

ANTHONY LEROY WESTERLING

Ernest and Julio Gallo Management Program, School of Engineering, University of California, Merced, 5200 Lake Rd., Merced, CA 95343 voice: 209 756 8793
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EDUCATION

University of California, San Diego

Department of Economics and School of International Relations and Pacific Studies

Joint Ph.D. 2000, Economics and International Affairs

Advisor: Dr. Gordon J. MacDonald (IRPS, deceased)

Committee: Richard T. Carson (Economics, Chair), Clive W.J. Granger (Economics, deceased), Barry J. Naughton (IRPS), Jason M. Shachat (Economics), Richard C.J. Somerville (SIO)

Dissertation: *Climate Change and Variability, and the Role of Information in Catastrophe Insurance Markets*

University of California, Los Angeles

B.A. 1987, Economics/International Area Studies

PROFESSIONAL EXPERIENCE

Associate Professor - Management, School of Engineering. *UC Merced*, 2015 - 2018.

Associate Professor - Environmental Engineering, School of Engineering. *UC Merced*, 2010 - 2015.

Associate Professor - Geography, Cognitive and Information Sciences, School of Social Sciences, Humanities and Arts. *UC Merced*, 2010 - 2015.

Assistant Professor - Environmental Engineering, School of Engineering. *UC Merced*, 2006 - 2010.

Assistant Professor - Geography, School of Social Sciences, Humanities and Arts. *UC Merced*, 2006 - 2010.

Assistant Project Scientist - Climate Research Division, *Scripps Institution of Oceanography*, La Jolla, CA, 2004 - 2006. PI: Daniel Cayan.

Postgraduate Research Meteorologist - Climate Research Division, *Scripps Institution of Oceanography*, La Jolla, CA, 2000 - 2004. PI: Daniel Cayan

Instructor - *Graduate School of International Relations and Pacific Studies Pre-Academic Program*, International Career Associates Program, UCSD, Summer 1997 - 1998.

Graduate Student Researcher - *Graduate School of International Relations and Pacific Studies*, University of California, San Diego, 1992 - 1997. PI: Dr. Gordon J. MacDonald.

Teaching Assistant - UCSD: *International Economics* 1997 & 1994, *Managerial Economics* 1996, *Politics of International Economic Relations* 1993, *3rd College Writing Program* 1992.

Visiting Researcher - Young Scientist Summer Program, *International Institute for Applied Systems Analysis*, Laxenburg, Austria, 1996. Support: NSF/American Acad. of Arts & Sciences.

Staff Research Associate - *California Environmental Technology Center*, Scripps Institution of Oceanography, La Jolla, CA, 1994 - 1995.

Prevention Effectiveness Summer Intern - *Air Pollution and Respiratory Health Branch, National Center for Environmental Health, Centers for Disease Control*, Atlanta, GA, 1993.

Assistant General Manager and Associate Editor - *Journal of Environment & Development*, La Jolla, CA, 1991 - 1993.

Research Associate - *Economic Analysis Corporation*, Century City, CA, 1989 - 1990.

English Instructor - *Hangzhou University of Commerce*, Hangzhou, Zhejiang Province, People's Republic of China, 1988 - 1989.

State Department Summer Intern - Office of Land Transport and Maritime Affairs, Bureau of Economics, *U.S. State Department*, Washington, D.C., Summer 1987.

GRADUATE STUDENT RESEARCHERS

Qingqing Xu, UC Merced, Environmental Systems (Ph.D., in progress, Chair, Dissertation Committee)
Joseph Crockett, UC Merced, Environmental Systems (M.S. expected 2017, Chair, Dissertation Committee)
Alisa R. Keyser, UC Merced, Environmental Systems (Ph.D. Defended 2016, Filed 2016, Chair, Dissertation Committee)
Kaitlin Lubetkin, UC Merced, Environmental Systems (Ph.D. Defended 2014, Co-Chair, Dissertation Committee)
Benjamin P. Bryant, Pardee RAND Graduate School, Policy Analysis (Ph.D., Defended 2012, Filed 2013, Member, Dissertation Committee)

OTHER GRADUATE STUDENT MENTEES

James Stinecipher, UC Merced, Environmental Systems (Ph.D., Advanced to Candidacy 2016, Dissertation Committee Member, Qualifying Exam Committee Member)
Joseph Rungee, UC Merced, Environmental Systems (Ph.D., Advanced to Candidacy 2016, Qualifying Exam Committee Member)
Daniel Winkler, UC Merced, Environmental Systems (M.S. Completed 2013, Committee Member)
Miguel Fernandez, UC Merced, Environmental Systems (Ph.D., Defended 2013, Dissertation Committee Member)
YaQiong Lu, UC Merced, Environmental Systems (Ph.D., Advanced to Candidacy 2010, Qualifying Exam Committee Member)
Thomas Corringham, UC San Diego, Economics (Ph.D., Advanced to Candidacy 2006, Qualifying Exam Committee Member)

PUBLICATIONS

(underlined author's were students when they contributed to the indicated publication)

Peer-reviewed Manuscripts in progress:

E. Vincent, **A.L. Westerling**, T. Matlock. (in preparation). Opportunities for scientists to improve media coverage of climate change

T. Kitzberger, D.A. Falk, **A.L. Westerling**, T.W. Swetnam. (major revision). Direct and indirect climate controls predict heterogeneous early-mid 21st century wildfire burned area across western and boreal North America.

Keyser, A.R., & **Westerling, A.L.** (minor revision). Climate drives inter-annual variability in probability of high severity fire occurrence in the western United States. Submitted to Environmental Research Letters

Matlock, T., Coe, C.M., Montoya, A.J., & **Westerling, A.L.** (minor revision). Metaphor in wildfire communication. Submitted to Environmental Communication.

K. Lubetkin, L. Kueppers, **A.L. Westerling** (in review). Climate and landscape drive conifer encroachment into subalpine meadows in the central Sierra Nevada, California. Submitted to Ecological Applications

Liang, Shuang; Hurteau, Matthew; **Westerling, Anthony L.** (in review) Committed decline in carbon carrying capacity with changing climate in the Sierra Nevada.

Peer-reviewed Publications:

Liang, Shuang; Hurteau, Matthew; **Westerling, Anthony L.** 2016. Response of Sierra Nevada forests to projected climate-wildfire interactions. **Global Change Biology**. Early view version: Accepted manuscript published online November 1, 2016.

Westerling ALR. 2016 Increasing western US forest wildfire activity: sensitivity to changes in the timing of spring. **Phil. Trans. R. Soc. B** 371: 20150178. <http://dx.doi.org/10.1098/rstb.2015.0178>

A. LeRoy Westerling, Timothy J. Brown, Tania Schoennagel, Thomas W. Swetnam, Monica G. Turner, and Thomas T. Veblen. 2016. Climate and Wildfire in Western US Forests. Chapter 3 in **Forest Conservation in the**

Anthropocene: Science, Policy, and Practice. Edited by V. Alaric Sample, R. Patrick Bixler, and Char Miller. University Press of Colorado. August, 2016. pp 43 - 56.

Barnosky, A D, Matlock, T, Christensen, J, Han, H, Miles, J, Rice, R E, **Westerling**, L and White, L 2016 Chapter 9. Establishing Common Ground: Finding Better Ways to Communicate About Climate Disruption. In Special Collection: Bending the Curve: Ten scalable solutions for carbon neutrality and climate stability. **Collabra**, 2(1): 23, pp. 1-20, DOI: <http://dx.doi.org/10.1525/collabra.68>

Monica G. Turner, Daniel C. Donato, Winslow D. Hansen, Brian J. Harvey, William H. Romme, and **A. LeRoy Westerling**. 2016: Climate Change and Novel Disturbance Regimes in National Park Landscapes. Chapter 5 in **Science, Conservation and National Parks**. Editors: Steven R. Beissinger, David D. Ackerly, Holly Doremus, and Gary E. Machlis. University of Chicago Press. December, 2016.

B.P. Bryant, **A.L Westerling** 2014: Scenarios for future wildfire risk in California: links between changing demography, land use, climate and wildfire, **Environmetrics** 25(6):454-471

Westerling, Brown, Schoennagel, Swetnam, Turner, Veblen 2014: Briefing: Climate and Wildfire in Western US Forests, in Sample, V. Alaric and R. Patrick Bixler (eds.). 2014. **Forest Conservation and Management in the Anthropocene**. General Technical Report. Fort Collins, CO: US Department of Agriculture, Forest Service. Rocky Mountain Research Station.

