Journal of Global Environmental Modeling

A new all-electronic peer-reviewed, non-profit journal, published by CSU's Department of Atmospheric Science to serve the global modeling community.

The Journal of Global Environmental Modeling (GEM) is an international, interdisciplinary scientific journal for the publication of original articles and short communications (Notes and

Correspondence) for the modeling of the Earth's climate system, including its atmosphere, oceans, land and ice surfaces.

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What is SPARC?

SPARC (Scholarly Publishing Academic Resources Coalition) is an alliance of universities, research libraries, and organizations built as a constructive response to market dysfunctions in the scholarly communication system. These dysfunctions have reduced dissemination of scholarship and crippled libraries. SPARC serves as a catalyst for action, helping to create systems that expand information dissemination and use in a networked digital environment while responding to the needs of scholars and academe.

Is SPARC a publisher?

SPARC is not a publisher. SPARC helps stimulate competition in the market by nurturing high-quality, low-cost journals published by researchers, societies or publishers with scientist—and library-friendly values and practices

What are the benefits of joining SPARC?

Libraries that join SPARC are taking action to preserve their future and the future of research-centered, affordable journals for their faculty. Supporting SPARC and subscribing to SPARC-endorsed journals gives libraries a choice, and gives researchers the option to publish their findings in forums that support science rather than publisher profits.

Are SPARC-endorsed journals print or electronic?

SPARC-endorsed journals are both print and electronic. All SPARC-endorsed journals that appear in print also appear as web editions. Two journals, *New Journal of Physics* and *Internet Journal of Chemistry,* are electronic-only.

Where does SPARC stand on archiving, licensing and copyrighting issues?

SPARC and its partners aim to ensure fair use of electronic resources while strengthening the proprietary rights and privileges of authorship. SPARC also works closely with its licensing advisory council to provide guidance for new journals on policies that will make the title as library-friendly as possible. SPARC advocates for comprehensive archiving for electronic publications and is involved with a variety of projects working to create this reality.

Does SPARC provide start-up funds for new journals?

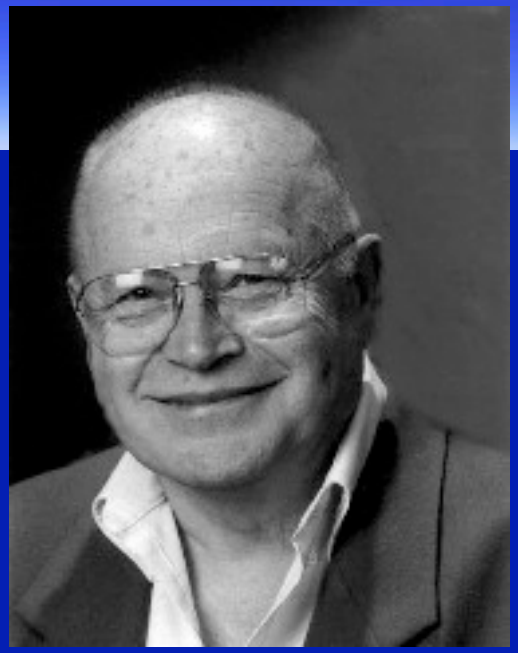
SPARC's financial support of journals generally takes the form of subscriptions placed by its members rather than through direct funding. SPARC provides many other services to its publisher-partners, including: an advisory role in the planning and development phases; advertising, publicity and promotion to the broad marketplace; and sales and marketing focused on encouraging SPARC member purchases. SPARC's Scientific Communities Initiative, a one-time grant program announced in spring 1999, awarded $500,000 in development funds to three new electronic journals: Columbia Earthscape, MIT CogNet, and eScholarship (California Digital Library). These funds are administered over a three-year period. The awardees are now part of SPARC's Scientific Communities publisher partner program.

Edited Book on the History of Global Atmospheric Modeling

Norman Phillips

Meteorology Project, Institute for Advanced Study, Princeton, 1952. Left to right: Jule Charney, MANIAC I, Norman Phillips, Glenn Lewis, N. Gilbarg, George Platzman.

