

## PHILIP W. MOTE

### Education

**UNIVERSITY OF WASHINGTON** *Seattle, WA*  
Ph.D. in Atmospheric Sciences, January 1994.

**HARVARD UNIVERSITY** *Cambridge, MA*  
B.A. with Honors in Physics, June 1987.

### Research Experience

**Director** **Oregon Climate Change Research Institute** *Corvallis, OR*  
**Professor** **College of Earth, Ocean, and Atmospheric Sciences, Oregon State University**  
**Director** **Oregon Climate Service, CEOAS, OSU**  
(3/09-present)

**State Climatologist** **Office of Washington State Climatologist, UW** *Seattle, WA*  
(3/03-7/09)

**Research Scientist** **JISAO/SMA Climate Impacts Group, UW** *Seattle, WA*  
(1/98-7/09) interdisciplinary research on climate variability, change, and its impacts in the western US; public outreach & engagement

**Consultant** **NorthWest Research Associates** *Bellevue, WA*  
(7/98-3/09) Dynamics of the stratosphere and upper troposphere.

**Research Scientist** **NorthWest Research Associates** *Bellevue, WA*  
(8/96-6/98) Dynamics of the stratosphere.

**Research Fellow** **Department of Meteorology, University of Edinburgh** *Edinburgh, Scotland*  
(2/94-7/96) UK Universities' Global Atmospheric Modelling Programme.

### Teaching Experience

**Professor** **College of Earth, Ocean, and Atmospheric Sciences, OSU** *Corvallis, OR*  
(winter 2013, 14, 15, 16)  
(winter 2014) Atmospheric Sciences 210: Intro to Atmospheric Sciences  
(winter 2016) Fifth Assessment of the Intergovernmental Panel on Climate Change: Working Group I report  
Fifth Assessment of the Intergovernmental Panel on Climate Change: Working Group II report

**Coordinator** **Program on Climate Change Graduate Certificate in Climate Sciences, UW**  
(9/08-3/09)

**Instructor** **Program on Climate Change, UW** *Seattle, WA*  
(1/09-3/09) Ocean 509D Communicating Climate Science

**Lecturer** **Department of Atmospheric Sciences, UW** *Seattle, WA*  
(3/97-6/97, 9/00-12/00, and 1/02-3/02) Atmospheric Sciences 211 (Climate and Climate Change)

**Teaching Asst.** **Department of Atmospheric Sciences, University of Washington** *Seattle, WA*  
(1/93-3/93) Atmospheric Sciences 102 (Climate)

**Teacher** **Monte Vista Christian High School** *Watsonville, CA*  
(9/87-6/89) Physics, Mathematics (Algebra II through Calculus). Introduced Advanced Placement Calculus, reformed math department curriculum, coached math team in statewide contests, junior class advisor, senior class advisor.

**Teaching Asst.** **Department of Physics, Harvard College** *Cambridge, MA*  
(6/88-8/88) Physics S1

### Leadership Experience

Founding director of Oregon Climate Change Research Institute. Hired staff, leveraged \$180K per year of state support into \$3.5m/yr, won several competitive grants to make OSU the home of three regional cli-

mate enterprises for the Northwest funded by NOAA, USGS, and USDA.  
Led or co-led large interdisciplinary teams on 16 proposals since 2009, 7 of which were funded.  
Created Office of Washington State Climatologist, official state climate office for Washington, and secured funding from the state legislature.

Conceived and carried out a 2-week international training course on climate modeling, a NATO Advanced Study Institute “Numerical Modelling of the Global Atmosphere,” May-June 1998, *Castelvecchio Pascoli, Italy*;

Conceived and carried out a series of international conferences on regional integrated assessment, September 2002, *Castelvecchio Pascoli, Italy*; Second International Conference on Climate Impacts Assessment, June-July 2004, *Grainau, Germany*; Third International Conference on Climate Impacts Assessment, July 2006, *Cairns, Australia*.

### **Promoting diversity and inclusion**

Organized CEOAS faculty training on overcoming implicit bias, 2016

Participated in OSU ADVANCE, intensive 2-week seminar, September 2016

Organized lunch-and-learn series for OCCRI on understanding difference, power, and discrimination

Member of CEOAS Diversity Task Force, 2016-

### **Service**

#### **International and national service**

President-elect, Global Environmental Change Focus Group, and member of the Council, American Geophysical Union, 2017-

NOAA Climate Working Group, 2012-

National Academy of Sciences’ National Research Council (NRC), Committee to Review the Climate Science Special Report, 2016-17.

Chapter Lead, Northwest Chapter, US Fourth National Climate Assessment, 2016-

Executive Board, NOAA National Climate Predictions and Projections platform, 2012-14

Intergovernmental Panel on Climate Change (IPCC) lead author, Chapter 4 (Cryosphere) of the contribution of Working Group I to the Fifth Assessment Report, 2010-2013

IPCC lead author, Chapter 4 of the contribution of Working Group I to the Fourth Assessment Report, 2004-07

NRC Committee on Attribution of Extreme Weather Events in the Context of Climate Change, 2015-16.

NRC Committee to evaluate the Landscape Conservation Cooperatives, 2014-15

NRC Report on Effects of Sea Level Rise on the US Pacific Coast, 2010-11

NRC committee “America’s Climate Choices”, 2009-10

NRC committee on “Redesigning the National Academy’s Koshland Science Museum’s exhibit on climate change”, 2008-2011

NRC committee on “Evaluating NOAA’s Sector Applications Research Program,” 2007-2008

Climate Variations and Change Committee, American Meteorological Society, 2004-2010.

*National Integrated Drought Information System* Implementation Team, 2007-2010.