Hurteau, M.D., **A.L. Westerling**, C. Wiedinmyer, B.P Bryant 2014: "Projected Effects of Climate and Development On California Wildfire Emissions through 2100," **Journal of Environmental Science and Technology**, 48 2298-2304.

Pierce, D. W., **Westerling, A. L.**, and Oyler, J. 2013: Future humidity trends over the western United States in the CMIP5 global climate models and variable infiltration capacity hydrological modeling system, **Hydrol. Earth Syst. Sci.**, 17, 1833-1850, doi:10.5194/hess-17-1833-2013, 2013.

Fleishman, Belnap, Cobb, Enquist, Ford, MacDonald, Pellant, Schoennagel, Schmit, Schwartz, Van Drunick, **Westerling**, 2013: "Chapter 8: Natural Ecosystems" **The Southwest Climate Assessment Technical Report**.

Bryant, B.P., **A.L. Westerling**, 2012: "Scenarios to Evaluate Long-term Wildfire Risk in California: new methods for considering links between changing demography, land use and climate" **Public Interest Energy Research, California Energy Commission**, Sacramento, CA.

Westerling, A.L., B.P. Bryant, H.K. Preisler, T.P. Holmes, H. Hidalgo, T. Das, and S. Shrestha 2011: "Climate Change and Growth Scenarios for California Wildfire" **Climatic Change**, 109(s1):445-463.

Smithwick, E. A. H., **A. L. Westerling**, M. G. Turner, W. H. Romme, M. G. Ryan 2011: Vulnerability of Landscape Carbon Fluxes to Future Climate and Fire in the Greater Yellowstone Ecosystem, **Questioning Greater Yellowstone's Future: Climate, Land Use, and Invasive Species. Proceedings of the 10th Biennial Scientific Conference on the Greater Yellowstone Ecosystem. October 11-13, 2010, Mammoth Hot Springs Hotel, Yellowstone National Park**. C. Andersen, ed., 191-198.

Westerling, A.L., M.G. Turner, E.H. Smithwick, W.H. Romme, M.G. Ryan 2011: "Continued warming could transform Greater Yellowstone fire regimes by mid-21st Century" **Proceedings of the National Academy of Sciences**, 108(32),13165-13170.

Preisler, H.K., **A.L. Westerling**, K. M. Gebert, F. Munoz-Arriola, T. P. Holmes 2011: "Spatially Explicit Forecasts of Large Wildland Fire Probability and Suppression Costs for California" **International Journal of Wildland Fire**, 20 508-517.

Westerling, A. L. 2009: "Wildfires," Chapter 8 in **Climate Change Science and Policy**, Schneider, Mastrandrea, Rosencranz and Kuntz-Duriseti, Eds., Island Press.¹

Spracklen D. V., L. J. Mickley, J. A. Logan, R. C. Hudman, R. Yevich, M. D. Flannigan, **A. L. Westerling** 2009: "Impacts of climate change from 2000 to 2050 on wildfire activity and carbonaceous aerosol concentrations the western United States," **Journal of Geophysical Research**, 114, D20301.

¹ Note that this is the English version of number 12.

- Westerling, A. L., B. P. Bryant, H. K. Preisler, T. P. Holmes, H. G. Hidalgo, T. Das** 2009: "Climate Change, Growth and California Wildfire" *Public Interest Energy Research, California Energy Commission*, Sacramento, CA.
- Bryant, B. P. and A. L. Westerling** 2009: "Potential Effects of Climate Change on Residential Wildfire Risk in California" *Public Interest Energy Research, California Energy Commission*. Sacramento, CA.
- Littell, J. S., D. McKenzie, D. L. Peterson, and A. L. Westerling** 2009: "Climate and Wildfire Area Burned in Western U.S. Ecoprovinces, 1916-2003," *Ecological Applications*.
- Bryant, B.P., A.L Westerling** 2009: *AIGIS: Areal Interpolation for GIS data, Comprehensive R Archive Network*, contributed software package for R.
- Westerling, A.L., H.G. Hidalgo, D.R. Cayan, T.W. Swetnam**: "Warming and Earlier Spring Increases Western U.S. Forest Wildfire Activity" republished with commentary in *Science Magazine's State of the Planet 2008-2009*. Island Press. Donald Kennedy, Ed. ISBN 1-59726-405-9. *Pub. Date: 12/18/2008*
- Jaffe, D., W. Hafner, D. Chand, **A. L. Westerling**, D. V. Spracklen 2008: "Interannual Variations in PM2.5 due to Wildfires in the Western United States," *Environmental Science and Technology*, 42: 2812-2818. DOI:10.1021/es702755v
- Jaffe, D., D. Chand, W. Hafner, **A. L. Westerling**, D. V. Spracklen 2008: "Influence of Fires on O³ Concentrations in the Western U.S.," *Environmental Science and Technology*, 42(16), 5885-5891, DOI:10.1021/es800084k.
- Westerling, A. L.**, 2008: "Climatology for Wildfire Management," Chapter 6 in *The Economics of Forest Disturbances: Wildfires, Storms, and Invasive Species*, Series: Forestry Sciences, Vol 79. T.P. Holmes, J.P. Prestemon and K.L. Abt, Eds., XIV, 422 p. Springer. ISBN: 978-1-4020-4369-7
- Holmes, T. P., R. J. Hugget and **A. L. Westerling**, 2008: "Statistical Analysis of Large Wildfires," Chapter 4 *The Economics of Forest Disturbances: Wildfires, Storms, and Invasive Species*, Series: Forestry Sciences, Vol 79. T.P. Holmes, J.P. Prestemon and K.L. Abt, Eds., XIV, 422 p. Springer. ISBN: 978-1-4020-4369-7
- Preisler, H. K., S. C. Chen, F. Fujioka, J. W. Benoit, **A. L. Westerling**, 2008: "Wildland fire probabilities estimated from weather model-deduced monthly mean fire danger indices," *International Journal of Wildland Fire*, 17:305-316. DOI: 10.1071/WF06162
- Corringham, T., A. L. Westerling**, B. Morehouse 2008: "Exploring Use of Climate Information in Wildland Fire Management: A Decision Calendar Study," *Journal of Forestry*, 106(2): 71-77.
- Westerling, A. L. and B. P. Bryant** 2008: "Climate Change and Wildfire in California," *Climatic Change*, 87: s231-249. DOI:10.1007/s10584-007-9363-z.
- Westerling, A. L.** 2007: "Los incendios en el oeste de los EEUU y el cambio climatico" Chapter 2 in *Prevencion de los Desastres Ambientales: Una reflexion critica*, Ruiz de Elvira, Ed., (Spanish edition of immediately preceding publication).
- Westerling, A. L.** 2007: "Os incendios no oeste dos EEUU e o cambio climatico" Chapter 2 in *Previendo os Desastres Ambientais: Unha reflexion critica*, Ruiz de Elvira, Ed., Monographias 06: Escola Galega de Administracion Publica, Santiago de Compostela, Galicia. ISBN 9788445344309..
- Spracklen, D. V., J. A. Logan, L. J. Mickley, R. J. Park, R. Yevich, **A. L. Westerling**, and D. Jaffe 2007: "Wildfires drive interannual variability of organic carbon aerosol in the western U.S. in summer," *Geophysical Research Letters*, 34, L16816. DOI:10.1029/2007GL030037.
- Preisler, H.K., and **A.L. Westerling** 2007: "Statistical Model for Forecasting Monthly Large Wildfire Events in the Western United States" *Journal of Applied Meteorology and Climatology*, 46(7): 1020-1030.
- Westerling, A.L., H.G. Hidalgo, D.R. Cayan, T.W. Swetnam** 2006: "Warming and Earlier Spring Increases Western U.S. Forest Wildfire Activity" *Science*, 313: 940-943. * *Online supplement* *
- Shachat, J., and **A.L. Westerling** 2006: "Information Aggregation in a Catastrophe Futures Market," *Managerial and Decision Economics*, 27: 477-495.
- Westerling, A.L. and B.P. Bryant** 2006: "Climate Change and Wildfire In and Around California: Fire Modeling and Loss Modeling," *Public Interest Energy Research, California Energy Commission. CEC-500-2005-190-SF*, Sacramento, CA.

