Ron Stouffer at GFDL

38 years, 147 papers,
8 supercomputers

(and more than 3,200 strokes
in the GFDL Open)

ASC NO. 6.—Looking over the Advanced Scientific Computer No. 6, which is processing seismic data for GSI, are Hurshell Stinson (seated) and Tony Galindo. The computer began processing data on Jan. 6 and the one-pipe system is located in Austin, where Hurshell is manager of ASC computer services and Tony is in charge of hardware.

ASC No. 6 used for GSI data

On. Jan. 6, another Advanced Scientific Computer began processing seismic data for GSI in Austin, providing additional capacity for processing information gathered at remote sites. ASC No. 6 sends and receives information from terminals located in Dallas, Houston, Midland, New Orleans and Croydon, England.

ASC No. 6 is a one-pipe system, identical to No. 5, for seismic processing, which also is being used in Austin. A third ASC, No. 1A, is being used in Austin for research and development.

ASC No. 7 is being developed for use by the Naval Research Laboratory in Washington, D.C. Two previous ASC's are in use by the National Oceanic and Atmospheric Administration for weather research at Geophysical Fluid Dynamics Laboratory in Princeton, N.J. and by the U.S. Army Ballistic Missile Defense Agency for defense research at Huntsville, Ala.

Another ASC is located in TI's Services Group facility in Amstelveen, Holland and it is processing seismic data.

DallaSite January, 1975

May 21, 1984

The History of the Advanced Scientific Computer

Harvey G. Cragon

Return now to the GFDL ASC. This machine was delivered in April 1974 and passed its acceptance test at GFDL in November 1974. GFDL required a large secondary storage system for the ASC. We investigated several approaches to this requirement and selected an array of video tape recorders which were modified to store digital data. After much difficulty, this system finally passed acceptance tests in 1975 (month?). However, the system would not stand up to round-the-clock operation, and we finally negotiated a reasonable settlement with GFDL. This system represents the only complete hardware failure of the ASC project; all other problems were solved in some way. For example, the answer variability problem at GFDL was solved by redesign of the memory error checking boards and the thin film memory problem was solved by the use of semiconductor memories.

The GFDL ASC was turned off and replaced by an IBM??? in ??. (I need the story of the last days at GFDL).

JOURNAL OF GEOPHYSICAL RESEARCH, VOL. 85, NO. C10, PAGES 5529–5554, OCTOBER 20, 1980

Sensitivity of a Global Climate Model to an Increase of CO_2 Concentration in the Atmosphere

SYUKURO MANABE AND RONALD J. STOUFFER

Geophysical Fluid Dynamics Laboratory/NOAA, Princeton University, Princeton, New Jersey 08540

