New Award Honors Yoram J. Kaufman

Alan Robock

The Atmospheric Sciences Section of the American Geophysical Union is pleased to announce the establishment of a new Section Award for senior atmospheric scientists, the Yoram J. Kaufman Unselfish Cooperation in Research Award. This award is named in honor of Yoram J. Kaufman, an outstanding atmospheric scientist, mentor, and creator of international collaborations who worked on atmospheric aerosols and their influence on the Earth’s climate for his entire 30-year career. Yoram was tragically killed in a bicycle accident just at the peak of his career at NASA Goddard Space Flight Center. He grew in the 1990’s to be a leading light in aerosol research, both as an author of many new theoretical ideas and as a leader of field campaigns like SCAR-B. He also captained the first NASA Earth Observing System platform, Terra, as its Project Scientist. He advised and mentored a large number of students and junior scientists, and was known for his quick insight, great heart, deep wisdom, and outreach to national and international collaborators.

The AS Section will begin making the annual Kaufman Award starting at the Joint Assembly (Spring Meeting) in 2009. Please start now to think of worthy recipients. The citation will read: “The Yoram J. Kaufman Award for broad influence in atmospheric science through exceptional creativity, inspiration of younger scientists, mentoring, international collaborations, and unselfish cooperation in research.”

To be eligible, the candidate must be a member of the AGU, and be at least ten years past the award of the Ph.D. (or equivalent). Members of the AS Section are encouraged to nominate deserving individuals. The nomination package, to be submitted before December 1, 2008, should consist of a nomination letter and the candidate’s curriculum vitae. The package should also include three letters of recommendation, at least one from a non-U.S. collaborator of the nominee. The nomination and supporting letters should clearly state how the nominated individual has exhibited the qualities noted in the citation. Details of the nomination process will be announced soon.

IPCC Special Session

Michel Mesquita

Among the many AGU Fall Meeting 2007 highlights was the session called “The Intergovernmental Panel on Climate Change 2007: Results and Responses II.” This session was composed of four talks: IPCC (2007): Climate Change The Physical Science Basis (Dr. S. Solomon); Human Health Impacts of and Public Health Adaptation to Climate Variability and Change (Dr. K.L. Ebi); IPCC Working Group II: Impacts and Adaptation Part I (Dr. R.S. Pulwarty); and IPCC Report: Trends in Energy Use and Carbon Emissions for the Buildings Sector (Dr. M. Levine).

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Dr. Solomon, co-chair of the IPCC Working Group I, emphasized in her talk that the world has warmed. She presented a brief history of the IPCC and its characteristics today: it was formed in 1988, its main objective is to assess literature, and for this it has 600 reviewers worldwide and 450 contributors. She mentioned that there are many signals of a warming world and human emissions of greenhouse gases are “very likely” responsible (in the IPCC literature, very likely means greater than a 9 in 10 chance). But how much warming can we expect? That is not an easy question because a world of change will mean different changes in different places, for example it may mean more rain for some, and less for others. Sea-ice level is an important issue, and so are the ice sheets. The room at Moscone South was filled for Dr. Solomon’s talk, which cast no doubt about the importance and impact of the Nobel Peace Prize winners both now and in the future.

Climate Change and Ethics

Anna Harper

The groundbreaking research of Darwin on the Galapagos finches and explorations of the double helix composition of DNA have some similarities with current research into climate change, according to Richard Somerville, a theoretical meteorologist and professor at Scripps Institution of Oceanography, UCSD. The implications of Darwinian evolution, DNA stem cell research, and climate research all involve issues of ethics and fairness, and force the scientists involved to decide if they should have any part in advocacy or policy in addition to the pure science that they do. Somerville made this point during a talk on the UCLA campus on Wednesday, January 16, during a three-day conference of the Center for Multiscale Modeling of Atmospheric Processes. His talk was entitled “The Intergovernmental Panel on Climate Change and the Challenges of Climate Policy, Equity and Ethics” and it is available as a webcast and a podcast at http://www.oid.ucla.edu/webcasts/courses/2007-2008/2008winter/aos270-1.

