ADAM C. WATTS

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PROFESSIONAL INTERESTS

My passion is service leadership to support a diverse group of investigators leading globally-important atmospheric and interdisciplinary environmental research, while maintaining attention to my work in fire ecology and unmanned aircraft systems. These research interests include the ecological and atmospheric effects of wildland fires; the creation and support of interdisciplinary teams to address complex problems; and the development of technology and its application in challenging environments to collect novel environmental data, such as the deployment of customized smoke-sampling payloads above high-intensity prescribed burns. To advance work in this area I lead the UAS component of the Fire and Smoke Model Evaluation Experiment, and I direct DRI's Airborne Systems Testing and Environmental Research Laboratory. I also serve as Deputy Director for the Division of Atmospheric Sciences, where I have assisted with and participated in business development for faculty programs, annual evaluations via the MBO process, and the budgeting and leadership processes for DAS and DRI.

EXPERIENCE

Deputy Director, Division of Atmospheric Sciences, Desert Research Institute 2019-present

Associate Research Professor, Division of Atmospheric Sciences, Desert Research Institute 2016-present
Graduate Faculty, Department of Physics and Atmospheric Sciences, Univ. NV Reno, 2019-present
Director, Airborne Systems Testing for Environmental Research Laboratory 2018-present
Division Lead, UAS for Ecological and Atmospheric Applications 2015-present
Affiliate Faculty, Ecology, Evolution, and Conservation Biology, Univ. of NV, Reno 2014-present
Deputy Director, Climate, Ecosystems, and Fire Applications (CEFA) Program 2014-2019

Assistant Research Professor, Division of Atmospheric Sciences, Desert Research Institute 2013-2016

Postdoctoral Research Ecologist, Fire Science Lab, University of Florida 2012–2013

Volunteer Firefighter, West Putnam Volunteer Fire Department, Hawthorne, FL 2012–2013

Alumni Graduate Fellow, University of Florida 2008–2012

Scientist/UAS Program Coordinator, USGS Florida Cooperative Fish and Wildlife Research Unit and University of Florida IFAS 2006–2008

Peace Corps Agroforestry Volunteer, US State Department, Guinea 2004–2006

Wildlife Biologist, USGS Florida Cooperative Fish and Wildlife Research Unit 2002–2003

Research Assistant, UF Department of Wildlife Ecology & Conservation 2000–2002

EDUCATION

Doctor of Philosophy, Interdisciplinary Ecology, University of Florida 2012

Master of Science, Interdisciplinary Ecology, University of Florida 2002

Bachelor of Science, Biology/Ecology (co-major), Emory University 1999

LEADERSHIP AND INSTITUTIONAL SERVICE

INSTITUTIONAL SERVICE AND LEADERSHIP

Deputy Director, Division of Atmospheric Sciences, 2019-current
DRI Representative to the University Corporation for Atmospheric Research (UCAR), 2019-current
DRI Representative to Tahoe Science Advisory Council, 2018-current
DRI Program and Budget Committee, DAS representative, 2018-2019
DRI Promotions Committee, 2018
Faculty Senate, Desert Research Institute, 2017-2018
-Ad hoc Travel Policy Review Committee, 2018
-Committee on Sabbaticals, 2017
Search Committee, DRI Executive Vice President for Research, 2017
Search Committee, Executive Assistant to the DRI President, 2015

MANAGEMENT TRAINING

Leadership Development Program. Center for Creative Leadership, San Diego, CA, 2019

Making the transition to management. American Management Academy, Chicago, IL, 2017

AMA "5-Day MBA" Course. American Management Academy, Boston, MA, 2017

Career Planning: aligning your development to your organization's needs. American Management Academy, San Francisco, CA, 2017

SPONSORED PROJECTS:

(SUMMARY: 23 PROJECTS TOTALING $9.2 MILLION DURING THE PAST 10 YEARS;
11 PROJECTS FOR $8.4 MILLION AS PI OR CO-PI AT DRI)

Fighting Wildfires under Climate Change: A Data-Informed Physics-Based Computational Framework for Probabilistic Risk Assessment and Mitigation, and Emergency Response Management. National Science Foundation, 2020-2024. $2,000,000. Co-PI.

Closing gaps in measurements and understanding: plume characteristics, live fuel moisture dynamics, and process-based modeling. US Department of Defense Strategic Environmental Research and Development Program, 2020-2024. $2,747,389. Co-PI.

MRI: Acquisition of an Infrared Microscope for Research Expansion and Training in the Earth Sciences. National Science Foundation. 2020. $138,570. Co-PI.

Upland Ecosystem Science to Action: Recommendations for applied research and monitoring of upland ecosystems in the Lake Tahoe Basin. Tahoe Regional Planning Agency, 2020. $20,000. PI.

UAS smoke data collection. Joint Fire Science Program, 2019-2020. $45,000. PI.

UAS support for the Fishlake National Forest FASMEE campaign. USDA Forest Service, Pacific Northwest Research Station, 2019-2020. $40,000. PI.

Remote sensing of fire workshop. NASA EPSCoR, 2016, $29,988. Co-PI.

Prometheus unmanned: bringing wildfire and industry together in Nevada. Nevada Governor's Office of Economic Development, Knowledge Fund, 2015-2019. $492,000 (multiple awards over funding period). PI.

Unmanned aircraft for precipitation enhancement: Promoting drought resilience and advancing Nevada's UAS industry. Nevada Governor's Office of Economic Development, 2015-2018. $750,000 (multiple awards over funding period). PI.

Fire and smoke model evaluation experiment (FASMEE) phase 1 (Design and Planning) Leadership. Joint Fire Science Program, 2015-2018. $491,380. Co-PI.

Collaborative research: Nitrogen partitioning and evolution of particulate organic nitrogen in peat fire emissions. National Science Foundation, 2015-2017. $409,570 Co-PI. ($294,922 award to DRI.)

Measuring absorption spectra of carbonaceous combustion aerosols to enable their identification and quantification by shortwave remote sensing. NASA, 2015-2018. $500,000. Co-PI.

Patterned landscapes and the ecological drill: biotic control on hydrology and surface morphology in a low-relief carbonate system. National Science Foundation, 2014-2017. $900,000. Co-PI.

Linking fire ecology and particulate microphysics to explore climatic implications of peat fire emissions. DRI-DAS internal proposal, 2013-2014. $36,861. PI.

Successive wildfire influence on structure and properties of forested wetlands in southern Florida. National Science Foundation, 2013-2014. $74,979. PI.

Interactions of microclimate and fire effects in wetland forest patches: implications for current fire management and future climate scenarios. 2012, National Park Service, $19,500. Co-PI.

Red-cockaded woodpecker cavity tree monitoring: immediate and delayed mortality due to fire. National Park Service, 2011-2013. $78,000. Co-PI.

Delayed mortality and fire-climate interactions in cypress swamps, Big Cypress National Preserve. National Park Service, 2011-2013. $25,415. Co-PI.

Will climate change alter wildfire behavior and effects in seasonally-dry wetlands? Joint Fire Science Program/Association for Fire Ecology, 2011-2012. $22,277. Co-PI.

Flatwoods species responses to restoration treatment and season: Long-term success of fire and roller-chopping in fire-suppressed areas. Florida Conserved Forest Ecosystems Outreach and Research Cooperative (CFEOR), 2011-2012. $19,974. Co-PI.

Climate response and fire history of slash pine on Blackbeard Island and Wassaw National Wildlife Refuges, Savannah Coastal Refuges Complex. US Fish & Wildlife Service, 2011. $25,000. Co-PI.

Impact of Deep Fire on hardwood hammocks in Big Cypress National Preserve, Florida. U.S. Geological Survey, 2010-2012. $40,762. Student Services Contract.

Delayed mortality among pond cypress (*Taxodium distichum* var. *imbricarium*): do hydrology and edaphic factors explain response? National Park Service, 2010-2011. $24,169. Co-PI.

Mortality of pondcypress (*Taxodium distichum* var. *imbricarium*) following the Deep Fire, Big Cypress National Preserve. U.S. Geological Survey, 2009. $10,120. Student Services Contract.

Use and enhancement of an autonomous UAS System, US Geological Survey RWO 249. U.S. Army Corps of Engineers, 2008-2010. $441,509. Proposal author/Senior personnel.

Assessment of unmanned aircraft systems for Everglades wading bird surveys. South Florida Water Management District, 2008. $35,000. Co-PI.

ERDC participation in 2008 USACE UAS Program, US Geological Survey RWO 248. U.S. Army Corps of Engineers, 2008. $66,038. Proposal author/Senior personnel.