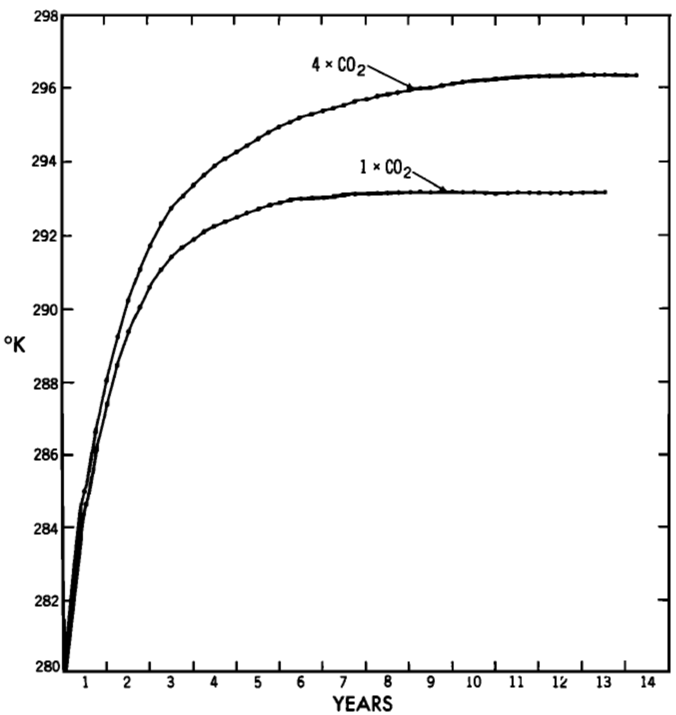
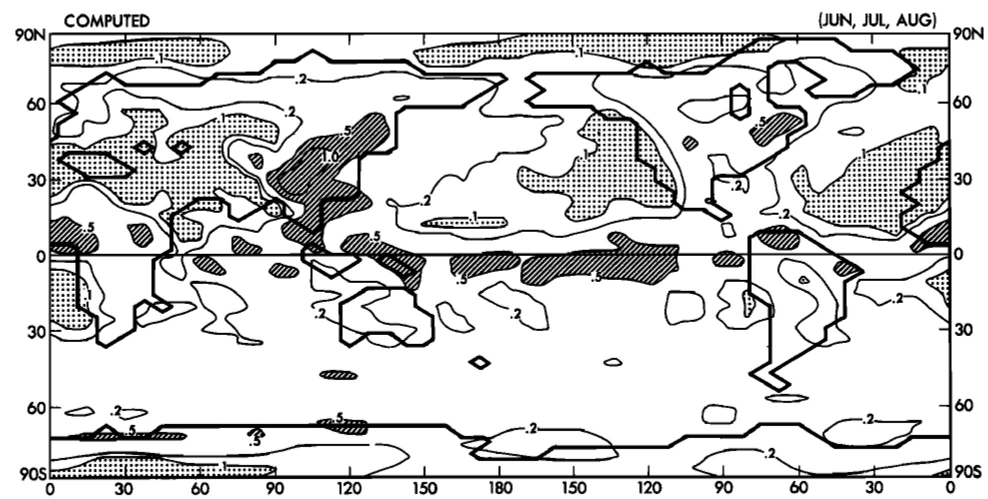