Numerous proposal review panels for NOAA, NSF, EPA, DOE.

#### **University and College Service**

OSU Marine Studies Initiative, Research Committee, 2016-

CEOAS Diversity Task Force, 2016-

CEOAS College Advisory Council, 2011-16, College Leadership Team 2016-

OSU BigData Initiative committee, 2016-

C(E)OAS Peer Review of Teaching Committee, 2009-2010 and 2015-16

OSU College of Science Data Science working group, 2016

OSU *ad hoc* committee on improving competitiveness in interdisciplinary proposals 2010-12

OSU Faculty screening committee for assistant professor regional climate, 2011-2012

UW Educational Outreach Sustainability Programs Advisory Board, 2008-2014

CEOAS Promotion & Tenure Committee, 2012-13

University of Oregon Climate Leadership Initiative advisory board, 2007-2012

**Conference organizer** Annual meeting of the American Association of State Climatologists (AASC), July 2007, *Coeur d’Alene, Idaho*; AASC, July 2014, *Stevenson WA*. Workshops on scenarios of future climate, October 2009, June 2012, April 2014, *Portland, Oregon*. Co-Founder, Pacific Northwest Climate Science Conference: *Portland, OR (2010), Seattle, WA (2011), Boise, ID (2012), Portland (2013), Seattle (2014), Coeur d’Alene ID (2015), Stevenson WA (2016)*.

**Convener** Seven sessions at meetings of the American Geophysical Union (5/99, two in 12/00, 12/08, 12/09, 12/15, 12/16), *San Francisco*; Program Committee, Symposium on Connections between Mesoscale Processes and Climate Variability, AMS annual meeting 2007, *San Antonio, TX*; Program Chair, 21<sup>st</sup> Conference on Climate Variability and Change, American Meteorological Society, *Phoenix*, January 2009. Program co-chair, 22<sup>nd</sup> Conference on Climate Variability and Change, American Meteorological Society, *Atlanta*, January 2010.

### **Public Speaking**

Testimony to Congress or state legislatures: over a dozen appearances, including US House Science Committee Hundreds of media interviews; quoted in *Time*, Los Angeles Times, New York Times, Fox News, National Public Radio, Seattle Times, Seattle Magazine, and many more; feature article front page Sunday edition of the Portland Oregonian.

over 800 public speaking appearances including dozens of invited and/or keynote talks. Some of the significant appearances (keynote address, audience >100 or including top-level policymakers) since arriving at OSU in 2009:

2009: Corvallis City Club, US House of Representatives Committee on Science and Technology, Subcommittee on Energy and Environment; Oregon Water Resources Commission; Deans of the Western Association of Agricultural Experiment Station directors; California climate change conference; WasteReuse Symposium (joint with US Rep. Earl Blumenauer, D-OR), Washington/Oregon Emergency Management Conference; National Council for Air and Stream Improvement; Oregon Science Teachers Association; NPR Philosophy Talk; Oregon Public Health Association; Arlington Club, Portland; Association of Public & Land Grant Universities; Oregon Water Resources Congress.

2010: Northwest Transportation Conference, Oregon Environmental Quality Commission; Oregon Natural Resources Cabinet; Western Governors Conference on Drought; Oregon Global Warming Commission (2x); Oregon Board of Forestry; Society for Values in Higher Education; Piloting [water] Utilities’ Modeling

Applications; Oregon Environmental Quality Commission; Oregon House committee on environment and water; Oregon Senate committee on environment and natural resources

2011: Oregon State Lands board (chaired by the governor); Oregon Academy of sciences; NRC panel on the future of climate modeling; Oregon Water Resources board; Lower Columbia River Estuary partnership; Canadian Meteorological and Oceanographic Society; Western Governors Association; American Fisheries Society; World Climate Research Program Open Science Conference; Water Utility Climate Alliance general managers retreat

2012: US Forest Service regional leadership (including regional forester); Washington State University Extension Retreat; Western Governors Association; evening public event in Portland >300 attendees, front page of the Oregonian newspaper; Oregon State University Extension conference; Northwest Tribal Leaders Summit; Adaptation International conference; Oregon Global Warming Commission; Oregon Governor's Natural Resources Cabinet; Western States Water Council; Aspen Global Change Institute; International Society of Arboriculture; PNW Clean Water Association annual conference; Columbia Basin federal caucus

2013: American Fisheries Society; Committee of 25 (Palm Springs); Oregon Sustainable Bar (attorneys, Portland); Oregon Board of Forestry (Salem); Oregon Water Resources Commission (Corvallis)

2014: Forest Health Conference; Oregon drought - briefing for US Senator Jeff Merkley; Groundwater and climate change, UC Davis; Institute for Tribal Environmental Professionals training (2x); Seattle City Council; National Tribal Forum; Oregon Global Warming Commission; Water for Food conference (Seattle); Portland General Electric board of directors; Citizens Utility Board of Oregon (Portland); Ouranos Symposium (Québec); Idaho Environmental Forum (audience included the Lieutenant Governor)

2015: Oregon Sustainable Bar; Multnumah Athletic Club; American Planning Association national meeting, IPCC Technical Group on Data and Scenarios for Impacts Assessments (Palisades, New York); International Association for Landscape Ecology World Congress (Portland); seminar, UK Met Office Hadley Centre (Exeter, UK); Legislative Commission on Indian Services (Salem); keynote speech, Rogue Basin climate summit (Medford, OR; other keynotes included US Sens. Jeff Merkley and Ron Wyden); evening lecture, High Desert Museum (Bend, OR).

