KT Overview
Year 4 Accomplishments
and Renewal SI Plans

Wayne Schubert
KT Goals

First SI Plan:

A. Enable improved climate models
B. Enable improved weather forecasts
C. Capture and record the history of global modeling.
D. Create an appropriate venue for the publication of scientific papers on global environmental modeling.
E. Create an appropriate venue for the publication of review articles directed toward policy planners and the scientifically informed public.
F. Create ... CMMAP website.
KT Objectives

First SI Plan:

1. Provide to climate modeling centers improved tools for the simulation of global cloudiness, as well as innovative tools for the analysis of such simulations. Relates to Goal A.

2. Provide improved cloud parameterizations to numerical weather prediction centers. Relates to Goal B.

3. Create an edited book on the history of global atmospheric modeling. Relates to Goal C. Leo Donner*

4. Create a new all-electronic open-access journal for the publication of research on global environmental modeling, including a section for review articles. Relates to Goals D and E.

5. Create and maintain ... CMMAP web site. Relates to Goal F.

* Presenter
Renewal SI Plan:

A. Enable improved climate and weather prediction models.

B. Enlarge and enhance the global modeling workforce.

C. Create publications that communicate climate science to a wide range of audiences.
KT Objectives

Renewal SI Plan:

1. Collaborate with CCSM on climate change simulations. Relates to Goal A. *Steve Krueger*
2. Collaborate on global atmospheric model development. Relates to Goal A. *Steve Krueger*
3. Create a national training resource for global modelers. Relates to Goal B. *Dave Randall*
4. Foster JAMES, and wean it from CMMAP. Relates to Goal C. *Rodger Ames*
5. Create an online magazine for public outreach. Relates to Goal C. *Rodger Ames*

*Presenter
Book Project

First SI Plan:


Leo Donner

• Accomplishments (Book, Year 4 of the STC)
The Development of Atmospheric General Circulation Models: Complexity, Synthesis, and Computation

Leo Donner
GFSL/NOAA, Princeton University

KT Book Project Update, San Diego, January 2010
Status

- All chapters and foreword submitted
- 6 revised chapters and foreword in
- 2 revised chapters not in
- Review not received for chapter on land model (Bob Dickinson)-Volunteer for review?
Overall Impressions

- Book will provide unique history and current status of climate models.
- Most authors have written at “specialist” level. Implications for marketing target.
- Wider group of physical and biological scientists may find book challenging, especially due to “jargon.” Glossary may be helpful.
- Re-ordering of chapters to improve overall coherence (Washington, Fleming chapters should be adjacent. Position of IPCC chapter…ultimate or penultimate?)
Remaining Activity

• Manuscript was due at Cambridge 31 Dec 2009
• Some chapter revisions still required
• Introduction to be written
• Format issues, e.g., consistent referencing among chapters, to be addressed
• Copyrights for figures
• Marketing analysis
• Cover art-Suggestions welcome
• Submission
Cover Layout Suggested by Dave Randall

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

Current Chapter Order

Foreword, Introduction (Held, Editors)
2. Richardson to Early NWP (Lynch)
4. NWP/Climate Synergies (Senior)
5. Observations (Lau)
6. Societal Context (Fleming)
7. IPCC (Somerville)
8. Ocean Coupling (Bryan)
9. Land Coupling (Dickinson)
10. Complexity (Randall)
Enable Improved Climate and NWP Models

Renewal SI Plan:

Objective 1. Collaborate with CCSM on climate change simulations.

Objective 2. Collaborate on global atmospheric model development.

Steve Krueger

• Accomplishments (KT to NWP and Climate Centers, Year 4 of the STC)

• Renewal plans
Objectives

1. Collaborate with CCSM on climate change simulations. *Relates to Goal A.*

2. Collaborate on global atmospheric model development. *Relates to Goal A.*

*Goal A: Enable improved climate and weather prediction models.*
Collaborate with CCSM on climate change simulations

• Our main Knowledge-Transfer partnership in the climate modeling arena is with the Community Climate System Model (CCSM) project, which is led by the National Center for Atmospheric Research.
Collaborate with CCSM on climate change simulations

- CMMAP will collaborate with CCSM in connection with the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC), which will be completed in 2013. CMMAP and CCSM scientists will perform simulations of direct relevance to AR5, using CMMAP computing resources, and a unique model created by CMMAP using some components from the CCSM.
Collaborate with CCSM on climate change simulations

• Analysis of the simulation results will provide a basis for evaluation of the cloud-related feedbacks on climate change, in comparison with results from a conventional version of the CCSM.

• Our results will be provided as input to the IPCC’s Assessment.
Collaborate on global atmospheric model development

- On the weather prediction side, CMMAP will continue its partnership with the National Centers for Environmental Prediction (NCEP).
- CMMAP will also begin a new partnership with the Earth System Research Laboratory (ESRL).
- CMMAP will organize an international intercomparison of very high-resolution global dynamical cores.
Collaborate on global atmospheric model development: NCEP

- NCEP's EMC (Environmental Modeling Center) is considering using the assumed PDF method for representing subgrid-scale clouds and turbulent fluxes in the GFS and CFS.

