

## TIMOTHY KITTEL

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## BIOSKETCH

Dr. Timothy Kittel is a research ecologist and climate scientist. After receiving his PhD in Ecology from the University of California, Davis, he was a Postdoctoral Fellow at the Cooperative Institute for Research in the Atmosphere, Colorado State University, Ft. Collins. Dr. Kittel has since held research positions at the Natural Resource Ecology Laboratory (Colorado State University), the University Corporation for Atmospheric Research (UCAR), and the National Center for Atmospheric Research (NCAR), before joining the research faculty of the Institute of Arctic and Alpine Research, University of Colorado, Boulder, in 2004.

Dr. Kittel has worked for more than 35 years in the field of global change science, with contributions to our understanding of climate-biosphere interactions and historical climatic change and to the modeling of regional ecosystem and climate dynamics. Dr. Kittel's work on climate change impacts has been included in IPCC and US National Assessments. His current research is on approaches for handling climate change uncertainty in biodiversity conservation and on the nature of recent climate change in high mountain regions. Dr. Kittel has published over 90 peer-reviewed articles and book chapters in ecology and climate dynamics, along with more than 40 climatic and ecological public-access datasets.

Dr. Kittel's teaching emphasizes field instruction in ecology and conservation biology. He has taught field courses for the University of Colorado-Boulder, Columbia University of New York, University of Nevada-Las Vegas, and Semester-at-Sea. He currently teaches Winter Field Ecology and Field Methods in Vegetation Ecology in the Colorado Rocky Mountains and study abroad courses on conservation in practice in Brazil.

## EDUCATION

### PROFESSIONAL EXPERIENCE

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## PUBLICATIONS

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### Professional Networks:

Academia.edu - <http://colorado.academia.edu/TimothyKittel>

ResearchGate - [https://www.researchgate.net/profile/Timothy\\_Kittel/](https://www.researchgate.net/profile/Timothy_Kittel/)

LinkedIn - <http://www.linkedin.com/in/timothykittel>

Vitae (Chronicle of Higher Education) -

<https://chroniclevitae.com/people/37972-timothy-kittel/profile>

SciProfiles - <https://sciprofiles.com/profile/1323680>

Mountain Research Initiative (MRI) Expert Database -

<https://mri.django-hosting.ch/user/kittel/>

**Other Publication Managers** (journal pubs primarily):

ResearcherID : <http://www.researcherid.com/rid/F-2792-2011>

Publons: <https://publons.com/researcher/2782540/timothy-g-f-kittel/>

Google Scholar - <http://scholar.google.com/citations?hl=en&user=iOqSEJYAAAAJ>

ORCID - <https://orcid.org/0000-0002-4153-1006>

ResearcherID/Publons

ORCID [orcid.org/0000-0002-4153-1006](https://orcid.org/0000-0002-4153-1006)

 [scholar.google.com](http://scholar.google.com)

## EDUCATION

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B.S.	1975	University of California, Davis	Environmental Science, Highest Honors
M.S.	1978	University of California, Davis	Ecology (Biological Ecology)
Ph.D.	1986	University of California, Davis	Ecology (Physical Ecology)

## PROFESSIONAL EXPERIENCE

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### Current Positions

2002-present [Research Affiliate / Research Associate](#). University of Colorado, Boulder: Institute of Arctic and Alpine Research (INSTAAR). [Research Affiliate](#) 2002-2004, 2009-2010, 2021-present. [Research Associate](#), 2004-2008, 2011-2021.

<b>Research Highlights</b> (🔍 = HIGHLIGHTED RECENT PUBLICATIONS) —
<ul style="list-style-type: none"> <li>• <i>Biodiversity conservation planning and climate change</i> —               <ul style="list-style-type: none"> <li>◦ <i>Assessment of the complexity of species and system vulnerability to climate change</i> (🔍 <a href="#">PUB1</a>, <a href="#">PUB2</a>)</li> <li>◦ <i>Development and implementation of a framework to address highly uncertain futures - through integration of scenario planning, vulnerability assessment, and no-regrets approaches</i> (🔍 <a href="#">PUB3</a>, <a href="#">PUB1</a>)</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <i>Climate change in Colorado's Front Range (Niwot Ridge Long-Term Ecological Research Program, NWT-LTER)</i> —               <ul style="list-style-type: none"> <li>◦ <i>Analysis of elevational, seasonal, and decadal dependence in surface temperature and precipitation trends in subalpine vs. alpine sites</i> (🔍 <a href="#">PUB4</a>)</li> <li>◦ <i>Linkage of elevation-dependent climate change in high mountain environments to shifts in hemispheric circulation patterns, such as the Pacific Decadal Oscillation and ENSO</i> (🔍 <a href="#">PUB7</a>)</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <i>Development of climate data quality and analysis protocols for agency monitoring programs</i> (🔍 <a href="#">PUB5</a>, <a href="#">PUB6</a>)</li> </ul>

Faculty research profiles:

INSTAAR: <http://instaar.colorado.edu/people/timothy-kittel/>  
 Univ of Colorado: [https://experts.colorado.edu/display/visid\\_139473](https://experts.colorado.edu/display/visid_139473)

2010-present [Faculty Director](#). University of Colorado, Boulder: *Conservation Biology and Practice in Brazil's Atlantic Forest Global Seminar* program, Education Abroad (formerly Study Abroad). [TEACHING EXPERIENCE](#)

2007-present [Graduate Faculty](#). University of Colorado, Boulder:

- Department of Geography, 2007-2010
- Department of Ecology and Evolutionary Biology, 2011-present.

2005-present [Lecturer](#). University of Colorado, Boulder: Mountain Research Station, Nederland, CO. [TEACHING EXPERIENCE](#)

### Prior Experience

In chronological order:

- 1976 [Lecturer](#). Sierra Nevada College, Incline Village, NV. [TEACHING EXPERIENCE](#)
- 1977-1983 [Research Assistant and Teaching Assistant](#). University of California, Davis: Division of Environmental Studies and Dept of Land, Air, and Water Resources.
- 1984 [Lecturer](#). University of California, Davis: Department of Land, Air, and Water Resources - *Weather Analysis and Forecasting*. [TEACHING EXPERIENCE](#)
- 1985-1986 [Postdoctoral Fellow](#). Colorado State University, Ft. Collins: Cooperative Institute for Research in the Atmosphere (CIRA).
  - *Analysis of the linkage of global biogeographical patterns with global climate dynamics*
- 1987-1997 [Research Associate](#). Colorado State University, Ft. Collins: *jointly with* Cooperative Institute for Research in the Atmosphere (CIRA) and Natural Resource Ecology Laboratory (NREL).
  - *Scaling of biophysical and biogeochemical processes from landscapes to regions (FIFE, First ISLSCP--International Satellite Land Surface Climatology Project--Field Experiment)*
  - *Assessment of ecological responses to climate change and altered CO<sub>2</sub> with regional ecosystem/biogeochemical models*
- 1991-1996 [Deputy Project Scientist](#). University Corporation for Atmospheric Research (UCAR), Boulder, CO: Climate System Modeling Program.  
 Concurrently [Scientific Visitor](#), National Center for Atmospheric Research (NCAR), Boulder: Climate and Global Dynamics Division (1991-1997).
  - *Facilitation of early community-wide progress in incorporating biospheric processes into global climate models (Climate System Modeling Program, CSMP)*
  - *Application of global climate models (GCMs) to understand climate change impacts (Model Evaluation Consortium for Climate Assessment, MECCA)*
- 1997-2002 [Research Scientist I](#). Colorado State University, Ft. Collins: Natural Resource Ecology Laboratory (NREL).
  - *Configuration of a regional atmospheric model (RAMS) to address climate-scale questions*
- 1997-2002 [Scientist II](#). National Center for Atmospheric Research, Boulder: Climate and Global Dynamics Division, Ecosystem Dynamics and the Atmosphere Section and Terrestrial Sciences Section.
  - *Planning and implementation of an international intercomparison of regional/global ecosystem and dynamic vegetation*