During the 1992 Earth Summit in Rio de Janeiro, a primary objective was to avoid dangerous anthropogenic climate change, but there was no agreement on how much climate change is considered “dangerous.” Different nations have since created their own definitions of the word, and they also have different ideas of what is fair in mitigating climate change.

What exactly constitutes fairness? The December 2007 Bali negotiations were infused with disagreements on the differentiated rights and responsibilities of developed versus developing countries. Also, in terms of geo-engineering, Somerville asked who has the moral (or legal) right to decide to intentionally modify the planet, and who pays for unintended consequences? A final issue he brought up was the obligations that the current generation has to our descendants.

Somerville said that it is the job of policymakers to decide what actions to take, and that our job as climate scientists is to predict how climate will respond to these actions. He listed three guidelines and principles for climate policy, which can be summarized as:

1. Scientific uncertainty should not be used as an excuse to prevent all action.
2. Win-win policies, or policies that have collateral benefits, are preferable (for example, energy efficiency and conservation).
3. Scientists should not make policy, but wise policy can be informed by sound science (for example, halting stratospheric ozone depletion).
4. Do no harm (be aware of unintended consequences).

Besides the ethical questions involved in deciding how involved one should be in policy and advocacy, scientists seem to have problems effectively communicating with the public. Somerville said the IPCC AR4 Working Group I decided to pose some frequently asked questions and answer them for a high school teacher audience. However, they soon realized that this was easier said than done, and they ultimately had to hire a professional science writer to help. This experience reinforced Somerville’s conviction that communicating with the public is an area with much room for improvement among climate scientists.

Progress is being made in deciding what constitutes “dangerous” anthropogenic climate change. Earlier last year, the European Union Commission effectively defined dangerous levels of climate change as anything greater than 2°C above pre-industrial levels (See AS Newsletter Vol. 1, Issue 2 article by Juan A. Añel for more information). The goal of 2°C was also endorsed by the 2007 Bali Climate Declaration by scientists: http://www.climate.unsw.edu.au/bali/.

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Somerville included a thought-provoking quote from the 1995 Nobel Prize winner F. Sherwood Rowland in his talk. Concerning the ozone hole, Rowland was quoted by New Yorker journalist Paul Brodeur as saying, “What’s the use of having developed a science well enough to make predictions, if in the end, all we’re willing to do is stand around and wait for them to come true!” This statement is relevant to our current quest to understand and communicate the possibilities of future climate change.

Announcing the New AGU Fellows

Michael Prather

Each year, no more than 0.1% of the AGU members are elected as AGU Fellows. For 2008, the Atmospheric Sciences section is proud to have seven representatives in the newly elected class of Fellows. Following is a short bio of each of these outstanding scientists.

Each of these new AGU Fellows will be giving a talk at a special session at the Joint Assembly (formerly AGU Spring Meeting) in Ft. Lauderdale, May 27-30, discussing exciting new research or giving an overview of their most important work. Please join us there.

Jeffrey Kiehl: “For major and lasting contributions to our understanding of the radiative forcing and feedback processes that govern climate change.”

Dr. Kiehl's career has been marked by distinctive and exceptional accomplishments with tremendous impacts in both scientific understanding, development of state-of-art climate models, and leadership of national and international research programs. Over a sustained period of time, he has made pioneering and seminal research contributions to understanding many aspects of climate variability and climate change, including the physical processes that determine climate response and sensitivity, radiative effects of sulfate aerosols, chemistry-climate interactions, various paleoclimate problems, and human treatment of the natural world. The breadth and depth spanned by Dr. Kiehl's research has been unique, revealing the propensity for innovative explorations, deep insights, and far-reaching outcomes as evidenced by his outstanding publications list. His eminence in the field of climate modeling is acknowledged worldwide. He has also been an exemplary model of a high-level scientific citizen providing exceptional service to the AGU, climate, and NCAR communities.