AWARDS

Editor's Choice Article Award for "Criteria-Based Identification of Important Fuels for Wildland Fire Emission Research," 2020

DRI Sabbatical Awardee, 2020-2021

10th Anniversary Best Paper Award for "Unmanned aircraft systems in remote sensing and scientific research: classification and considerations of use" in *Remote Sensing*, 2019

Rising Researcher Award, Nevada Board of Regents, 2016

Nature Geosciences Editors' Pick for "Global vulnerability of peatlands to fire and carbon loss," 2015

CBC Fellow, Northwest Climate Science Center, 2013

Edward Komarek Graduate Student Excellence Award, Association for Fire Ecology, 2012

Graduate Research Innovation Award, U.S. Joint Fire Science Program, 2011

John I. Davidson Award for Practical Papers, American Society for Photogrammetric Engineering and Remote Sensing, 2010

Best Student Paper award, 24th Fire Ecology Conference, Tall Timbers Research Station and Land Conservancy, 2009

University of Florida Graduate Alumni Fellowship, 2008-2012

SCIENTIFIC AND COMMUNITY SERVICE ACTIVITIES

PROFESSIONAL ORGANIZATIONS

Association for Fire Ecology
- -Treasurer/Financial Secretary, 2014-2018
- -Board of Directors, 2012-2018
- -Liaison to Board of International Association for Wildland Fire, 2018
- -Finance Committee chair, 2013-2017
- -Awards Committee, 2014-current
- -National Co-Chair, Student Association for Fire Ecology, 2010-2011

Society for Ecological Restoration
- -Membership Chair, Coastal Plain Chapter, 2002-2003

EVALUATION OF COMPETITIVE FUNDING PROPOSALS

Maine Space Grant Program, 2019
Department of Energy, Terrestrial Ecological Sciences Program, 2018
Department of Energy, Terrestrial Ecological Sciences Program, 2015
National Science Foundation, 2014, 2020
National Geographic Society; Alaska Coastal Marine Institute, 2013, 2015
Joint Fire Science Program, 2012, 2013
Association for Fire Ecology (Graduate Research Innovation Grants), 2012, 2013, 2014
Tahoe Science Program/Southern Nevada Public Lands Grants, 2009, 2010, 2011
State Wildlife Grants program, Florida Fish and Wildlife Research Institute, Florida Fish and Wildlife Conservation Commission, 2008

EVALUATION OF MANUSCRIPTS

Canadian Journal of Remote Sensing
Fire Ecology
African Studies Quarterly
(Editorial Committee, 2006–2008)
African Journal of Environmental Science and Technology
Soil Science Society of America Journal
International Journal of Wildland Fire
Chemosphere
Nature Climate Change
International Journal of Aerospace System Science and Engineering
Biogeochemistry
Sensors
Ibis
PlosOne
Journal for Field Ornithology
North American Journal of Fisheries Mgt.
Journal of Unmanned Vehicle Systems
British Journal of Science and Technology
Computers and Geosciences
Rangeland Ecology and Management
Fire (Editorial Board, 2018-current)

COMMUNITY SERVICE AND SCIENTIFIC ACTIVITIES

Co-Editor, Special Issue: "Unmanned aircraft in fire research and management." *Fire*, 2019-2020

Organizer, Special Session: "Unmanned aircraft systems (UAS) in wildland fire research and management." International Fire Congress, AFE, 18-22 November 2019, Tucson, AZ

Technical Committee, American Society for Photogrammetry and Remote Sensing "UAS Mapping" meeting, 21-22 October 2014, Reno, NV

Member, Nevada Sagebrush Ecosystem Science Work Group, Reno/Carson City, NV, 2013-2014

Co-organizer, Special Session: "Behavior and Ecological Consequences of Smoldering Fires." 4th Fire Behavior and Fuels Conference, International Association of Wildland Fire, 18-22 February 2013, Raleigh, NC

Judge for student poster session, 5th International Fire Ecology and Management Congress, 3-7 December 2012, Portland, OR

Session Moderator, "Observing Fire," 5th International Fire Ecology and Management Congress, 3-7 December 2012, Portland, OR

Visiting Scholar, Bre Centre for Fire Safety and Engineering, University of Edinburgh, 2012

Co-organizer, Special Session: "Fire: Shaping Wetlands from Nutrients to Wildlife." 9th INTECOL International Wetlands Conference, 3-8 June 2012, Orlando, FL

NASA/US Forest Service Tactical Fire Remote Sensing Advisory Committee, 2010-current

"Application of Adaptive Management to Address Climate Change Related Challenges" workshop, Collaborative Adaptive Management Network, 2010

Reviewer, Fire Management Plan, Big Cypress National Preserve, Florida, 2010

President, Student Association for Fire Ecology, University of Florida Chapter, 2008-2009

Volunteer Diversity Committee, U.S. Peace Corps, Guinea, 2005-2006

Peer Support Network, U.S. Peace Corps, Guinea, 2004-2006

TEACHING AND ADVISING:

Advisor and Committee Co-Chair for Kerri Minaitre (Ph.D.), 2019-current

Postdoc Mentor for Gabrielle Boisrame (DHS Postdoctoral Scholar), 2019-current

Committee member for Chiranjivi Bhatterai (Ph.D.), 2019-current

Committee member for Deep Sengupta (Ph.D.), 2017-2020

Postdoc Advisor for Kellen Nelson, 2017-2019

Committee member for Zachary Carter (M.S. student at University of Nevada, Reno), 2015-2016

External advising faculty for capstone course project on UAS applications, University of British Columbia-Okanagan, Kelowna, Canada, Fall 2015

Fire Ecology (undergraduate and graduate course with lab component), Spring 2013: Instructor (UF)

Florida Certified Prescribed Burning Certification Course: Instructor at UF and Florida Center for Wildfire and Forest Resources Management Training, Spring 2013

Contemporary Issues in Forest Resources and Conservation (FOR4020), Fall 2010: Instructor (UF)

Introduction to Forest Resources and Conservation (FOR3200), Summer 2010: Teaching Assistant (UF)

Forest Ecology (FOR3153C), Fall 2001: Teaching Assistant and Lab Instructor (UF)

Invited lecture or instructor:

Wildland Restoration Ecology, University of Idaho, Spring 2016
Fire Ecology, University of Florida, Spring 2014
Ecosystem Responses to Climate Change, UC-Berkeley, Spring 2014
Fire Ecology, Mississippi State University, Spring 2014
Contemporary Issues in Forest Resources and Conservation, University of Florida, Fall 2012
Introduction to Forest Resources and Conservation, University of Florida, Summer 2012
Integrated Natural Resource Management, University of Florida, Spring 2012

PROFESSIONAL PUBLICATIONS AND COMMUNICATIONS

(SUMMARY: 38 PEER-REVIEWED PUBLICATIONS; 20 RESEARCH REPORTS; 1 BOOK CHAPTER; 136 PRESENTATIONS AND WORKSHOPS; >2300 CITATIONS; *h*-INDEX=16)

PEER-REVIEWED PUBLICATIONS

41. Kobziar, L. N., D. Vuono, and A. C. Watts. High-intensity wildland fires transfer diverse and viable microbes from terrestrial sources to an atmospheric refuge through smoke. *In preparation*.

40. Kobziar, L. N., R. Moore, C. Trucco, B. Christner, A. C. Watts, R. D. Ottmar, A. Hudak, A. Kochanski, J. Cronan, and R. McCarley. Estimated Biological Smoke Emissions from High-Intensity Crown Fire in Forests of the Inland West, USA. *In preparation.*

39. Aurell, J., B. Gullett, A. Holder, F. Kiros, A. Watts, and R. Ottmar. Wildland fire emission sampling at Fishlake National Forest, Utah, using an unmanned aircraft system. *Submitted*, Atmospheric Environment.

38. Watts, A. C., V. Samburova, A. Y. Khlystov, and H. Moosmüller. Criteria-based identification of important fuels for wildland fire emissions research. Atmosphere 11:640; 10.3390/atmos11060641. (*Selected for Editor's Choice Award*)

37. Sengupta, D., V. Samburova, C. Bhatterai, A. C. Watts, H. Moosmüller, and A. Y. Khlystov 2020. Polar semivolatile organic compounds in biomass burning emissions and their chemical transformations during aging in an oxidation flow reactor. Atmospheric Chemistry and Physics 20: 1-24; 10.5194/acp-2019-1179.