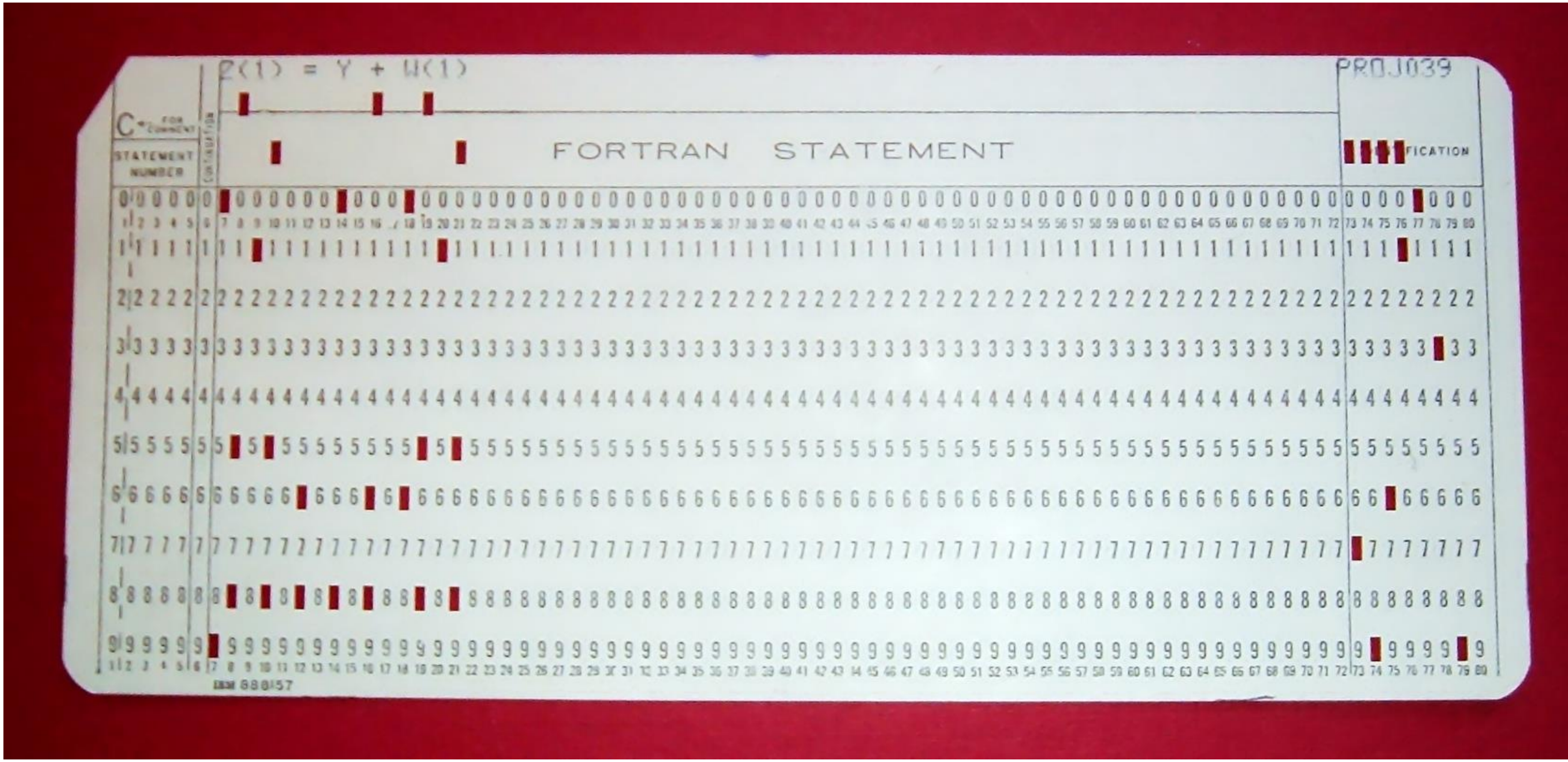
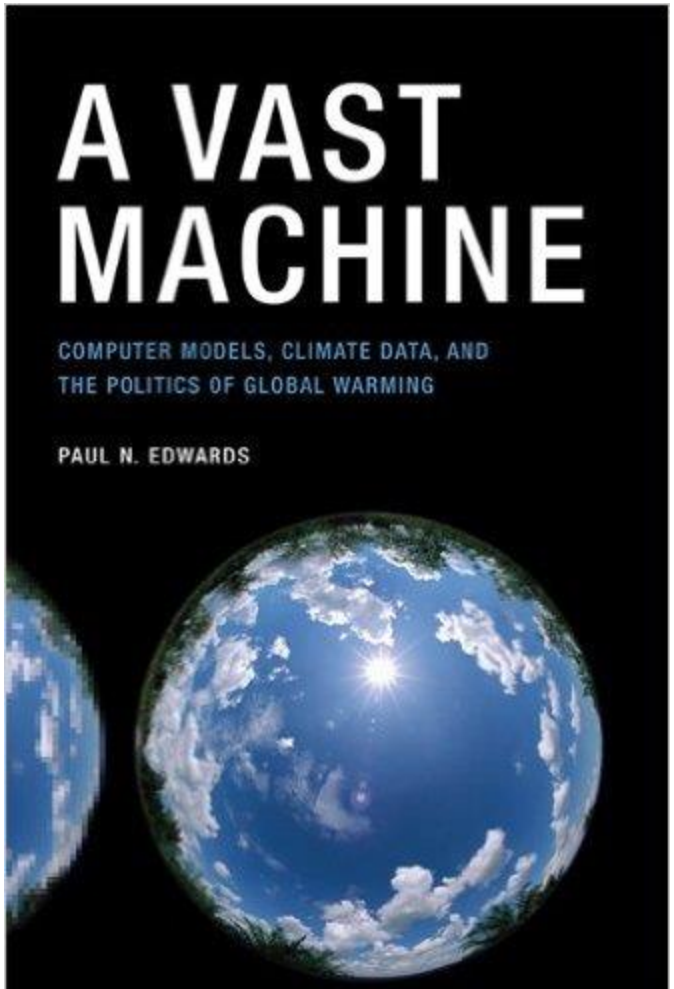