- Westerling, A.L.**, D.R. Cayan, T.J. Brown, B.L. Hall and L.G. Riddle 2004: "Climate, Santa Ana Winds and Autumn Wildfires in Southern California," *EOS*, 85(31): 289,296.
- Brown, T.J., B.L. Hall and **A.L. Westerling** 2004: "The Impact of Twenty-first Century Climate Change on Wildland Fire Danger in the Western United States: An Applications Perspective," *Climatic Change*, 62: 365-388.
- Westerling, A.L.** and T.W. Swetnam 2003: "Interannual to Decadal Drought and Wildfire in the Western United States," *EOS*, 84(49): 545,554-5.
- Westerling, A.L.**, T.J. Brown, A. Gershunov, D.R. Cayan and M.D. Dettinger, 2003: "Climate and Wildfire in the Western United States," *Bulletin of the American Meteorological Society*, 84(5) 595-604.
- Westerling, A.L.**, A. Gershunov, D.R. Cayan and T.P. Barnett, 2002: "Long Lead Statistical Forecasts of Area Burned in Western U.S. Wildfires by Ecosystem Province," *International Journal of Wildland Fire*, 11(3,4) 257-266.
- Westerling, A.L.**, 1992: "Climate Change and Chinese Energy Policy," *Journal of Public and International Affairs*, 3:71-90.

Other Published Writings

- A. L. Westerling** 2016. Wildfires in West have gotten bigger, more frequent and longer since the 1980s. The Conversation
- Anthony LeRoy Westerling 2016. This year's wildfires are bad. Climate change will make future ones worse. 26 July 2016. **The Guardian**.
- Westerling, A.L.** 2012: "Fire: Are we facing an increase in wildfires?" PAGES news, 20(1):24-25.
- Westerling, A.L.** 2011: "Brevia: Climate Change Could Rapidly Transform Greater Yellowstone Fire Regimes" *Mountain Views: The Newsletter of the Consortium for Integrated Climate Research in Western Mountains (CIRMOUNT)*, 5(2):30-32.
- Smithwick, E.A.H., A.L. Westerling, M.G. Turner, W.H. Romme, M.G. Ryan 2009: *Climate, Fire and Carbon: Tipping Points and Landscape Vulnerability in the Greater Yellowstone Ecosystem*, Final Report 09-3-01-47, Joint Fire Sciences Program.
- Preisler, H.K., and **A.L. Westerling** 2005: "Estimating Risk Probabilities for Wildland Fires," *Proceedings of the 2005 Joint Statistical Meetings*, Minneapolis, MN.
- Shachat, J., and **A.L. Westerling** 2004: "Information Aggregation in Catastrophe Reinsurance Markets," *Economics Working Paper Archive*, Experimental Series #0403002. Washington University Economics Department.
- Dettinger, M.D., D.R. Cayan, N.K. Knowles, **A.L. Westerling**, M.K. Tyree, 2004: "Recent Projections of 21st-Century Climate Change and Watershed Responses in the Sierra Nevada. USDA Forest Service Gen. Tech. Rep. PSW-GTR-193. Conference proceeding for the Sierra Nevada Science Symposium, Oct 7-10, 2002, Kings Beach, California.
- Westerling, A.L.**, A. Gershunov and D.R. Cayan, 2003: "Statistical Forecasts of the 2003 Western Wildfire Season Using Canonical Correlation Analysis," *Experimental Long-Lead Forecast Bulletin*, 12(1,2).
- Westerling, A.L.**, A. Gershunov and D.R. Cayan, 2001: "Statistical Forecasts of Western Wildfire Season Severity," *Proceedings of the 4th Symposium on Fire and Forest Meteorology*, Reno, Nevada, November 2001, pp 202-205
- Westerling, A.L.**, D.R. Cayan, A. Gershunov, M. D. Dettinger and T. J. Brown, 2001: "Statistical Forecast of the 2001 Western Wildfire Season Using Principal Components Regression," *Experimental Long-Lead Forecast Bulletin*, 10:71-75.
- Westerling, A. L.**, (2000), "Calculating Risks? The Spatial and Political Dimensions of Hazardous Waste Policy, by J. T. Hamilton and W. K. Viscusi," *Journal of Economic Literature*, 38, 684-686. Book Review.

Abstracts

Westerling, A. L., D. R. Cayan, T. J. Brown, B. L. Hall, L. G. Riddle, (2005) “Antecedent Climate, Santa Ana Winds and Autumn Wildfires in Southern California,” AMS Conference on Hydrology, Vol. 19, (np).

Alfaro, E., **Westerling, A. L.**, Cayan, D.R., (2004), “Climate and Wildfire in Mountains of the Western United States,” Eos Transactions AGU, Fall Meeting Supplement, Abstract U51A-07.

Westerling, A. L. and T. W. Swetnam, (2004), “A Long Term Perspective on Decadal Variability in Climate and Wildfire in the Western United States,” Eos Transactions AGU, Fall Meeting Supplement, Abstract B43E-04.

Holmes, T. P., and **A. Westerling**, (2003), “A Century of Fire and Land Management in the Southern Sierra Nevada,” Proceedings of the Second International Wildland Fire Ecology and Fire Management Congress and Fifth Symposium on Fire and Forest Meteorology, Orlando, Florida, October 2003.

Westerling, A. L., K. Gebert, G. Jones, K. Abt, J. Prestemon, A. Gershunov (2003), “Long Lead Statistical Forecasts of Wildland Fire Suppression Costs,” Proceedings of the Second International Wildland Fire Ecology and Fire Management Congress and Fifth Symposium on Fire and Forest Meteorology, Orlando, Florida, October 2003.

Westerling, A. L., (2001), “Climatology of Western Wildfire and Experimental Long-Range Forecasts of Wildfire Season Severity,” In 2001 Fire & Climate Workshops Proceedings, Tucson, Arizona, 2001. Gregg Garfin and Barbara Morehouse, Editors.

Westerling, A. L., A. Gershunov, D. R. Cayan, and T. J. Brown, (2001), “A Western United States Fire Climatology,” In Proceedings of the American Meteorological Society Symposium on Climate Variability, the Oceans and Societal Impacts, Albuquerque, New Mexico, 2001.

Westerling, A. L., (2001), “Climate Variability and Large Storm Surge on the Pacific Coast of the United States,” In Proceedings of the American Meteorological Society Symposium on Climate Variability, the Oceans and Societal Impacts, Albuquerque, New Mexico, 2001.

Westerling, A., (2000), “El Niño and One Hundred Years of Storm Surge in the Eastern North Pacific,” Proceedings of the 16th Annual Pacific Climate Workshop, Santa Catalina Island, California, 1999.

GRANTS AND CONTRACTS

at UC Merced

Co-PI: Climate and Health Interdisciplinary Research Program \$2,148,949 (Total). 2015-18. **University of California Office of the President, Multicampus Research Programs and Initiatives.**

Co-PI: Fire, fuels, management, and resilience: alternative scenarios for western conifer forests \$418,249 (Total - U Wisconsin Prime). 2015-18. **Joint Fire Science Program.**

PI: Wildfire Simulations for the Fourth California Climate Assessment \$118,464 (Total). 2015-18. **California Energy Commission.**

PI: Modeling Potential Fire Impacts with Landscape Vegetation Scenarios and Changing Climate for the Sierra Nevada and Other Areas in the Western U.S. \$190,000 (Total). 2014-19. **USDA Forest Service.**

Co-PI: Integrated effects of climate and management on western US forest wildfire and vegetation. \$750,000 (Total. Penn State Prime). 2012-16. **USDA AFRI.**

Co-PI: California-Nevada Applications Program (Recompete). \$3,000,000 (Total. UCSD prime). 2012-17. **NOAA.**

Co-PI: California-Nevada Applications Program (2010-2012). \$700,000 (Total. UCSD prime). 2010-12. **NOAA.**

Co-PI: California-Nevada Applications Program (National Assessment). \$315,000 (Total. UCSD prime). 2010-12. **NOAA.**

Co-PI (with Professor Kueppers at UC Merced): Senate Faculty Research Award: Causes of Hydrologic Consequences of Conifer Encroachment Into High-Elevation Sierran Meadows \$9,997 (total). 2011. **UC Merced**

Contractor: Collaborative Research: CRI-EaSM Multiscale Modeling of Aerosol Indirect Effects on Decadal Timescales. 2010-14. **NSF** (with EPA, DOE).

PI: *Senate Research Award*. \$1,250 (total). 2010-present. **UC Merced**

PI: *Gridded Seasonal Wildfire Outlook for the Western United States*. \$75,000 (total). 2010-2012. **US Forest Service, National Wildfire Coordinating Group**

Co-PI: *California Vulnerability and Adaptation Study*. \$4,343,489 (total UC). 2010-2011. **California Energy Commission**

Co-PI: *Climate, Fire and Carbon: Tipping Points and Landscape Vulnerability in the Greater Yellowstone Ecosystem*. \$140,653. 2009-2010. **Joint Fire Sciences**

PI: *Climate Change Impacts for California Wildfire*. \$70,000. 2008-2009. *subcontract*: **California Energy Commission/PIER/California Climate Change Center**

PI: *Extreme Value Statistics for Forest Wildfire*. \$25,000. 2007-2011. **USDA Forest Service** Southern Research Station.