2016: National Integrated Drought Information System PNW pilot launch (Portland); keynote, Greenbelt Land Trust annual meeting; Greenlane Sustainable Business Network (Eugene); public lecture (sold out 850-seat auditorium), Fermi National Accelerator Laboratory, Illinois

#### Professional Societies

American Geophysical Union  
 American Meteorological Society  
 American Association of State Climatologists

#### Affiliations, Fellowships, and Awards

Adjunct Faculty, College of Public Health and Human Sciences, OSU, 2012-present  
 Affiliate Faculty, UW Department of Atmospheric Sciences, 2002-present.

University of Washington distinguished Staff Award 2008  
 Named one of the 25 most influential people in the Puget Sound region by Seattle Magazine, November 2008.  
 As lead author of the contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), shared in the 2007 Nobel Peace Prize.  
 NASA Group Achievement Award to the Upper Atmosphere Research Satellite team, 2006.  
 NASA global change fellowship, 1991-1994; Harvard College Scholarship (meritorious award), 1986; Rowland science fellowship, 1986.

#### Major grants awarded

USDA Regional approaches to Climate Change for PNW agriculture, co-PI, \$20.0m, 2011-2017  
 NSF Anticipating water scarcity, co-PI, \$4.3m, 2010-2016  
 DOI NW Climate Science Center, lead PI, \$4.2m 2010-2017 renewable  
 USDA Forest dieoff, climate change, human intervention, lead PI \$4.1m 2013-18  
 NOAA Climate Impacts Research Consortium, lead PI, \$3.8m, 2010-2015 renewable, *and*  
 NOAA Climate Impacts Research Consortium 2.0, lead PI, \$3.7m, 2015-2020 renewable.  
 USGS, Integrated scenarios, lead PI, \$0.4m, 2012-14  
 Bureau of Land Management, Climate Change technical assistance, lead PI, \$0.25m, 2010-15  
 Microsoft Corp., several awards, lead PI, total \$0.4m, 2008-13.  
 Seattle Public Utilities, lead PI, \$0.13m, 2012-14  
 Numerous other awards - funding sources Bonneville Power Administration, California Energy Commission, EPA, US Army Corps of Engineers, USDA, USGS, NASA, US Fish and Wildlife Service, US Department of Transportation, Union of Concerned Scientists.

#### Advising and Mentoring

Fulbright Scholars: Danda P. Adhikari (Nepal) 2010-11, Marie Schlenker (Germany) 2015-16  
 Postdoctoral researchers: Ahmed Salahuddin (2010-13), Robert Mera (2011-13), David Rupp (2011-14), Julie Vano (2013-15), Samantha Chisholm Hatfield (2013-16).  
 Graduate students: Meredith Payne (2009-11), Sihan Li (2011-present), Linnia Hawkins (2014-present), Danielle Moruzzi (2016-present).  
 Graduate thesis committee: Matt Cooper (2015), Iva Sokolovska (2016-pres.), Katy Serafin (2016-pres.)  
 Summer undergraduate researchers: Karin McKinnon, NOAA Hollings Fellow (2009), Kelsey Dudziak (2010), Kayla Novak (2012), Helen Mallett (2013), Christian McGillen (2014), Savannah Kisling (2015)

#### Publications

**h-index: 38 total citations 8828** (google scholar 1/4/17)

**publication number bold: pub was peer-reviewed**  
**underlined: contributes to h-factor**

**114.** Rupp, D.E., S. Li, P.W. Mote, N. Massey, S.N. Sparrow, and D.C.H. Wallom, 2016: Influence of the ocean and greenhouse gases on severe drought likelihood in the