36. McLauchlan, K. K., P. E. Higuera, J. Miesel, B. M. Rogers, J. Schweitzer, J. K. Shuman, A. Tepley, J. M. Varner, T. T. Veblen, S. A. Adalsteinsson, J. K. Balch, P. Baker, E. Batllori, E. Bigio, P. Brando, M. Cattau, M. L. Chipman, J. Coen, R. Crandall, L. Daniels, N. Enright, W. S. Gross, B. J. Harvey, J. A. Hatten, S. Hermann, R. E. Hewitt, L. N. Kobziar, J. B. Landesmann, M. M. Loranty, S. Y. Maezumi, L. Mearns, M. Moritz, J. A. Myers, J. G. Pausas, A. F. A. Pellegrini, W. J. Platt, J. Roozeboom, H. Safford, F. Santos, R. M. Scheller, R. L. Sherriff, K. G. Smith, M. D. Smith, and A. C. Watts 2020. Fire as a fundamental ecological process: research advances and frontiers. Journal of Ecology: doi:10.1111/1365-2745.13403.

35. Hiers, J. K., J. J. O'Brien, J. M. Varner, B. W. Butler, M. Dickinson, J. Furman, M. Gallagher, D. Godwin, S. L. Goodrick, S. M. Hood, A. Hudak, L. N. Kobziar, R. Linn, E. L. Loudermilk, S. McCaffrey, E. M. Rowell, K. Robertson, N. Skowronski, A. C. Watts, and K. Yedinak 2020. Prescribed fire science: Understanding the behavior, effects, and challenges of fires we use. Fire Ecology 16: 11.

34. Kobziar, L.N., M. Pingree, A. C. Watts, K. N. Nelson, T. J. Dreaden, and M. Rideout 2019. Accessing the life of smoke: using small unmanned aircraft systems (UAS) to sample wildland fire bioaerosol emissions and their environment. Fire 2(4):56.

33. Chow, J. C., J. Cao, L.-W. Antony Chen, X. Wang, Q. Wang, J. Tian, S. S. H. Ho, A. C. Watts, T. B. Carlson, S. D. Kohl, and J. G. Watson 2019. Changes in $PM_{2.5}$ peat combustion source profiles with atmospheric aging in an oxidation flow reactor. Atmospheric Measurement Techniques 12: 5475-5501.

32. Watson, J. G., J. Cao, L.-W. Antony Chen, Q. Wang, J. Tian, X. Wang, S. Gronstal, S. S. H. Ho, A. C. Watts, and J. C. Chow 2019. Gases and $PM_{2.5}$ Mass and Speciated Emission Factors from Laboratory Chamber Peat Combustion. Atmospheric Chemistry and Physics 19: 14173-14193.

31. Falk, D. A., A. C. Watts, and A. Thode 2019. Scaled ecological resilience. Frontiers in Ecology and Evolution 7:275.

30. Liu, Y., A. Kochanski, K. R. Baker, W. Mell, R. Linn, R. Paugam, J. Mandel, A. Fournier, M. A. Jenkins, S. Goodrick, G. Achtemeier, F. Zhao, R. Ottmar, N. French, N. Larkin. T. Brown, A. Hudak, M. Dickinson, B. Potter, C. Clements, S. Urbanski, S. Prichard, A. Watts, and D. McNamara 2019. Fire behavior and smoke modeling: Model improvement and measurement needs for next-generation operational smoke prediction systems. International Journal of Wildland Fire 28(8): 570-588.

29. Nelson, K. N., J. M. Boehmler, A. Y. Khlystov, H. Moosmüller, V. Samburova, C. Bhatterai, E. M. Wilcox, and A. C. Watts 2019. A Multipollutant Smoke Emissions Sensing and Sampling Instrument Package for Unmanned Aircraft Systems: Development and Testing. Fire 2: 32.

28. Prichard, S., N. S. Larkin, R. Ottmar, N. French, K. Baker, T. Brown, C. Clements, M. Dickinson, A. Hudak, A. Kochanski, R. Linn, Y. Liu, B. Potter, W. Mell, D. Tanzer, S. Urbanski, and A.C. Watts 2019. The Fire and Smoke Model Evaluation Experiment: a plan for integrated, large fire-atmosphere field campaigns. Atmosphere 10:66.

27. Boehmler, J. M., S. M. Loría-Salazar, C. Stevens, J. D. Long, A. C. Watts, H. A. Holmes, J. C. Barnard, and W. P. Arnott 2018. Development of a multispectral albedometer and deployment on an unmanned aircraft for evaluating satellite retrieved surface reflectance over Nevada's Black Rock Desert. Sensors 18: 3504.

26. Bhattarai, C., V. Samburova, D. Sengupta, M. Iaukea-Lum, A. C. Watts, H. Moosmüller, A. Khlystov 2018. Physical and chemical characterization of aerosol in fresh and aged emissions from open combustion of biomass fuels. Aerosol Science and Technology 52: 1266-1282.

25. Sengupta, D, V. Samburova, C. Bhattarai, E. Kirillova, L. Mazzoleni, M. Iaukea-Lum, A. C. Watts, H. Moosmüller, A. Khlystov 2018. Light absorption by polar and non-polar aerosol compounds from laboratory biomass combustion. Atmospheric Chemistry and Physics, 18: 10849–10867.

24. Yatavelli, R. L. N., Chen, L.-W. A., Knue, J. D., Samburova, V., Gyawali, M., Watts, A. C., Chakrabarty, R. K., Moosmüller, H., Hodzic, A., Wang, X., Zielinska, B. K., Chow, J. C., and J. G. Watson 2017. Emissions and partitioning of intermediate-volatility and semi-volatile polar organic compounds (I/SV-POCs) during laboratory combustion of boreal and sub-tropical peat. Aerosol Science and Engineering 1: 25-32.

23. Watts, A. C., H. Moosmüller, V. Samburova, A. Y. Khlystov, M. Gyawali, D. Sengupta, C. Bhattarai, R. L. N. Yatavelli, R. K. Chakrabarty, I. J. Arnold, B. Zielinska, J. D. Knue, J. Chow, J. G. Watson, X. Wang, L.-W. A. Chen, A. Tsibart, and G. Engling. 2016. Detailed analyses of emissions from peat combustion across biomes. Proceedings of the 15th International Peat Congress, Sarawak, Malaysia, 15-19 August 2016.

22. Samburova, V., J. Connolly, M. Gyawali, R. L.N. Yatavelli. A. C. Watts, R. K. Chakrabarty, B. Zielinska, H. Moosmüller, A. Khlystov. 2016. Polycyclic Aromatic Hydrocarbons in Biomass-Burning Emissions and Their Contribution to Light Absorption and Aerosol Toxicity. Science of the Total Environment 568: 391-401.

21. Chakrabarty, R. K., M. Gyawali, L. N. R. Yatavelli, A. Pandey, A. C. Watts, J. Knue, L-W. A. Chen, R. R. Pattison, A. T. Tsibart, V. Samburova, and H. Moosmüller. 2016. Brown carbon aerosols from burning of boreal peatlands: microphysical properties, emission factors, and implications for direct radiative forcing. Atmospheric Chemistry and Physics 5: 3033-3040.

20. Smith, A. M. S., C. A. Kolden, T. B. Paveglio, M. A. Cochrane, M. A. Moritz, A. D. Kliskey, L. Alessa, A. T. Hudak, C. M. Hoffman, J. A. Lutz, D. M. J. S. Bowman, L. P. Queen, S. J. Goetz, P. E. Higuera, L. Boschetti, M. Flannigan, K. M. Yedinak, A. C. Watts, E. K. Strand, J. W. van Wagtendonk, and B. J. Stocks. 2016. The Science of Firescapes: Achieving Fire Resilient Communities. BioScience 66, 130-142.

19. Watts, A. C., C. A. Schmidt, D. A. Kaplan, and D. L. McLaughlin. 2015. Hydrologic implications of smoldering fires in wetland landscapes. Freshwater Science 34:1394-1405.

18. Chakrabarty, R. K., M. Gyawali, L. N. R. Yatavelli, A. Pandey, A. C. Watts, J. Knue, L-W. A. Chen, R. R. Pattison, A. T. Tsibart, V. Samburova, and H. Moosmüller. 2015. Dominance of brown carbon in aerosol emissions from burning of boreal peatlands. Atmospheric Chemistry and Physics Discussions 15: 28793-28813.

17. Watts, A. C. and L. N. Kobziar. 2015. Hydrology and fire regulate edge influence on microclimate in wetland forest patches. Freshwater Science 34: 1383-1393.

16. Kobziar, L. N., D. Godwin, L. Taylor, and A. C. Watts. 2015. Perspectives on trends, effectiveness, and impediments to prescribed burning in the Southern US. Forests 6: 561-580.