PI: *Great Valley Climate Almanac*. \$20,804. 2006- 2007. **Great Valley Center/Hewlett**.

PI: *CEC/Barnett Research Subcontract*. \$72,000. 2006-2007. Scripps Institution of Oceanography/**California Energy Commission**

PI: *CAP Research Subcontract*. \$205,000. 2006-2009. Scripps Institution of Oceanography/**NOAA OGP**

PI: *Fire Research at a Landscape Scale*. \$250,000. 2006 - 2011. **USDA Forest Service PSW at Scripps Institution of Oceanography**

Co-I (PI T. Barnett): *Climate Forecasts for Improving Management of Energy and Hydropower Resources in the Western United States*. \$400,000. 2005-2007. **NOAA CDEP**

Co-I (PI T. Barnett): *Climate Forecasts for Improving Management of Energy and Hydropower Resources in the Western United States*. \$200,000. 2005-2008. **California Energy Commission**.

Co-I (PI D. Cayan): *Assessing Potential Impacts of Climate Change on California*. \$480,000. August 17, 2005 – May 17, 2006. **California Energy Commission**

Co-I (PI D. Cayan): *California Applications Program*. \$520,000. May 1, 2005 – Dec 1, 2005. **NOAA OGP**

PI: *Regional Predictions of Annual Area Burned for the U.S. Forest Service*. \$22,000. 2005 - 2008. **USDA Forest Service**: National Fire Plan Grant via Rocky Mountain Research Station.

PI: *Incorporating Vegetation Management into Wildfire Area Burned Models*. \$36,000. 2003 - 2005. **USDA Forest Service**: National Fire Plan Grant via Southern Research Station

PROFESSIONAL ACTIVITIES AND SERVICE

Professional Association Memberships

American Geophysical Union

International Association of Wildland Fire

Association for Fire Ecology

American Association for the Advancement of Science

Sigma Xi, The Scientific Research Society (treasurer '07-09, vice-president '09-'10, president '10-'11, UC Merced Chapter Charter member)

University Service - UC Merced

Co-Chair, MIST Search Committee (2 positions) 2016 - present

Co-Director, Sierra Nevada Research Institute, 2016 - Present

Co-Director, Center for Climate Communication, SNRI, 2016 - Present

Management proto-bylaw 55 and Grad Group Executive Committee, Member, 2015 - Present

(Creating Undergraduate, Professional Masters and Doctoral programs and curriculum, and Management Department)

Environmental Systems Graduate Group Executive Committee, 2013 - 2016.

Environmental Systems Graduate Group Educational Policy Committee Chair, 2009 - 2016.
Member, Management Search Committee (3 Open Rank positions) 2015 - 2016.
Co-Chair, Natural Resource Management and Parks/Protected Places Management Search Committee (Open Rank) 2015 - 2016.
Chair, Natural Resource Management and Parks/Protected Places Management Search Committee (Open Rank) 2014 - 2015.
Asst Prof in Ecological Theory/Modeling Search Committee, member, 2013-2014
Asst Prof in Evolutionary Biology Search Committee, member, 2013-2014
Environmental Systems Graduate Group Executive Committee, 2013 - present
Chair, Environmental Engineering Water Resources/Energy/Informatics Search Committee (Assistant/Associate Professor) 2011 - 2012.
Founding Management Search Committee, Member, 2010-2011.
UC Merced Academic Senate Committee on Committees member, 2009 - 2011
Environmental Systems Graduate Group Educational Policy Committee Chair, 2009 - 2013
Sierra Nevada Research Institute Advisory Committee member, 2008 - present
UC Merced Campus-wide Academic Strategic Planning Committee member, 2007 - 2008.
Chair, Sustainability Science Search Committee (Assistant/Associate Professor) 2006 - 2007.
Chair, Environmental Systems Grad Group Admissions Committee, 2006 - 2008 (2007-08 Chair)
Management Search Committee (Assistant Professor) 2006 - 2007.
Management Search Committee (Senior) 2006 - 2007.
Graduate Research Council, UC Merced Academic Senate 2006 - 2008.
UC-wide California Climate Solutions Institute proposal to the PUC. UC Merced faculty representative with Roger Bales.

Ad Hoc Reviewer - Manuscripts

Science, Nature, Proceedings of the National Academy of Sciences, Can J Forest Res, Ecol, Int J Wildland Fire, Global Change Bio, Global Ecol Biogeogr, GRL, B Am Meteorol Soc, Forest Sci, J Geophys Res–Atmos, West N Am Naturalist, Ecol Model, Ecol Appl, Int J Climatol, J Climate, J Agr Forest Meteorol, Climatic Change, Weather and Forecasting, PNAS, Phys. Geog., etc.

Ad Hoc Reviewer - Career

USDA Forest Service

Ad Hoc Reviewer - Grants

NOAA, NSF

Public and Professional Service

Forest Carbon Action Team, Science Advisory Team, State of California, November 2014 - present.

NOAA Visiting Scientist Program, Postdocs Applying Climate Expertise, Supervisory Committee Member, September 2014-present.

State of California and the Pacific Council on International Policy, Climate Adaptation Advisory Panel, November 2009 - June 2010, Fire sub-panel Team-Leader.

Sigma Xi Research Society, Merced Chapter, Spring Symposium, Climate Change Science and Governance, 15 April 2010, Merced, CA, symposium organizer.

National Academy of Sciences Workshop on Strategic Advice on CCSP 19-20 March 2008, Boulder, Colorado, participant.

U.S. House of Representatives, Committee on Appropriations, Subcommittee on Interior, Environment, and Related Agencies, 12 February 2008, Washington D.C., Hearing: Wildland Fire Management, invited testimony.

Environmental and Energy Study Institute Briefing, Effects of Climate Change on Forest Resources, 11 February 2008, Washington D.C., Climate Change Impacts on Western Forest Wildfire, invited briefing.

National Academy of Sciences Board on Atmospheric Sciences and Climate Meeting, 12-13 November 2007 Irvine, CA. Climate Services in California and Technology Transfer from Academia, Invited Presentation.

U.S. Senate, Committee on Energy and Natural Resources, Hearing: Impacts of Global Climate Change on Wildfire Activity in the United States, 24 September 2007, Washington D.C., invited testimony, with Dr. Swetnam.

U.S. House of Representatives, Committee on Natural Resources, Subcommittee on Energy and Mineral Resources, Oversight Hearing, 20 March 2007, Longworth House Office Building, Washington, DC, Hearing: Towards a Clean Energy Future: Energy Policy and Climate Change on Public Lands, Invited testimony.

National Academy of Sciences Workshop on the Impacts of Climate Change on Federal Lands, 2-3 November 2006, National Academies, Washington, DC, Forest Ecosystems Panel, Invited Panelist.

American Meteorological Society Environmental Science Seminar Series: Drought, Water, Wildfires and Climate Change in the Western US - Historical Context and the Road Ahead, 25 September 2006, Russell Senate Office Building, Washington, DC, Climate Change and Forest Wildfire in the Western US, invited briefing.
<http://www.ametsoc.org/atmospolicy/environmentalssarchives.html>

Climate Change Briefing for **California State Senator Kehoe** 13 July 2006

Presentations, Workshops, Panels, Seminars...

California Energy Commission, **California Climate Change Symposium 2017**: Science to Safeguard California, 25 January 2017, Sacramento CA, Changing wildfire regimes, invited presentation and panelist.

Society of Environmental Journalists 26th Annual Conference, Panel: Living With Fire, 23 September 2016 Sacramento, CA. Invited panelist.

USDA Forest Service, Forestry Sciences Laboratory, University of Georgia, 19-23 September 2016 Athens, GA. Workshop participant: systematic map of the drought/fire/carbon nexus

University of California social media, Twitter chat, 10 August 2016 Climate Change and California Wildfires

NOAA VSP/PACE, NOAA Summer Institute, 24-28 July 2016, Steamboat Springs, CO.

National Wildlife Federation and U.S. FWS National Conservation Training Center, 22 June 2016, Webinar, Increasing Western US Forest Wildfire Activity: Sensitivity to changes in the timing of Spring, invited presentation

California Energy Commission, Coordination of energy-related research projects for California's Fourth Climate Change Assessment, 20 April 2016, Webinar, Fire Scenarios for the 4th California Climate Assessment.