*models in their responses to climate change and altered CO<sub>2</sub> (Vegetation/Ecosystem Modeling and Analysis Project, VEMAP). Responsible for applying innovative solutions to solve difficult and complex problems. Development of spatially- and temporally-complete historical gridded (0.5x0.5 deg) daily and monthly bioclimatic dataset (surface Tmin, Tmax, precipitation, solar radiation, & wind) for the conterminous US (1895-1993) and Alaska (1922-1996) and under future climate scenarios (to 2100).*

1998-1999/ [Deputy Section Head](#) / [Acting Section Head](#). National Center for Atmospheric Research, Boulder: Ecosystem Dynamics and the  
1999-2001 Atmosphere Section, Climate and Global Dynamics Division.

- *Promotion of the Section's research projects and community activities and their role in Division and Center missions*

2000-2018 [Instructor](#). Columbia University of New York: Earth Institute Center for Environmental Sustainability (EICES; *formerly* Center for Environmental Research and Conservation, CERC). Summer Ecosystem Experiences for Undergraduates Program (SEE-U): Brazil, Dominican Republic, Puerto Rico, and Arizona. [Lecturer](#), Sustainability Management Program, School of Professional Studies, 2018. [TEACHING EXPERIENCE](#)

- *Development and implementation of a field ecology/conservation biology course for non-science and sustainable development majors.*

2002-2007 [Research Scientist III](#). Colorado State University, Ft. Collins: Natural Resource Ecology Laboratory (NREL).

2005 [Lecturer](#). University of Colorado, Boulder: Department of Ecology and Evolutionary Biology. Fall 2005. [TEACHING EXPERIENCE](#)

2006 [Lecturer](#). Semester at Sea, Institute for Shipboard Education, Charlottesville, VA (in affiliation with the University of Virginia, Charlottesville). Fall 2006 voyage. [TEACHING EXPERIENCE](#)

2007-2012 [Affiliate Scientist](#). Colorado State University, Ft. Collins: Natural Resource Ecology Laboratory (NREL).

2007, 2016 [Lecturer](#). University of Colorado, Boulder: Department of Geography. Fall 2007 & 2016. [TEACHING EXPERIENCE](#)

2010-2012 [Lecturer](#). University of Nevada, Las Vegas: Division of Educational Outreach. March 2010-2012. [TEACHING EXPERIENCE](#)

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## ■ AREAS OF RESEARCH

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- **Global Environmental Change**
  - Conservation Planning in Context of Climate Change
- **Earth System Science**
  - Terrestrial Biosphere-Climate Interactions
- **Climate Analysis**
  - Climate Change in High Mountain Systems
- **Ecosystem Geography**

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## ■ PROFESSIONAL ACTIVITIES — RESEARCH, SERVICE, AND PUBLICATIONS

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## ■ SPONSORED RESEARCH (n=18)

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### Grants as Principal Investigator

Evaluating and Reporting Climate Data to I & M Networks and Parks. USDI National Park Service, Rocky Mountains Cooperative Ecosystem Studies Unit. Sept 2007-Nov 2008. \$30k/y. ([Principal Investigator](#), with Mark Williams)

VEMAP Phase 2 Input Dataset Development and Model Output Synthesis. Vegetation/Ecosystem Modeling and Analysis Project ([VEMAP](#)). NASA Mission to Planet Earth. Jan 1996-Aug 2002. \$1.53M/6.7y. Funding in part to support the US National Assessment. ([Principal Investigator](#), with D. Schimel, NCAR) [VEMAP OVERVIEW](#) | [VEMAP WEBSITE](#)

Development of a 90-year High Resolution Climate Data Set for the Continental United States. Joint NOAA/NASA Climate Change Enhanced Data Set Project. Sept 1997-June 2002. \$325K/4.5+y. ([Principal Investigator](#), with C. Daly and G. Taylor, Oregon State Univ, A. McNab, NCDC)

Climatic Change in the Colorado Rocky Mountains: Bounding Projected Changes in Regional Climate. USGS Biological Resources Division (formerly NBS and NPS) Global Change Research Program. 1991-1999, \$550K/8y. ([Principal Investigator](#), with R.A. Pielke, Sr., Colorado State Univ)

Projecting Climate and Vegetation Change for the Central Grasslands Region. USGS Biological Resources Division (formerly NBS and NPS) Global Change Research Program. 1992-1999, \$950K/7y. ([Principal Investigator](#), with W. Reiners, Univ of Wyoming, R. Neilson, USFS/Corvallis, and R.A. Pielke, Sr., Colorado

State Univ)

VEMAP Phase I Integrated Data Base and Model Output Synthesis. Vegetation/Ecosystem Modeling and Analysis Project (VEMAP). EPRI, USFS, and NASA. Aug 1993-Dec 1995. \$225K/2.3y. ([Principal Investigator](#), with D. Schimel, NCAR)

Grassland/Atmosphere Response to Changing Climate: Coupling of Regional and Local Scales. Department of Energy (DOE), Theoretical Ecology Program. Sept 1989-Nov 1992. \$210K/3y. ([Principal Investigator](#), with M. Coughenour, Colorado State Univ)

#### As Co-Principal Investigator/Co-Investigator

The Impacts of Climate Change on Alaskan Coastal Arctic Tundra. The Nature Conservancy, Global Climate Change Initiative. 2002-2003. (B. Baker, PI, TNC)

Spatial Data and Scaling Methods for Assessment of Agricultural Impacts of Climate: Managing Multiple Sources of Uncertainty over Space. NSF Methods and Models for Integrated Assessment. 2000-2003. \$725K/3y. ([Co-Investigator](#); L. Mearns, PI, NCAR)

Understanding Coupled Climatic, Hydrological and Ecosystem Responses to Global Change in the Colorado Rockies Biogeographic Area: Phase II. USGS Global Change Research Program. 1999-2003. \$225K/yr for 3 yrs. ([Co-Principal Investigator](#); T. Stohlgren, Lead PI, Colorado State Univ)

Integrated Research Challenges: Biological Controls of Terrestrial Carbon Fluxes. NSF Integrated Research Challenges Program. 1999-2004. \$2.8M/4y. ([Co-Principal Investigator](#); D. Ojima, Lead PI, Colorado State Univ).