Fig. 6. Time variation of the global mean water temperature of the mixed layer ocean from $1 \times CO_2$ and $4 \times CO_2$ experiments. A 1-year running mean operator is applied to both curves.




Z(1) = Y + W(1)
PROJ039
C FOR COMMENT
STATEMENT NUMBER
CONTINUATION
FORTRAN STATEMENT
FICATION
IBM 888157



Box 7.1
(continued)

Supersource

In the late 1970s, Leith Holloway began to re-code the GFDL spectral model to add modularity and user-specifiable options. The resulting model, Supersource, remained in use at GFDL through the 1990s. Supersource physics descend from Manabe et al.'s Zodiac grid model series. Users can specify code components and options. Supersource has often been used as the atmospheric component in coupled atmosphere-ocean GCM studies.[f]

a. J. Smagorinsky et al., "Numerical Results from a Nine-Level General Circulation Model of the Atmosphere," *Monthly Weather Review* 93, 1965: 727–68.

b. Yoshio Kurihara, "Numerical Integration of the Primitive Equations on a Spherical Grid," *Monthly Weather Review* 93, no. 7, 1965: 399–415.

c. See e.g. S. Manabe and K. Bryan, "Climate Calculations with a Combined

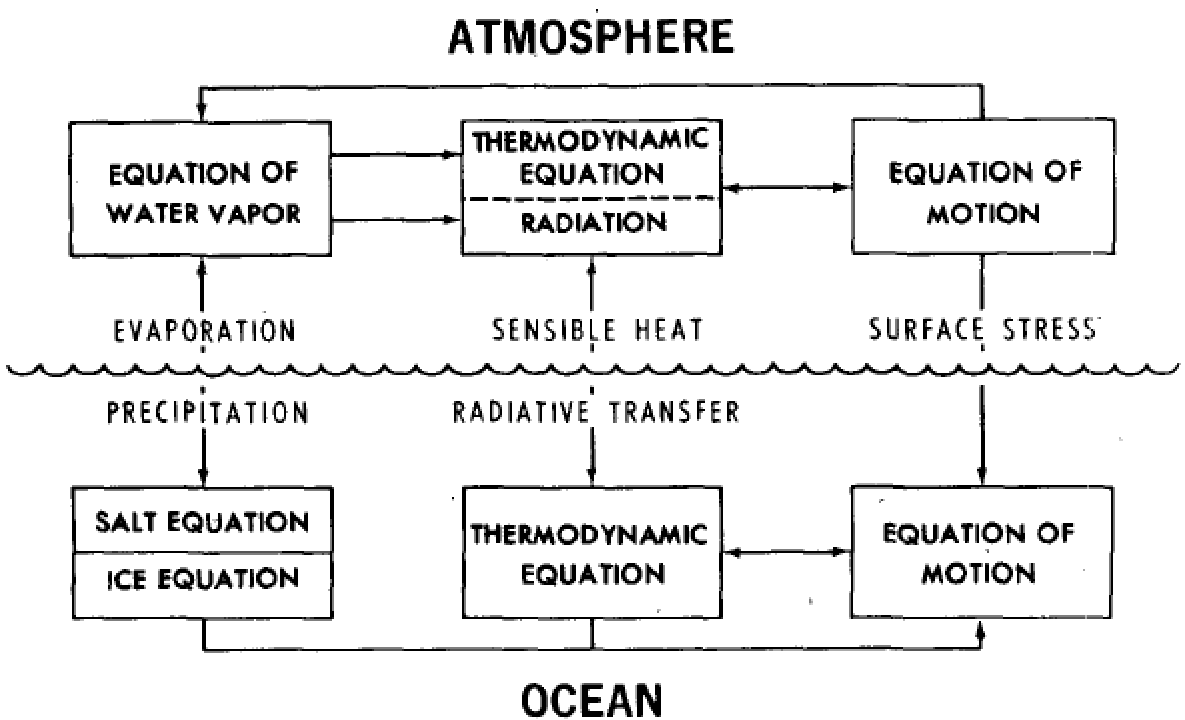


FIG. 1. Box diagram which identifies the major components of the coupled ocean-atmosphere model and their interactions.

“How many numerical modelers does it take to outrun Steve Lyons?”


ES FORREST

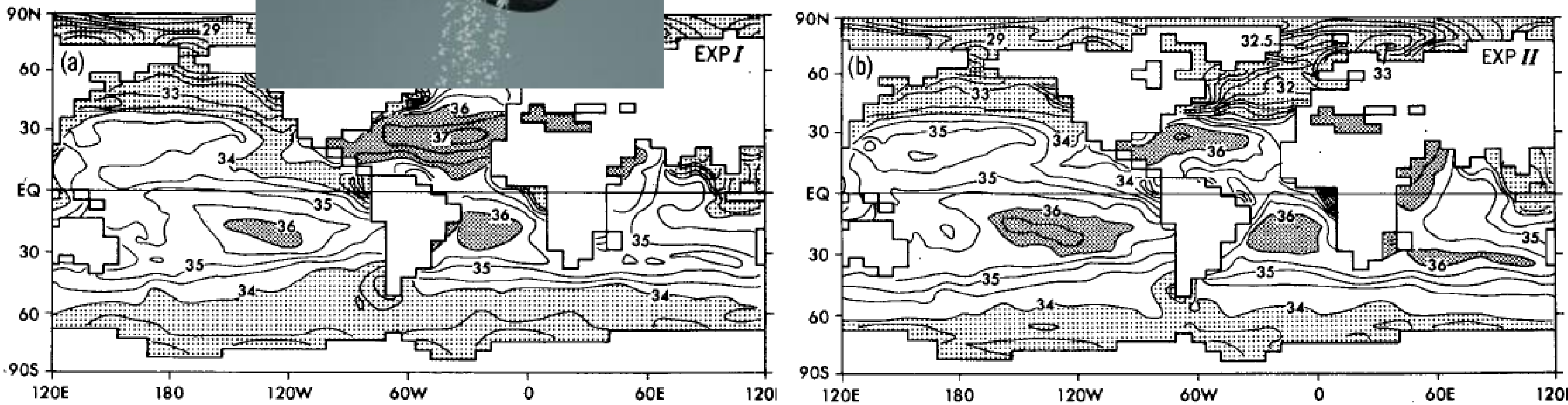
VOLUME 1 JOURNAL OF CLIMATE SEPTEMBER 1988

Two Stable Equilibria of a Coupled Ocean–Atmosphere Model

S. MANABE AND R. J. STOUFFER

Geophysical Fluid Dynamics Laboratory/NOAA, Princeton University, Princeton, New Jersey

(Manuscript received 1 September 1987, in final form 4 May 1988)



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Simulation of abrupt climate change induced by freshwater input to the North Atlantic Ocean

Syukuro Manabe & Ronald J. Stouffer

Geophysical Fluid Dynamics Laboratory/NOAA, Princeton University, Princeton, New Jersey 08542, USA