15. Turetsky, M., B. W. Benscoter, S. Page, G. Rein, G. van der Werf, and A. C. Watts. 2015. Global vulnerability of peatlands to fire and carbon loss. Nature Geoscience 8: 11-14.

14. Tsibart, A. S., A. Gennadiev, T. Koshovskii, and A. C. Watts. 2014. Polycyclic aromatic hydrocarbons in post-pyrogenic soils of drained peatlands in West Meshchera (Moscow Region, Russia). Solid Earth 5:1-4.

13. Watts, A. C., D. L. Watts, M. J. Cohen, J. B. Heffernan, D. L. McLaughlin, J. B. Martin, D. A. Kaplan, T. Z. Osborne, and L. N. Kobziar 2014. Evidence of biogeomorphic patterning in a low-relief karst landscape. Earth Surface Processes and Landforms. 39: 2027-2037.

12. Watts, A. C. and L. N. Kobziar. 2013. Smoldering combustion and ground fires: ecological effects and multi-scale significance. Fire Ecology 9: 124-132.

11. Watts, A. C. 2013. Organic soil combustion in cypress swamps: moisture effects and landscape implications for carbon release. Forest Ecology and Management 294C: 178-187.

10. Watts, A. C., V. G. Ambrosia, and E. A. Hinkley. 2012. Unmanned aircraft in remote sensing and scientific research: classification and considerations for use. Remote Sensing 4: 1671-1692.

9. Watts, A. C., L. N. Kobziar, and J. R. Snyder. 2012. Fire reinforces structure of pondcypress (*Taxodium distichum* var. *imbricarium*) domes in a wetland landscape. Wetlands 32: 439-448.

8. Watts, A. C., L. N. Kobziar, and H. F Percival. 2011. Unmanned aircraft systems for wildland fire monitoring and research. K.M. Robertson, R.E. Masters and K.E.M. Galley, eds. Pages 86–90 in Proceedings of the 24th Tall Timbers Fire Ecology Conference: The Future of Fire: Public Awareness, Health, and Safety. Tall Timbers Research Station, Tallahassee, FL.

7. Watts, A. C., J. H. Perry, S. E. Smith, M. A. Burgess, B. E. Wilkinson, Z. Szantoi, P. Ifju, and H. F. Percival. 2010. Small unmanned aircraft systems for low-altitude aerial surveys. Journal of Wildlife Management 7: 1614–1619.

6. Monroe, M. C., A. C. Watts, and L. N. Kobziar. 2009. Where there's fire, there's smoke: Air Quality and Prescribed Burning in Florida. In Electronic Data Information Source. Institute of Food and Agricultural Sciences, Gainesville, Florida.

5. Wilkinson, B. E., B. A. Dewitt, A. C. Watts, A. H. Mohamed, and M. A. Burgess. 2009. A new approach for passpoint generation from aerial video imagery. Photogrammetric Engineering and Remote Sensing 75:1415-1424.

4. Perry, J., A. Mohamed, A. H. El-Rahman, W. S. Bowman, Y. O. Kaddoura, A. C. Watts 2008. Precision directly georeferenced unmanned aerial remote sensing system: performance evaluation. Pages 680-688 in Proceedings of the Institute of Navigation National Technical Meeting, 28–30 January 2008, San Diego, CA.

3. Watts, A. C., W. S. Bowman, A. H. El-Rahman, A. Mohamed, B. E. Wilkinson, J. Perry, Y. O. Kaddoura, and K. Lee. 2008. Unmanned aircraft systems (UASs) for ecological research and natural resource monitoring. Ecological Restoration 26:13-14.

2. Hilderbrand, R. H., A. C. Watts, and A. M. Randle. 2005. The myths of restoration ecology. Ecology and Society 10:19.

1. Watts, A. C. and G. W. Tanner. 2003. Fire and roller chopping have varying effects on dry prairie plant species (Florida). Restoration Ecology 21: 205-207.

RESEARCH REPORTS, EXTENSION, AND OTHER PUBLICATIONS

20. Moosmüller, H., A. C. Watts, and V. Samburova. 2020. Measuring Absorption Spectra of Carbonaceous Combustion Aerosols to Enable their Identification and Quantification by Shortwave Remote Sensing. Final Report for NASA Project NNX15AI48G.

19. Watts, A. C., P. Manley, A. Harpold, S. Chandra, D. Eckberg, M. Hausner, M. Moritz, and B. Sullivan. 2020. Upland ecosystem science to action plan: applied research and monitoring of upland ecosystems in the Lake Tahoe Basin. Final Project Report, Tahoe Science Advisory Council, Work Order 015.

18. Tahoe Science Advisory Council (TSAC). 2019. Science to Action Planning, Project Briefing and Science Vision for Lake Tahoe, 2019. TSAC Technical Report, August 2019. Incline Village, NV.

17. Watts, A. C. 2017. Biological Footprints in the geological record. Research Features 113: 24-27.

16. Soja, A., D. Schimel, L. Giglio, T. Loboda, N. French, J. Dibb, T. Moore, J. McCarty, A. da Silva, Jr., S. Conard, J. Douglas, R. Kahn, R. Sohlberg, A. Pankratz, R. Swap, C. Ichoku, D. Hamilton, V. Ambrosia, C. Rodriguez-Franco, B. Stocks, Z. Holden, M. Carroll, K. Weber, T. Harbour, J. Schnase, E. Hinkley, M. Miller, M. Rollins, S. Goodrick, A. Watts, S. Goetz, B. Peterson, R. Ziebart, B. Barnard, J. Coen, J. Cissel, T. Brown, C. Wiedinmyer, C. Justice, J. Vogelman, J. Brass, J. Randerson, B. Quayle, B. Schichtel, S. Hook, S. Phillips, and D. Roy. 2015. Prudent observations necessary to address wildland fire science and applications grand challenges: critical feedbacks with the climate system. White paper submitted to the National Academies of Science, Engineering, and Medicine's Earth Science and Application Decadal Survey.

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14. Brown, T., C. Clements, N. Larkin, K. Anderson, B. Butler, S. Goodrick, C. Ichoku, B. Lamb, R. Mell, R. Ottmar, S. Schranz, G. Tonnesen, S. Urbanski, and A. Watts. 2014. Validating the next generation of wildland fire and smoke models for operational and research use – a national plan. Final Report, Joint Fire Science Program, Project 13-S-01-01.

13. Watts, A. C. 2013. Will climate change alter wildfire behavior and effects in seasonally-dry wetlands? Final Report, Joint Fire Science Program, Project 11-3-1-22.

12. Watts, A. C. 2013. Smoldering combustion in organic soils. National Park Service Fire Program RxFx Newsletter, Spring 2013 issue.

11. Kobziar, L. N., E. Carvalho, and A. C. Watts. Flatwoods species responses to restoration treatment and season at Myakka River State Park – A CFEOR Signature Project. CFEOR [Conserved Forest Ecosystems Outreach and Research Cooperative] Updates Newsletter, February 2013 issue.

10. Watts, A. C. and L. N. Kobziar. 2012. Smoldering combustion in organic soils: peat and muck fires in the southeastern US. Research Synthesis 2012-9, Southern Fire Exchange.

9. Watts, A. C. and L. N. Kobziar. 2012. Cypress mortality following wildfires: information and recommendations for fire and natural resource managers. Fact Sheet 2012-4, Southern Fire Exchange Information Briefs.

8. Watts, A. C. and L. N. Kobziar. 2012. University of Florida graduate research reveals challenges to managing fire in dry wetlands. Conserved Forest Ecosystems Outreach and Research Cooperative (CFEOR) Newsletter.

7. Watts, A. C. 2012. The Wildfire Ecology of Wetland Landscapes. Article, National Park Service Fire Program RxFx Newsletter, Spring 2012 issue.

6. Watts, A. C., J. R. Snyder, and L. N. and Kobziar. 2011. Mortality of pondcypress (*Taxodium distichum* var. *imbricarium*) in cypress domes following the 2009 Deep Fire: influence of fire severity, tree injury, and cypress dome size. Final Report, Southeastern Ecological Science Center, USGS. 21 p.

5. Watts, A. C. 2008. Unmanned Aircraft Systems operator's manual, Nova/Polaris UAS Program. Gainesville, FL: Florida Cooperative Fish and Wildlife Research Unit.

4. Brush, J. and A. C. Watts. 2008. An assessment of autonomous unmanned aircraft systems (UAS) for avian surveys. Final Report, Wildlife Research Section, Fish and Wildlife Research Institute, Florida Fish and Wildlife Conservation Commission.

