honorary doctorate from the University of Tartu, Tartu, Estonia. Dr. Karnosky is currently on the editorial board of Environmental Pollution, Forest Genetics, and Tree Physiology. Dr. Karnosky has served as a consultant to EPA in preparation of the Air Quality Documents for Ozone (1995 and 2005).

In the last two years, Dr. Karnosky received funding from the U.S. Department of Energy (DOE) for a long-term study of the effects of elevated CO_2 and/or O_3 on northern forest ecosystem structure and function and for genomic research aimed at improving carbon sequestration under elevated CO2. Dr. Karnosky has also received funding from the USDA Forest Service and the U.S. McIntire-Stennis Program for gas exchange research at the Aspen FACE project examining CO_2 and O_3 impacts on carbon assimilation. Dr. Karnosky also received funding from the Arthur Ross Foundation for his work on developing improved elms for use in urban tree planting.

Dr. Naresh Kumar

Dr. Naresh Kumar is the Senior Program Manager of the Air Quality and Global Climate Change Business Areas in the Environment Group. He has 16 years of experience in air quality studies and directs research activities related to modeling and monitoring of ozone, particulate matter, atmospheric deposition, regional haze, and interactions between air quality and global climate change. He played a key role in development of an advanced treatment of plume dynamics in air quality models. He also led the research leading to development of an advanced three-dimensional aerosol model that uses the state-of-the-science modules in its formulation. He is also leading the development of modeling techniques and data analysis tools for studying regional haze issues. He also led a key survey effort to evaluate the economic valuation of visibility improvements in national parks.

Dr. Kumar received a B. Tech. (Honors) degree in Mechanical Engineering from Indian Institute of Technology, India in 1988. He received his M.S. degree in Mechanical Engineering from University of California, Santa Barbara in 1990, and a Ph.D. in Mechanical Engineering from Carnegie Mellon University in 1994. He also holds an MBA degree from University of California Haas School of Business, Berkeley.

Prior to joining EPRI, Dr. Kumar was at Sonoma Technologies, Inc. where he played a leading role in development and application of state-of-the-art tools for managing air quality. He worked on various photochemical and aerosol model development programs, emissions processing and evaluation, and air quality and meteorological data analysis. For his dissertation at Carnegie Mellon University, Dr. Kumar worked extensively on various air quality models. He was one of the developers of an Urban and Regional Multiscale (URM) air quality grid model that was recently used by Southern Appalachian Mountains Initiative (SAMI) for a visibility study. Dr. Kumar is the co-author of more than twenty peer-reviewed papers published in scientific journals. He also serves on the Editorial Review Board of the Journal of the Air and Waste Management Association. Dr. Kumar is employed directly by EPRI and receives no income/support from grants or contracts.

Dr. Myron J. Mitchell

Dr. Myron J. Mitchell has been at the College of Environmental Science and Forestry since 1975 (State University of New York, Syracuse, New York). He is currently a Distinguished Professor, Director of Council on Hydrologic Systems Science and Director of Graduate Program of EFB in the Faculty of Environmental and Forest Biology. He received his Ph.D. in Soil Ecology from The University of Calgary in 1974 and obtained a B.A. in Biology in 1969 at Lake Forest College (Lake Forest, Illinois). He was an NRC Postdoctoral Fellow at the University of British Columbia from 1973 to 1974. His research interests include investigations on biogeochemistry, hydrology, forest ecology, decomposition processes and floral-faunal interactions in terrestrial and aquatic systems.

Dr. Mitchell has worked in Asia as well as Central Europe. He has participated on various NSF panels and currently serves on the Board of Directors of the Research Foundation of State of New York and Board of Directors of Upstate Freshwater Institute. He is the Leader of Urban Ecosystems Integrated Systems Development Team of New York Environmental Quality Systems Center. He has been a Visiting Scholar for The University of Calgary (1983), obtained a Fulbright Travel Fellowship to New Zealand (1983-1984), was a Visiting Professor, Kyoto University, Japan (1996) and also was awarded a Deutscher Akademischer Austausch Dienst award for working in Germany (2004).

Dr. Mitchell's honors and rewards include Fellow of the American Association for the Advancement of Science (1992), Sigma Xi Outstanding Faculty Research Award (1994), Co-chair for Gordon Conference on Hydrobiogeochemistry of Forested Catchments (1997), SUNY Chancellor's Research Recognition Award (2002), and Exemplary Researcher Award by SUNY-ESF (2006). Professional affiliations include the American Geophysical Union, Ecological Society of America; A.A.A.S., Sigma Xi, and Soil Science Society of America. He has more than 185 publications.