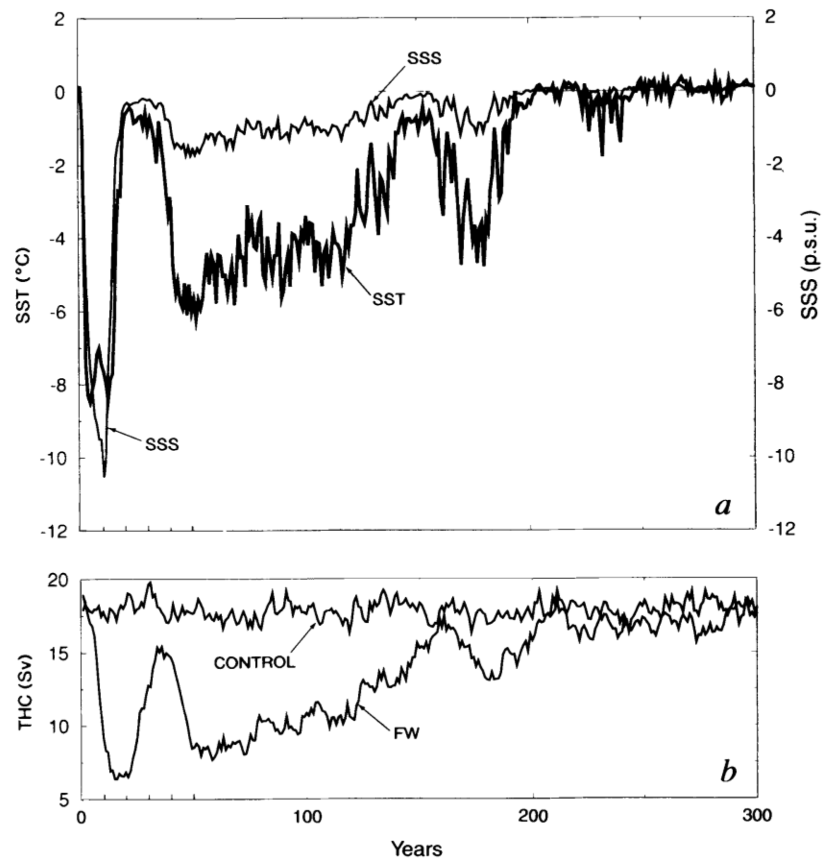
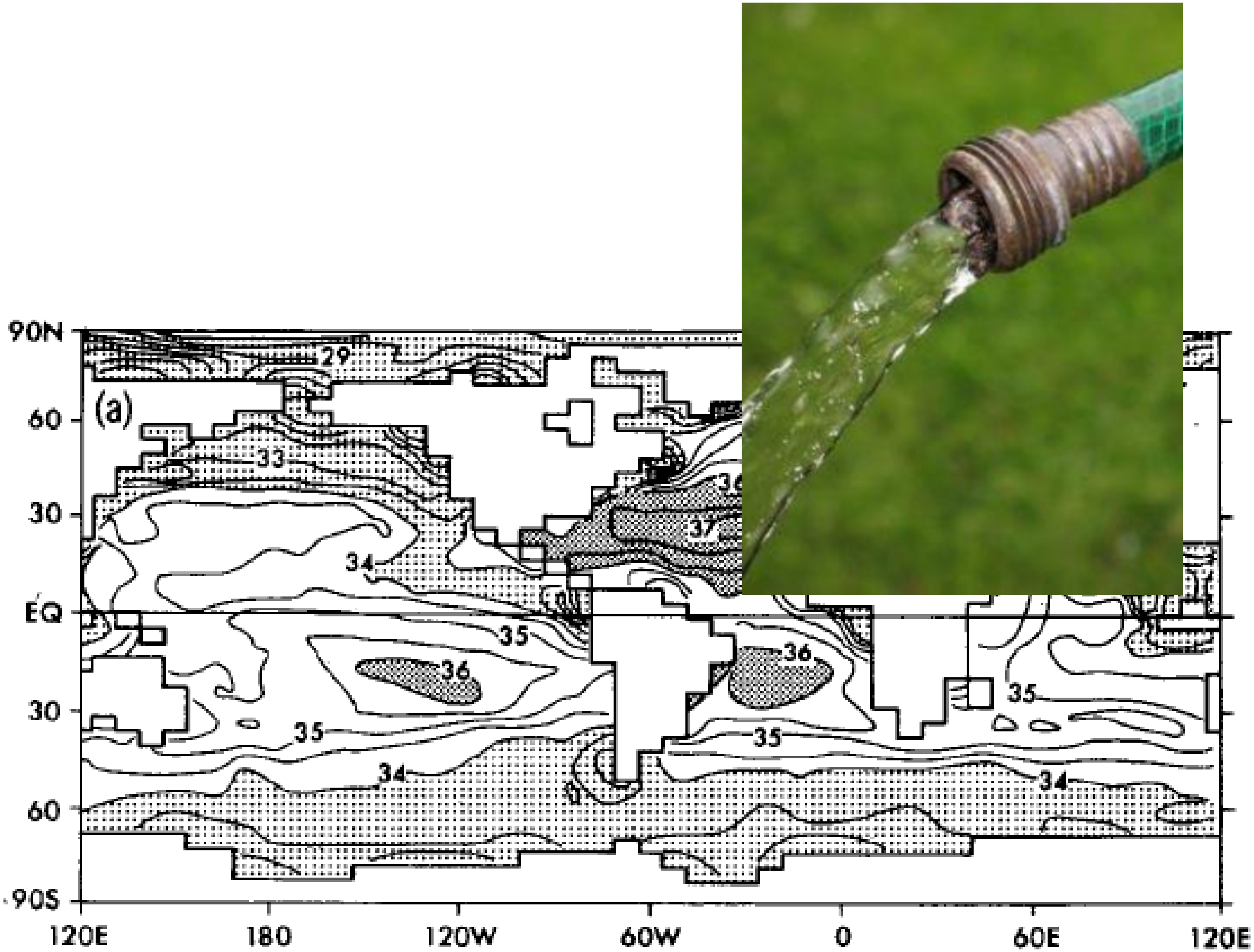