- central US in 2012. *J. Clim.*, doi: 10.1175/JCLI-D-16-0294.1.
- 113.** Rupp, D.E., J.T. Abatzoglou, and P.W. Mote, 2016: Projections of 21st century climate of the Columbia River Basin. *Clim. Dyn.*, doi: 10.1007/s00382-016-3418-7.
- 112.** Mote, P.W., D.Rupp, S. Li, F. Otto, D. Sharp, F. Otto, P. Uhe, M. Xiao, D. Lettenmaier, H. Cullen, and M.R. Allen, 2016: Perspectives on the causes of exceptionally low 2015 snowpack in the western US. *Geophys. Research Letters*, 43, doi:10.1002/2016GL069965.
- 111.** Rupp, D.E., S. Li, P.W. Mote, K.M. Shell, N. Massey, S.N. Sparrow, D.C.H. Wallom, and M.R. Allen, 2016: Seasonal spatial patterns of projected anthropogenic warming in complex terrain: a modeling study of the western US. *Clim. Dyn.* DOI: 10.1007/s00382-016-3200-x
- 110.** National Academies of Sciences, Engineering, and Medicine, 2016: Attribution of Extreme Weather Events in the Context of Climate Change. Washington, DC: *National Academies Press*. doi: 10.17226/21852.
- 109.** Vano, Julie A., John B. Kim, David E. Rupp, and Philip W. Mote, 2016: Selecting climate change scenarios using impact-relevant sensitivities. *Geophys. Research Letts.* 42, no. 13 (2015): 5516-5525.
- 108.** Li, S., P.W. Mote, D. Vickers, R. Mera, D.E. Rupp, A. Salahuddin, M.R. Allen, and R. G. Jones, 2015: Evaluation of a regional climate modeling effort for the western US using a superensemble from climate-prediction.net. *J. Clim.*, doi: 10.1175/JCLI-D-14-00808.1.
- 107.** Mera, R., D. Rupp, N. Massey, M. Allen, P. Mote, and P.C. Frumhoff, 2015: Climate Change, Climate Justice and the Application of Probabilistic Event Attribution to Summer Heat Extremes in the California Central Valley. *Climatic Change*, doi: 10.1007/s10584-015-1474-3.
- 106.** Mote, P.W., M.R. Allen, R.G. Jones, S.Li, R. Mera, D.E. Rupp, A. Salahuddin, and D. Vickers, 2015: Superensemble regional climate modeling for the western US. *Bull. Amer. Meteorol. Soc.*, doi: 10.1175/BAMS-D-14-00090.1.
- 105.** Rupp, D. E., S. Li, N.Massey, S. N. Sparrow, P. W. Mote, and M. Allen, 2015: Anthropogenic influence on the changing likelihood of an exceptionally warm summer in Texas, 2011, *Geophys. Res. Lett.*, 42, doi:10.1002/2014GL062683.
- 104.** Mote, P.W., and S. Chisholm Hatfield, 2014: Assessing Climate Change Effects on Natural and Cultural Resources of Significance to Northwest Tribes, [www.sciencebase.gov/catalog/item/52fa3070e4b02baefb0492b7](http://www.sciencebase.gov/catalog/item/52fa3070e4b02baefb0492b7)
- 103.** Ralph, F.M., et al., 2014: A vision of future observations for western US extreme precipitation and flooding. *J. Contemporary Water Resources Research & Education*, 153, pp 16-32.
- 102.** Mote, P., A.K. Snover, S. Capalbo, S.D. Eigenbrode, P. Glick, J. Littell, R. Raymondi, and S. Reeder, 2014: Ch. 21: Northwest. *Climate Change Impacts in the United States: The Third National Climate Assessment*, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 495-521.
- 101.** Abatzoglou, J., D.E. Rupp, and P.W. Mote, 2014: Understanding seasonal climate variability and change in the Pacific Northwest of the United States. *J. Climate*, 27, 2125–2142 doi: 10.1175/JCLI-D-13-00218.1.
- 100.** Moss, R.H., G. A. Meehl, M.C. Lemos, J.B. Smith, J.R. Arnold, J.C. Arnott, D. Behar, G.P. Brasseur, S.B. Broomell, A.J. Busalacchi, S. Dessai, K.L. Ebi, J.A. Edmonds, J. Furlow, L. Goddard, H.C. Hartmann, J.W. Hurrell, J.W. Katzenberger, D.M. Liverman, P. Mote, S. C. Moser, A. Kumar, R. S. Pulwarty, E. A. Seyller, B. L. Turner, W. M. Washington, T. J. Wilbanks, 2013: Hell and High Water: Application-Relevant Climate Adaptation Science. *Science*, doi: 10.1126/science.1239569.
- 99.** Dalton, M., P.W. Mote, and A.K. Snover, eds., 2013: *Climate Change in the Northwest: Implications for Our Landscapes, Waters, and Communities*. 224 pp. Island Press.
- 98.** Mote, P., J. Abatzoglou, and K. Kunkel, 2013: Climate change in the Northwest. Chapter 2 in Dalton, M., P.W. Mote, and A.K. Snover, eds., 2013: *Climate Change in the Northwest: Implications for Our Landscapes, Waters, and Communities*. 224 pp. Island Press.
- 97.** Rupp, D.E., J. Abatzoglou, K.C. Hegewisch, and P.W. Mote, 2013: Evaluation of CMIP5 20th century climate simulations for the Pacific Northwest US. *J. Geophys. Res.*, doi:10.1002/jgrd.50843.
- 96.** Ashfaq, M., S. Ghosh, S.-C. Kao, L.C. Bowling, P. Mote, D. Touma, S.A. Rauscher, and N.S. Diffenbaugh, 2013: Nearterm acceleration of hydroclimatic change in the western U.S., *J. Geophys. Res. Atmos.*, 118, 10,676–10,693, doi:10.1002/jgrd.50816.
- 95.** Vaughan, D. G., J. C. Comiso, I. Allison, J. Carrasco, G. Kaser, R. Kwok, P. Mote, T. Murray, F. Paul, J. Ren, E. Rignot, O. Solomina, K. Steffen and T. Zhang, 2013: Observations: Cryosphere. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T. F., D. Qin, G.-K. Plattner, M. Tignor, S. K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P. M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
- 94.** Rupp, D.E., P.W. Mote, N.L. Bindoff, P.A. Stott, D.A. Robinson, 2013: Detection and Attribution of Observed Changes in Northern Hemisphere Spring Snow Cover. *J.*

