

# CMMAP Knowledge Transfer Activities



EAP Meeting, September 29, 2008



# CMMAP Book Project

## The Development of Atmospheric General Circulation Models: Complexity, Synthesis, and Computation



Knowledge Transfer

EAP Meeting, September 29, 2008



# Comments from 2007 EAP

## Book

- Consider chapter on future of climate modeling



# Past Year's Milestones

- Publishing Proposal sent to Cambridge University Press (Jan 08)
- Publishing contract accepted by CUP (Feb 08)
- Editor contracts signed (April 08)
- Author section created on CMMAP web site
- Chapter summaries received for all nine subject chapters and introduction
- Manuscripts received for two chapters



# Book Outline

## **THE DEVELOPMENT OF ATMOSPHERIC GENERAL CIRCULATION MODELS: Complexity, Synthesis, and Computation**

Edited by Leo Donner, Wayne Schubert, Richard Somerville

Forward - Isaac Held

1. Introduction - Leo Donner, Wayne Schubert, and Richard Somerville
2. From Richardson to Early Numerical Weather Prediction - Peter Lynch
3. From Early Numerical Weather Prediction to General Circulation Models for Climate Prediction - Lennart Bengtsson
4. The Evolution of Research Goals for General Circulation Models - Warren Washington and Akira Kasahara
5. The Evolution of Complexity in General Circulation Models - Dave Randall
6. Synergies between Numerical Weather Prediction and Climate General Circulation Models - Catherine Senior
7. The Role of Observations in Developing and Evaluating General Circulation Models - V. Ramanathan
8. The Societal Context of General Circulation Model Research and Development - James Fleming
9. Coupling Atmospheric General Circulation to Oceans Kirk Bryan
10. Coupling Atmospheric General Circulation to Chemistry and Biology at the Land Surface - Robert Dickinson



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# Chapters Received

## Chapter 8. James R. Fleming

- Beyond prediction to climate modeling and climate control: New perspectives from the papers of Harry Wexler, 1945-1962

## Chapter 9. Kirk Bryan

- Coupling atmospheric General Circulation to Oceans



# Next Year's Plans

- Collect remaining chapters (March 09)
- Editors send out chapters for review (April 09)
- Return drafts to authors for revisions, provide additional comments to authors (May 09)
- Revision process; editors receive revised chapters (June 09)
- Editors compile revised manuscripts (July 09)
- Compile index (Aug. 09)
- Submit Manuscript to CUP (Sept. 09)



# Questions for the EAP

- How do the book Editors gently guide the Authors to more strongly link the various chapters?
- Editors can encourage Authors to read other chapters on Author web page before preparing their revised version.



# CMMAP Journal Project

## Journal of Advances in Modeling Earth Systems - JAMES



Knowledge Transfer

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# Comments from 2007 EAP

## JAMES

- We are enthusiastic about open-access journal
- Prefer low cost model; would consider doing without copy-editing
- Consider guest editors
- Try to achieve low production time
- Review function is important
- Maintenance of accessible archive is important
- Consider parallel web site for discussion



# Past Year's Milestones

- Business plan drafted
- IGES partnership & subaward
- Publishing contract with The Charlesworth Group
- Established Advisory and Editorial Boards
- Launched JAMES and JAMES-D *beta* web sites (June 08)
- Six submissions in peer review, two in final stages
- Five manuscripts currently available on JAMES-D

# JAMES Business Plan

## Business Plan

- Journal description: open-access, all electronic, low cost structure, parallel journals for discussion (JAMES-D) and formal peer review (JAMES)
- Services and registrations (Library of Congress, Cross Ref, ISI)
- Financial plan & technical specifications
- Timeline

## Appendices

- IGES memo of understanding
- CWG contract
- Library of Congress and CrossRef contracts



# Advisory Board

James Kinter (Chair), IGES

- Robert Dickinson, Georgia Tech
- Inez Fung, UCB
- Kevin Hamilton, U. Hawaii
- Arthur Hou, NASA Goddard
- Dennis Lettenmaier, UW
- Steve Lord, NCEP
- Martin Miller, ECMWF
- David Randall, CSU
- Masaki Satoh, FRCGC
- Maria Silva Dias, CPTEC



# Editorial Board

Chief Editor: David Randall, CSU

Editors:

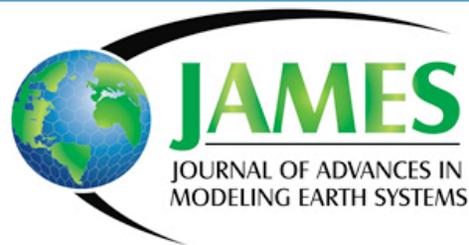
- Curtis Covey, PCMDI (Climate Model Diagnosis and Intercomparison, Historical Climates, Biogeochemical Cycles)
- Paul Dirmeyer, COLA (Land Surface Processes)
- Paul Houser, IGES (Hydrology)
- Bohua Huang, IGES (Ocean Modeling and Data Assimilation)
- Takamitsu Ito, CSU (Ocean Modeling)
- Wojciech Grabowski, NCAR - MMM (Cloud-resolving models and cloud microphysics)
- Wayne Schubert, CSU (Dynamics)
- Minghua Zhang, SUNY-Stony Brook (Climate Modeling, Atmospheric Predictability, Data Assimilation)
- Milija Zupanski, CIRA (Data Assimilation)



# Next Year's Plans

- Work with business office at IGES on author billing and CWG payment
- Work with CWG on typesetting workflow, LaTeX and Word style files, online interface for proofreading and article management
- ISI coverage, other Abstracting & Indexing services
- Marketing
  - General announcement via major list serves (Sept. 08)
  - Booth at annual AGU meeting (Dec. 08)
  - Ad in EOS
  - 1st Advisory Board meeting at annual AMS meeting (Jan. 09)



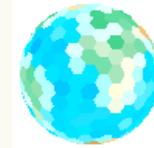


## Highlights

### [Call for Papers](#)

JAMES & JAMES-D are open for submissions of high quality manuscripts reporting on new advances in global environmental modeling.