2003 Benjamin Franklin Medal in Earth Science



Norman A. Phillips, Ph.D.

Former Principal Scientist
National Weather Service
National Meteorological Center

Citation: Drs. Phillips and Smagorinsky are awarded the 2003 Benjamin Franklin Medal in Earth Science for their major contributions to the prediction of weather and climate using numerical methods. Their seminal and pioneering studies led to the first computer models of weather and climate, as well as to an understanding of the general circulation of the atmosphere, including the transports of heat and moisture that determine the Earth's climate. In addition, Smagorinsky played a leading role in establishing the current global observational network for the atmosphere, and Phillips' leadership fostered the development of effective methods for the use of observations in data assimilation systems.

A theoretical meteorologist, Norman Phillips was the first to show, with a simple General Circulation model, that weather prediction with numerical models was even feasible. The advent of numerical weather predictions in the 1950s also signaled the transformation of weather forecasting from a highly individualistic effort to one in which teams of experts developed complex computer programs, eventually for high-speed computers.

Phillips received his B.S. from the University of Chicago in 1947 and his Ph.D. in 1951.

Joseph Smagorinsky

Pioneering meteorologist Joseph Smagorinsky, who developed influential methods for predicting weather and climate conditions and was affiliated with Princeton for many years, died Sept. 21, 2005. He was 81.

Smagorinsky founded the Geophysical Fluid Dynamics Laboratory (GFDL), which is operated by the federal government and has been located on the University's Forrestal campus since 1968. His work profoundly influenced the practice of numerical weather prediction around the world. Climate models developed at the lab have led to greater understanding about humans' capabilities to affect climate change.

Syukuro Manabe

Research: Model Study of Climatic Change: Past, Present and Future

In the early 1960's, we developed a radiative-convective model of the atmosphere, and explored the role of greenhouse gases such as water vapor, carbon dioxide and ozone in maintaining and changing the thermal structure of the atmosphere. This was the beginning of the long-term research on global warming, which I have continued until now in collaborating with the staff members of Geophysical Fluid Dynamics Laboratory of NOAA.

In the late 1960's, Kirk Bryan and I began to develop a general circulation model of the coupled atmosphere-ocean-land system, which eventually became a very powerful tool for simulating global warming. More recently, we have realized that a coupled model can successfully simulate many low frequency variabilities of climate. This has encouraged us to use a coupled model for exploring not only global warming but also unforced, natural variability of climate with seasonal to decadal time scales.

The analysis of deep-sea cores indicates that the Earth's climate has fluctuated greatly during the geological past. Throughout my career, past climate changes have provided many exiting issues, which we have explored using climate models with various complexity.

Akira Kasahara

RESEARCH INTERESTS

1) Numerical weather prediction (NWP)

General circulation modeling of the atmosphere. Numerical methods for NWP models. Data initialization, including diabatic effects. Handling of cumulus parameterization in NWP models.

2) Atmospheric dynamics

Free oscillations of the atmosphere. Application of Hough functions. Planetary wave propagation. Frontal cyclone theory. Nonhydrostatic normal modes.

3) Tropical cyclone research

Genesis mechanisms. Movement theory. Impact of global warming.