3. Frederick, P. C, A. C. Watts, and H. F. Percival. 2008. An assessment of unmanned aircraft systems for surveys of wading birds in the Everglades. Final Report, South Florida Water Management District.

2. Watts, A. C. 2008. A Real Man's Place: Attitudes and environment at a Southern deer camp. T. A. Watts, ed. White Masculinity in the Recent South. Baton Rouge: Louisiana State University Press.

1. Watts, A. C., G. W. Tanner, and R. Dye 2006. Restoration of dry prairie using fire and roller chopping. R. Noss, ed. Pages 225–230 in Land of fire and water: Proceedings of the Florida Dry Prairie Conference.

BOOK CHAPTER

Watts, A.C. 2019. Unmanned aircraft systems. In Manzello, S. (ed), Encyclopedia of wildfires and wildland-urban interface (WUI) fires. Springer. doi: 10.1007/978-3-319-51727-8_83-1.

PRESENTATIONS AND WORKSHOPS:

136. Watts, A. C. Environmental effects of wildfires, and areas of current and future concern. Invited presentation, Nevada Legislature Interim Committee on Wildfires. 2 June 2020, Carson City, NV.

135. Kobziar, L. N., D. Vuono, R. Moore, B. Christner, A. C. Watts, B. Gullett, J. Aurell, A. Kochanski, D. Betancourt, and T. Dean. Microbial emissions affect biodiversity and ice nucleation potential in FASMEE smoke plumes. Presentation, 3rd International Smoke Symposium, 22 April 2020, Raleigh, NC.

134. Watts, A. C., R. D. Ottmar, B. Gullett, L. N. Kobziar, J. Aurell, D. Grimm, K. Hiers, and A. Holder. Wildland Fire Emissions and Atmospheric Measurements from Unmanned Aircraft Systems to support FASMEE. Presentation, 3rd International Smoke Symposium, 22 April 2020, Raleigh, NC.

133. Watts, A. C. Applications of unmanned aircraft for wildland fire research and monitoring. Invited Seminar, University of Illinois at Chicago School of Engineering, 28 February 2020, Chicago, IL.

132. Watts, A. C. Wildfire Hazards Research and Mitigation. Presentation to U.S. Congressman Mark Amodei, 20 February 2020, Desert Research Institute, Reno, NV.

131. Watts, A. C. D. McEvoy, and T. Wall. Western Regional Climate Center, and Program in Climate, Ecosystems, and Fire Applications at DRI. Presentation to DRI External Review Panel, 19 February 2020, Reno, NV.

130. Brewer, M., C. b. Clements, and A. C. Watts. Small UASs for fire weather and fire behavior monitoring in the wildland fire environment. Presentation, 100th American Meteorological Society Annual Meeting, 12-16 January 2020, Boston, MA.

129. Watts, A. C. Academic leadership panel on UAS. 21st unmanned aircraft systems technical analysis and applications center meeting, 10-12 December 2019, New Mexico State University, Las Cruces, NM.

128. Kobziar, L.N., D. Vuono, R. A. Kohn, B. Christner, and A. C. Watts. The life of smoke: how wildland fire aerosolizes viable microbial communities with atmospheric and terrestrial ramifications. Presentation, American Geophysical Union Fall meeting, 9-13 December 2019, San Francisco, CA.

127. Watts, A. C., V. Samburova, H. Moosmüller, A. Khlystov, D. Sengupta, and C. Bhatterai. Selecting important fuels for biomass emissions research. Presentation, 8th International Fire Ecology and Management Congress, 18-22 November 2019, Tucson, AZ.

126. Watts, A. C., L. N. Kobziar, and J. M. Varner. Beyond the paradigm of moving beyond the paradigm: myths of fire ecology. Plenary Presentation, 8th International Fire Ecology and Management Congress, 18-22 November 2019, Tucson, AZ.

125. Kobziar, L. N., M. Pingree, A. C. Watts, K. N. Nelson, D. Vuono, R. Moore, J. Smith, T. Dreaden, and M. Rideout. Accessing the life of smoke: using unmanned aircraft systems (sUAS) to sample viable microorganisms and environmental covariates during wildland fires. Presentation, 8th International Fire Ecology and Management Congress, 18-22 November 2019, Tucson, AZ.

124. Watts, A. C., R. Ottmar, D. Grimm, J. Juchzter, P. Melarkey, D. Page, L. N. Kobziar, K. N. Nelson, and J. Boehmler. Unmanned aircraft systems (UAS) for data collection at the Fire and Smoke Model Evaluation Experiment (FASMEE). Presentation, 8th International Fire Ecology and Management Congress, 18-22 November 2019, Tucson, AZ.

123. Parsons, R. A., C. Moran, K. Sauerbrey, C. Seielstad, M. Cunningham, A. C. Watts, K. N. Nelson, R. Mell, S. Prichard, and E. Rowell. Connecting fuels, fire behavior and fire effects at the Sycan Marsh, Oregon. Presentation, 8th International Fire Ecology and Management Congress, 18-22 November 2019, Tucson, AZ.

122. Brewer, M., A. C. Watts, C. Clements. Small UAS for Fire Weather and Fire Behavior Monitoring in the Wildland Fire Environment. Presentation, 8th International Fire Ecology and Management Congress, 18-22 November 2019, Tucson, AZ.

121. Watts. A. C. Building a UAS Program for Arid-Lands Monitoring, Management, and Research. Invited Presentation, Bureau of Land Management, 12 November 2019, Reno, NV.

120. Watts. A. C. Building UAS capacity across DRI. Invited presentation, Desert Research Institute, 10 October 2019, Reno, NV.

119. Samburova, V., D. Sengupta, C. Bhatterai, A. C. Watts, H. Moosmüller, and A. Y. Khlystov. Analysis of unidentified organic species in fresh and aged biomass-burning emissions generated under controlled conditions. Presentation, American Association for Aerosol Research, 14-18 October 2019, Portland, OR.

118. Iaukea-Lum, M., D. Sengupta, V. Samburova, A. Y. Khlystov, A. C. Watts, W. P. Arnott, and H. Moosmüller. Optical characterization of fresh and photochemically-aged aerosols emitted from laboratory Siberian peat burning. Poster, American Association for Aerosol Research, 14-18 October 2019, Portland, OR.

117. Watts, A. C. Creating a world-class UAS program for fire research. Invited lecture and workshop, 16 October 2019, Tall Timbers Research Station and Land Conservancy, Tallahassee, FL.

116. Sengupta, D., V. Samburova, C. Bhatterai, A. C. Watts, H. Moosmüller, and A. Y. Khlystov. Polar fraction of semi-volatile organic compounds in biomass burning emissions and their chemical transformations during aging with an oxidation flow reactor. Poster, American Association for Aerosol Research, 14-18 October 2019, Portland, OR.

115. Watts, A. C. Wildfire research at DRI's Airborne Systems Testing and Environmental Research Laboratory. Invited presentation for U.S. Congressman Mark Amodei. 30 September 2019, Reno, NV.

114. Watts, A.C. Operational use of unmanned aircraft over wildland fires: recent UAS work at the Desert Research Institute and the Fire and Smoke Model Evaluation Experiment. Invited presentation, Pacific Northwest National Laboratory. 15 July 2019, Richland, WA.

113. Watts, A.C. UAS Planning for the Fire and smoke model evaluation experiment (FASMEE). Invited presentation, NASA/U.S. Forest Service Tactical Fire Remote Sensing Advisory Committee Spring Meeting, 29 May 2019, Mountain View, CA.

112. Watts, A. C. Small unmanned aircraft systems use in wildland fire research and management. Invited Presentation, 6th International Fire Behavior and Fuels Conference, 29 April-3 May 2019, Albuquerque, NM.

111. Nelson, K, A. Watts, J. Boehmler, V. Samburova, A. Khlystov, H. Moosmüller, and E. Wilcox. Development of a compact, portable smoke emissions sampling instrument appropriate for use with small unmanned aircraft systems. 6th International Fire Behavior and Fuels Conference, 29 April-3 May 2019, Albuquerque, NM.

110. Khlystov, A. Y., V. Samburova, D. Sengupta, C. Bhatterai, A. C. Watts, and H. Moosmüller. Emission Factors and Chemical Composition of Laboratory-Generated Fresh and Aged Biomass Burning Aerosols. 12th International Conference on Carbonaceous Particles in the Atmosphere, 3-6 April 2019, Vienna, Austria.

109. Iaukea-Lum, M., D. Sengupta, V. Samburova, A. Y. Khlystov, A. C. Watts, W. P. Arnott, and H. Moosmüller. Optical characterization of fresh and photochemically-aged aerosols emitted from laboratory Siberian peat burning. 12th International Conference on Carbonaceous Particles in the Atmosphere, 3-6 April 2019, Vienna, Austria.