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Research articles on a wide range of topics in climate science, including atmospheric and ocean flows on multiple scales, model parameterizations, and numerical methods.

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Introducing JAMES and JAMES Discussion, two new open access journals covering all aspects of global environmental modeling.

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The *Journal of Advances in Modeling Earth Systems - Discussion* (JAMES-D) is an international, open-access, scientific journal for the publication of original and updated research. JAMES-D is the interactive discussion forum for JAMES. Publishing in JAMES-D is free to submitting authors.

### Research Articles

Research articles on a wide range of topics in climate science, including atmospheric and ocean flows on multiple scales, model parameterizations, and numerical methods.

### Short Topics

Shorter research contributions of four or less journal pages on new advances in earth systems modeling and climate science.

### Reviews

Scientific reviews of the present state of selected aspects of climate research.

### Policy and Science Education

Articles directed to science educators, policy makers, and members of the informed public interested in climate science.

### Recent Submissions in Open Discussion - Vol 1 (2008)

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#### Research Articles

Shallow Water Quasi-Geostrophic Theory on the Sphere, **#1**, Submitted 2008-07-22  
*Wayne H. Schubert, Richard K. Taft, Levi G. Silvers* [ABSTRACT PDF](#)  
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Understanding Subtropical Low Cloud Response to a Warmer Climate in a Superparameterized Climate Model, **#2**, Submitted 2008-07-30  
*Matthew C Wyant, Christopher S Bretherton, Peter N Blossey* [ABSTRACT PDF](#)  
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Evaluating the influence of antecedent soil moisture on variability of the North American Monsoon precipitation in the coupled MMS/VIC modeling system, **#3**, Submitted 2008-07-31  
*Chunmei Zhu, Ruby L Leung, David Gochis, Yun Qian, Dennis P. Lettenmaier* [ABSTRACT PDF](#)  
[Comments \(0\)](#)

A Filtered Model of Tropical Wave Motions, **#5**, Submitted 2008-09-11  
*Wayne Schubert, Levi G. Silvers, Matthew T. Masarik, Alex O. Gonzalez* [ABSTRACT PDF](#)  
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#### Short Topics

Typhoon genesis controlled by a Madden-Julian Oscillation simulated in a global cloud-resolving model, **#4**, Submitted 2008-08-21  
*Kazuyoshi Oouchi, Akira T Noda, Masaki Satoh, Hiroaki Miura, Hirofumi Tomita, Tomoe Nasuno, Shin'ichi Iga* [ABSTRACT PDF](#)  
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## Typhoon genesis controlled by a Madden-Julian Oscillation simulated in a global cloud-resolving model

Kazuyoshi Oouchi, Akira T Noda, Masaki Satoh, Hiroaki Miura, Hirofumi Tomita, Tomoe Nasuno, Shin'ichi Iga

### Abstract

Tropical cyclogenesis remains one of the least predictable weather events in the terrestrial atmosphere, involving complicated interactions among clouds and disturbances across wide-ranging scales. Recent observational evidence provided a clue that an Madden-Julian Oscillation (MJO), a planetary-scale, prominent tropical weather event, significantly controls the genesis. However, conventional climate models had difficulty representing multi-scale cloud processes and MJO simultaneously owing to insufficient resolution and uncertainty in formulating clouds. Here, we take a novel approach with a "global cloud-resolving" model, wherein clouds and their coupling with atmospheric motions are represented explicitly. Our model successfully simulated the genesis of an observed boreal-summer typhoon preconditioned by an MJO event over the North Western Pacific. The simulation highlights two important processes: as MJO propagates over that region, the easterly shear (with an enhanced low-level westerly) of the western branch of MJO's circulation moderates the climatological westerly shear that is otherwise persistent and inhibits cyclogenesis there; meanwhile, its attendant cyclonic vorticity from the westerly region migrates northward, making the genesis in place. The result illuminates a potential new pathway for predicting North Western Pacific tropical cyclogenesis via MJO and the strength of a global cloud-resolving model as a promising framework for it.

Full Text: [PDF](#)

### Supplementary Files

1. [DOWNLOAD](#) (461KB) Supplementary materials description/figure sheet - This PDF file includes Supplementary Figures (S1 - S5) and links pointing to Supplementary Videos (S6 and S7). S6 and S7 are separately uploded with the names Suppl-S6.avi and Suppl-S7.avi.
2. [DOWNLOAD](#) (4MB) Supplementary Video - S6 - The 1st file of Supplementary Video
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#### Typhoon genesis c...

*Oouchi, Noda, Satoh,  
Miura, Tomita, Nasuno,  
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# Questions for the EAP

- Marketing Suggestions...
- Should we pursue the idea from last year to provide 'layman's abstracts' published in a BAMS style front section?
- How do we promote more participation in the JAMES-D discussion forum?
  - Kick-off discussion comment from Chief Editor
  - Anonymous posting of excerpts from peer reviews

