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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Authors are of course at liberty to present their findings at scientific meetings before publication. However, the journal recommends that authors do not contact the media or respond to such contacts unless the manuscript has been accepted for publication and an embargo date has been established.

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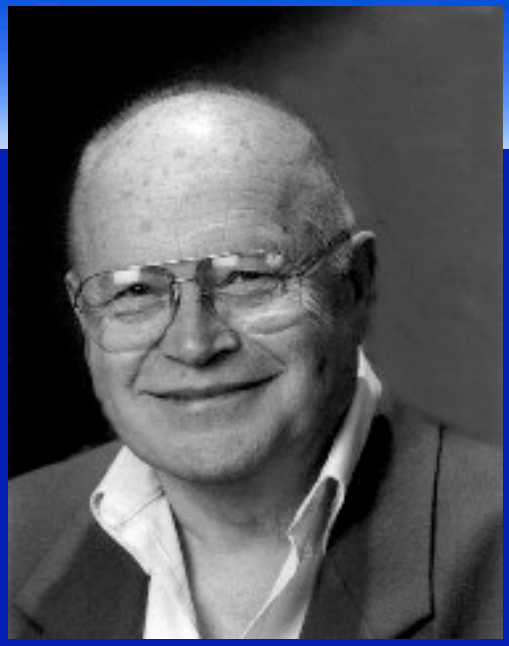
Editors and reviewers are required to treat all submitted manuscripts in strict confidence.

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.

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

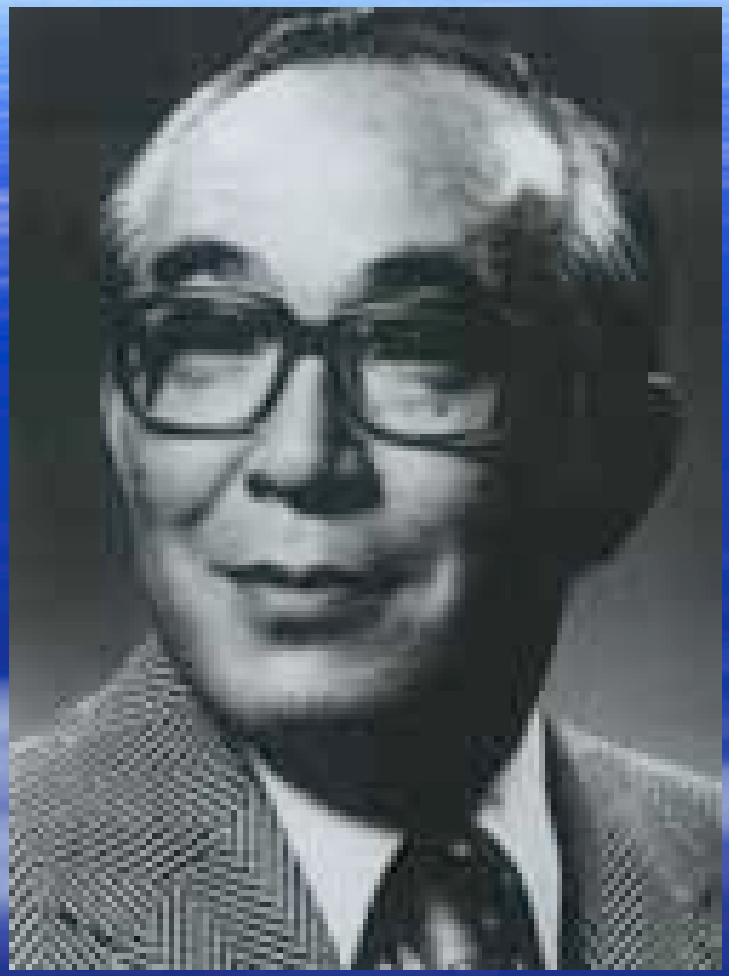
Genesis mechanisms. Movement theory. Impact of

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.

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.

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 parameterizations to numerical weather prediction centers.	Make prototype MMF available to numerical weather prediction centers	Khairoutdinov Lord Miller	CSU NCEP ECMWF	Year 1
	Make improved conventional parameterizations available to numerical weather prediction centers	Khairoutdinov Lord Miller	CSU NCEP ECMWF	Year 3