Dr. Mitchell's recent research has focused on the role of air pollutants and climate change on watershed processes with support from the NSF, U.S. Forest Service, New York State Energy Research and Development Authority and the New York City Department of Environmental Protection.

Dr. Kevin Percy

Dr. Kevin Percy is a Senior Scientist with Natural Resources Canada, Canadian Forest Service. He earned his Ph.D. (Science) from the University of Bristol, England (1987). He was awarded M.Sc. (1979) and B.Sc.F. (1976) degrees by the University of New Brunswick, Canada. Dr. Percy has accumulated expertise in the evaluation of the effects of air pollutant exposure on trees, forests, natural vegetation and agricultural crops. He has a long record of collaborative research with air chemistry and air pollution vegetation-effects scientists in the US (USDA FS/ARS stations, US DOE, universities, NASA) and eight European countries. Dr. Percy's research interests have centered on tree and crop response to criteria air pollutants (SO_2, O_3, PM), HNO_3, CO_2 and UV-B radiation. Dr. Percy has authored both retrospective as well forward-looking air pollution-vegetation state of science analyses at global, pan-national (North America, Europe), and national (US, Canada) scales. Recently, his work has focused on alternative approaches for analysis of dose-response empirical data that has resulted in development of statistically valid, standards-based, regulator-friendly exposure-response functions that could be applied within an ambient air quality management context. Currently, Dr. Percy is an author for the NARSTO (North American Regional Research Strategy for Tropospheric Ozone) Multi-Pollutant Accountability Assessment addressing technical issues surrounding multi-pollutant air quality management, including accountability. He is an expert reviewer for Canada on the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment, Working Group II (Impacts, Adaptation and Vulnerability).

Dr. Percy continues to serve on the Steering Committee for the US DOE Aspen FACE (Free Air Carbon Dioxide Enrichment) User Facility, the world's largest free-air CO2 and O3 greenhouse gas experiment, Rhinelander, WI. He is appointed to the Science Steering Committee, Terrestrial Environmental Effects (SO2, NOx, and PM) Monitoring Committee of the non-governmental Wood Buffalo Environmental Association (Oil Sands Region) Alberta, Canada. Dr. Percy also sits on the Enlarged Executive Board of the International Union of Forest Research Organizations (IUFRO), a non-governmental international (110 countries, 15,000 scientists) network of forest scientists.

Dr. Percy's former appointments include: Federal Co-Chair, Vegetation Working Group, Canadian Multi-stakeholder NOx/VOC Science Program (1992-1997); Coordinator, IUFRO Research Group 7.01 "Impacts of Air Pollution and Climate Change on Forest Ecosystems" (1996-2000); Coordinator, IUFRO Task Force on Forests and Carbon Sequestration (2001-2006); Federal Co-chair, Canadian Council of Ministers of Environment (CCME) Federal-Provincial Long Range Transport of Air Pollutants (LRTAP) Terrestrial Effects Research and Monitoring Coordinating Committee (1989-1992). Dr. Percy has held appointments as Associate Editor or Editorial Board member for numerous scientific journals.

Mr. David J. Shaw

Mr. David J. Shaw is the Director of the Division of Air Resources at the New York State Department of Environmental Conservation. He has held that position since March 2004 and served as Acting Director from April 2003 until he was appointed in 2004. As Director, Mr. Shaw is responsible for developing and implementing the air quality programs at the NYS Department of Environmental Conservation.

Mr. Shaw received his B.A. in 1976 from the State University College at Geneseo and his M.P.A. in 1982 from Harvard University.

Presently, Mr. Shaw is the Air Pollution Program designee from New York to the Ozone Transport Commission. He is a member of the Board of Directors of the Northeast States for Coordinated Air Use Management (NESCAUM), serving as Chair for 2006-2007; and the National Association of Clean Air Agencies (formerly STAPPA and ALAPCO). He also served as a member of the Air Quality Management Workgroup which developed the report, *Recommendations to the Clean Air Act Advisory Committee, Phase I and Next Steps I in 2005*.