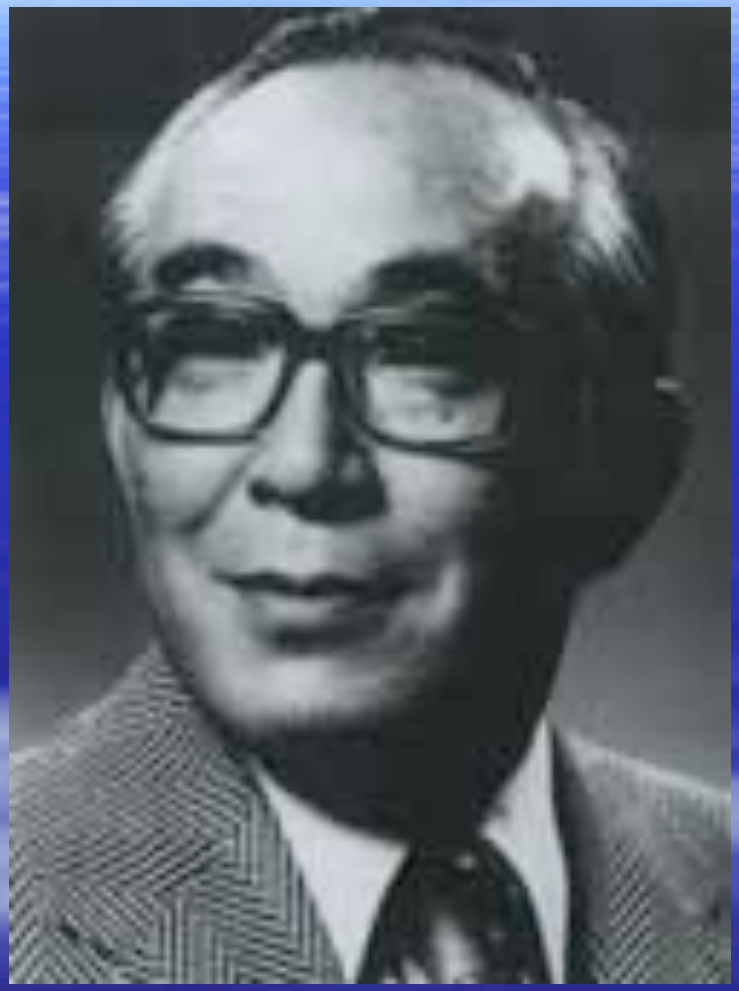
Warren Washington

Born in Portland, Oregon, Washington earned a bachelor's degree in physics and a master's degree in meteorology from Oregon State University. After completing his doctorate in meteorology at Pennsylvania State University, he joined NCAR in 1963 as a research scientist. Washington's areas of expertise are atmospheric science and climate research, and he specializes in computer modeling of the earth's climate. He has published more than 100 papers in professional journals. His book **An Introduction to Three-Dimensional Climate Modeling**, co-authored with Claire Parkinson (NASA), is a reference on climate modeling.

Washington is consultant and advisor to a number of government officials and committees on climate-system modeling. From 1978 to 1984, he served on the President's National Advisory Committee on Oceans and Atmosphere. He participated in several panels of the National Research Council and chaired its Advisory Panel for *Climate Puzzle*, a film produced for the 1986 PBS television series **Planet Earth**. Washington was a member of the Secretary of Energy's Advisory Board from 1990 to 1993 and has been on the Secretary of Energy's Biological and Environmental Research Advisory Committee (BERAC) since 1990. From 1996-present, he has been the chair of the subcommittee on Global Change for BERAC.

Yale Mintz

Akio Arakawa



B.S. and D.Sc., Tokyo University specialty:

Earth System Modeling

Numerical Modeling of the Global Atmosphere (Interactions between dynamic & physical processes)

Chuck Leith

The Livermore Atmospheric Model (LAM)

In 1960, Cecil E. "Chuck" Leith began work on a GCM at Lawrence Livermore National Laboratories. Trained as a physicist, Leith became interested in atmospheric dynamics and received the blessing of LLNL director Edward Teller for a project on the general circulation. Teller's approval stemmed from his long-term interest in weather modification.

After receiving encouragement from Jule Charney, Leith spent a summer in Stockholm at the Swedish Institute of Meteorology. There he coded a five-level GCM for LLNL's newest computer, the Livermore Automatic Research Calculator (LARC), due to be delivered in the fall of 1960. Leith wrote the code based on the manual for the new machine.

Although aware of the Smagorinsky/Manabe and Mintz/Arakawa efforts, Leith worked primarily on his own. He had a working five-level model by 1961. However, he did not publish his work until 1965. Nevertheless, by about 1963 Leith had made a film showing his model's results in animated form and had given numerous talks about the model.

Leith ceased work on his model -- known as LAM ("Leith Atmospheric Model" or "Livermore Atmospheric Model") -- in the mid-1960s, as he became increasingly issued in statistical modeling of turbulence. In 1968, he went to the National Center for Atmospheric Research.