108. Watts, A.C. Implications of unmanned aircraft for society: case studies from the environmental sciences. Invited seminar, Center for the Study of Science and Society, Missouri University of Science and Technology, 31 October 2018, Rolla, MO.

107. Watts, A.C. Past and future directions for UAS in environmental research. Invited presentation, Missouri University for Science and Technology, 30 October 2018, Rolla, MO.

106. Mazzoleni, L., E. Kirillova, S. Schum, M. Khaksari, D. Sengupta, C. Bhattarai, V. Samburova, A.C. Watts, H. Moosmüller, A.Y. Khlystov. Water-Soluble Aerosol Organic Matter from Wildland Fire Emissions as Observed using Ultrahigh Resolution Orbitrap Elite Mass Spectrometry. Goldschmidt 2018, 12-17 August 2018, Boston, MA.

105. Watts, A.C. Unmanned Aircraft Systems (UAS) for FASMEE and the Rx Fire Science Consortium. Invited Presentation, FASMEE/Rx Fire Science Consortium Workshop, 14 August 2018, Pacific Wildland Fire Sciences Laboratory, Seattle, WA.

105. Nelson, K.N., A.C. Watts, V. Samburova, A.Y. Khlystov, C. Bhattarai, H. Moosmüller, E. M. Wilcox, and M. Giordano. An emissions sampling payload for use with small Unmanned Aircraft Systems (sUAS). Poster, International Society for Atmospheric Research using Remotely-piloted Aircraft, 9-12 July 2018, Boulder, CO.

104. Sengupta, D., L. Gao, E.M. Wilcox, N.D. Beres, C. Bhattarai, V. Samburova, A.C. Watts, A.Y. Khlystov, H. Moosmüller: Estimation of Snow Albedo Reduction by Light Absorbing Impurities Using a Monte Carlo Radiative Transfer Model. 10th International Aerosol Conference, 2-7 September 2018. St. Louis, MO.

103. Sengupta, D, L. Gao, N. Beres, C. Bhattarai, E. Wilcox, V. Samburova, A. Watts, A. Khlystov, and H. Moosmüller. Estimation of Snow Albedo Reduction by Light Absorbing Impurities Using a Monte Carlo Radiative Transfer Model. Presentation, Joint Meeting of 17th Electromagnetic and

Light Scattering Conference (ELS-XVII) and 11th Conference on Laser-Light and Interactions with Particles (LIP2018), 4-9 March 2018, College Station, TX.

102. Watts, A. C., F. McDonough, A. Broch, J. Fleitz, M. Richards, and A. Gertler. Unmanned aircraft for precipitation enhancement. Invited Presentation, International Conference on Aerospace and Aeronautical Engineering. 26-27 February 2018, Abu Dhabi, UAE.

101. French, N, R. Ottmar, T. J. Brown, N. Larkin, S. Prichard, and A. C. Watts. Fire and smoke model evaluation experiment (FASMEE): Coordination of a study to improve smoke modeling for fire operations within the United States. Poster, American Geophysical Union Fall Meeting, 11-14 December 2017, New Orleans, LA.

100. Boehmler, J. M., C. Stevens, W. P. Arnott, A.C. Watts, J. All, and C. G. Schmidt. Development of a novel multispectral instrument for handheld and UAS measurements of surface albedo; first applications for glaciers in the Peruvian Andes and for Nevada's Black Rock Desert. Presentation, American Geophysical Union Fall Meeting, 11-14 December 2017, New Orleans, LA.

99. Nelson, K. N., A. K. Urza, J. Dell, A. C. Watts. Effects of prescribed fire on fuel loadings in contrasting Sierra Nevada meadow and forest sites. Poster, International Fire Congress, 27 November-2 December 2017, Orlando, FL.

98. Iaukea-Lum, M., C. Bhattarai, D. Sengupta, P. G. Piedra, J. Connolly, V. Samburova, A. Y. Khlystov, A. C. Watts, H. Moosmüller. Three-Wavelength Optical Characterization of Fresh and Photochemically-Aged Aerosols from Siberian Peat Burning. 36th Annual Conference of the American Association for Aerosol Research, October 16, 2017-October 20, 2017, Raleigh, NC.

97. C. Bhattarai, V. Samburova D. Sengupta, M. Iaukea-Lum, A. C. Watts, H. Moosmüller, A. Y. Khlystov. Physical and Chemical Characterization of Fresh and Aged Emissions from Open Combustion of Biomass Fuels. 36th Annual Conference of the American Association for Aerosol Research, October 16, 2017-October 20, 2017, Raleigh, NC.

96. Sengupta, D., V. Samburova, C. Bhattarai, M. Iaukea-Lum, A. C. Watts, H. Moosmüller, A. Y. Khlystov. Light absorption of polar and non-polar aerosol components from laboratory biomass combustion. 36th Annual Conference of the American Association for Aerosol Research, October 16, 2017-October 20, 2017, Raleigh, NC.

95. Watts, A. C. Ecological Footprints: How processes and feedbacks create patterns in landscapes. Invited public lecture for Terry Lee Wells Discovery Museum's Science Distilled Public Lecture Series, 16 August 2017, Reno, NV.

94. C. Bhattarai, D. Sengupta, V. Samburova, A. C. Watts, H. Moosmüller, A. Y. Khlystov. Physical and Chemical Characterization of Fresh and Aged Emissions from Open Combustion of Biomass. Graduate Student Poster Competition, 3 May 2017, Reno, NV.

93. Sengupta, D., V. Samburova, C. Bhattarai, M. Iaukea-Lum, A. C. Watts, H. Moosmüller, A. Y. Khlystov. Light absorption of polar and non-polar aerosol components from laboratory biomass combustion. DRI Graduate Student Poster Competition, 3 May 2017, Reno, NV.

92. Watts, A. C. Considerations for UAS use in environmental research. Invited lecture, Ecology, Evolution, and Conservation Biology Colloquium Series, University of Nevada, Reno, 6 April 2017.

91. Watts, A. C. Re-launching UAS capabilities at DRI. Invited Science Talk, 23 February 2017, Desert Research Institute, Reno, NV.

90. Gyawali, M., R. L. N. Yatavelli, A. C. Watts, V. Samburova, R. K. Chakrabarty, L.-W. A. Chen, I. J. Arnold, X. Wang, A. Y. Khlystov, and H. Moosmüller. Optical Properties of Aerosols Emitted

from Laboratory Peat Combustion. Fourth Santa Fe Climate Conference, 5-10 February 2017, Santa Fe, NM.

89. Watts, A. C. and F. Seijo. International collaboration to strengthen the global community of fire ecologists. Invited Closing Presentation, International Conference on Prescribed Fires, Barcelona, Spain, 31 January-2 February 2017.

88. Y. Liu, A. Kochanski, K. Baker, R. Mell, R. Linn, R. Paugam, J. Mandel, A. Fournier, M. A. Jenkins, S. Goodrick, G. Achtemeier, A. Hudak, M. Dickson, B. Potter, C. Clements, S. Urbanski, R. Ottmar, N. Larkin, T. Brown, N. French, S. Prichard, A. Watts, D. McNamara. Fire and smoke model evaluation experiment (FASMEE): modeling gaps and data needs. In: Proceedings for the 2nd International Smoke Symposium, 14-17 November 2016, Long Beach, CA.

87. Cohen, M. J., A. C. Watts, D. L. McLaughlin, C. Quintero, N. D. Ward, A. Pain, X. Dong, C. Chamberlain, J. Diamond, M. Flint, X. Zhang, J. B. Martin, T. S. Bianchi, and J. B. Heffernan. Perspectives on the spatial pattern and basin development of the karst wetlands of Big Cypress National Preserve. Big Cypress Research Symposium, 10 November 2016, Big Cypress National Preserve, Ochopee, FL.

86. Cohen, M. J., D. L. McLaughlin, C. Quintero, N. D. Ward, A. Pain, X. Dong, C. Chamberlain, J. Diamond, M. Flint, X. Zhang, J. B. Martin, T. S. Bianchi, J. B. Heffernan, and A. C. Watts. Hydrogeology and geochemistry of karst cypress domes in Big Cypress National Preserve. Big Cypress Research Symposium, 10 November 2016, Big Cypress National Preserve, Ochopee, FL.

85. Watts, A. C. Fire: Friend or foe? Invited lecture for Science Distilled public lecture event. Terry Wells Discovery Museum, 12 October 2016, Reno, NV.