California Energy Commission, 22 March 2016, Sacramento, CA Developing new wildfire scenarios for the energy sector, LeRoy Westerling and Erica Fleishman.

Mariposa Democratic Club, Mariposa, CA 12 March 2016 Climate, Fuels and Wildfire: how forest management and climate change are shaping forest wildfire frequency, size, severity and emissions., invited presentation.

Cat Risk Management 2016, Orlando, FL 17 February 2016 Climate, Land Use, and Wildfire Interactions in the Western United States, invited presentation.

American Geophysical Union Fall Meeting, The Role of Fire in the Earth System: Understanding Drivers, Feedbacks, and Interactions with the Land, Atmosphere, and Society, 17 December 2015, San Francisco, CA, Effects of Climate and Fuels Management on Wildfire Occurrence, Size, Severity and Emissions in the Sierra Nevada, invited presentation.

Environmental Systems Particulate Seminar, UC Merced, 2 November 2015, Merced, CA, Climate and land use effects on wildfire emissions in the Sierra Nevada. invited lecture.

Royal Society Discussion Meeting, The interaction of fire and mankind, 15 September 2015, London, United Kingdom, Climate Change and Wildfire, invited presentation.

California Energy Commission, **California Climate Change Symposium 2015**: Using Climate Science to Plan for a resilient future. 25 August 2015 Sacramento CA, Interactive effects of climate change and fuels management scenarios on wildfire activity and emissions in Sierra Nevada forests, invited presentation.

Mariposa County Workshop: Health impacts from climate change in Mariposa County, 20 May 2015, Mariposa CA, Climate change, forest management and particulate pollution emissions from wildfires. invited presentation.

Council of Western State Foresters and the Western Forestry Leadership Coalition, The Future of Forestry in a Changing Climate, Complexities of Wildland Fire and Dynamic Western Systems, 13 May 2015, San Francisco, CA, Climate, Wildfire and Management in Western Forests, invited presentation,

California Energy Commission, Staff Workshop on Selecting Climate Scenarios for the California Energy Sector, Secondary Scenarios for the Energy Sector, 27 February 2015, Sacramento, CA, Developing new wildfire scenarios for the energy sector: a proposed approach, Invited presentation

Office of the State Fire Marshal, CalFire, Land Use Planning Unit, 13 November 2014, Sacramento, CA, Invited discussant.

UC Center Sacramento, State Capitol Interns Luncheon, 13 November 2014, Sacramento, CA, invited discussant

UC Center Sacramento Speaker Series, University of California Center Sacramento, 13 November 2014, Sacramento CA, Climate change and wildfire in California's forests: how might forest management affect our vulnerability to climate change? invited presentation

Tahoe Science Consortium, Tahoe Climate Science Symposium 2014, 13 November 2014, Incline Village, Nevada, Climate Change, Fuels Management and Wildfire in Sierra Nevada Forests, invited presentation.

R20, CalEPA/ARB, USC Schwarzenegger Institute, California Leadership on Climate Change: Lessons for Paris, 8 September 2014, CalEPA, Sacramento, CA The Economic Cost of Climate Change, Why We Cannot Afford Inaction. invited panelist.

California Energy Commission, Staff Workshop for California's Fourth Climate Change Assessment, 25 August 2014, Sacramento, CA

Ecological Society of America Annual Meeting, Understanding and Managing Ecological Resilience to Natural Disasters in a Changing Environment, 14 August 2014, Sacramento, CA, Controls and consequences of forest wildfires under a changing climate, contributed presentation.

Ecological Society of America Annual Meeting, Arctic, Alpine, Antarctic Systems, 14 August 2014, Sacramento, CA, Life stage filters on conifer encroachment into subalpine meadows in the central Sierra Nevada, California, contributed presentation (with Kaitlin Lubetkin).

Ecological Society of America Annual Meeting, Understanding and Managing Ecological Resilience to Natural Disasters in a Changing Environment, 14 August 2014, Sacramento, CA, Examining the impact of changes in climate and vegetation on future fire activity in the Sierra Nevada Mountains, California, contributed presentation (with Alisa Keyser).

Climate Action Team Public Health Workgroup, CA Dept of Public Health, CalEPA/ARB, Wildfire and Health in a Changing Climate, 22 July 2014, CalEPA Sacramento CA, Wildfire Risk Projections. Invited.

NOAA VSP/PACE, NOAA Summer Institute, 16 July 2014, Steamboat Springs, CO, Climate, wildfire and management as drivers of change in western US forests.

California Governor's Office, California Climate Change Science and Policy Briefing, Panel 1: Impacts on Ecosystems, Water, Snow and Heat, 29 May 2014, Governor's Council Room, California State Capitol, Sacramento, CA. Invited panelist.

California Energy Commission, Staff meeting on Climate Scenarios for the California Energy Sector, 19 May 2014, Sacramento CA.

Western Forest Insect Work Conference, Plenary Session II, 1 April 2014 Sacramento CA, Recent and projected changes in western US forest wildfire activity, invited plenary presentation.

Tahoe Basin AFRI stakeholder meeting, 26 March 2014, Lake Tahoe Basin Management Unit, South Lake Tahoe, CA, Sierra Nevada Regional Fire Emissions Workshop

Sierra Nevada Research Institute Research Symposium, UC Merced, 10 March 2014, Merced, CA, California Drought and Effects

American Geophysical Union Fall Meeting, Creating Policy-Relevant Resource Management Science under Climate Change, 9 December 2013, San Francisco, CA, Climatic water deficit and wildfire: predicting spatial patterns in forest ecosystem sensitivity to warming and earlier spring snowmelt. invited presentation.

Modesto Area Partners in Science Symposium, 22 November 2013, Modesto JC West Campus, Modesto, CA. Climate and Wildfires in the West. Invited presentation.

Summerville High School, World Geography Class, 26 September 2013, Tuolumne CA, invited lecture.

Pinchot Institute and Senator Wyden, Forest Conservation in the Anthropocene: Adaptation of Science, Policy and Practices, Panel 2: Uncharted Territory: Assessing vulnerability and developing options for sustaining key values and services from forest ecosystems under conditions of elevated uncertainty, 17 September 2013, US Capitol Visitors Center, Washington, D.C., invited presentation.

Senator Carol Liu (host), State Senate District 25, and Union of Concerned Scientists, Insurance in an Era of Climate Change, 28 June 2013, Pasadena Central Library, Donald R. Wright Auditorium, Pasadena, CA, Climatic and Demographic Scenarios for Wildfire in Southern California, invited presentation

National Park Service, Climate Change in America's National Parks Webinar: Changing Fire Regimes, Management, and People in the Sierras and Yellowstone National Park, June 13 2013, invited seminar and panel.

Woods Institute for the Environment & IPCC, Uncommon Dialogue: Managing the Risks of Extreme Climate Events and Disasters, 11 April 2013, Stanford University, Palo Alto, CA. invited round table participant and presenter.

Union of Concerned Scientists, Climate Science Information Day, California State Legislature, Sacramento, CA, 3 April 2013. invited participant. (UCS sponsored leading scientists from around the state to visit legislators in Sacramento to educate them on climate impacts in the state and hear their concerns and information needs)

Robert Fore Fellowship presentation in Wawona, Yosemite NP 23 March 2013 (invited presentation/outreach on fire and climate science to Merced County high school science teachers)

California Landscape Conservation Cooperative and USDA Forest Service, Vulnerability Assessment Workshop for the Climate Adaptation Project for the Sierra Nevada, Sacramento, CA, 7 March 2013. (Climate, Land Use and Wildfire in California, invited presentation and workshop participation (Westerling is a member of the Science Advisory Board).

National Climate Assessment Southwest Region Townhall 18 January 2013, La Jolla, CA, National Climate Assessment Southwest Region: Wildfire and Ecosystems, invited presentation

National Wildfire Coordinating Group annual Fire Environment Committee meeting, December 11, 2012 (via webinar), Climate Change and the Fire Environment, invited presentation

Association for Fire Ecology biennial International meeting, Portland, OR Dec 4, 2012, Incorporating lightning scenarios into seasonal fire forecasts over California and Nevada, contributed presentation

Yosemite Hydroclimate Workshop, 12 October 2012 Yosemite National Park, CA, Seasonal Wildfire Forecast Models.