- NCEP's EMC is particularly interested in using the giga-LES for improving the cumulus parameterization used in the GFS and CFS.
Collaborate on global atmospheric model development: New interactions with ESRL

- ESRL is building models that have a lot in common with CMMAP models.
- We have a history of working with ESRL.
- ESRL has a strong and growing connection with NCEP.
- ESRL is close to CSU, making collaboration easy.
Metrics for Knowledge Transfer

• Number of collaborative research papers on climate change. 
  *Addresses Objective 1.*

• Number of collaborative research papers on numerical weather prediction. 
  *Addresses Objective 2.*
## Summary

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Actions Required</th>
<th>Key Scientists</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Collaborate with CCSM on climate change simulations</td>
<td>Perform simulations</td>
<td>Randall, Collins, Moeng</td>
<td>Year 8</td>
</tr>
<tr>
<td></td>
<td>Analyze results</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Communicate results to AR5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Collaborations on global atmospheric model development</td>
<td>Continue interactions with NCEP, NCAR, and GFDL</td>
<td>Randall, Krueger, Collins, Donner</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Create new interactions with ESRL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Organize intercomparison of GCRMs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Enhance the Global Modeling Workforce

Renewal SI Plan:

Objective 3. Create a national training resource for global modelers.

*Dave Randall*

- Renewal plans
Training Global Modelers
Teaching is the most important job in the world.
The Need

- Global modeling is a rapidly growing, constantly changing, increasingly complicated subject.
- Not many people build models -- especially parameterizations.
- There is a need for more modeling expertise to support climate prediction.
What is the content?

- Concepts
  - Numerics
  - Physics
  - Tests
  - Applications
- Infrastructure
  - Major modeling centers
  - Operational models
  - Datasets
  - Analysis tools
  - Supercomputing
- History
  - Stand alone
  - Blended with technical material
Who is the audience?

- Graduate students at universities
- Professionals, for example at federal modeling centers
How can we reach them?

- University classes
- Lecture materials
- Textbook(s)
- Summer schools
- 2 weeks
- Rotating venues
- Web sites
How it will work

- University classes
  - Access to federal models
  - Support for hands-on instruction
    - Computer time
    - Technical assistance
  - Documentation
- Summer schools
  - Venues
  - Instructors
  - Recruiting/selection processes
  - Student expenses
  - And the same three requirements listed for university classes
There is a need for more global modelers.
Training can occur both inside and outside the universities.
Training should be both conceptual and practical.
Training should be partly hands-on.
...Babies and kids are really the R&D department of the human species. They're the ones that get to do the blue-sky learning, imagining, thinking.

And the adults are production and marketing.
Publication Projects

Renewal SI Plan:

Objective 4. Foster JAMES, and wean it from CMMAP.
Objective 5. Create an online magazine for public outreach.

Rodger Ames

• Accomplishments (JAMES, Year 4 of the STC)
• Renewal plans
JAMES Accomplishments

- First articles published in June of 2009
- 16 articles published to Vol. 1, 2009
  - 4 Review papers; 11 Research; 1 “Short Topic”
- Submitted manuscripts
  - 3 in press; 4 in review; 4 rejected
- A new editor: Christiane Jablonowski, University of Michigan
- Added to DOAJ & MGA
- Under evaluation for coverage in Web of Science
New features:
- Article spotlight
- FAQ
- User mail list
- RSS feeds

Activities:
- CrossRef and A&I metadata deposits
- Eos Ad
- List serve Announcements
JAMES - fun stats.

Site visits and page views in 2009

Dashboard

Jan 1, 2009 - Jan 6, 2010

Site Usage

- **6,999 Visits**
- **41,777 Pageviews**
- **5.97 Pages/Visit**

- **48.66% Bounce Rate**
- **00:05:28 Avg. Time on Site**
- **55.24% % New Visits**
JAMES - fun stats

Visits from around the world in 2009

6,999 visits came from 1,219 cities
JAMES - fun stats

Number of PDF downloads by published article, Volume 1, 2009
JAMES - Renewal SI Plan

- Objective 4: **Foster JAMES**, and wean it from CMMAP
- Attract submissions
- Continue and expand marketing activities
- Increase visibility through A&I services, library coverage
- Publish articles
- Form new partnerships
Objective 4: Foster JAMES, and wean it from CMMAP

Current plan is to “hand-off” JAMES to IGES by Year 8 (2014)

AGU approached us with an idea for a new journal

- New title would cover the physical science of climate models and impacts of climate change (e.g. adaptation and mitigation research).
- JAMES is a candidate to become “Part I” of such a journal.
- AGU will develop a model for the proposed journal.
- Potential for a partnership with AGU in the near-term.
JAMES - Renewal SI Plan

Our proposed terms for a publishing partnership with AGU:

• The JAMES model does not change
  ‣ Focus on Earth systems modeling; open access; Creative Commons Attribution Licensing

• JAMES listed as an AGU journal

• AGU helps with marketing

• Benefits to each party
  ‣ JAMES gains exposure and credibility via AGU’s status; marketing expertise; membership
  ‣ AGU gains an open access title focused on Earth systems modeling
Objective 5: Create an online magazine for public outreach

Working title: Climate Sense

Mission: provide a venue for a multidisciplinary conversation surrounding the Earth's climate and climate change, and to promote Earth-Science literacy.

Content: non-technical articles on a range of topics related to climate science and climate policy.

Target audience: students and members of the public who are educated at the university level, educators, and policy makers.

Business plan: under development.
Format:

- Organize content by categories of interest to the intended audience (students/educators/interested public).

- Contributing Editors write short introductions to submitted pieces, or to linked content from other sources (information broker).

- Review function (to evaluate the degree to which articles are well written and interesting).
Connections:

- Participation by faculty from a broad spectrum of academic programs; Education; English; Political Science; Natural Resources; Earth Sciences.
- Plan is to involve Schools of the Environment at CSU (SOGES) and other universities.
- Synergies with ED activities.