- Climate, 26, 6904–6914. doi: <http://dx.doi.org/10.1175/JCLI-D-12-00563.1>
- 93.** Rupp, D.E., P.W. Mote, F.E.L. Otto, and M.R. Allen, 2013: The human influence on the probability of low precipitation in the central United States in 2012. [in *Explaining Extreme Events of 2012 from a Climate Perspective*]. *Bull. Amer. Meteorol. Soc.*, 94 (9), S2-S6.
- 92.** Jaeger, W. K., A.J. Plantinga, H. Chang, K. Dello, G. Grant, D. Hulse, J.J. McDonnell, S. Lancaster, H. Moradkhani, A.T. Morzillo, P. Mote, A. Nolin, M. Santelmann, and J. Wu, 2013: Toward a formal definition of water scarcity in natural-human systems, *Water Resour. Res.*, 49, 4506–4517, doi:10.1002/wrcr.20249.
91. Mauger, G. S., K. A. Bumbaco, G. J. Hakim, and P. W. Mote, 2013: Optimal design of a climatological network: Beyond practical considerations, *Geosci. Instrum. Method. Data Syst. Discuss.*, 3, 193-219, doi: 10.5194/gid-3-193-2013.
- 90.** National Research Council 2012. *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*. R.A. Dalrymple and A. Linn, eds., National Academy Press, 201pp.
- 89.** Rupp, D.E., P.W. Mote, et al., 2012: Did human influence on climate make the 2011 Texas drought more probable? In Peterson, T., P.A. Stott, and S. Herring, eds, 2012: Explaining 2011. *Bulletin of the American Meteorological Society*, doi: 10.1175/BAMS-D-12-00021.1
88. MacArthur, J., P. Mote, J. Ideker, M. Figliozzi, and M. Lee, 2012: Climate Change Impact Assessment for Surface Transportation in the Pacific Northwest and Alaska. *Oregon Transp. Resrch and Ed. Consortium*, OTREC-RR-12-01.
87. Mote, P.W., and K.T. Redmond, 2011: Western climate change. in *Ecological Consequences of Climate Change*, E.A. Beever and J.L. Belant, eds., Taylor and Francis. ISBN: 978-1-4200-8720-8.
- 86.** Mote, P.W., L. Brekke, P. Duffy, and E. Maurer, 2011: Guidelines for constructing climate scenarios. *EOS, Transactions, Amer. Geophys. Union*, **92**, doi:10.1029/2011EO310001.
- 85.** Beever, E.A., C. Ray, J.L. Wilkening, P.F. Brussard, and P.W. Mote, 2011: Contemporary climate change alters the pace and drivers of extinction. *Global Change Biology*, doi:10.1111/j.1365-2486.2010.02389.x.
- 84.** Dello, K.D., and P.W. Mote, eds, 2010: Oregon Climate Assessment Report. COAS, OSU.
- 83.** Mote, P.W., et al., 2010: Climate change in Oregon's land and marine environments. Chapter 1 in Dello, K.D., and P.W. Mote, eds, Oregon Climate Assessment Report. COAS, OSU.
- 82.** Bumbaco, K., and P.W. Mote, 2010: Three recent flavors of drought in the Pacific Northwest. *J. Appl. Met and Clim.* **49** 2058-2068 doi:10.1175/2010JAMC 2423.1.
- 81.** National Research Council, 2010: Adapting to Climate Change. K. Jacobs and T. Wilbanks, eds., America's Climate Choices: Panel on Adapting to the Impacts of Climate Change. Washington, DC: The National Academies Press. 244pp.
- 80.** Minder, J. R., P. W. Mote, and J. D. Lundquist (2010), Surface temperature lapse rates over complex terrain: Lessons from the Cascade Mountains, *J. Geophys. Res.*, 115, D14122, doi:10.1029/2009JD013493.
- 79.** Slaughter, R., A.F. Hamlet, D. Huppert, J. Hamilton, and P.W. Mote, 2010: Mandates vs. markets: Addressing over-allocation of Pacific Northwest river basins. *Water Policy*, 12, 305-317, doi: 10.2166/wp.2009.152.
- 78.** Mote, P.W., and E.P. Salathé Jr., 2010: Future climate in the Pacific Northwest. *Clim. Change*, doi: 10.1007/s10584-010-9848-z.
- 77.** Beever, E.A., C. Ray, P.W. Mote, and J.L. Wilkening, 2010: Testing alternative models of climate-mediated extirpations. *Ecol. Appl.*, 20, 164-178.
76. Mote, P.W., 2009: Variability and trends in mountain snowpacks in western North America. Chapter 4 in *Climate Warming in western North America: evidence and environmental effects*, Frederic H. Wagner, ed., University of Utah Press.
- 75.** Zhang, Y., V. Dulière, P. Mote, and E.P. Salathé Jr., 2009: Evaluation of WRF and HadRM mesoscale climate simulations over the United States Pacific Northwest, *J. Climate*, 22, doi: 10.1175/2009JCLI2875.1.
- 74.** Mote, P.W., and E.P. Salathé Jr., 2009: Future climate in the Pacific Northwest. Chapter 1 in *The Washington Climate Change Impacts Assessment: Evaluating Washington's Future in a Changing Climate*, Climate Impacts Group, University of Washington, Seattle, Washington.
- 73.** Brown, R.D., and P.W. Mote, 2009: The response of northern hemisphere snow cover to a changing climate. *J. Climate*, 22, doi: 10.1175/2008JCLI2665.1.
- 72.** Casola, J.H., L. Cuo, B. Livney, D.P. Lettenmaier, P.W. Mote, and J.M. Wallace, 2009: Assessing the impacts of global warming on Pacific Northwest snowpack. *J. Climate*, 22, doi: 10.1175/2008JCLI2612.1.
- 71.** Fueglistaler, S., A.E. Dessler, T.J. Dunkerton, I. Folkins, Q. Fu, and P.W. Mote, 2009: The tropical tropopause layer. *Rev. Geophys.*, 47, RG1004, doi: 10.1029/2008RG000267.
70. Mote, P.W., and G. Kaser, 2008: The shrinking glaciers of Kilimanjaro: can global warming be blamed? pp 63-82 in *Melting Glaciers and Rising Sea Levels: Im-*