M. Patrick McCormick: “For the remarkable scientific and technological achievements that allowed measurement of aerosols, clouds, and ozone from space, and for making those measurements that documented ozone depletion and the volcanic impact on climate.”

Professor Pat McCormick has provided innovative leadership in the development, deployment, and interpretation of optical techniques for measuring aerosols, clouds, and ozone, which have played a pivotal role in understanding the nature of clouds, volcanic aerosols, the stratosphere, and the depletion of the ozone layer. Dr. McCormick's high quality, limb sounding, solar occultation instruments provided the first global view of the stratospheric aerosol layer. He was the first to name and identify the widespread nature of polar stratospheric clouds. His data were an essential clue to understanding ozone loss. Observations of stratospheric aerosols from the satellite family Dr. McCormick developed still form the backbone for calculations of mid-latitude chemical ozone loss. In addition, the satellite instruments whose development he led provided the most widely used data on the spread of volcanic clouds, such as following the 1992 eruption of Mt. Pinatubo. Dr. McCormick's instruments also showed for the first time that sub-visible cirrus clouds were common at the tropical tropopause. Dr. McCormick developed a self-calibrating strategy for limb observations of ozone. These data form a long, highly reliable measure of global ozone and its changes. Additionally, Dr. McCormick developed the first space born lidar system, which opened the way to spectacular new data sets being obtained from free flying satellites with lidars.

V. Ramaswamy: “For lasting contributions to our understanding of radiative forcing of climate change and his leadership role in national and international assessments.”

Dr. V. Ramaswamy's career has been devoted to improving our understanding of radiative transfer in the atmosphere and incorporating this understanding in the radiative component of climate models. In the process, he has explored nearly every aspect of the radiative forcing of climate change, whether due to greenhouse gases, aerosols, clouds or ozone, in over 100 papers, over half of which are published in AGU journals. The best known of these papers include classic studies (a review in 2001 and a Science paper in 2006) on observations and modeling of lower stratospheric temperature trends, two papers in 1997-8 on the global direct aerosol forcing, and his early work with Keihl on effects of large smoke and dust loadings (AKA nuclear winter). Despite his impressive research productivity, Ramaswamy is probably best known for his leadership in the radiation/climate community, starting with the seminal model intercomparison project ICCRM and culminating in his Coordinating author position for the Radiative Forcing chapter of the Fourth IPCC Assessment, as well as his leading role in the latest CCSP report on tropospheric temperature trends. He is currently Acting Director of the Geophysical Fluid Dynamics Laboratory, indicative of the high regard in which he is held both for his science and his organizational skills.

Jagadish Shukla: “For his visionary leadership and pioneering research efforts in advancing the science of seasonal to interannual climate prediction.”

Professor Jagadish Shukla is President of the Institute of Global Environment (IGES). He has served on numerous national and international panels and committees, including the World Climate Research Programme's Modeling Panel, where he is the current chair. Shukla is the author or co-author of over 150 scientific papers. His research has established the intellectual framework for climate prediction on time scales beyond those approachable by atmospheric weather prediction by recognizing the importance of incorporating dynamic models of the oceans and land as sources of longer-term system memory. He has made leading contributions in the research areas of climate analysis, model-based climate predictability, and practical prediction of seasonal to interannual climate variability. Shukla envisioned and promoted the retrospective analysis of global atmospheric observations, using state-of-the-art prediction models to produce global gridded datasets. His advocacy efforts, including his paper with Lennart Bengtsson, were instrumental in building a constituency for reanalysis projects in the U.S. and Europe. The datasets resulting from these efforts are widely used in climate analysis research; the publication introducing the U.S. reanalysis dataset has been cited nearly 4000 times in the past decade.

Shukla established and directed one of this country's premier climate modeling groups, the Center for Ocean-Land-Atmosphere interactions. With support from the WMO, he was instrumental in establishing the National center for Medium Range Weather Forecasting in India. He also led the effort to create the Climate Dynamics Ph.D. Program at George Mason University.
James Galloway: “For his pioneering research on acid rain and the global nitrogen cycle, and for his voice on informing and guiding environmental policy.”