A Climatic Analysis of Long-Term Ecological Research Sites ([CLIMDIS](#)). NSF Long-Term Ecological Research (LTER) Program. 1994-1996. \$100K/2y. ([Co-Principal Investigator](#), with D. Greenland, Univ of Oregon)

Dynamic Land Surface/Atmospheric Parameterization at Different Spatial Scales for the South Platte River Drainage. NOAA Global Change Program. 1993-1995. ([Co-Investigator](#); R. Pielke, J. Baron, W. Parton, PIs, Colorado State Univ)

Modeling Biosphere-Atmosphere Interactions at Various Scales in Support of BOREAS. NASA BOREAS Program. 1993-1996. ([Co-Investigator](#); R. Pielke, PI, Colorado State Univ)

Responses of Hydrologic and Aquatic Ecosystem Processes to Potential Climate Change on Watershed, Drainage Basin, and Regional Scales. USGS Biological Resources Division (formerly NBS and NPS) Global Change Research Program. 1991-1999. ([Co-Principal Investigator](#); J. Baron, Lead PI, Colorado State Univ)

A Scientific GIS for Global Change Research. IBM Independent Research and Development Project. 1990-1994. ([Collaborator](#); L. Knapp and A. Beller, IBM, Project Leaders)

Using Multi-Sensor Data to Model Factors Limiting Carbon Balance in Global Arid and Semiarid Lands. NASA, Earth Observing System (EOS) Program, Interdisciplinary Science. 1989-2000. ([Co-Investigator](#); D. Schimel, PI, Colorado State Univ & NCAR)

Response of a Temperate Grassland Ecosystem to Climate Change: Importance of Biotic Interactions and Feedbacks. Ecosystems Studies Program, NSF. 1989-1994. ([Co-Investigator](#); H.W. Hunt, PI, Colorado State Univ)

Biophysical Constraints over Gas Exchange in a Tallgrass Prairie. NASA, FIFE: First ISLSCP (International Satellite Land Surface Climatology Project) Field Experiment. 1987-1992. ([Co-Principal Investigator](#); D. Schimel, PI, NCAR)

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#### PROFESSIONAL SOCIETY MEMBERSHIP AND ACTIVITIES

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##### *Professional Society Activities*

\* Society member at time of service

↪ [PROFESSIONAL SERVICE — MEETING SESSIONS ORGANIZED OR CHAIRED](#) (follow link for details)

- \*American Geophysical Union
- \*Association of American Geographers
- \*Ecological Society of America
- International Association of Meteorology and Atmospheric Sciences
- \*International Association for Landscape Ecology (US-IALE)

↪ [PROFESSIONAL SERVICE — PEER REVIEW](#) (follow link for details)

- American Institute of Biological Sciences
- \*American Geophysical Union
- \*Ecological Society of America
- Society for Range Management

↪ [PROFESSIONAL SOCIETY WORKSHOP PARTICIPANT](#)

- International Association of Hydrological Sciences (IAHS): Global Data Bases Workshop, Birmingham, UK. July 1999.
- Natural Areas Association (NAA): Cuban Bird Conservation and Natural Areas Workshop, Central and Western Cuba. Nov 2001.

↪ [OTHER SOCIETY ACTIVITIES](#)

- \*International Association for Vegetation Science (IAVS): Vegetation of South Africa Excursion. Sept-Oct 1996.

##### *Professional Society Honors*

- \*American Association for the Advancement of Science (AAAS): Award for Excellence, Pacific Division, Atmospheric and Hydrospheric Science Section. 1984.

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#### AWARDS AND HONORS

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- Postdoctoral Fellowship, Cooperative Institute for Research in the Atmosphere, Colorado State Univ. 1985.
- Award for Excellence, American Association for the Advancement of Science,

Pacific Division, Atmospheric and Hydrospheric Science Section. 1984.  
 Sigma Xi Scientific Research Society. Elected to membership, 1978.  
 Phi Kappa Phi Honor Society. Elected to membership, 1975.  
 Departmental Citation, Division of Environmental Studies, University of California, Davis. 1975.  
 Research Fellowship, Foresta Institute for Ocean and Mountain Studies, Carson City, NV. 1972.

## PROFESSIONAL SERVICE — NATIONAL AND INTERNATIONAL COMMITTEES AND SCIENCE TEAMS (23)

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### International

#### Scientist signatory:

"World Scientists' Warning to Humanity: A Second Notice." Ripple, W. J., et al. 2017. *Bioscience* 67(12): 1026-1028. doi: [10.1093/biosci/bix125](https://doi.org/10.1093/biosci/bix125)  
 "Global Scientists Call for Economic Stimulus to Address Climate Adaptation and Covid," Moomaw, W.R., et al. 2020. [https://cdn.gca.org/assets/2020-12/Science\\_Statement\\_V3\\_1.pdf](https://cdn.gca.org/assets/2020-12/Science_Statement_V3_1.pdf)  
 "World Scientists' Warnings into Action, Local to Global," Barnard, P. et al. 2021. *Science Progress*, in press.  
<https://www.scientistswarningeurope.org.uk/s/ScientistsWarningIntoAction-Paper>

British Columbia Central Interior Ecoregional Assessment, The Nature Conservancy of Canada (NCC), Victoria, BC. [Climate Change Advisor / Team Lead](#), Climate Change Working Group & [Member](#), Core Team. 2007-2011. [Assessment products: see "Central Interior" under [NCC Conservation Blueprints](#)]

Vegetation/Ecosystem Modeling Analysis Project ([VEMAP](#); an IGBP/GAIM core project). Phase 1: 1993-95; Phase 2: 1996-2002.  
[Co-Leader](#), Data and Analysis Group.  
[Member](#), Steering Committee.

IPCC [Contributing Author](#), Working Groups I & II - Intergovernmental Panel on Climate Change (IPCC, recipient [2007 Nobel Peace Prize](#)). 1995-2001.

*Climate Change 2001: The Scientific Basis*, IPCC Third Assessment Report, Working Group I, Chapter 13: Climate Scenario Development.  
*Climate Change 1995. The Science of Climate Change*, IPCC Second Assessment Report, Working Group I - Chapter 5: Impacts of climate change on mountain regions.  
*Climate Change 1995. Impacts, Adaptations and Mitigation of Climate Change*, IPCC Second Assessment Report, Working Group II - Chapter 6: Climate models - Projection of future climate.  
*The Regional Impacts of Climate Change. An Assessment of Vulnerability*, IPCC Working Group II (1997) - Annex C: Simulated changes in vegetation distribution under global warming.

Model Evaluation Consortium for Climate Assessment (MECCA) Analysis Team. 1992-1995.

First ISLSCP (International Satellite Land Surface Climatology Project) Field Experiment (FIFE) Science Team. 1987-1992.

Lake Titicaca Limnological Research Expedition, Peru. 1972-73. University of California, Davis, and University of the Pacific, Stockton, CA. Under sponsorship of the National Geographical Society and el Instituto del Mar del Perú (IMARPE), Lima.

### National

[Colorado Plateau Interest Group](#), The Heinz Center and Colorado State University. 2010-2011. Cross-jurisdictional planning for climate change in the Colorado Plateau Ecoregion.

Rocky Mountain Climate Working Group, Greater Yellowstone Network and Rocky Mountain Network, USDI National Park Service Inventory and Monitoring Program. 2009-2010.

Scientific Advisory Committee, Greater Yellowstone Network (GRYN), USDI National Park Service. 2002-2006.

Steering Committee, [U.S. Workshop on Climate Projections, Uncertainty and Scenarios for Impact Assessment](#). 2002.

National Technical Advisory Committee, DOE National Institute for Global Environmental Change (NIGEC). 1996-1998, 2001-2002. Executive Committee Member and NTAC Secretary, 2002.

National Center for Atmospheric Research (NCAR) Community Climate System Model ([CCSM](#)) [Biogeochemistry Working Group](#). 1998-2002.

[Co-Leader](#), Ecosystems Scenario Development Team, U.S. National Assessment of the Potential Consequences of Climate Variability and Change. 1998-2001. (with J. Melillo and D. Schimel) [\[on-line information\]](#)

Climate Variability and Change Scenario Development Team, U.S. National Assessment of the Potential Consequences of Climate Variability and Change. 1998-2001.