FIG. 1 *a*, Time series of the deviations of sea surface temperature (SST) and sea surface salinity (SSS; p.s.u., practical salinity units) from their initial values (that is, 7 °C and 35 p.s.u., respectively) at a grid point in the Denmark Strait (60.75° N, 37.50° W) obtained from the FW experiment. *b*, Temporal variations of the rate of THC in the North Atlantic obtained from the control and FW integrations. Here, the rate of THC is defined as the maximum value of the stream function of meridional circulation in the North Atlantic (Fig. 4).

TEMPERATURE records from Greenland ice cores[1,2] suggest that large and abrupt changes of North Atlantic climate occurred frequently during both glacial and postglacial periods; one example is the Younger Dryas cold event. Broecker[3] speculated that these changes result from rapid changes in the thermohaline circulation



(a)
90N
60
30
EQ
30
60
90S
120E
180
120W
60W
0
60E
120E
29
33
34
35
36
37
34
35
36
35
34
35
34

- “Three sets of simulations are analyzed, with each set including a control run and a **freshwater hosing** run.”
- “In a transient **water-hosing** experiment, where suppressing the Atlantic meridional overturning circulation (MOC) causes a reduction in northward ocean heat transport…”
- “**Freshwater hosing** experiments with a comprehensive coupled climate model…”
- “…similar to the responses in previous **water-hosing** experiments with an input of freshwater in the subpolar North Atlantic.”
- “The global response to a shutdown of the Atlantic meridional overturning circulation (AMOC) is investigated by conducting a **water-hosing** experiment…”
- “Simulations are performed for preindustrial conditions using **hosing** levels consistent with present-day observations of 3000 $m^3 s^{-1}$…”
- “…two 5-member ensemble runs with a coupled climate model (CCM), the difference being that in one ensemble a **hosing** experiment was performed.”

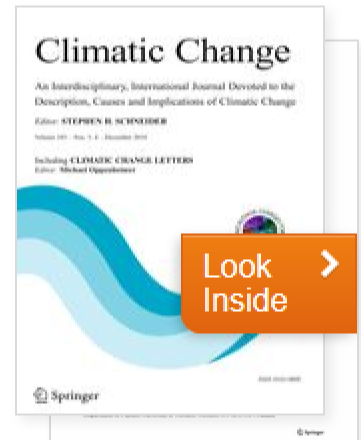
Letter
Climatic Change
December 2010, Volume 103, Issue 3, pp 619-625

First online: 17 September 2010

The impact of Greenland melt on local sea levels: a partially coupled analysis of dynamic and static equilibrium effects in idealized water-hosing experiments

A letter

Robert E. Kopp , Jerry X. Mitrovica, Stephen M. Griffies, Jianjun Yin, Carling C. Hay, Ronald J. Stouffer



GEOPHYSICAL FLUID DYNAMICS LABORATORY
Princeton University - Post Office Box 308

PHONE: 609-452-6502 FTS: 345-6502

DATE : October 20, 1976

TO : J. Leith Holloway, Jr., Bruce Ross and Lou Umscheid

FROM : J. Smagorinsky JS 10/20/76

SUBJECT: GFDL Computer Users Advisory Board

I have reviewed your proposed charter for a Computer Users Advisory Board. Since I strongly believe the computer facility exists solely to serve the research needs of GFDL, I endorse your recommendation with the following qualification.