84. Gyawali, M., R. L. N. Yatavelli, A. C. Watts, V. Samburova, R. K. Chakrabarty, L.–W. A. Chen, I. J. Arnold, X. Wang, A. Y. Khlystov, and H. Moosmüller. Optical Properties of Aerosols Emitted from Laboratory Peat Combustion. Atmospheric Optics: Aerosols, Visibility, and the Radiative Balance, Air & Waste Management Association, September 26-30, 2016, Jackson Hole, WY.

83. Watts, A. C., H. Moosmüller, V. Samburova, A. Y. Khlystov, M. Gyawali, D. Sengupta, C. Bhattarai, R. L. N. Yatavelli, R. K. Chakrabarty, I. J. Arnold, B. Zielinska, J. D. Knue, J. Chow, J. G. Watson, X. Wang, L.-W. A. Chen, A. Tsibart, and G. Engling. Detailed analyses of emissions from peat combustion across biomes. Invited presentation, International Peat Congress, Sarawak, Malaysia, 15-19 August 2016.

82. Watts, A. C., T., Ball, T., M. Richards, and J. Fleitz, J. Operation Energy Resilient Enlighten Project: Phase III briefing and project site prospection to NV Energy, 2 June 2016, Reno, NV.

81. Watts, A. C., M. Dickinson, T. Brown, R. D. Ottmar, N. K. Larkin, N. French, S. J. Pritchard. FASMEE (Fire and Smoke Model Evaluation Experiment) and UAS. Invited presentation, NASA/U.S. Forest Service Tactical Fire Remote Sensing Advisory Committee Spring Meeting, 25 May 2016, Mountain View, CA.

80. Ball, T. J., M. Richards, J. Fleitz, and A. C. Watts. Operation Energy Resilient Enlighten Project: Phase II briefing to NV Energy, 20 May 2016, Reno, NV.

79. Fleitz, J., M. Richards, and A. C. Watts. Operation Energy Resilient Enlighten Project: Phase I briefing to NV Energy, 10 May 2016, Las Vegas, NV.

78. Watts, A. C. Fire and flying robots: unmanned aircraft and fire science. Invited lecture, Terry Wells Discovery Museum, 23 April 2016, Reno, NV.

77. Watts, A. C. Ecosystems and global change. Invited lecture, University of Idaho, 23 March 2016, Moscow, Idaho.

76. Samburova, V., M. Gyawali, R.L.N. Yatavelli, R.K. Chakrabarty, A.C. Watts, J.D. Knue, A.E. Cunningham, J. Connolly, H. Moosmuller, B. Zielinska, and A.Y. Khlystov. Estimation of light absorption by biomass burning aerosols using detailed chemical composition data. PacifiChem, 16-20 December 2015, Honolulu, HI.

75. Cohen, M. J., C. Quintero, N. D. Ward, E. Raines, A. Brown, J. B. Martin, T. S. Bianchi, D. L. Mclaughlin, T. Osborne, J. B. Heffernan, and A. C. Watts. An Ecological Drill: biogeomorphic pattern evolution in a low-relief carbonate landscape. Poster, American Geophysical Union Fall Meeting, 14-18 December 2015, San Francisco, CA.

74. Watts, A. C. and R. W. Gray. Wildland fire applications for unmanned aircraft: evaluation and commercialization. Poster, American Geophysical Union Fall Meeting, 14-18 December 2015, San Francisco, CA.

73. Watts, A. C. and R. W. Gray. Evaluating and operationalizing unmanned aircraft for wildland fire use. Poster, 6th International Fire Ecology and Management Congress, 16-20 November 2015, San Antonio, TX.

72. Watts, A. C. Desert Research Institute: Thematic areas and potential for collaboration. University of British Columbia-Okanagan, 3 November 2015, Kelowna, Canada.

71. Khlystov, A.Y., V. Samburova, M. Gyawali, R.L.N. Yatavelli, R.K. Chakrabarty, A.C. Watts, J.D. Knue, A. Cunningham, J. Connoly, H. Moosmüller, B.K. Zielinska. Detailed analysis of brown carbon constituents in biomass burning emissions. Presentation, American Association for Aerosol Research, 12-16 October 2015, Minneapolis, MN.

70. Molzan, J. L., N. D. Beres, A. C. Watts, V. Samburova, and H. Moosmüller. Optical Properties of aerosols from smoldering laboratory combustion of wildland fuels. Poster, Tahoe Science Conference, 21-23 September 2015, Reno, Nevada.

69. Gyawali, M., R.L.N. Yatavelli, A.C. Watts, V. Samburova, R.K. Chakrabarty, J.D. Knue, L.-W.A. Chen, I.J. Arnold, X. Wang, A.Y. Khlystov, J.C. Chow, B.K. Zielinska, J.G. Watson, and H. Moosmüller. Optical properties of aerosol emissions from laboratory peat combustion. Presentation, American Association for Aerosol Research, 12-16 October 2015, Minneapolis, MN.

68. Gyawali, M., R.L.N. Yatavelli, A.C. Watts, V. Samburova, R.K. Chakrabarty, J.D. Knue, L.-W.A. Chen, I.J. Arnold, X. Wang, A.Y. Khlystov, J.C. Chow, B.K. Zielinska, J.G. Watson, and H. Moosmüller. Optical properties of aerosol emissions from laboratory peat combustion. 11th International Conference on Carbonaceous Particles in the Atmosphere, 10-13 August 2015, Berkeley, CA.

67. Samburova, V., M. Gyawali, R.L.N. Yatavelli, R.K. Chakrabarty, A.C. Watts, J.D. Knue, A.E. Cunningham, J. Connolly, A.Y. Khlystov, H. Moosmuller, and B. Zielinska. Analysis of polycyclic aromatic hydrocarbons in gaseous- and particle- phase emissions from peat fuel combustion under controlled conditions. 108th Annual Air and Waste Management Association Conference, 22-26 June 2015, Raleigh, NC.

66. Gyawali, M., R. L. N. Yatavelli, A. C. Watts, V. Samburova, R. K. Chakrabarty, J. D. Knue, L.–W. A. Chen, I. J. Arnold, X. Wang, A. Y. Khlystov, J. C. Chow, B. K. Zielinska, J. G. Watson, and H. Moosmüller. Optical properties of emissions from laboratory peat combustion. 15th Electromagnetic and Light Scattering (ELS) Conference, 21-26 June 2015, Leipzig, Germany.

65. Ball, T., M. Richards, and A. C. Watts. Introduction to UAS for wildland fire applications. Sierra Front Interagency Dispatch Center, 10 June 2015, Minden, NV.

64. Watts, A. C. Fire science, fire ecology, and interdisciplinary UAS research at DRI. Invited presentation, Nevada Board of Regents Meeting, 5 March 2015, Las Vegas, NV.

63. Ambrosia, V. G., R. P. Dahlgren, A. C. Watts, K. W. Reynolds, and T. Ball. UAS developments supporting wildfire observations. Poster, American Geophysical Union Fall Meeting, 15-19 December 2014, San Francisco, CA.

62. Watts, A. C., M. R. Turetsky, B. Benscoter, S. E. Page, G. Rein, and G. van der Werf. Global perspectives on peat fires. Presentation, American Geophysical Union Fall Meeting, 15-19 December 2014, San Francisco, CA.

61. Schmidt, C. A., A. C. Watts, D. L Mclaughlin, and D. A. Kaplan. Ground fire effects on hydrology and habitat: implications for fire management in areas with organic soil. Poster, American Geophysical Union Fall Meeting, 15-19 December 2014, San Francisco, CA.

60. Heffernan, J. B., A. B. Murray, M. J Cohen, J. B. Martin, D. L. Mclaughlin, T. S. Bianchi, and A. C. Watts. A model of depressional wetland formation in low-relief karst landscapes. Presentation, American Geophysical Union Fall Meeting, 15-19 December 2014, San Francisco, CA.

59. Gyawali, M. S., R. K. Chakrabarty, R. L. N. Yatavelli, L.-W. A. Chen, J. Knue, V. Samburova, A. C. Watts, H. Moosmüller, W. P. Arnott, X. Wang, B. Zielinska, J. C. Chow, J. G. Watson, and A. Tsibart. Strong wavelength dependence of aerosol light absorption from peat combustion. Poster, American Geophysical Union Fall Meeting, 15-19 December 2014, San Francisco, CA.

58. Knue, J., R. L.N. Yatavelli, L.-W. A. Chen, V. Samburova, M. S Gyawali, A.C. Watts, R. K Chakrabarty, H. Moosmüller, X. Wang, B. Zielinska, J. C. Chow, J. G. Watson, and A. Tsibart. A comparison of mass-based emission factors from laboratory combustion of boreal and sub-tropical peat. Poster, American Geophysical Union Fall Meeting, 15-19 December 2014, San Francisco, CA.