Central Great Plains Assessment Steering Committee. U.S. National Assessment of the Potential Consequences of Climate Variability and Change. 1998-2001. [\[on-line information\]](#)

Oak Ridge National Laboratory (ORNL) Distributed Active Archive Center (DAAC) User Working Group (UWG). 1997-1999. UWG Climate Committee. 1998-1999.

Climate Scenario Task Force, USDA Forest Service Global Change Research Program. 1994-1997.

NASA EOS Algorithm Theoretical Basis Document (ATBD) Review Panel. 1997.

NASA EOS Pathfinder AVHRR Land Surface Science Working Group. 1992-1994.

Climate System Modeling Program (CSMP) Science Team, University Corporation for Atmospheric Research (UCAR). 1991-1996.

Long-Term Ecological Research Program (NSF/LTER) Climate Committee. 1990-1996, 2002-2003.

Hatch Fund Panel, Agricultural Experiment Station, University of Nevada, Reno. 1989, 1990.

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## ■ PROFESSIONAL SERVICE — WORKSHOPS & MEETING SESSIONS ORGANIZED OR CHAIRED (17)

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### *International*

#### *Professional Society Meetings*

Invited Session on "Terrestrial Ecosystem Carbon and Vegetation Dynamics: PIK/NPP and VEMAP2 Model Intercomparisons." IAMAS (International Association of Meteorology and Atmospheric Sciences) Symposium on Improvements and Intercomparisons of Climate System Models and Their Component Models, IUGG 99, 15-21 July 1999, Birmingham, UK. ([Convener](#), with K. Hibbard, Univ. of New Hampshire).

Steering Committee, 2nd International Conference on Integrating GIS and Environmental Modeling, National Center for Geographical Information and Analysis (NCGIA). 1992-1993.

#### *International Research Program Workshops*

VEMAP2 Fast-Track Experiment Results Workshop, 6-10 April 1999, Breckenridge, CO. ([Organizer](#), with D. Schimel)

VEMAP2 Preliminary Modeling Results Workshop, 21-22 Oct 1998, Biosphere2, Oracle, AZ. ([Organizer](#), with D. Schimel)

VEMAP2 Experimental Design Workshop, April 1998, Ft. Collins, CO. ([Organizer](#), with D. Schimel)

#### *Non-Governmental Organizations*

Incorporating Climate Change Information into Biodiversity Conservation Programs. 22 May 2015. Instituto de Pesquisas Ecológicas (IPÊ), Nazaré Paulista, São Paulo, Brazil.

Climate Threat & Conservation in the BC Central Interior Synthesis Workshop, Victoria, BC, Canada. 19-20 November 2007. British Columbia Regional Office, The Nature Conservancy of Canada (NCC). ([Organizer](#))

Climate Threat & Conservation in the BC Central Interior Analysis Workshop, Victoria, BC, Canada. 7-8 August 2007. British Columbia Regional Office, The Nature Conservancy of Canada (NCC). ([Organizer](#))

### *National*

#### *Professional Society Meetings*

Contributed Paper and Poster Sessions Organizing Committee, 1996 Annual Combined Meeting, Ecological Society of America (ESA), August 1996, Providence, RI.

Joint Special Session on "Regional-Global Interactions." Atmospheric Sciences, Hydrology, and Ocean Sciences Sections, 1993 American Geophysical Union (AGU) Fall Meeting, December 6-10, San Francisco. ([Convener](#), with R. Pielke and D. Schimel)

4th Annual Landscape Ecology Symposium, Ft. Collins, CO. March 1989. Session Chair.

1989 Association of American Geographers (AAG) Annual Meeting, Baltimore, MD. March 1989. Session Chair.

1988 Annual Meeting, Ecological Society of America (ESA), Davis, CA. Aug 1988. Session Chair.

#### *Government Agency Workshops*

Greater Yellowstone and Rocky Mountain Networks Climate Data Analysis Workshop, Bozeman, MT. 6-9 April 2009. Greater Yellowstone Network (GRYN), National Park Service Inventory and Monitoring Program. ([Organizer](#), with Stacey Ostermann-Kelm)

NSF LTER Workshop on "Biogeographical and Biogeochemical Analysis of Climate Variability and Change." Long Term Ecological Research Network All Scientist's Meeting 'Long-term Ecological Research in the New Millennium — Unifying Concepts and Global Applications' August 2000, Snowbird, Utah. ([Organizer](#), with D. Ojima, R. Neilson, W. Parton). [Program](#), [Abstract](#)

Forum on Observational Data and Analysis for Global Change. NOAA National Geophysical Data Center, IBM (Boulder), and Colorado State University. Boulder and Ft. Collins, CO. Apr 1991. ([Organizer](#), with J. Kineman).

#### *Academic & Research Institution Workshops*

Global Climate Change and Regional Responses Workshop, Pingree Park, CO, Oct 1991. Climate System Modeling Program (CSMP), University Corporation of Atmospheric Research (UCAR). ([Organizer](#), with R. Pielke, D. Schimel, and F. Bretherton)

Workshop on Monitoring Climate for the Effects of Increasing Greenhouse Gas Concentrations. Pingree Park, CO, Aug 1987. Cooperative Institute for Research in the Atmosphere (CIRA), Colorado State University. ([Organizer](#), with R. Pielke)

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## ■ PROFESSIONAL SERVICE — PEER REVIEW: [Agency/Institutional Review](#), [Publication Peer-review](#), [Grant Proposal Review](#)

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### **Agency Program and Institutional Review**

#### *Other Nations*

Ecosystems Branch, British Columbia Ministry of Environment, Canada. Ecosystem Conservation Framework - Foundation Documents Review. 2008.

Research Branch, British Columbia Ministry of Forests and Range, Canada. Future Forest Ecosystem Initiative - Scientific Foundation Document Review. 2008.  
Pacific Climate Impacts Consortium (PCIC), University of Victoria, BC, Canada. Research report review. 2008.

### U.S. National

NASA EOS Data Assimilation System (DAS) Program Review. 1997.  
DOE National Institute for Global Environmental Change (NIGEC) Regional Centers, NTAC Program Review. 1996, 1997, 1998, 2001, 2002.  
USDI National Park Service, Greater Yellowstone Inventory & Monitoring Network (GRYN). 2002-2006.  
Oregon State University. Faculty promotion review. 2003.

### Publications - Journal Editorial Service

Editorial Board Member and Academic Editor, *Climate* [ISSN 2225-1154]. 2020-present.  
Guest Editor (with Terri Schulz): "[Climate System Uncertainty and Biodiversity Conservation](#)." Joint Special Issue in *Climate and Earth*.  
Editorial Board Member, *Natural Resources Informatics (NRI)*. Founding Board Member. 2021. (Journal discontinued)  
Guest Editor (with G. Meehl, and D.S. Schimel). 1995. "Results from the Model Evaluation Consortium for Climate Assessment (MECCA)." *Global and Planetary Change* (Special Issue), vol. 10 (nos. 1-4).

### Publications - Peer-review

#### Journals:

*BioScience*. 1992.  
*Climatic Change*. 2001, 2002.  
*Climate Research*. 1998.  
*Ecological Applications*. 1997, 1998.  
*Ecology*  
*Journal of Hydrometeorology*. 2002.  
*Journal of Geophysical Research*  
*Journal of Range Management*  
*Meteorology and Atmospheric Physics*  
*Tellus*

#### Books:

Addison-Wesley Publishers: *Terrestrial Plant Ecology* (Barbour et al. 1998). 1998.  
Intergovernmental Panel on Climate Change (IPCC) Working Group II: *Climate Change 1995*. 1995.  
*Grassland Ecosystems of the Mongolian Steppe* (proceedings volume). 1993.