During his career at the Department of Environmental Conservation, Mr. Shaw has participated in the development of programs to address long range transport at both the regional and national level; the development of New York State's Implementation Plans to address one-hour ozone and carbon monoxide non-attainment areas and a number of regulatory initiatives. Mr. Shaw is employed directly by the state of New York and receives no income/support from grants or contracts.

Dr. Kathleen C. Weathers

Dr. Kathleen C. Weathers received her M.F.S. degree from Yale University in 1983 and her Ph.D. in Ecology from Rutgers University in 1993. She is currently a Senior Scientist at the Institute of Ecosystem Studies (IES) in Millbrook, New York. Dr. Weathers has been involved in air pollution research since the mid-1980s. She has published widely, including significant papers on modeling the effects of landscape features on patterns of atmospheric deposition, tracking the response of terrestrial ecosystems to nitrogen pollution, and illuminating the ecological importance of fog. Much of her research is focused on understanding atmospheric influences and controls on ecosystem processes and biogeochemical cycles in heterogeneous landscapes. Currently, she is working with colleagues and students in California, Chile, Mexico, New York, New England, and National Parks in the eastern US.

Dr. Weathers has been elected a fellow of the American Association for the Advancement of Science (AAAS), and is a recently-appointed member of the Public Affairs Committee of the Ecological Society of America (ESA). She has been a member of various National Science Foundation and American Association of University Women (AAUW) panels, and a member of the National Academy of Sciences/Transportation Research Board (NAS/TRB) Committee to evaluate the Congestion Mitigation Air Quality (CMAQ/TEA-21) program. She has co-led workshops and conferences on such topics as the ecological effects of air pollution; strategies for successfully bridging science, policy and management; and linking science, education and outreach.

Dr. Weathers has received recent funding for her atmospheric deposition work from the SUNY foundation of NY, from the A.W. Mellon Foundation (via a grant to IES), and the National Park Service. She has received funding for workshops from The Nature Conservancy, the National Science Foundation.

Dr. George T. Wolff

Dr. George T. Wolff is presently a Principal Scientist with the General Motors Public Policy Center. He holds a B.S. in Chemical Engineering from the New Jersey Institute of Technology (1969), an M.S. in Meteorology and Air Resources Management from New York University (1970), and a Ph.D. in Environmental Sciences (Water, Air and Waste Management) from Rutgers University (1974). Dr. Wolff was an Adjunct Professor, Department of Civil and Environmental Engineering, Michigan State University, from 1998 to 2000 and at the University of Michigan, School of Public Health, from 1991 to 1995.

Dr. Wolff has previously served as both a Member and Chair (1992-1996) of EPA's Clean Air Scientific Advisory Committee (CASAC), including the period during the CASAC conducted its previous iteration of National Ambient Air Quality Standard (NAAQS) reviews of ozone (1993-1996) and particulate matter (1994-1996 and 1999-2006). Dr. Wolff presently serves as a Consultant to the CASAC Particulate Matter Review Panel, and he has also served on numerous other CASAC panels and SAB committees, including the Research Strategies Advisory Committee (RSAC) (1992-1994), the Advisory Council on Clean Air Compliance Analysis (1995-1998), the Air Quality Modeling Subcommittee (1997-1998), and the Health and Ecological Effects Committee (1997-1998). Dr. Wolff is a fellow member of the Air & Waste Management Association and a member of the American Meteorological Society and the American Association of the Advancement of Science (AAAS).

Dr. Wolff's other professional advisory activities and associations include: National Research Council (NRC), Committee to Review the U.S. Department of Energy (DOE), Office of Fossil Energy, Research Plan for Fine Particulates (1999-2000); Health Effects Institute (HEI), Advisory Board for the Epidemiology Reanalysis Project (1998-2001); University of Michigan, School of Public Health, External Advisory Committee for the Michigan Center for the Environment and Children's Health (1998-present); reviewer for various EPA, EPRI and HEI research programs (1979-present); California Air Resources Board (CARB) Management Advisory Group for the Southern California Air Quality Study (SCAQS) and CARB Emissions Working Group for the Southern California Air Quality Study (1985-1991); CARB Statewide Modeling Coordination Group (1989-1991); Michigan Department of Natural Resources' Southeast Michigan Ozone Modeling Committee, (1989-1990); Lake Michigan Ozone Study (LMOS) Advisory Committee (1990-present); and the Southeast Michigan Ozone Study (SEMOS) Management Committee (1992-present).