Professor James Galloway has built an international reputation for his work on two topics of critical importance to earth systems science and to society - acid rain and the global nitrogen cycle. Dr. Galloway has pioneered basic research on these issues, led major national and international synthesis efforts, and has worked effectively on linking science to policy on both. Dr. Galloway’s work on acid rain dates back to the 1970’s, when he and Dr. Gene Likens began publishing widely on this phenomenon. Jim Galloway was the lead author on a set of key publications that explored the sulfur and nitrogen components of the acid rain issue, developed a conceptual model of freshwater acidification from the atmospheric deposition of sulfuric acid, and proposed a precipitation chemistry network to study the effects of acid rain on aquatic and terrestrial ecosystems. In a landmark paper in Science in 1984, he reported on the natural versus anthropogenic components of acid rain in a way that helped move the policy debate forward. His efforts were critical in communicating the foundational science that led to the environmental policies to control acid rain in the U.S. In terms of the global nitrogen cycle, Galloway identified the ways in which it was being altered by human actions through the use of fertilizer in agriculture, the planting of legumes, and the burning of fossil fuels.

Ulrike Lohmann: “For her leadership in climate change research through merging aerosols with liquid, ice and mixed-phase clouds in global climate models.”

Ulrike Lohmann’s work is distinguished by a remarkable interdisciplinary blend of laboratory experiments, process modeling, global modeling, and analysis of in situ and remote sensing data. Since obtaining her Ph.D. just over 10 years ago, she has published almost 100 peer-reviewed articles, and has made important contributions to the Third and Fourth Assessment Reports of the Intergovernmental Panel on Climate Change. Ulrike has clearly established herself as one of the world’s leading authorities on the effects of aerosols on clouds, also known as the aerosol indirect effect (AIE), on the planetary energy balance. She began her work with the AIE in warm clouds, producing the first estimate of the AIE using a physically-based treatment of droplet nucleation. She provided plausible explanations for the different observed relationships between cloud reflectivity and droplet size in clean and polluted clouds, and for the observed tendency for the width of the droplet size distribution to be broader in more polluted clouds. She then addressed the much more difficult problem of aerosol effects on ice and mixed-phase clouds, working with others to study homogeneous and heterogeneous ice crystal nucleation, coupling them to the aerosol in a global climate model, and using them to investigate a variety of mechanisms by which soot, dust and sulfate aerosol effects on ice crystal nucleation can affect the global energy balance. She stimulated efforts to study homogeneous and heterogeneous ice nucleation in several laboratories worldwide. She initiated her own experimental programs, assembling a remarkable research group that contains equal components of modeling, laboratory work, and field studies.

Jeffrey M. Forbes: “For his exceptional contributions to upper-atmospheric physics and comparative planetary aeronomy.”

Professor Forbes’ research is not only prolific, but also transformational. Jeff has published 165 papers in peer-reviewed journals, 80 of which are in AGU journals. These papers are heavily cited (4,058 citations) and give him a Hirsch index of 34. Both numbers put him in the upper half of the AGU Fellows. Several of his papers are considered to be classics. Two of his papers have been cited more than 100 times, and six have been cited more than 100 times. Jeff’s work has been on middle atmosphere dynamics and their effects on the thermosphere and ionosphere. He has also done research on important feedbacks among these regions with the magnetosphere. Jeff’s most notable scientific contributions have been to do realistic, yet readily interpretable models of atmospheric tides. This enables easy comparison between theory and observations. One of the seconding letters says, “One cannot do research on, or teach about, upper atmospheric tides and planetary waves without reading papers by Forbes or showing results they contain.” Jeff has recently entered the field of comparative planetary aeronomy, and he has already made an auspicious contribution in this area with a seminal paper on the role of the semi-diurnal tide (and solar asymmetric diurnal) tide in driving the Martian upper atmosphere. Evidence of the high regard in which Jeff is held is seen by his being selected as the 2004 Niels H. J. Kuiper Lecturer at the Fall AGU meeting and his service on several NRC and NASA committees. He has been an Associate Editor of JGR (Space Physics). We cannot think of a stronger joint Atmospheric Sciences, SPA, and Planetary sections joint candidate for AGU Fellow.
Opportunities

Compiled by Anna Harper

Note: You may be asked for your AGU member # to open the following links. Visit the AS Section website for links to other job opportunities not listed here: http://www.agu.org/sections/atmos/ click on Job Listings/Resources.