#### Agency publications:

US EPA. 2017. (Review contracted by ERG)  
NOAA National Geophysical Data Center (Global Ecosystems Database CDROM)  
UCAR Office for Interdisciplinary Earth Studies (Global Change Institute proceedings). 1991, 1993.  
USDA Forest Service:  
National Global Change Research Program  
Southern Region Global Change Research Program  
Rocky Mountain Forest and Range Experiment Station  
Forest Sciences Laboratory, Pacific Northwest Research Station (Corvallis, OR). General Technical Report review. 1999.  
USDA Agricultural Research Service (Ft. Collins, CO)  
USDI National Park Service, Inventory and Monitoring Program. 2008.

### Granting Agency Proposal Review

American Institute of Biological Sciences (AIBS) —  
Biospherics Peer Review for NASA. 1992.  
Scientific Peer Review for National Commission on Science for Sustainable Forestry (NCSSF). Panel Member. 2003, 2004.  
CALFED Bay-Delta (San Francisco Bay/Sacramento-San Joaquin Delta) Program. 2002.  
National Aeronautics and Space Administration (NASA) —  
Earth Observing System (EOS)  
NASA Postdoctoral Program Applications Review, Oak Ridge Associated Universities. 2013  
National Institute for Climatic Change Research (NICCR), Department of Energy —  
Western Regional Center. 2007, 2008, 2009  
National Institute for Global Environmental Change (NIGEC), Department of Energy —  
National NIGEC Office. 1996, 1997, 1998, 1999, 2000, 2001.  
Great Plains Regional Center. 1997, 1998, 2001.  
Midwestern Regional Center.  
WESTGEC. 1997, 1998.  
National Oceanic and Atmospheric Administration (NOAA) —  
Climate and Global Change Program, Office of Global Programs. Mar 2001, Dec 2001  
Office of Ocean Exploration. 2002.  
National Park Service (NPS), Global Change Research Program  
National Science Foundation (NSF) —  
Climate Dynamics Program.  
Long Term Studies in Environmental Biology Program.  
Paleoclimate Program. 1997.  
U.S. Environmental Protection Agency, Environmental Research Laboratory, Corvallis, OR.  
U.S. Fish and Wildlife Service, National Ecology Research Center, Ft. Collins, CO.

University of Nevada, Reno, Agricultural Experiment Station Hatch Fund. [Panel Member](#). 1989, 1990.

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## HOME INSTITUTION SERVICE

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### University of Colorado, Boulder

[Member](#), Graduate Faculty of the University of Colorado at Boulder —  
 Department of Geography. 2007-2010.  
 Department of Ecology and Evolutionary Biology. 2011-present.  
[Core Team Member](#), [US-Brazil Network](#). 2011-present.  
[Honors Thesis Committee Member](#), Environment Studies Program. 2011-2012.  
[Guest Lecturer](#), International Affairs Program. 2013.  
[Member](#), Campus Global Citizen Award Selection Committee, Education Abroad Office. 2017.

### National Center for Atmospheric Research (1991-2002)

Steering Committee and Working Group, NCAR Weather and Climate Impact Assessment Science Initiative. 2001-2002.  
 NCAR GIS Advisory Group. 2001-2002. ([synopsis](#): "Geographical Information Systems Strategic Initiative")  
[Acting Section Head](#), Ecosystem Dynamics and the Atmosphere Section, Climate and Global Dynamics Division. 1999-2001.  
[Deputy Section Head](#), Ecosystem Dynamics and the Atmosphere Section. 1998-1999.  
 Biogeochemistry Working Group, NCAR Community Climate System Model (CCSM). 1998-2002.  
 Advanced Study Program Postdoctoral Fellow mentoring — D. Yates. 1997-1998.  
 Advanced Study Program Postdoctoral Fellow Research Planning Committee — R.F. Cannon. 1997-1998.  
[Reviewer](#), postdoctoral fellowship applications, Advanced Study Program. 1998.  
[Reviewer](#), community requests for computing resources, Scientific Computing Division. 1997.  
[Seminar Series Coordinator](#), Climate and Global Dynamics Division. 1994-1995.  
 In-house review of extramural proposals, Climate and Global Dynamics Division. 1994, 1995.

### Colorado State University (1985-1994)

[Member](#), Program for Ecological Studies. 1990-1994.  
 Workshop Scholarship Committee, Program for Ecological Studies. 1990.  
[Instructor](#), *Global Change Graduate Seminar*, Program for Ecological Studies. 1989.  
[Co-organizer](#), Laird-Norton Forum on Global Change. 1989-1990.  
[Organizer](#), NREL-CIRA Joint Seminar Series on Global Change. 1987-1989.  
[Guest Lecturer](#), *Biogeochemistry*, Department of Range Science. 1989.  
 Fellowship Selection Committee, Cooperative Institute for Research in the Atmosphere. 1986.

### University of California, Davis (1977-1984)

Chancellor's Advisory Committee for the UC Davis Natural Reserve System. 1984.  
 Ecology Seminar Series Committee, Institute of Ecology. 1982-1984.  
[Coordinator](#), Center for Environmental Design. 1985.  
[Instructor-in-Charge](#), *Ecology of Development in the Humid Tropics*, Division of Environmental Studies. 1982.  
 Course Development Committee, Tropical Studies Group, Ecology Graduate Group. 1982.  
[Guest Lecturer](#), Division of Environmental Studies:  
*Principles of Environmental Science*. 1984.  
*Field and Laboratory Methods in Ecology*. 1983.  
*Limnology Laboratory*. 1980, 1981, 1983, and 1984.

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## COMMUNITY SERVICE — OUTREACH

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### Graduate Student Committees

Ph.D. Qualifying Examination Committee and [Affiliate Faculty Member](#), Department of Geological Sciences, University of Colorado, Boulder. 1994.

### Extramural (Outside Home Institution) Undergraduate Courses (see also [TEACHING EXPERIENCE](#))

[Instructor](#), *Summer Ecosystem Experiences for Undergraduates (SEE-U)*, Center for Environmental Research and Conservation, Columbia University, New York.  
 Lecture, field, and digital laboratory course: [Overview](#). Course taught at Biosphere 2 Center, Oracle, AZ (Summers 2000-2001), Instituto de Pesquisas Ecológicas, Nazaré Paulista, São Paulo, Brazil (Summers 2002-2005, 2007-2011, 2014), Punta Cana Biodiversity Laboratory, Dominican Republic (2005, 2012), and El Verde Field Station, Puerto Rico (2010).

[Lecturer](#), Semester at Sea, Institute for Shipboard Education, Charlottesville, VA. Fall 2006 voyage. As [Visiting Lecturer](#), University of Virginia, Charlottesville. Aug-Dec 2006.

[Guest Lecturer](#), *GIS Applications in Ecological Modeling*, Dept. of Zoology and Physiology, Univ. of Wyoming, Laramie. "Development of Integrated Datasets for Regional Ecosystem Modeling." March 1994.

[Guest Lecturer](#), *General Ecology*, Dept. of Biological Sciences, California State Univ., Sacramento. "Methods in Plant Ecology." March 1980.

### Field Study Programs (8) (see also [INTERNATIONAL FIELD EXPERIENCE](#))

[Volunteer Scientist](#), Guanacos of Patagonia Research Expedition, Chile. EarthWatch Expeditions. Dec 1977-Jan 1978.