You state in your proposed charter that "(operations and systems personnel and non-users are specifically excluded)" from the board. While operations and systems personnel need not be members of the board, they must have an opportunity to react or respond to user suggestions before those suggestions are submitted to me by the board. If you believe this to be unworkable, then please see me, directly, and explain why you believe it to be unworkable.

Clearly, after discussion with the operations and system personnel and Mr. Frazier, you wish to recommend a change in practice or policy to me, then I want you to do so. I expect problems to be resolved at the lowest practical level and do not want the board to escalate <u>all</u> user problems to me.

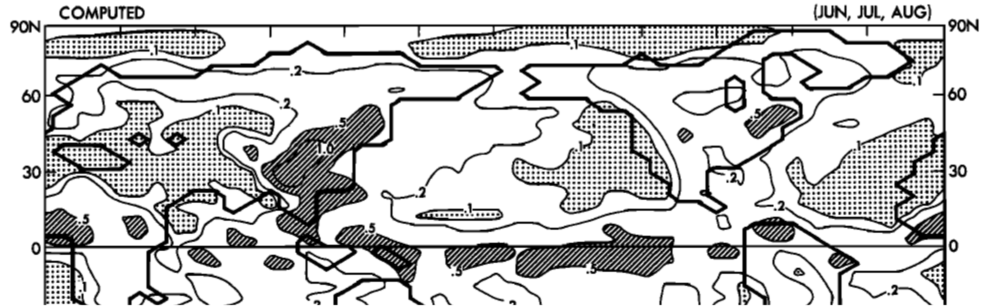
Within that framework, I believe the Computer Users Advisory Board can serve a useful purpose.

I wish to make the following appointments to the board:

Lou Umscheid	-	1 year term (present to 12/31/78)
J. Leith Holloway	-	2 year term (present to 12/31/79)
Bruce Ross	-	3 year term (present to 12/31/80)

JS/lo

Ron served three terms on CUAB:
1983-85
1992-94
2006-08



GEOPHYSICAL RESEARCH LETTERS, VOL. 33, L01702, doi:10.1029/2005GL024546, 2006

Response of the ITCZ to Northern Hemisphere cooling

Anthony J. Broccoli
Department of Environmental Sciences, Rutgers University, New Brunswick, New Jersey, USA

Kristina A. Dahl[1]
Massachusetts Institute of Technology/Woods Hole Oceanographic Institution Joint Program, Woods Hole, Massachusetts, USA

Ronald J. Stouffer
NOAA/Geophysical Fluid Dynamics Laboratory, Princeton, New Jersey, USA

Received 2 September 2005; accepted 29 November 2005; published 10 January 2006.

[1] Climate simulations, using models with different levels of complexity, indicate that the north-south position of the intertropical convergence zone (ITCZ) responds to changes in interhemispheric temperature contrast. Paleoclimate data on a variety of timescales suggest a similar behavior, with southward displacements of the ITCZ and associated changes in tropical atmospheric circulation during cold periods in the Northern Hemisphere. To identify a mechanism by which ITCZ displacements can be forced from the extratropics, we use a climate model with idealized geography and a simple slab ocean. We cool the northern extratropics and warm the southern extratropics to represent

models, when one of the authors (RJS) noticed a dependence of the latitude of the intertropical convergence zone (ITCZ) on the interhemispheric temperature contrast. The southward bias of the tropical rainfall maximum in one simulation [*Manabe and Stouffer*, 1980] results from an austral warm bias caused by the underestimation of cloud cover in the southern extratropics. The ITCZ was displaced toward the warmer hemisphere, in a manner consistent with its observed seasonal migration between its northernmost latitude in boreal summer and its southernmost latitude in boreal winter.

GFDL's ESM2 Global Coupled Climate–Carbon Earth System Models. Part I: Physical Formulation and Baseline Simulation Characteristics