- pacts and Implications*, P.S. Ranade, ed. Icfai University Press, Hyderabad, India.
69. Mote, P., E. Salathé, V. Dulière, and E. Jump, 2008: *Scenarios of future climate for the Pacific Northwest*. A report of the Climate Impacts Group for the State of Washington. 14 pp.
68. Kaser, G., and P.W. Mote, 2008: Glestcherschwund am Kilimanjaro. *Spectrum der Wissenschaft*, Januar, 62-69.
67. Mote, P.W., A. Peterson, H. Shipman, W.S. Reeder, and L. Whitely Binder, 2008: Sea level rise in the coastal waters of Washington. Report for the *Climate Impacts Group*, University of Washington, Seattle. 11pp.
66. National Research Council, 2008: *Research and Networks for Decision Support in the NOAA Sectoral Applications Research Program*. H.M. Ingram and P.C. Stern, eds., Committee on the Human Dimensions of Global Change, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press. 85pp.
65. Mote, P.W., A.F. Hamlet, and E.P. Salathé, Jr., 2007: Has spring snowpack declined in the Washington Cascades? *Hydrology and Earth System Sciences Discussions*, 4, 2073-2110, and *Hydrology and Earth System Sciences* 12, 193-206 (2008).
64. Mote, P.W., J. Casson, A. Hamlet, and D. Reading, 2007: Sensitivity of Northwest ski areas to warming. *Proc. Western Snow Conf. 2007*, B. McGurk, ed., 63-67.
63. Salathé, E.P., P.W. Mote, and M.W. Wiley, 2007: Review of scenario selection and downscaling methods for the assessment of climate change impacts on hydrology in the United States Pacific Northwest. *International Journal of Climatology*, 27, 1611-1621, doi: 10.1002/joc.1540.
62. Colman, R., W. Collins, J. Haywood, M. Manning, and P. Mote, 2007: The Physical Science behind climate change. *Scientific American*, August, 64-71.
61. Mote, P.W., and G. Kaser, 2007: The shrinking glaciers of Kilimanjaro: can global warming be blamed? *American Scientist*, 95, 318-325.
60. Trenberth, K.E., P.D. Jones, P. Ambenje, R. Bojariu, D. Easterling, A. Klein Tank, D. Parker, F. Rahimzadeh, J.A. Renwick, M. Rusticucci, B. Soden and P. Zhai, 2007: Observations: Surface and Atmospheric Climate Change. Chapter 3 in *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. 102pp.
59. Lemke, P., J. Ren, R.B. Alley, I. Allison, J. Carrasco, G. Flato, Y. Fujii, G. Kaser, P. Mote, R.H. Thomas and T. Zhang, 2007: Observations: Changes in Snow, Ice and Frozen Ground. Chapter 4 in: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. 48pp.
58. Hamlet, A.F., P.W. Mote, M.P. Clark, and D.P. Lettenmaier, 2007: 20th century trends in runoff, evapotranspiration, and soil moisture in the Western U.S. *J. of Climate*, 20, 1468-1486.
57. Keeton, W.S., P.W. Mote, and J.F. Franklin, 2007. Climate variability, climate change, and western wildfire with implications for the urban-wildland interface. In A. Troy and R. Kennedy (eds.), *Living on the Edge: Economic, Institutional and Management Perspectives on Wildfire Hazard in the Urban Interface*, pp 225-253. Elsevier Ltd., Oxford.
56. Alley, R., et al., 2007: Summary for Policymakers. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. 18pp.
55. Miles, E.L., A.K. Snover, L.C. Whitely Binder, E. Sarachik, P.W. Mote, and N.J. Mantua, 2007: An approach to designing a National Climate Service. *Proceedings of the National Academies of Sciences*, 103, 19616-19623. doi: 10.1073/pnas.0609090103.
54. Mote, P.W., 2006: Climate-driven variability and trends in mountain snowpack in western North America, *J. Climate*, 19, 6209-6220.
53. Mote, P.W., and R. Frey, 2006: Variability of clouds and water vapor in low latitudes: view from Moderate Resolution Imaging Spectroradiometer (MODIS), *J. Geophys. Res.*, 111, D16101, doi:10.1029/2005JD006791. 14pp.
52. Mote, P.W., E.P. Salathé and C. Peacock, 2006: Energy-relevant impacts of climate change in the Pacific Northwest. A report prepared for Portland General Electric Center for Science in the Earth System, University of Washington, Seattle. 19pp.
51. Mote, P.W., A.F. Hamlet, and D.P. Lettenmaier, 2005: Variability and trends in mountain snowpack in western North America. In *Proceedings of the Western Snow Conference, April 19-22, 2004, Richmond, BC*. K. Elder et al., eds., 15-22.
50. Mote, P.W., E.P. Salathé, and C. Peacock. 2005. *Scenarios of Future Climate for the Pacific Northwest*. Climate Impacts Group, Center for Science in the Earth

System, Joint Institute for the Study of the Atmosphere and Ocean, University of Washington. 13pp.

49. Mote, P.W., A.K. Snover, L.C. Whitely Binder, A.F. Hamlet, and N.J. Mantua, 2005: *Uncertain Future: Climate Change and Its Effects on Puget Sound - Foundation Document*. Climate Impacts Group, Center for Science in the Earth System, Joint Institute for the Study of the Atmosphere and Oceans, University of Washington. 42pp.

48. Snover, A.K., P.W. Mote, L.C. Whitely Binder, A. F. Hamlet, and N.J. Mantua. 2005. *Uncertain Future: Climate Change and Its Effects on Puget Sound*. Climate Impacts Group, Center for Science in the Earth System, Joint Institute for the Study of the Atmosphere and Oceans, University of Washington. 36pp.

47. Hamlet, A.F., P.W. Mote, M.P. Clark, and D.P. Lettenmaier, 2005: Effects of precipitation and temperature variability on snowpack trends in the western United States, *J. Climate*, 18, 4545–4561.

46. Mote, P.W., A.F. Hamlet, M.P. Clark, and D.P. Lettenmaier, 2005: Declining mountain snowpack in western North America, *Bull. of the Amer. Meteorol. Soc.*, 86, 39–49.