[Associate Scientist](#), Guanaco Behavioral Ecology Expedition, Peru. Educational Expeditions International (EarthWatch). April 1973.



Foresta Institute for Ocean and Mountain Studies, Carson City, NV.

*Residential environmental education programs:*

- Assistant Field Director, Washoe Pines Ecology Program. July-Aug 1972.
- Mountaineering Program Leader, Washoe Pines Ecology Program. July-Aug 1970, 1971, June-July 1975.
- Field Instructor, NSF-High School Student Science Training Program (SSTP). June-July 1971, 1972.
- Field Instructor, NSF-High School Teachers' In-Service Training Institute (TISI). Oct-Dec 1971.
- Field Instructor, IUCN-UNESCO Joint International Environmental Education Conference, June-July 1970.

Volunteer Instructor, *The Study of Natural Areas*, Agora Alternative Education Program, Davis Senior High School. Apr-June 1975.

#### Outreach Presentations

- Hidden Corners, Inc., Mongolian Magic Expedition, Mongolia. "Ecology of Lake Khövsgöl." July 1998.
- Guest Lecturer, National Park Service, Natural Resources Management Trainee Program, Denver, CO. "Global Change: Causes and Impacts." March 1991.
- EarthWatch Expeditions, Ecology of Great Plains Grasslands Project, Pawnee National Grassland, CO. "Climate of Arid Lands: Global Distribution and Causes." July 1990.

#### Non-profits and Industry Outreach

The Nature Conservancy (TNC) —

- Participant, TNC 4th Wetland Management Network (WETNET) Workshop: *From Science to Strategy: How to Put Lessons from Wetland Ecology into Practice*. 15-17 April 2003, Tulum, Mexico.
- Contributor, Project on *The Impacts of Climate Change on Alaskan Coastal Arctic Tundra: A Synthesis of Possible Outcomes*. TNC Global Climate Change Initiative. 2002-2003.
- Invited Visitor, Application of global climate change assessments in nature preserve design. TNC Western Resource Office, Boulder, CO. Dec 2000.
- Invited Visitor, Application of global climate change assessments in nature preserve design. TNC Colorado Field Office, Boulder, CO. March 2007.

Panel Member, "Brazil: A BRIC in Crisis," Geopolitics Discussion Group, United Nations Association Boulder Chapter and Boulder Public Library. Feb 2016.

Juror, Botanical Illustration Certificate Program, School of Natural History Art, Arizona-Sonora Desert Museum, Tucson, AZ. Aug 2001.

University Liaison/Technical Advisor, *A Scientific GIS for Global Change Research*, an IBM Independent Research and Development Project. IBM, Boulder, CO. 1990-1994.

#### ■ INVITED SEMINARS (16)

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#### International - Invited Seminars



Graduate School of Environmental Conservation and Sustainability ([ESCAS](#)), Instituto de Pesquisas Ecológicas (IPÊ), Nazaré Paulista, São Paulo, Brazil. (ESCAS, Escola Superior de Conservação Ambiental e Sustentabilidade, a Masters program in Conservation of Biodiversity and Sustainable Development):

- "The Climate Threat and Conservation: Facing Uncertainty." Aug 2009, May 2011, May 2015.
- "The Climate Threat & Conservation Action: Climate Uncertainty & the Vulnerability Approach to Planning." May 2016. Presentation and joint ESCAS Masters program-[University of Colorado Global Studies program](#) workshop on incorporating climate change in to Masters student thesis research.

British Columbia Conservation Data Center (BCCDC), Ecosystems Branch, British Columbia Ministry of Environment, Victoria, BC, Canada. "The Climate Threat and Conservation Planning." Oct 2007.

Organization for Tropical Studies (OTS), La Selva Biological Reserve, Costa Rica. "Global Climate Change: A Tropical Forest Perspective." June 1989.

#### National - Invited Seminars

- National Park Service, Climate Change Response Program, Ft. Collins, CO. "Conservation in the Face of Climatic Uncertainty." Sept 2016.
- The Nature Conservancy, Colorado Office, Boulder, CO. "Conservation Planning in the Face of Climatic Uncertainty: A Vulnerability-Based Strategy Implemented for the British Columbia Central Interior" Feb 2012.
- NatureServe, Western Regional Office, Boulder, CO. "Conservation Planning in the Face of Climatic Uncertainty: A Vulnerability-Based Strategy Implemented for the British Columbia Central Interior" April 2011.
- Institute of Arctic and Alpine Research, University of Colorado at Boulder. "Historical and Future Climates of the US Rocky Mountains." Oct 2002.  [ABSTRACT](#) |  [PRESENTATION \(pdf file\)](#)
- Climate and Global Dynamics Division, National Center for Atmospheric Research. "Bioclimate Datasets for Assessment of Ecosystem Sensitivity to Climate Variability and Climate Change." Aug 1997.
- Department of Botany, University of Wyoming. "Ecosystem Sensitivity to Climate and CO2 Change: The VEMAP Model Intercomparison." March 1995.
- National Center for Atmospheric Research-Colorado State University-University of Colorado Front Range Biosphere-Atmosphere Interactions Group. "The VEMAP U.S. Dataset for Terrestrial Biosphere Modeling." Boulder, CO. April 1994.
- Department of Botany, University of Wyoming. "Impacts of Global Change on Ecosystem Dynamics of the North American Central Grasslands." Nov 1989.
- Goddard Institute for Space Studies, New York, NY. "Large-Scale Relationships between General Circulation and the Distribution of Global Vegetation Zones." Aug

1986.

Natural Resource Ecology Laboratory, Colorado State University. "Large-Scale Atmospheric Processes Influencing the Distribution of Vegetation in North America." May 1986.

## ■ INVITED TALKS AT PROFESSIONAL MEETINGS AND WORKSHOPS (53)

- [International Invited Talks](#)
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### International - Invited Talks

- Professional Society Symposia
- Non-Governmental Organizations
- International Research Projects
- Academic & Research Institution Hosted Workshops

#### *Professional Society Symposia - Invited Talks*

IAMAS Symposium on Improvements and Intercomparisons of Climate System Models and Their Component Models. "Historical and Future Scenario Climate Datasets for the Conterminous United States and Alaska: Model Input Data for VEMAP Phase 2." IUGG99 22nd General Assembly, Birmingham, UK. 18-30 July 1999.

IAHS Global Data Bases Workshop. "Runoff in the Vegetation/Ecosystem Modeling and Analysis Project (VEMAP) Comparison with Observed Streamflow." IUGG99 22nd General Assembly, Birmingham, UK, 18-30 July 1999. (K. Hibbard, lead presenter)

#### *Non-Governmental Organizations - Invited Talks*

Land Trust Alliance of British Columbia ([LTABC](#)). "The Climate Threat and Conservation - Facing Certainty and Uncertainty. I: Guiding Strategies" and "II: Implementation in British Columbia", Land Trust and Stewardship Seminar Series 2008: Stewardship and Conservation through Changing Climates Conference. Manning Park Resort. April 2008. I: Invited plenary talk; II: Invited session seminar.

The Nature Conservancy of Canada (NCC) Climate Threat & Conservation in the BC Central Interior Analysis Workshop. "The Climate Threat and Conservation Planning." Victoria, BC, Canada. 7-8 August 2007.