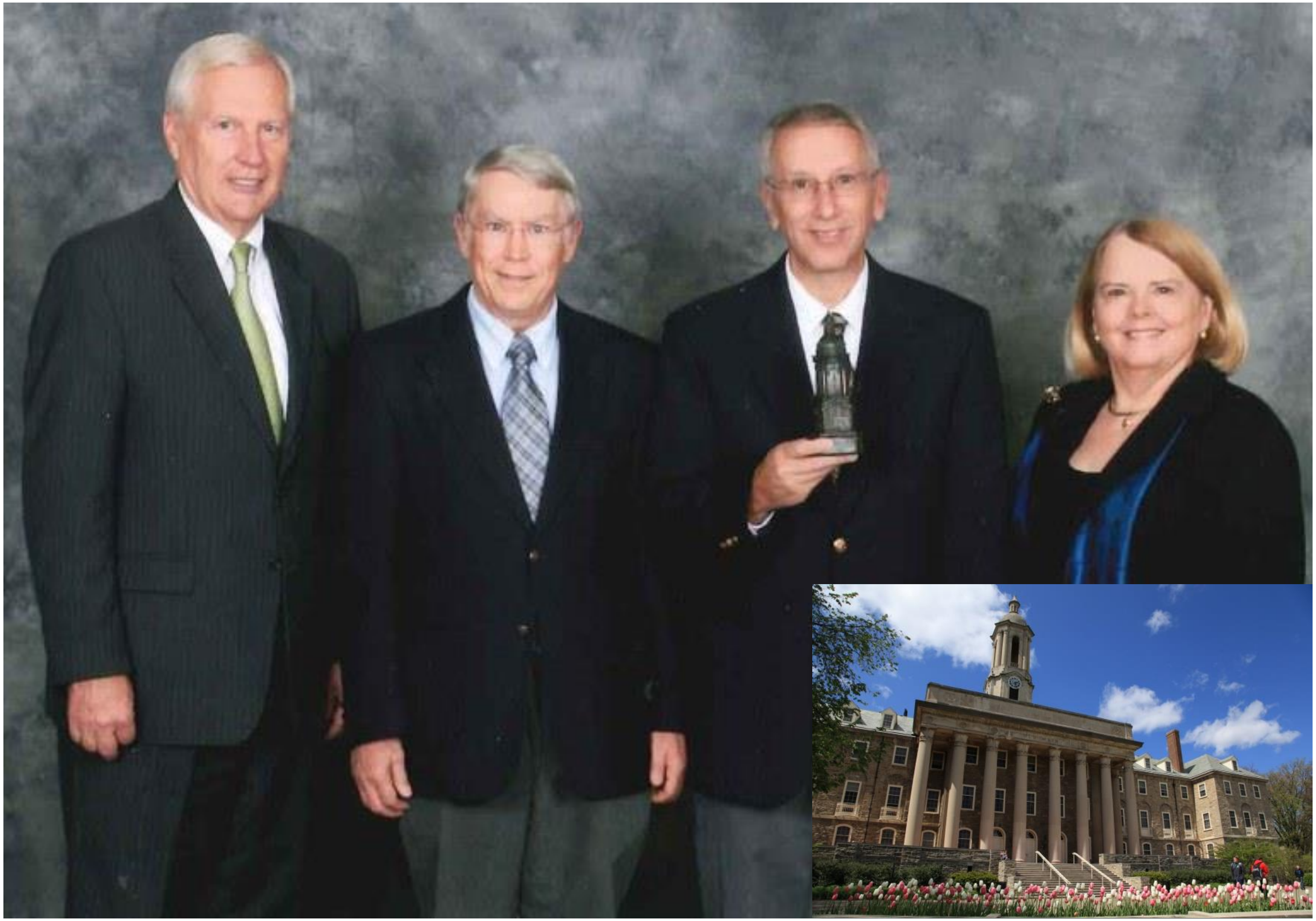
JOHN P. DUNNE,* JASMIN G. JOHN,* ALISTAIR J. ADCROFT,+ STEPHEN M. GRIFFIES,* ROBERT W. HALLBERG,* ELENA SHEVLIAKOVA,# RONALD J. STOUFFER,* WILLIAM COOKE,@ KRISTA A. DUNNE,& MATTHEW J. HARRISON,* JOHN P. KRASTING,** SERGEY L. MALYSHEV,# P. C. D. MILLY,& PETER J. PHILLIPPS,* LORI T. SENTMAN,* BONITA L. SAMUELS,* MICHAEL J. SPELMAN,@ MICHAEL WINTON,* ANDREW T. WITTENBERG,* AND NIKI ZADEH@

** National Oceanic and Atmospheric Administration/Geophysical Fluid Dynamics Laboratory, Princeton, New Jersey*
+ Program in Atmospheric and Oceanic Sciences, Princeton University, Princeton, New Jersey
 # Department of Ecology and Evolutionary Biology, Princeton University, Princeton, New Jersey
@ High Performance Technologies Group, DRC, and GFDL, Princeton, New Jersey
& U.S. Geological Survey, and National Oceanic and Atmospheric Administration/Geophysical Fluid Dynamics Laboratory, Princeton, New Jersey
*** High Performance Technologies Group, DRC, and National Oceanic and Atmospheric Administration/Geophysical Fluid Dynamics Laboratory, Princeton, New Jersey*

AMERICAN METEOROLOGICAL SOCIETY 1919

AGU

American Geophysical Union



Climate model diagnostics and intercomparisons

IPCC assessments

Climate sensitivity

Climate impacts assessments

Committed warming and long term response

Detection and attribution of climate change

The Atlantic Meridional Overturning Circulation

Coupled climate-carbon cycle modeling

Interhemispheric asymmetry and the Southern Ocean

Sea level rise

Paleoclimate

The future of climate modeling