The Emergence of Numerical Weather Prediction: Richardson's Dream

by Peter Lynch

Lewis Fry Richardson dreamt that scientific weather prediction would one day become a practical reality. Before his ideas could bear fruit several advances were needed: better understanding of the dynamics of the atmosphere; stable computational algorithms to integrate the equations; regular observations of the free atmosphere; and powerful automatic computer equipment. By 1950 advances in all these fronts were sufficient to permit the first computer forecast to be made. Over the ensuing fifty years progress in numerical weather prediction has been dramatic. Weather prediction and climate modeling have now reached a high level of sophistication. This book tells the story of Richardson's trial forecast, and the fulfillment of his dream of practical numerical weather forecasting. It includes a complete reconstruction of Richardson's forecast, and analyses in detail the causes of his failure. This will appeal to everyone involved in numerical weather forecasting, from researchers and graduate students to professionals.

The Emergence of Numerical Weather Prediction: Richardson's Dream

by Peter Lynch

Includes a complete reconstruction of Richardson's forecast and analyses, in detail, the causes of his forecast failure

Presents a comprehensive account of the emergence of modern weather prediction.

Discusses the key topic of atmospheric balance on full detail

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Richardson's Forecast Factory by F. Schuiten

American Meteorological Society
University Corporation for Atmospheric Research
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American Meteorological Society
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TAPE RECORDED INTERVIEW PROJECT
LECTURES AND TALKS

Title	Date
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"Meteorologists I Have Known" Arnt Eliassen	10/31/89
Philip D. Thompson Symposium, "A Day to Remember Phil..."	11/30/94
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Akira Kasahara Symposium, NCAR (158)	9/97

Journal of Global Environmental Modeling

Create a new all-electronic open-access journal for the publication of research on global environmental modeling.	Creation of a business plan for the journal	Schubert Randall KT manager	CSU CSU CSU	Year 1
	Exploration of possible affiliations, e.g., PLoS	Schubert Randall KT manager	CSU CSU CSU	Year 1
	Development of a plan for the submission-to-publication process	Schubert Randall KT manager	CSU CSU CSU	Year 1
	Solicitation of contributions	Schubert Randall KT manager	CSU CSU CSU	Year 2
	Development of a plan for publicizing the new journal	Schubert Randall KT manager	CSU CSU CSU	Year 2
	Begin publication	Schubert Randall KT manager	CSU CSU CSU	Year 3

History of Global Atmospheric Modeling

Create an edited book on the history of global atmospheric modeling.	Recruit chapter authors	Randall Schubert Donner	CSU CSU GFDL	Year 1
	Interview modelers	Randall Schubert Donner	CSU CSU GFDL	Years 1-3
	Choose publisher	Randall Schubert Donner	CSU CSU GFDL	Year 2
	Deliver manuscript to publisher	Randall Schubert Donner	CSU CSU GFDL	Year 4

Knowledge Transfer Implementation Plan

Objective	Action Steps	Responsible Person & Team	Location	Time-frame
Provide improved cloud parameteri-zations to nu-merical weather prediction cen-ters.	Make prototype MMF available to numerical weather prediction centers	Khairoutdinov Lord Miller	CSU NCEP ECMWF	Year 1
	Make improved conventional parame-terizations available to numerical weather prediction centers	Khairoutdinov Lord Miller	CSU NCEP ECMWF	Year 3

Knowledge Transfer to Traditional Modeling Centers (Bill Collins)

We will hold a discussion in WG 11 on knowledge transfer to traditional modeling centers on Thursday morning.

We have two general goals for our WG:

- Provide improved tools for simulation of cloudiness to modeling centers
- Provide innovative tools for evaluation of these simulations.

Specifically, our tasks from the implementation plan are:

- Provision of prototype MMF to modeling centers and collaboration on its application to climate models
- Provision of improved parameterizations to climate modelers
- Provision of advance diagnostics tools to climate modelers

Of course, one of the most interesting aspects of this work is understanding the implications of MMF-related developments on the mean climate and climate change simulated by global coupled models.

Bill particularly encourages short presentations related to this topic and to the issue of understanding the diversity of cloud feedbacks in the IPCC multi-model ensemble.