The Nature Conservancy of Canada (NCC) Alaska-Yukon-British Columbia Conservation Exchange Workshop. "The Climate Threat and Conservation Planning." Haines Junction, Yukon, Canada. 7-9 May 2007. [ABSTRACT](#)

#### *International Research Programs - Invited Talks*

VEMAP2 Results and Planning Workshop. "The VEMAP Work Bench." Jena, Germany. June 2000. (S. Aulenbach, lead presenter)

VEMAP2 Fast-Track Experiment Results Workshop. "The VEMAP2 Conterminous U.S. and Alaskan Historical Climate and Scenario Datasets." Breckenridge, CO. 6-10 April 1999.

VEMAP2 Preliminary Modeling Results Workshop. "The VEMAP2 Transient Climate Scenarios." Biosphere2, Oracle, AZ. 21-22 Oct 1998.

VEMAP2 Experimental Design Workshop. "The VEMAP2 Historical Climate Dataset and Development of Transient Climate Scenarios." Ft. Collins, CO. April 1998.

VEMAP Phase 2 Planning Workshop. "Development of Gridded Historical Climate Data and Transient Climate Scenarios for the United States: The VEMAP Phase 2 Database." Boulder, CO. Jan 15-17, 1996.

VEMAP Results Workshop I. "The VEMAP Dataset for Ecosystem/Vegetation Model Intercomparison and Climate/CO2 Sensitivity Studies." Boulder, CO. 20-21 April 1994.

IPCC Working Group I Regional Climate Evaluation Workshop. T. Kittel & G. Meehl\*: "Regional Intercomparison of IPCC-Archived Coupled Model Runs." Sydney, Australia. 7-9 Feb 1994. (\*=presenter)

MECCA Principal Investigators Workshop. "Ecological Response to Climate Change: Uncertainties and Regional Assessments." Boulder, CO. Jan 1993.

MECCA Analysis Team First Advisory Committee Meeting. "Terrestrial System Response and Feedbacks to Global Climate Change." Boulder, CO. July 1992.

MECCA Principal Investigators Workshop. "CSMP Assessment of Climate Change Impacts: Environmental Response and Feedbacks to Climate." Palo Alto, CA. Feb 1992.

MECCA Policy Committee Meeting. "Climate and Environmental/Socioeconomic Assessment Cycles: Dual Linked Strategies for MECCA Assessment." Palo Alto, CA. Feb 1992.

#### *Academic & Research Institution Hosted Workshops - Invited Talks*

Network of Conservation Educators and Practitioners Community Exchange Workshop. "Zen and Experiential Learning: Setting the Stage for Remote 'Hands-on' Instruction." Center for Biodiversity and Conservation, American Museum of Natural History. On-line workshop. July 2020. Presentation & video: <https://drive.google.com/drive/folders/1Gq1KHKZEzGZJTsuh4NhwqN5F3AciUGRS>

International Workshop on Globally Gridded Transient Climate Data Sets for Biosphere Models. "Development of Topographically-Sensitive Gridded Historical Climate Data for the United States: The VEMAP Phase 2 database." Potsdam Institute for Climate Impact Research. Sponsored by EPRI. Potsdam, Germany. May 22-24, 1996.

### National - Invited Talks

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#### **Professional Society Symposia - Invited Talks**

ESA Symposium on The Past, Present, and Future of Rocky Mountain Ecosystems. "Colorado Rocky Mountain Climate: Trends and Sensitivities." Ecological Society of America Annual Meeting, Snowbird, UT, Aug 1995. (Presented by T.N. Chase)

AGU Special session on Continental-Scale Hydrology-Climate Interaction. "A Physically-Consistent Database for Simulation of U.S. Ecosystem/Vegetation Responses to Global Change: The VEMAP dataset." American Geophysical Union Fall Meeting, San Francisco, Dec 1994. (Presented by N.A. Rosenbloom)

#### **Non-Governmental Organizations - Invited Talks**

Heinz Center and Colorado State University - [Colorado Plateau and Climate Change Workshop](#). "Downscaled Climate Scenarios for Natural Resource Vulnerability Assessment: Adding Geographic & Daily Variance Structure." H. John Heinz III Center for Science, Economics, and the Environment, and NREL, Colorado State University. Durango, CO. Nov-Dec 2010.

#### **U.S. Government Agency Workshops - Invited Talks**

USGCRP 1998 US National Assessment Leaders Summer Workshop. "VEMAP2 Gridded Climate Time Series for the U.S. National Assessment." Monterey, CA. 27-31 July 1998. Invited talk and [panel member](#).

Central Great Plains Assessment Steering Committee Meeting. "VEMAP2 Historical Climate and Climate Scenarios for the U.S. National Assessment." USGCRP U.S. National Assessment of the Potential Consequences of Climate Variability and Change, Ft. Collins, CO. 9-10 Sept 1998.

USGS/BRD Human-Induced Changes to Rocky Mountain Ecosystems Workshop. "100-yr Climate History of the Rocky Mountains." USGS/Biological Resources Division. Flathead Lake Biological Station, MT. 17-21 Sept 1997.

U.S. Government Agency Briefing on VEMAP. "The VEMAP Phase 2 Historical Climate Database for the United States." Arlington, VA. 20 May 1997.

USGS/BRD Central Grasslands Global Change Research Program (CEGR) Principal Investigators Workshop. "Effects of Regional and Global Landuse Change on the Regional Climate of the U.S. Central Grasslands." Ft. Collins, CO. 25-26 Mar 1997.

USDA Forest Service Global Change Modelers Meeting. "Objectives and Status of the VEMAP Phase 2 Database: Historical Base Climate and Transient Climate Change Scenarios." Ft. Collins, CO. 17-18 Oct 1995.

USFS GCRP Climate Scenario Task Force Meeting. "The VEMAP Integrated Database Update and Phase II Plans: Interannual Variability and Transient Scenarios." USDA Forest Service Global Change Research Program. Boulder, CO. 5-6 Oct 1994.

USFS GCRP Program Managers Meeting. "The VEMAP Dataset for Ecosystem/Vegetation Model Intercomparison and Climate/CO2 Sensitivity Studies." Ft. Collins, CO. 8 June 1994.

USFS GCRP Workshop, Climate Scenario Meeting. "The VEMAP Integrated Climate Database and Climate Change Scenarios." Ft. Collins, CO. 19 Jan 1994.

NPS Colorado Rockies Biogeographical Area Global Change Research Program Principal Investigators Workshop. "Regional Climate Change Scenarios for the Colorado Rocky Mountains." National Park Service Global Change Research Program. Estes Park, CO. Mar 1993.

NPS Ozark Highlands Global Change Workshop. "Regional Climate and Vegetation Change Modeling for the Central Grasslands: Application to the Ozark Highlands." National Park Service Global Change Research Program. Buffalo National River, AR. April 1992.

USFS Terrestrial Ecosystem Regional Research and Analysis Laboratory (TERRA) Climate Scenario Workshop. "Simulation of Regional Climatic and Ecological Change." Boulder, CO. Sponsored by USDA Forest Service and National Center for Atmospheric Research. Mar 1992.

Second Annual LWVS/WEBB/COLR Workshop and Planning Meeting. "Climatic Change in the Colorado Rocky Mountains: Bounding Projected Change in Regional Climate." USGS & NPS. Rocky Mountain National Park, Estes Park, CO. Mar 1992.

NASA Pre-BOREAS Modeling Workshop. "Mesoscale Atmospheric Modeling and BOREAS: Principles, Utility, and Research Needs." Flathead Lake, MT. Aug 1991.