Boulder County, Wildfire Awareness Month Regional Forum, 19 October 2012, Golden, CO Climate and Forest Wildfire in the Mountain West: Understanding our changing risks. Invited presentation and stakeholder outreach workshop.

International Association of Hydrological Sciences, International Commission on Continental Erosion, International Conference on Wildfire and Water Quality: Process, Impacts & Challenges, 11 June 2012, Banff Centre, Banff, Alberta, Canada. Climate and Wildfire in Western US Forests, invited, opening plenary presentation.

National Parks Institute, April 2012, Merced CA and Yosemite CA, Climate Change and Wildfire in Yellowstone National Park, organized curriculum for a National Parks training program and led a 1-day training exercise on wildfire and climate change in Yellowstone.

Sierra Nevada Research Institute Research Symposium, UC Merced Research Week, 16 April 2012, Climate Change and Wildfire in Yellowstone, invited presentation

Willowbridge Bookstore, Public Seminar, 11 February 2012, Oakhurst, CA, Climate Change and Extreme Fire Seasons in the Southern Sierra, invited presentation.

California Department of Water Resources, Los Angeles County Department of Public Works Headquarters, Alhambra, CA, Department of Water Resources Workshop, 31 January 2012, Alhambra, CA, Climate Change and Wildfire Extremes, invited presentation.

California Climate Change Center, Scripps Institution of Oceanography, Vulnerability and Adaptation to Extreme Events in California in the Context of a Changing Climate: New Scientific Findings, 13 December 2011, La Jolla, CA, Climate Change and Wildfire Extremes, invited presentation.

American Geophysical Union, Fall Meeting, December 2011, San Francisco, CA, Effects of climate change on climatic water deficit and wildfire in Greater Yellowstone Ecosystem forests

Department of Interior, National Park Service, 30 November 2011, Interior Building, Washington, D.C., Climate and Wildfire in the Western US.

NOAA Climate Program Office, 30 November 2011, Silver Spring, MD, Climate and Wildfire in the Western US.

SERDP/ESTCP Partners in Environmental Technology Technical Symposium and Workshop: Meeting DoD's Environmental Challenges, Role of Fire in the Carbon Cycle under Climate Change, November 2011, Washington, D.C., Climate Change Fuels and Wildfire, invited presentation.

Fisheries and Wildlife Service, Annual Fire Management Officers Meeting, November 2011, San Luis National Wildlife Refuge, Los Banos, CA, Climate and Wildfire in the Western US, invited presentation.

Public Interest Energy Research, California Institute for Energy & Environment, Bay Area Vulnerability and Adaptation Meeting, 26 September 2011, University of California, Berkeley, CA, Bay Area Wildfire Scenarios, invited presentation.

US Climate Variability and Prediction Research Program/National Corporation for Atmospheric Research Advanced Study Program Researcher Colloquium, June 2011, Boulder, CO, Western US Climate and Fire Extremes: Issues in scale, uncertainty, systems interactions and thresholds, invited presentation.

The Yosemite Forum, May 2011, Yosemite National Park, CA, Managing Fire in a Changing Climate: A tale of two parks, invited presentation.

University of California Center Sacramento Public Policy Seminar, March 2011, Sacramento, CA, Climate Change and Wildfire in the Sierra Nevada, invited presentation.

Southern Sierra Fire Management Scenario Planning Pilot Project, National Parks Service, Southern Sierra Fire Management Alternatives Workshop, February 2011, Fresno, CA, Fire-Climate connections in the southern Sierra Nevada, invited presentation.

California Energy Commission, Second Coordination Meeting, Vulnerability and Adaptation Study, February 2011, Sacramento, CA, Adaptation Strategies for Climate Change Impacts on Wildfire in California, invited presentation.

University of California, Merced, Environmental Systems Graduate Seminar, February 2011, Fire regime effects of anthropogenic changes in Rocky Mountains Climate and Hydrology, invited presentation.

Yellowstone Biennial Conference, October 2010, Mammoth Hot Springs, Yellowstone National Park, Fire Regime Effects of Anthropogenic changes in Rocky Mountains Climate & Hydrology

Chancellor's Task Force on Community Engaged Scholarship, UC Merced Conference on Community Research and Scholarship, October 2010, Merced, CA, Fire Science for Western U.S. Land Managers, invited presentation.

Geneva Association, MORE 24 Seminar, June 2010, Bermuda Underwater Exploration Institute, Hamilton, Bermuda, Wildfire Risk Map, invited presentation.

National Park Service, Yosemite Fire Science Symposium, April 2010, Yosemite National Park, CA, Climate Change Impacts on Wildfire in the Sierra Nevada, invited presentation.

UC Davis, Land, Air and Water Resources, 2010 Seminar Series, 27 January 2010, Davis, CA, Climate and Wildfire in California and the Western US, invited seminar.

American Geophysical Union, Fall Meeting, 15 December 2009, Fire Regime and Ecosystem Effects of Climate-driven Changes in Rocky Mountains Hydrology, contributed presentation.

World Association of Former United Nations Interns and Fellows, Innovation Talks II: Climate Change, Disaster Response, and Public-Private Partnerships, 19 November 2009,

Trusteeship Council Chambers, United Nations Headquarters, New York, NY. Climate Change and Wildfire: Policy Formulation for Peace, Security and Sustainable Development, invited presentation.

Pacific Council on International Policy, California's Adaptation to Climate Change Task Force Meeting II, 10 November 2009, San Francisco, CA, Fire and Climate in the West: Assessing the Threat, invited presentation.

The Nature Conservancy and USDA Forest Service; Fire, Landscapes and People Collaboration; Forging Fire Alliances in a Changing Climate, 3-4 November 2009, Arlington, VA, Perspectives on Fire and Climate in the Western US: 1600-2099, invited luncheon speaker.

UC Merced Cognitive and Information Sciences, Mind, Technology and Society Seminar Series, 19 October 2009, Merced, CA, Statistical Analysis and Modeling of Climate-Wildfire-Vegetation Interactions in California and the Western US, invited presentation.

Yosemite National Park, Yosemite Hydroclimate Conference, 8 October 2009, Yosemite Valley, CA, Implications of the 2008 California Climate Change Impact Assessment for Wildfire in the Sierra Nevada, contributed presentation.

UC Merced, Environmental Systems Seminar, 23 September 2009, Merced, CA, Climate Change, Growth and California Wildfire Risk, invited seminar.

California Energy Commission, California Climate Change Conference, 20 September 2009, Sacramento, CA, Potential Effects of Climate Change on Residential Wildfire Risk in California, invited presentation.

California Energy Commission, California Climate Change Conference, 10 September 2009, Sacramento, CA, Changes in Fire Extent and Frequency Under Climate Change and Increased Urbanization, invited presentation.

California Energy Commission, California Climate Action Team Public Meeting on California Climate Science, 20 April 2009, Scripps Institution of Oceanography, La Jolla, CA, Climate Change Impacts on Forestry and Wildfire, invited presentation.

Tahoe Science Consortium, 2009 Climate Change Symposium, 17 March 2009, Tahoe, CA, Climate Change Impacts on Wildfire, invited presentation.

Stanford University Bill Lane Center for the American West and Woods Institute for the Environment, How the West was Spun Colloquium, Wildfires in the West Forum, 15 January 2009, Stanford, CA, Projecting Climate Change Impacts on Wildfire, invited presentation.

American Geophysical Union, 2008 Fall Meeting, 16 December 2008, San Francisco, CA, Projecting Climate Change Impacts on Wildfire Probabilities, invited presentation.

International Association of Wildland Fire, The '88 Fires: Yellowstone and Beyond, 24 September 2008, Jackson Hole, WY, Climate Change and Forest Wildfire in the Western U.S., invited plenary presentation.

California Energy Commission, CalEPA and California Resources Agency, Fifth Annual California Climate Change Conference, 10 September 2008, Sacramento, CA, [Mapping Vulnerability to Wildfire: Property Losses and Suppression Costs](#), invited presentation.

USDA Forest Service Pacific Southwest Research Station, Sierra Nevada Science Symposium, 4 September 2008, Visalia, CA, Climate Change and Forest Wildfire in California, invited presentation.

California Energy Commission Public Interest Energy Research Climate Change Research Program and California Department of Fish and Game, Seminar on Climate Change and Ecological Resources in California, 6 June 2008, Sacramento, CA, Climate Change and Wildfire in California, invited presentation.

National Interagency Coordination Center 2008 Seasonal Assessment, 21 April 2008, Boulder, CO, Experimental Seasonal Wildfire Forecast for California, invited, with H. Preisler.