45. Mote, P.W., 2004: Global climate is changing. (and) Response to Patrick Michaels. *Spring Hill Review*, L. Austen, ed. 2pp.

44. McKenzie, D., Z. Gedalof, D. Peterson, and P. Mote, 2004: Climatic change, wildfire, and conservation, *Cons. Biol.*, 18, 890–902.

43. Mote, P.W., 2004: Declines in snow water equivalent in the Pacific Northwest and their climatic causes. In *Proc. Western Snow Conf.*, B. McGurk, ed., 77–83.

42. Mote, P.W., 2004: “How and why is Northwest climate changing?” in *Climate Change, Carbon, and Forestry in Northwestern North America*, edited by David L. Peterson and John L. Innes. Pacific Northwest research station general technical report, pp 11–22.

41. Mote, P.W., and T.J. Dunkerton, 2004: Kelvin wave signatures in stratospheric trace constituents. *J. Geophys. Res.*, 109, 10.1029/2002JD00370. 9pp.

40. Mote, P.W., A.F. Hamlet, and M. Clark, 2004: Variability and trends in mountain snowpack in western North America. *Proc. 15<sup>th</sup> Conf. on Global Climate Variations and Change*, Amer. Meteorol. Soc., Boston Mass. 10pp.

39. Mote, P.W., 2003: Twentieth-century fluctuations and trends in temperature, precipitation, and mountain snowpack in the Puget Sound/Georgia Basin region, *Canadian Water Resources Journal*, 28, 567–586.

38. Mote, P.W., 2003: Trends in temperature and precipitation in the Pacific Northwest, *Northwest Science*, 77, 271–282.

37. Mote, P.W., E.A. Parson, A.F. Hamlet, W.S. Keeton, D. Lettenmaier, N. Mantua, E.L. Miles, D.W. Peterson, D.L. Peterson, R. Slaughter, and A.K. Snover, 2003: Preparing for climatic change: the water, salmon, and forests of the Pacific Northwest. *Climatic Change*, 61, 45–88.

36. Mote, P.W., 2003: Trends in snow water equivalent in the Pacific Northwest and their climatic causes, *Geophys. Res. Letts.* 30, doi:10.1029/2003GL017258. 4pp.

35. Mote, P.W., and T.J. Dunkerton, 2003: Subseasonal water vapor variability in the tropical tropopause region. Proceedings of the Symposium on variability of water vapor, American Meteorological Society, Boston, MA.

34. Mote, P.W., and N.J. Mantua, 2002. Causes of climate variability in the Pacific Northwest. *Climate Report* 3(2) 2–6.

33. Snover, A.K., and P.W. Mote, 2002. Climate impacts on the natural resources of the Pacific Northwest. *Climate Report* 3(2) 7–11.

32. Mote, P.W., and N.J. Mantua, 2002: Coastal upwelling in a warmer future. *Geophys. Res. Letts.*, 10.1029/2002GL016086. 4pp.

31. Mantua, N.J., and P.W. Mote, 2002: Uncertainty in scenarios of human caused climate change. *Amer. Fish. Soc. Symp.*, 32, 263–272.

30. Mote, P.W., T.J. Dunkerton, and D. Wu, 2002: Kelvin waves in stratospheric temperature observed by the Microwave Limb Sounder. *J. Geophys. Res.*, 107(D14), 10.1029/2001JD001056, 2002, 10pp.

29. Mote, P.W., 2001: Scientific assessment of climate change: global and regional scales. White Paper. JISAO/SMA Climate Impacts Group, University of Washington, Seattle. 10pp.

28. Mote, P.W., and A.F. Hamlet, 2001: Anthropogenic climate change and snow in the Pacific Northwest. In *Proceedings of the Western Snow Conference*, K. Elder, ed., pp. 51-52.

27. Parson, E.A., P.W. Mote, A. Hamlet, N. Mantua, A. Snover, W. Keeton, E. Miles, D. Canning, and K. Ideker, 2001: Potential consequences of climate variability and change for the Pacific Northwest. Chapter 9 in *Climate Change Impacts in the United States, Foundation, National Assessment Synthesis Team*. Cambridge University Press. pp 247–280.

26. Gettelman, A., J. Harries, and P. Mote, 2000: Distribution and Variability of Water Vapour, Chapter 3 in *SPARC Assessment of Water Vapour in the Upper Troposphere and Lower Stratosphere*, D. Kley, J. Russell,

and C. Phillips, eds., World Climate Research Programme, Paris. pp 197–264.

**25.** Mote, P.W., H.L. Clark, T.J. Dunkerton, R.S. Harwood, and H.C. Pumphrey, 2000: Intraseasonal variations of water vapor in the tropical upper troposphere and tropopause region. *J. Geophys. Res.*, 105, 17,457–17,470.

**24. book:** Mote, P.W., and A. O'Neill, editors, 2000: *Numerical Modeling of the Global Atmosphere in the Climate System*, Kluwer Academic Press, Dordrecht. 517pp.

**23.** Mote, P.W., 2000: Designing a GCM experiment: Fundamentals of the planning process. In: *Numerical Modeling of the Global Atmosphere in the Climate System*, pp 119–126, P.W. Mote and A. O'Neill (eds), Kluwer Academic Press, Dordrecht.

**22.** Mote, P.W., E. Sarachik, and M. Déqué, 2000: Seasonal predictions. In: *Numerical Modeling of the Global Atmosphere in the Climate System*, pp 387–402, P.W. Mote and A. O'Neill (eds), Kluwer Academic Press, Dordrecht.

**21.** Mote, P.W., D. Paquin, and J. Yin, 2000: Snow White and the six dwarves run climate models in Italy. *Bull. of the Amer. Meteorol. Soc.*, 81, 1041–1045.