NPS Central Grasslands Global Change Workshop. "Simulation of Regional Climate Response to Global Climate Change." National Park Service Global Change Research Program. Wind Cave National Park, SD. June 1991.

#### **Academic & Research Institution Hosted Workshops - Invited Talks**

Spatial Data and Scaling Methods for Assessment of Agricultural Impacts of Climate, NCAR/Univ of Florida MMIA Project Planning Workshop. "VEMAP Soils, Land Cover, and Climate Datasets for the United States." Boulder, CO. 17-18 July 2000.

Geophysical Statistics Project at NCAR (GSP), External Advisory Panel Meeting. "Bioclimate Datasets for Assessment of Climate Impacts on Ecosystems: Spatio-temporal Statistical Infilling of Climate Fields." Boulder, CO. May 2000.  
Professional Society hosted

Geophysical Statistics Project at NCAR (GSP), NSF Probability and Statistics Program Visit. "VEMAP Datasets for Assessment of Climate Impacts: Spatio-temporal Statistical Infilling of Climate Fields." Boulder, CO. Nov 1999.

NSF Site Visit to the Geophysical Statistics Project at NCAR (GSP). "Historical Climate Reconstruction for the United States for the Last 100 years." Research Review. NCAR, Boulder, CO. 21-23 May, 1997.

NCEAS Workshops on Extrapolation of Arctic and Boreal Processes that Feedback to Climate. Workshop I: Changes in Vegetation and Energy Balance. "A Gridded, Historical Ecoclimate Dataset for the United States Including Alaska: The VEMAP Phase 2 Database." National Center for Ecological Analysis and Synthesis, Santa

Barbara, CA. April 6-13, 1997.

NCGIA Research Initiative-15: Multiple Roles for GIS in U.S. Global Change Research. First Specialist Meeting. National Center for Geographical Information and Analysis, Santa Barbara, CA, 8-11 March 1995. [Workshop position paper](#).

UCAR/OIES Workshop on Data Sets for Terrestrial Biosphere Modeling. "Development of Large Domain, Multi-Time Resolution Data Sets for Terrestrial Biosphere Modeling: The VEMAP Database as a Case Study." Boulder, CO. 9-11 May 1994.

UCAR/OIES Workshop on Data Sets for Terrestrial Biosphere Modeling. "Terrestrial Biosphere Model Strategies and Climate Data Requirements." Boulder, CO. 9-11 May 1994.

Niwot Ridge LTER Research Workshop. "Regional Climate Change Scenarios for the Colorado Rocky Mountains." University of Colorado Mountain Research Station, CO. Aug 1992.

UCAR/CSMP Global Climate Change and Regional Responses Workshop. "Modeling Regional Biospheric Response to Global Change." Climate System Modeling Program, UCAR. Pingree Park, CO, Oct 1991.

UCAR/CSMP Natural Variability, Model Validation, and Greenhouse Warming Detection Workshop. "Natural Variability, Model Credibility, and the Biosphere." Sponsored by Climate System Modeling Program, UCAR. Boulder, CO. May 1991.

LTER Climate Variability and Ecosystem Response Workshop. "Climatic Variability in the Shortgrass Steppe." Organized by LTER Climate Committee. University of Colorado Mountain Research Station, CO. Summer 1988. [Workshop paper](#). *Workshop summary*: Greenland & Swift. 1991. *Bull Ecol Soc Amer* 72:118-126.

#### Industry Research Group Hosted Meetings - Invited Talks

EPRI Statistical Downscaling Meeting. "Development of the VEMAP2 Historical (1895-1993) Daily Bioclimate Dataset: Disaggregation of the Monthly Series." Boulder, CO. 5 Nov 97.

EPRI Workshop on Estimating Impacts from Climate Change: Interim Results. "Intercomparison of the Climate and CO<sub>2</sub> Sensitivity of Ecosystem Physiological Models and Biome Distribution Models: Results from VEMAP." Washington, DC. 3-4 Nov 1994.

EPRI Atmospheric Sciences Program Advisory Committee Meeting. "Assessing Terrestrial Ecosystem Response to Global Climate Change." Boulder, CO. Sept 1992.

'What is Scientific GIS?' Conference. "Temporal Analysis, GIS, and Environmental Research." Sponsored by IBM. Boulder, CO. Sept 1991. Invited speaker and [panel member](#).

#### ACKNOWLEDGED CONTRIBUTIONS TO OTHER PUBLICATIONS




Colorado Climate Center. 2000. *Colorado Climate Vol. 1, No. 1: Winter 1999/2000*. Department of Atmospheric Science, Colorado State University, Fort Collins, CO. Figure p. 2: "Greenness in the central U.S. during 1988 growing season." (image credit: EROS Data Center and T. Kittel)

Keen, R.A. 1987. *Skywatch: The Western Weather Guide*. Fulcrum, Golden, CO. Photo p. 62: The Cheyenne Storm, 1 August 1985, time-lapse photo from Ft. Collins foothills (photo: T. Kittel).

Barbour, M.G., and J. Major. 1977. *Terrestrial Vegetation of California*. John Wiley & Sons. Cover photos: Sierra Nevada Foothills Oak Savanna and Mt. Lassen Ponderosa Forest and Montane Chaparral (photos: T. Kittel).

#### PUBLICATIONS (Total = 250, excluding Conference Abstracts)

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(Last updated 3 Dec 20)

- Total citations: 8843
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- i10-index: 73

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Refereed journal publications also linked to from:

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#### Publication Notations -

[citation index] - given for papers if  $\geq 20$ . Last updated Sept 2011.


Current citation numbers maintained by: [ResearchGate](#) - [https://www.researchgate.net/profile/Timothy\\_Kittel/](https://www.researchgate.net/profile/Timothy_Kittel/) & Researcher ID: <http://www.researcherid.com/rid/F-2792-2011>

 Highlighted publications (linked from [PROFESSIONAL EXPERIENCE](#))



\* Journal papers by a doctoral student directly advised

† Journal papers by a postdoctoral fellow directly advised


#### 2006-present



Jennings, K.S., Kittel, T.G.F., and Molotch, N.P. 2018. Observations and simulations of the seasonal evolution of snowpack cold content and its relation to snowmelt and the snowpack energy budget. *The Cryosphere*, 12(5):1595-1614. doi: [10.5194/tc-12-1595-2018](https://doi.org/10.5194/tc-12-1595-2018) |  [RJ55]



Accompanying dataset: Jennings et al. 2019. doi:10.6073/pasta/1538ccf520d89c7a11c2c489d973b232 [see [DS18](#)]


 Kittel, T.G.F., M.W. Williams, K. Chowanski, M. Hartman, T. Ackerman, M. Losleben, and P. Blanken. 2015. Contrasting long-term alpine and subalpine precipitation trends in a mid-latitude North American mountain system, Colorado Front Range, USA. *Plant Ecology & Diversity* 8:607-624. Published online: Mar 2016. doi: [10.1080/17550874.2016.1143536](https://doi.org/10.1080/17550874.2016.1143536) |  [RJ54]

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Scott-Denton, L.E., D.J.P. Moore, N.A. Rosenbloom, T.G.F. Kittel, S.P. Burns, D.S. Schimel, and R.K. Monson. 2013. Forecasting future net ecosystem CO<sub>2</sub> exchange in a subalpine forest using model data assimilation combined with simulated climate and weather generation. *Journal of Geophysical Research-Biogeosciences* 118: 549-565. DOI: [10.1002/jgrg.20039](https://doi.org/10.1002/jgrg.20039) |  [RJ53]

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