Association for Fire Ecology, Annual Awards Banquet Dinner, 30 January 2008, Tucson, AZ, Climate Change Impacts on Western Wildfire Regimes, invited keynote presentation.

American Geophysical Union, Fall Meeting 10-14 December 2007, San Francisco, CA, Reevaluation of the spring onset/fire association in the western U.S. using Phenological vs. Hydrological Models, with Julio Betancourt and Mark Schwartz, contributed presentation.

Air Resources Board site visit, 28 November 2007, UC Merced, CA, Fire & Climate Research Applications for California and the West, presentation.

Spanish Royal Academy of Sciences, Fundacion Ramon Areces, Incendios forestales: ¿lucha o adaptacion? 3 October 2007, Madrid, Spain, Climate Change Impacts on Fire Regimes, invited presentation.

Frontiers of Science and Engineering Seminar Series, Challenger Learning Center, Castle Science and Technology Center and Castle Air Museum, 15 September 2007, Atwater, California. Climate Change and Wildfire in the West, invited presentation.

Pacific Climate Workshop, May 2007, Asilomar, CA, Climate Change and Wildfire, contributed presentation.

NOAA Regional Integrated Science and Assessment PI Meeting, 27 February - 1 March 2007, Del Mar, California. Invited participant and panelist (Panel: Evaluating the benefits that RISAs bring to a region/set of stakeholders).

American Association for the Advancement of Science Annual Meeting, Science and Technology for Sustainable Well-Being, 15-19 February 2007, San Francisco, CA, Controversies in Forest Fire Suppression and Management, "Effects of Climate on Fire," contributed presentation with Haiganoush Preisler. Co-presenter.

Rocky Mountain Research Station and National Interagency Fire Center Meeting: "Suppression Cost Forecasting: Improving the Methodology," 2 February 2007, Pacific Southwest Research Station, Albany, CA. Invited to help organize development of improved fire suppression forecasts for Federal fire management. Invited presentation.

Xunta de Galicia e Escola Galega de Administracion Publica, Xornadas Prevendo os Desastres Ambientais: Unha Reflexión Crítica, 18 January 2007, Santiago de Compostela, Galicia, Spain. "A influencia da variabilidade e o cambio climáticos sobre os incendios no oeste dos EUA," invited presentation. Honorarium. <http://egap.xunta.es/detalleRecurso.php?id=254>

Association for Fire Ecology, 3rd International Fire Ecology and Management Congress, 13-17 November 2006, San Diego, CA, Session: Advances in Fire Climatology: Using Modern and Paleofire Data to Understand Long-Term and Broad-Scale Fire Regime Changes in Western North America, "Applied Dendrochronology for Fire Management in the Western United States." contributed presentation.

Association for Fire Ecology, 3rd International Fire Ecology and Management Congress, 13-17 November 2006, San Diego, CA, Plenary Session, "Climate, Forest and Fire Regime Changes in the Western US." Thomas Swetnam presenting. Invited presentation co-author.

Climate Impacts Group, University of Washington, CIG Seminar Series, 9 November 2006, Seattle, WA, "Climate and Forest Wildfire in the Western US," invited seminar. <http://www.cses.washington.edu/cig/outreach/seminarfiles/2006seminars/calendarfall06.shtml>

Modesto Junior College, Kick-back Science Seminar, 12 October 2006, Modesto, CA, "Climate Change and Forest Wildfire in the Western US," invited presentation.

Consortium for Integrated Climate Research on Western Mountains, MTNCLIM Workshop, 22 September 2006, Mt. Hood, OR, "Explaining Spatial Variability in Forest Wildfire Regime Response to Warming Temperatures and an Earlier Spring Snowmelt." Contributed presentation with M. Dettinger, H. Hidalgo, T. Swetnam. <http://www.fs.fed.us/psw/mtnclim/talks/list.shtml>

California Energy Commission, 2nd Climate Change Science Workshop, 15 September 2006, Sacramento, CA, "Climate and Forest Wildfire in the Western United States: recent trends and projections," invited presentation. http://www.climatechange.ca.gov/events/2006_conference/presentations/index.html

7th International Conference on Dendrochronology, 15 June 2006, Beijing, China, "Applied Dendrochronology for Fire Management in the Western United States." Invited presentation in Session 10: Applications of Dendrochronology to Resource Management. http://7thicd.ibcas.ac.cn/Final_Program.htm

National Interagency Coordinating Center, National Seasonal Assessment Workshop – Western States and Alaska, 4 April 2006, Boulder, CO, "Statistical Wildfire Forecasts for 2006: transition and uncertainty," invited presentation with H. Preisler.

NOAA Climate Prediction Applications Science Workshop: Research and Applications on Use and Impacts, 21 March 2006, Tucson, AZ, "Evolving Partnerships for Integrating Climate and Forecast Information into Fire Management Planning," presentation. <http://www.nws.noaa.gov/ost/climate/STIP/CPASW06/>

University of California, Merced Job Candidate Seminar, 8 March 2006, Merced, CA, "Trends in Large Wildfires in Western U.S. Forests Since 1970: effects of changes in the timing of Spring," invited presentation.

University of Arizona GRD/Udall Job Candidate Seminar, 17 January 2006, Tucson, AZ, "Trends in Large Wildfires in Western U.S. Forests Since 1970: effects of changes in the timing of Spring," invited presentation.

California Climate Action Team Workshop, Scenario Analysis Subgroup Meeting, 13 December 2005, Sacramento, CA, "Potential Impacts on Wildfire Risk," invited presentation. http://www.climatechange.ca.gov/climate_action_team/meetings/2005-12-13_meeting/index.html

Climate Change Science Program Workshop, Climate Science in Support of Decision Making, 14 November 2005, Arlington, VA "Climate Forecasts for Improving Management of Energy and Hydropower Resources in the Western U.S.," contributed presentation with T. Barnett, D. Pierce, E. Alfaro, A. Gershunov, D. Lettenmaier, A. Hamlet, N. Voisin, A. Steinemann, Ross Gutromson, Ning Lu. <http://www.climatescience.gov/workshop2005/presentations/default.htm>

Fire History and Climate Synthesis in Western North America, 30 April 2005, Flagstaff, AZ, "Linking Modern and Paleo Fire and Climate Data," plenary discussion leader with Thomas Swetnam.

Fire History and Climate Synthesis in Western North America, 30 April 2005, Flagstaff, AZ, "Western North America Fire Occurrence Data," invited presentation.

Fire History and Climate Synthesis in Western North America, 30 April 2005, Flagstaff, AZ, "Climate and Wildfire in Western North America," invited presentation with Thomas Swetnam and Daniel Cayan.

NOAA Office of Global Programs, RISA Speaker's Series, 15 April 2005, Silver Springs, MD, "California's Vulnerability to Climate Variability and Change and CAP's Efforts to Assist Decision Makers on Water Resources, Wildfire and Human Health Issues," invited presentation with Daniel Cayan.

National Interagency Coordination Center National Seasonal Assessment Workshop: Western States and Alaska 2005, 29 March 2005, Boulder, CO, "Preliminary 2005 Forecast and Forecast Assessment," invited presentation.

Consortium for Integrated Climate Research in Western Mountains, MNTCLIM 2005: Anticipating Challenges to Western Mountain Ecosystems and Resources, 1-4 March 2005, Pray, MT, "Trends in Climate Since 1970 and the Response in High Elevation Forest Wildfire Regimes in the Western United States," contributed poster presentation with Daniel Cayan and Hugo Hidalgo.

American Meteorological Society 2005 Annual Meeting, 11 January 2005, San Diego, CA, "Coastal Southern California Wildfire, Antecedent Climate, and Santa Ana Winds," contributed presentation with Cayan, Brown, Hall, and Riddle. http://ams.confex.com/ams/Annual2005/techprogram/session_17945.htm

American Geophysical Union 2004 Fall Meeting, 16 December 2004, San Francisco, CA, "Climate and Wildfire in the Mountains of the Western United States," contributed presentation with Eric Alfaro, Daniel Cayan, Michael Dettinger, and Hugo Hidalgo in session U51A: Challenges to Mountain Water Resources and Ecosystems I

American Geophysical Union 2004 Fall Meeting, 16 December 2004, San Francisco, CA, "A Long-Term Perspective on Decadal Variability in Climate and Wildfire in the Western United States," contributed presentation with Thomas Swetnam in Session B43E: Fire, Climate, and Ecosystems II

UCSD Department of Economics, UCSD Environmental Resource Group Weekly Luncheon Seminar, 18 October 2004, La Jolla, CA, presentation "Seasonal Forecasts of Wildland Fire Area Burned and Suppression Costs for Fire Management Applications."