AGU job postings can be found at: http://www.agu.org/cgi-bin/membership_services/joblistings.cgi

Below is a list of the postings in Atmospheric Sciences:

- Chief, Research Programs Division, Climate Program Office at NOAA
- Post-doctoral Fellow, Atmospheric Chemistry, Dept. of Atmospheric Sciences, Colorado State Univ. - deadline March 28
- Post-doctoral scholar, Regional Climate Dynamics, Dept. of Atmospheric and Oceanic Sciences, UCLA - reviews begin March 11
- Research Associate, Instrument Development, CIRES/NOAA
- Scientist, Model and Data Group, Max Planck Institute, Hamburg, Germany - deadline March 20
- Three-semester, full-time visiting professor in meteorology, Dept. of Geoscience at Hobart and William Smith Colleges - Reviews begin Feb. 29
- Two post-doctoral positions, Atmospheric Chemistry Modeling Group at Harvard University
- Post-doctoral research position in Air Quality Modeling, College of Engineering at Lamar Univ., Beaumont, TX
- Research Scientist, Aerosol and Cloud Science Group, Jet Propulsion Laboratory
- Senior orbit determination engineer in the Orbiter and Radio Metric Systems Group at the Jet Propulsion Laboratory

Ocean Sciences

- Cyberinfrastructure Coordinator, Woods Hole Oceanographic Institution
- OOI System Engineer, Woods Hole Oceanographic Institution
- Oceanography Faculty Position, Dept. of Earth and Environmental Sciences, Lamont-Doherty Earth Observatory of Columbia University - Reviews begin March 5
- Scientific researchers positions at NATO Research Centre - NURC
- Staff Systems Engineer, Orbiter and Radio Metric Systems at Jet Propulsion Laboratory

Biogeosciences

- PhD position in Forest Ecology and Modeling, Junior Research Group at the Max Planck Institute for Biogeochemistry, Hamburg, Germany - deadline March 10
- Post-doctoral position in Modeling Biodiversity-ecosystem functioning relationships, Junior Research Group at the Max Planck Institute for Biogeochemistry, Hamburg, Germany - deadline March 15

Interdisciplinary/Other

- Science Honors Program Director and Assistant/Associate Professor in Natural Science Dept., Central Washington Univ. - deadline March 25
- Director, Oregon Climate Change Research Institute, College of Oceanic and Atmospheric Sciences, Oregon State Univ. - deadline April 1
- Faculty position - dynamics of nonlinear systems, Dept. of Mechanical Engineering, MIT - deadline Sept. 15
- NASA Langley Research Center’s Visiting Fellowship Positions - deadline Apr. 1
- Post-doctoral Fellowship, Centre for Global Change Science, Univ. of Toronto
- Post-doctoral position, St. Anthony Falls Laboratory of the Univ. of Minnesota
- Post-doctoral researcher in Earth System Modeling, Carnegie Institution at the Dept. of Global Ecology at Stanford Univ.
- Post-doctoral position in the area of global decadal climate prediction, Max Planck Institute for Meteorology - Deadline March 30
- Post-doctoral position as a Gary Comer Abrupt Climate Change Fellowship, Max Planck Institute for Meteorology - Deadline March 30
- Post-doctoral position in sea-ice research and Scientific programmer for sea-ice modeling, Max Planck Institute for Meteorology - Deadline March 15
- Dean of Clayton H. Riddell Faculty of Environment, Earth, and Resources, University of Manitoba - Reviews begin Feb. 25
- Director, Office of Ocean Exploration and Research, NOAA, Silver Spring, Maryland - Vacancy closes March 10
- Geosciences initiative faculty positions under the theme “Surface Envelopes of Earth and Planets: Processes and Interactions,” UCLA
- Post-doctoral researcher in CO₂ emissions quantification, Dept. of Earth and Atmospheric Sciences/Purdue Climate Change Research Center

