CESM Societal Dimensions Working Group

Feb 27-28, 2012
NCAR
Download discussion papers from: www.cesm.ucar.edu/working_groups/Societal

Introduction and overview
1:30-2:00 CEM and its working group structure.  
Marika Holland,  
CESM Chief Scientist
2:00-2:15 The Societal Dimensions Working Group.  
Lawrence Buja NCAR/RAL

State of the science
2:15-2:45 Water and interactions with ESMs  
Dave Behar. SF Public Utilities Commission
2:45-3:15 Types of linkages between IAMs and ESMs  
D. van Vuuren invited
3:15-3:45 Break

Breakout groups
3:45-4:00 Water: Data needs for the water utility sector  
Laurna Kaatz, Denver Water
IAM/Land: possible land-climate research activities  
IAM: Brian Oneill
4:00-5:15 General discussion  
SDWG CoChairs

Plenary
5:15-5:45 Reports to plenary  
SDWG CoChairs
5:45-7:00 Light Reception in Damon Room
<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
<th>Presenter</th>
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</thead>
<tbody>
<tr>
<td>8:45-9:00</td>
<td>Breakout groups: Water: Future directions/CSL priorities</td>
<td>SDWG CoChairs</td>
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<td>IAM/Land: Future directions/CSL priorities</td>
<td>Water: C. Anderson</td>
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<td>9:00-10:00</td>
<td>General discussion in Breakouts</td>
<td>IAM: TBD</td>
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<td>10:00-10:30</td>
<td>Break</td>
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<td><strong>Plenary</strong></td>
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<td>10:30-11:15</td>
<td>Reports to plenary by Lead + Rap</td>
<td>SDWG CoChairs</td>
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<td>11:15-12:00</td>
<td>Next steps (future meetings, steps to Breck, funding possibilities, relationship to other relevant community projects)</td>
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<td>12:00-1:30</td>
<td>CoChairs + Volunteers prepare &quot;Overview of SDWG&quot; to be presented at 1:30</td>
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<tr>
<td>1:30-1:50</td>
<td>Overview of SDWG</td>
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<td>1:50-2:10</td>
<td>Current/planned activities in LMWG</td>
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<td>2:10-2:30</td>
<td>Current/planned activities in BGCWG</td>
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<td>2:30-2:50</td>
<td>Current/planned activities in Chem-Clim WG</td>
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<td>2:50-3:10</td>
<td>Break</td>
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<td>3:15-4:45</td>
<td>General discussion - Gutowski Notetaking</td>
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<td>4:45-5:00</td>
<td>Wrapup: summary of discussion and path f/wd</td>
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SDWG Background

- Growing interest within CCSM/CESM to better connect the modeling activity to climate-related societal issues
  - Initial meeting at the 2010 CCSM Workshop
  - May 2011 scoping workshop
  - White paper produced,
  - Working Group approved by CCSM SSC, July 2011

- Co-chairs: Lawrence Buja (NCAR), Bill Collins (LBNL), Bill Gutowski (ISU), Brian O’Neill (NCAR)

- First working group meeting now: Feb. 27-28 2012

- Next meeting at Breckenridge: June 2012
Develop collaborations between the CESM community & those working on issues relating societal dimensions and climate change.
IAM Recommendations

• Provide a **forum** to exchange ideas on how to interface IAMs & ESMs
• Pursue a **pilot project** on Land Use linkages between IAMs and CESM
• Consider the intersection of Land Use & Water issues
• Consider an additional project on climate change and air quality
Water Recommendations

• Provide a forum to exchange ideas on how to interface Water & Earth System Models

• Focus on
  • scale issues in using CESM simulations
  • use of multi-model simulations
  • Improving simulation of precipitation

• Pursue a pilot project with Water Utility Climate Alliance on national-level water management
Water Utility Climate Alliance

Central Arizona Project
Denver Water
Metropolitan Water District of Southern California
New York City Department of Environmental Protection
Portland Water Bureau
San Diego County Water Authority
San Francisco Public Utilities Commission
Seattle Public Utilities
Southern Nevada Water Authority
Tampa Bay Water
Water Utility Climate Alliance

Providing leadership and collaboration on climate change issues affecting drinking water utilities by improving research, developing adaptation strategies and creating mitigation approaches to reduce greenhouse gas emissions.

• Improve and expand climate change research so water managers can consider the potential implications climatic changes may have on water resource planning;

• Promote and collaborate in the development of adaptation strategies and tools to reduce the impacts of rising temperature and changes in precipitation patterns on our infrastructure and water supplies; and

• Identify and minimize greenhouse gas emissions resulting from the operations of WUCA member agencies.
Water Utility Climate Alliance

Options for Improving Climate Modeling to Assist Water Utility Planning for Climate Change

December 2009

Joseph Barsugli  
Western Water Assessment, CU Boulder

Chris Anderson  
Iowa State University Climate Science Initiative

Joel B. Smith, Jason M. Vogel  
Stratus Consulting Inc.

GCM Options
1. Improve the confidence in the range of GCM climate projections better thru understanding of the sources of uncertainty
2. Improve accessibility of GCM data to downscaling groups.
3. Improve the ability to assign credible probabilities to GCM model scenarios based on advanced comparison of the models to obs.
4. Develop the ability to integrate projections of climate variability & decadal variability with projections of climate change.
5. Improve GCM model simulations to increase accuracy at the scale of the GCM and provide better input to downscaling methods.
6. Improve agreement on the sign of change, rate of change, & reduce the range among GCM projections of global and regional climate on the timeframes of interest to water managers.

Regional Options:
1. Improve the ability of scientists to express their level of confidence in regional climate projections.
2. Improve the accessibility of local projections.
3. Improve the capacity for water utilities to select scenarios based upon water utilities’ management techniques,
4. Reduce the range of climate projections where possible.
5. Address the climate information needed for water utilities planning.
Goals for this Meeting

- Hold initial Working Group discussions
- Refine the proposed activities for each of the two topical areas of Water and Integrated Assessment
- Review the proposed CSL experiments and linkages to the other CESM working groups
- Discuss the infrastructure required for the success of these projects.
- Aim to initiate first set of projects
- Funding Opportunities: RCN/SRN, EaSM, SEES, CREATIV
SDWG Development Objectives:

**IAM:** Linking new CLM Agricultural, Forest Systems & Ecosystem Dynamics and Integrated Assessment Modeling (1A, 1B)

**Water:** Improving CESM Hydrology by reducing model uncertainty and bias (2A1, 2A2)
Providing relevant Hydroclimate variable for downscaling & decision making (2A4, 2B1)

<table>
<thead>
<tr>
<th>Experiment</th>
<th>Model Configuration</th>
<th># runs</th>
<th># of years</th>
<th>Core hour/year</th>
<th>Total core-hours</th>
<th>Total data volume in TB</th>
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SDWG Production Objectives:

IAM: 3A. interpreting IA model land use scenarios in CESM, 3B. assessing the importance of regional climate feedbacks, 3C. assessing the importance of model coupling, and 3D. evaluating possible future activities in the area of air quality.

Water: Simulating the impacts of climate change on important precipitation systems, focusing on short timescales, extremes & means, 4A. American monsoon and 4B. Droughts in the American southwest

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