Western Coalition of Arid States WESTCAS Summer Legislative Conference, 24 June 2004, San Diego, CA, invited presentation "Drought and Wildfire in the Western U.S."

CIRCMONT Mountain Climate Sciences Symposium, 25 - 27 May 2004, North Lake Tahoe, CA, participant and discussion recorder, Session 3: Drivers of Change.

Risk Prediction Initiative Workshop: Fires at the Wildland-Urban Interface: What does the future hold? 19 May 2004, Bermuda Underwater Exploration Institute, Hamilton, Bermuda, invited presentation: "Antecedent Climate and Seasonal Wildfire Forecasting"

University of California Extension, Joint Meeting of the Oak Woodland, Forestry, Fire and Monitoring Workgroups, 5 - 6 May 2004, San Diego, CA, invited presentation: "Climate and Wildfire in California"

Universidad de Alcala de Henares, 27 April 2004, Alcala, Spain, invited seminar: "Towards a Long-Term Perspective on Wildfire in the Western United States"

II International Symposium on Fire Economics, Planning & Policy: A Global Vision, 20 - 22 April 2004, Cordoba, Spain, contributed presentation: "A Long-Term Perspective on Wildfire Season Severity in the Western United States", with Thomas Swetnam and Krista Gebert.

National Interagency Coordinating Center National Seasonal Assessment Workshop - Western States and Alaska, 30 March 2004, Phoenix, AZ, invited presentation: "2004 Wildfire Season: Statistical Forecasts of Area Burned"

21st Annual Pacific Climate Workshop: Coastal Climates and Issues, 28-29 March 2004, Asilomar, CA, contributed paper presentation "Coastal Southern California Wildfire, Antecedent Climate, and Santa Ana Winds" with Daniel Cayan, Tim Brown, Beth Hall, and Larry Riddle.

Scripps Environmental Advocates Monthly Meeting, 17 March 2004, Scripps Institution of Oceanography, La Jolla, CA, invited seminar: "Western Wildfire: Dimensions of the Problem."

American Meteorological Society 5th Symposium on Fire and Forest Meteorology & Society of American Foresters 2nd International Fire Ecology and Fire Management Congress joint session: Assessing and Predicting Climate Impacts on Landscapes. 16 - 20 November 2003, Orlando Florida, contributed presentation "Long lead statistical forecasts of wildland fire suppression costs" with K. Gebert, G. Jones, K. Abt, J. Prestemon and A. Gershunov.

Twelve Thirty Club Luncheon Presentation, 22 October 2003, La Jolla Country Club, invited presentation "Climate and Wildfire Management in the Western United States"

Bren School of Environmental Science and Management, 7th Occasional Conference on Environmental Economics, 17-18 October 2003, University of California, Santa Barbara, contributed presentation "Statistical Forecasts of Wildfire Area Burned and Suppression Costs.

Scripps Institution of Oceanography, UCSD Climate Science and Policy Seminar, 20 May 2003, La Jolla, CA, invited seminar "Applied Climatology and Forecasting for Wildland Fire and Fuels Management"

California **Firescope** meeting, 16 April 2003, Sacramento, CA, conducted focus group on fire management decision calendars and the use of climate information.

20th Annual **Pacific Climate Workshop**, 6-9 April 2003, Asilomar, CA, contributed presentation "Statistical Reconstructions of Western U.S. Paleo Fire Regimes" with Thomas Swetnam

Joint **Fire Science Program/National Fire Plan** Wildland Fire Workshop, University of Arizona, Tucson, AZ, March 25-27, 2003, invited participant.

NOAA OGP Regional Integrated Science and Assessment Annual Program Meeting, Scottsdale, AZ, March 11-13, 2003, invited participant.

National Seasonal Assessment Workshop, sponsored by the **National Interagency Coordinating Center** - Predictive Services Group and the Climate Assessment for the Southwest, Mesa, AZ, February 25-28, 2003 invited presentation, "Scripps Statistical Fire Forecasts"

The **Seminar in Environmental and Resource Economics and Policy**, Department of Agricultural and Resource Economics, **University of California, Berkeley**, CA, February 5, 2003, invited presentation, "Statistical Modeling for Wildfire Management"

Climate Prediction Assessments Workshop: Research and Applications on Use and Impacts, Alexandria, VA, October 28-30, 2002, contributed presentation "A New Wildfire Climatology and Seasonal Forecasts for the Western U.S.: Developing and Implementing Tools for Fire and Resource Managers"

Sierra Nevada Science Symposium: Science for Management and Conservation, October 7-10, 2002, Lake Tahoe, California, contributed poster "Climate and Wildfire in California and the western United States"

International Workshop on Regional Integrated Assessment of Climate Impacts, Il Ciocco, Castelvechio Pascoli, Italy, 16-19 September 2002, presentation "A new wildfire climatology and seasonal forecasts for the western U.S.: Tools for fire and resource managers."

Southeast Fire and Climate Workshop, **University of S. Florida Oceanographic Institute**, June 25-17, St. Petersburg, FL, invited presentation "Economic importance of utilizing climate information for fire management."

American Meteorological Society, San Diego Chapter Meeting, 24 April 2002, La Jolla, CA, invited public seminar "Fire and Climate in the Western United States."

Fire and Climate History in Western North and South America Workshop, **Laboratory for Tree Ring Research**, 23-28 March 2002, Tucson, AZ, invited presentation "Integrating Modern and Reconstructed Fire Histories for the Western United States for a Wildfire Climatology."

Working meeting, **U.S. Forest Service Southern Research Station**, Economics Research Unit, 13-15 March 2002, Research Triangle Park, NC, invited presentation "A Seasonal Wildfire Area Burned Forecast for the Western U.S."; collaboration "A research agenda: the value of wildfire season severity forecasts for fuels management."

Association of American Geographers annual meeting, Society, Fire, Climate and Ecosystems in North America session, 20 March 2002, contributed presentation "Modeling Sierra Nevada Wildfire Season Severity and Suppression Costs under a Climate Change Scenario."

Fire in the West: A Climate/Fuels Assessment, Outlook, and Research Symposium hosted by the Institute for the Study of Planet Earth, the Climate Assessment for the Southwest (CLIMAS), the Laboratory for Tree Ring Research, the Program for Climate Ecosystem and Fire Applications (CEFA) and the National Weather Service Tucson Weather Forecast Office, 5-6 March 2002, Tucson, AZ, invited presentation "A Seasonal Wildfire Area Burned Forecast for the Western U.S."

Predictive Sciences Research Meeting, **National Interagency Fire Center**, 23 January 2002, Boise, ID, invited presentation "Statistical Forecasts of Western Wildfire Season Severity"

American Geophysical Union 2001 Fall Meeting, 10-14 December 2001, San Francisco, CA, contributed poster presentation "Modeling Sierra Nevada Wildfire Season Severity And Suppression Costs Under A Climate Change Scenario"

American Meteorological Society Fourth Symposium on Fire and Forest Meteorology, 13-15 November 2001, Reno, NV, contributed presentation "Statistical Forecasts of Western Wildfire Season Severity"

18th Annual **Pacific Climate Workshop**, 24-27 March 2001, Asilomar, CA, contributed presentation "Statistical Forecasts of Wildfire Season Severity using Canonical Correlation Analysis"

18th Annual **Pacific Climate Workshop**, 24-27 March 2001, Asilomar, CA, poster presentation "Climate Variability and Large Storm Surge on the Pacific Coast of the United States"

18th Annual Pacific Climate Workshop, 24-27 March 2001, Asilomar, CA, poster presentation "A Western United States Fire Climatology"

Climate Assessment for the Southwest 2001 Fire and Climate Workshops 14-16 February 2001, Tucson, AZ, contributed presentation, "Climatology of Western Wildfire and Experimental Long-Range Forecasts of Wildfire Season Severity"

81st **American Meteorological Society** Annual Meeting 14-19 January 2001, Albuquerque, NM, poster presentation "Climate Variability and Large Storm Surge on the Pacific Coast of the United States"

81st **American Meteorological Society** Annual Meeting 14-19 January 2001, Albuquerque, NM, poster presentation "A Western United States Fire Climatology"

American Geophysical Union 2000 Fall Meeting, 15-19 December 2000, San Francisco, CA, poster presentation "A Western United States Fire Climatology"

16th Annual **Pacific Climate Workshop**, 24-27 May 1999, Two Harbors, CA, contributed presentation "El Niño and One Hundred Years of Storm Surges in the Northeast Pacific"