Student Opportunities

There are many student opportunities on the AGU website. Here are just a few:

- Ph.D. position in storm precipitation analysis, Institute of Environmental Engineering, ETH Zurich - deadline April 1
- Summer Synthesis Institute Fellowships available for the Northeast Consortium for Hydrologic Synthesis, Boston, June 9 - July 18 - deadline March 24
- M.S. Assistantships in hydrological, physical, and social environmental sciences, Center for the Environment at Plymouth State University (New Hampshire)
- Ph.D. Assistantship in Ecosystem Ecology in Dept. of Forestry and Environmental Resources, North Carolina State Univ.
- Purdue Climate Change Research Center Graduate Fellowships
- Graduate Stipends in Ocean and Earth Sciences, Dept. of Ocean, Earth, and Atmospheric Sciences, Old Dominion University, Norfolk, VA
- Ph.D. Assistantship in Ecosystem Ecology in the Dept. of Forestry and Environmental Resources, North Carolina State Univ. beginning May 2008
- Reykjavik Energy Graduate School of Sustainable Systems - Deadline March 15
- Summer research opportunities in marine and atmospheric processes at Stony Brook University - deadline March 15
Conferences

• **2008 Joint Assembly** (May 27-30, 2008) - Ft. Lauderdale, Fla.  
  [http://www.agu.org/meetings/ja08/](http://www.agu.org/meetings/ja08/)

• **Biosphere-Atmosphere Technical Short Courses and Graduate Fellowships**

  The Biosphere-Atmosphere Research & Training IGERT Program is offering four short courses during the summer of 2008 at the University of Michigan's Biological Station located in Northern Michigan. Offered courses include: Essentials of Biosphere-Atmosphere Interactions, June 23-July 1, Flux Measurement Fundamentals, July 7-11 (Course content will not overlap with Flux Course to be offered by NCAR), Methods in Plant Physiological Ecology for Climate Change Research, July 14-18, Ecosystem Modeling Course, July 14-18. For more information about the short courses and to download a registration form see [www.lsa.umich.edu/umbs/bart](http://www.lsa.umich.edu/umbs/bart). Our website also contains information on graduate fellowships for PhD students studying biosphere-atmosphere interactions.

• On behalf of the Conference Organising Committee, we would like to inform you of the **Fifth International Conference on Environmental, Cultural, Economic and Social Sustainability** at the University of Technology, Mauritius, 5-7 January 2009:  

  This Conference aims to develop a holistic view of sustainability, in which environmental, cultural and economic issues are inseparably interlinked. It will work in a multidisciplinary way, across diverse fields and taking varied perspectives in order to address the fundamentals of sustainability.

  As well as impressive line-up of international main speakers, the Conference will also include numerous paper, workshop and colloquium presentations by practitioners, teachers and researchers. We would particularly like to invite you to respond to the Conference Call-for-Papers. Papers submitted for the Conference proceedings will be peer-refereed and published in print and electronic formats in the *International Journal of Environmental, Cultural, Economic and Social Sustainability* - [http://Sustainability-Journal.com](http://Sustainability-Journal.com). If you are unable to attend the Conference in person, virtual registrations are also available which allow you to submit a paper for refereeing and possible publication in this fully refereed academic Journal, as well as access to the electronic version of the Conference proceedings.

The deadline for the next round in the call for papers (a title and short abstract) is 14 February 2008. Proposals are reviewed within three weeks of submission.

We look forward to receiving your proposal and hope you will be able to join us in Mauritius in January 2009.