**20.** Mote, P.W., M. Holmberg, and N.J. Mantua, 1999: *Impacts of climate variability and change: Pacific Northwest. Executive summary.* A report of the JISAO/SMA Climate Impacts Group. 12 pp.

**19.** Mote, P.W., and 18 co-authors, 1999: *Impacts of climate variability and change: Pacific Northwest.* A report of the JISAO/SMA Climate Impacts Group. 110 pp.

**18.** Miles, E.L., N. Mantua, and P. Mote, 1999: ENSO impacts on the Pacific Northwest: An integrated assessment. *25th anniversary public proceedings of the School of Marine Affairs, May 7-8, 1998, Seattle.* W. Wooster and W. T. Burke (eds), University of Washington, pp 90–98.

**17.** Mote, P.W., W.S. Keeton, and J.F. Franklin, 1999: Decadal variations in forest fire activity in the Pacific Northwest. *11th Conference on Applied Climatology*, American Meteorological Society, pp 155–156.

**16.** Clark, H.L., R.S. Harwood, P.W. Mote, and W.G. Read, 1998: Variability of water vapor in the tropical upper troposphere as measured by the Microwave Limb Sounder on UARS. *J. Geophys. Res.*, 103, 31,695–31,708.

**15.** Mote, P.W., T.J. Dunkerton, and H.C. Pumphrey, 1998: Sub-seasonal variations in lower stratospheric water vapor. *Geophys. Res. Lett.*, 25, 2445–2448.

**14.** Mote, P.W., T.J. Dunkerton, M.E. McIntyre, E.A. Ray, P.H. Haynes, and James M. Russell III, 1998: Vertical velocity, vertical diffusion, and dilution by midlatitude air

in the tropical lower stratosphere. *J. Geophys. Res.*, 103, 8651–8666.

**13.** Mote, P.W., P.A. Stott, and R.S. Harwood, 1998: Stratospheric flow during two recent winters simulated by a mechanistic model. *Mon. Wea. Rev.*, 128, 1655–1680.

**12.** Elson, L.S., W. Read, J.W. Waters, P.W. Mote, J.S. Kinnersley, and R.S. Harwood, 1996: Space-time variations in water vapor as observed by the UARS Microwave Limb Sounder. *J. Geophys. Res.*, 101, 9001–9015.

**11.** Mote, P.W., K.H. Rosenlof, M.E. McIntyre, E.S. Carr, J.C. Gille, J.R. Holton, J.S. Kinnersley, H.C. Pumphrey, J.M. Russell III, and J.W. Waters, 1996: An atmospheric tape recorder: The imprint of tropical tropopause temperatures on stratospheric water vapor. *J. Geophys. Res.*, 101, 3989–4006.

**10.** Mote, P.W., 1995: Reconsideration of the cause of dry air in the southern middle latitude stratosphere. *Geophys. Res. Letters*, 22, 2025–2028.

**9.** Mote, P.W., K.H. Rosenlof, J.R. Holton, R.S. Harwood, and J.W. Waters, 1995: Seasonal variations of water vapor in the tropical lower stratosphere, *Geophys. Res. Letters*, 22, 1093–1096.

**8.** Carr, E.S., R.S. Harwood, P.W. Mote, G.E. Peckham, R.A. Suttie, W.A. Lahoz, A. O'Neill, L. Froidevaux, R.F. Jarnot, W.G. Read, J.W. Waters, and R. Swinbank, 1995: MLS stratospheric water vapor in the tropics, *Geophys. Res. Letters*, 22, 691–694.

**7.** Mote, P.W., 1995: The annual cycle of stratospheric water vapor in a general circulation model. *J. Geophys. Res.*, 100, 7363–7380.

**6.** Mote, P.W., 1994: Assessment of stratospheric water vapor in a general circulation model. PhD Thesis, University of Washington, Seattle. Advisor Jim Holton.

**5.** Mote, P.W., J.R. Holton, and B.A. Boville, 1994: Characteristics of stratosphere-troposphere exchange in a general circulation model. *J. Geophys. Res.*, 99, 16,815–16,829.

**4.** Mote, P.W., J.R. Holton, J.M. Russell III, and B.A. Boville, 1993: A comparison of observed (HALOE) and modeled (CCM2) methane and stratospheric water vapor. *Geophys. Res. Lett.*, 20, 1419–1422.

**3.** Mote, P.W., and J.R. Holton, 1992: Stratospheric water vapor in the NCAR CCM2. Eighth Conference on the Middle Atmosphere, January 5-10 1992, Atlanta, Georgia, American Meteorological Society, pp. 41–46.

**2.** Boville, B.A., J.R. Holton and P.W. Mote, 1991: Simulation of the Pinatubo aerosol cloud in a general circulation model. *Geophys. Res. Lett.* 18, 2281–2284.



1. Mote, P.W., J.R. Holton and J.M. Wallace, 1991: Variability in total ozone associated with baroclinic waves. *J. Atmos. Sci* 48, 1900–1903.

as an undergraduate researcher, contributed to the research presented in

Rienecker, M.M., C.N.K. Mooers, and A.R. Robinson, 1987: Dynamical Interpolation and Forecast of the Evolution of Mesoscale Features off Northern California. *Journal of Physical Oceanography*, vol. 17, issue 8, pp. 1189-1213.

*and*

Balkanski, Y.J., and D.J. Jacob, 1990: Transport of continental air to the subantarctic Indian Ocean. *Tellus*, 42, 62-75. DOI: 10.1034/j.1600-0889.1990.00008.x