57. Watts, A. C. Unmanned aircraft for aerial surveys: classification and considerations for use. Invited presentation, The Wildlife Society Conference, 27 October 2014, Pittsburgh, PA.

56. Yatavelli, L. N., L.-W. A. Chen, J. Knue, V. Samburova, M. Gyawali, A. Watts, R. K. Chakrabarty, H. Moosmuller, X. Wang, B. Zielinska, J. Chow, J. Watson, and A. Tsibart. Mass and energy-based emission factors and gas-particle partitioning of intermediate-volatility and semi-volatile organic compounds from laboratory combustion of boreal and sub-tropical peat. Presentation, American Association for Aerosol Research, 20-24 October 2014, Orlando, FL.

55. Watts, A. C., R. K. Chakrabarty, V. Samburova, and H. Moosmüller. Climatic implications of peat fire emissions. American Association for Aerosol Research, 20-24 October 2014, Orlando, FL.

54. Watts, A. C. and G. McGuire. Fire season 2014 recap and preliminary winter outlook. Invited presentation, Nevada Emergency Managers Workshop, 15 October 2014, Las Vegas, NV.

53. Fenstermaker, L., K. McGwire, E. Wilcox, J. Tilley, A. Watts, J. Baker, and J. Huntington. UAS environmental research. Nevada Governor's Conference on Small Business, 19 September 2014, Las Vegas, NV.

52. Watts, A. C. Unmanned aircraft: considerations for forest management, commercial and research use. Invited presentation, UNR Cooperative Extension Green Industry Professionals, 10 September 2014, Reno, NV.

51. Kaplan, D. A., C. A. Schmidt, D. L. McLaughlin, and A. C. Watts. Implications of organic soil combustion for fire management in wetlands. Presentation, Conference on ecological and ecosystem restoration, 28 July-2 August 2014, New Orleans, LA.

50. Kobziar, L. N., A. C. Watts, D. R. Godwin, and M. Johnson. Immediate effects of California's Rim Fire on tree injuries and in-stand severity in fuels-treated plantations. Presentation, Large Wildland Fires: Social, political, and ecological effects, 19-23 May 2014, Missoula, MT.

49. Watts, A. C., C. A. Schmidt, D. A. Kaplan, and D. L. McLaughlin. Hydrologic implications of ground fires in low-relief landscapes. Presentation, Large Wildland Fires: Social, political, and ecological effects, 19-23 May 2014, Missoula, MT.

48. Watts, A.C. Opportunities in Nevada for UAS testing. Invited presentation, NASA-US Forest Service Tactical Fire Remote Sensing Advisory Committee, 29 April 2014, NASA-Ames Research Center, Mountain View, CA.

47. Watts, A.C. Fire and climate, and climate change. Invited lecture, 10 April 2014, University of California, Berkeley, CA.

46. Watts, A.C. Fire science research with unmanned aircraft systems: near-term opportunities. Invited presentation, 9 April 2014, NASA-Ames Research Center, Mountain View, CA.

45. Watts, A.C. Fire and climate change. Invited lecture, 27 March 2014, University of Florida, Gainesville, FL.

44. Watts, A.C. Wildfire ecology of cypress swamps. Invited lecture, 21 January 2014, Mississippi State University, Starkville, MS.

43. Watts, A.C. Ecological tradeoffs of fire in cypress wetlands? MSU Student Association for Fire Ecology guest lecture, 21 January 2014, Mississippi State University, Starkville, MS.

42. Watts, A.C. Alternative Stable States in fire ecology. Invited lecture, 21 January 2014, Mississippi State University, Starkville, MS.

41. Watts, A. C. Ecological aspects of the Rim Fire. 20 November 2013, Invited presentation, University of Nevada, Reno, NV.

40. Watts, A. C. The "ecological drill": landscape patterns suggest mechanisms for cypress dome formation and spacing. Invited Presentation, Big Cypress Research Symposium, 7 November 2013, Big Cypress National Preserve, Ochopee, FL.

39. Watts, A. C. Landscape patches as altered-climate scenario proxies? A hypothesis. Invited Presentation, Great Basin Climate Forum, 16 October 2013, Bishop, CA.

38. Watts, A. C. Wildland fire and UAS: operational and research opportunities. Titans of industry meeting on UAS, Nevada Governor's Office of Economic Development, 25-27 June 2013, Las Vegas, NV.

37. Watts, A. C. Wetland fires and smoldering combustion in organic soils: recent findings and future research directions. Invited seminar, North Florida Prescribed Fire Council, 13 March 2013, Lake City, FL.

36. Watts, A. C. Fire ecology in the southeastern United States: overview of issues and recent research in Florida. Invited seminar, U.S. Forest Service Missoula Fire Sciences Laboratory, 28 February 2013, Missoula, MT.

35. Watts, A. C. and L. N. Kobziar. Determinants of smoldering in cypress landscapes: landscape factors and implications for carbon release. Invited presentation, 4th Fire Behavior and Fuels Conference, International Association of Wildland Fire, 18-22 February 2013, Raleigh, NC.

34. Kobziar, L. N., A. C. Watts, and L. Taylor. Does prescribed fire reduce wildfire in the southern US? A region-wide survey of public and private land manager perspectives. 4th Fire Behavior and Fuels Conference, International Association of Wildland Fire, 18-22 February 2013, Raleigh, NC.

33. Watts, A. C. Wildfire and landscape ecology research in a wetland mosaic. Invited seminar, Desert Research Institute, 11 February 2013, Reno, NV.

32. Watts, A. C. Role of fire in the human and natural ecology of Southeastern ecosystems. Department of Environmental Studies Seminar Series, 30 January 2013, Emory University, Atlanta, GA.

31. Kobziar, L. N., A. C. Watts, and E. Carvalho. The legacy of 23 years of mechanical fuels treatments and prescribed fire on vegetation in Florida. Presentation, 5th International Fire Ecology and Management Congress, 3-7 December 2012, Portland, OR.

30. Watts, A. C., and R. A. Huffaker. Can underlying structure in fire occurrence data predict future wildfires? Presentation, 5th International Fire Ecology and Management Congress, 3-7 December 2012, Portland, OR.

29. Cohen, M. J., J. B. Martin, D. L. McLaughlin, T. Z. Osborne, A. B. Murray, A. C. Watts, D. L. Watts, and J. B. Heffernan. An ecological mechanism to create regular patterns of surface dissolution of a low-relief carbonate landscape. Poster, American Geophysical Union Fall Meeting, 3-7 December 2012, San Francisco, CA.

28. Watts, A. C., D. L. Watts, D. A. Kaplan, D. L. McLaughlin, J. Heffernan, J. B. Martin, A. B. Murray, T. Z. Osborne, M. J. Cohen, and L. N. Kobziar. Landform elevation suggests ecohydrologic footprints in subsurface geomorphology. Poster, American Geophysical Union Fall Meeting, 3-7 December 2012, San Francisco, CA.

27. Watts, A. C. Wildfire effects on forest structure and soils in Big Cypress National Preserve, Florida. Invited webinar, Southern Fire Exchange, 5 October 2012 (online).

26. Watts, A. C. Wildfire ecology of a wetland landscape. Invited seminar, School of Natural Resources and Environment Fall Seminar Series, 11 September 2012, University of Florida, Gainesville, FL.

25. Watts, A. C. Ecological footprints in the geomorphic record: reciprocal feedbacks versus diametric processes. Presentation, 97th Annual Meeting of the Ecological Society of America, 5-10 August 2012, Portland, OR.

24. Watts, A. C. Smoldering combustion in subtropical wetland ecosystems. Invited presentation, International Workshop on Smoldering Fires in the Earth System, 27 July 2012, University of Edinburgh, UK (Organized by Imperial College, London).

23. Watts, A. C., L. N. Kobziar, and T. A. Martin. Scale-Dependent Microclimate Effects of Wetland Wildfire. Invited presentation, 9th INTECOL International Wetlands Conference, 3-8 June 2012, Orlando, FL.

22. Watts, A. C. L. N. Kobziar, T. Z. Osborne, and J. R. Snyder. Smoldering Cypress Swamp Soils: Moisture Effects and Implications for Forest Structure. Invited presentation, 9th INTECOL International Wetlands Conference, 3-8 June 2012, Orlando, FL.

21. Watts, A. C. Wildfire ecology in a wetland landscape: structural, functional, and geomorphic considerations. Seminar, National Wetlands Research Center, 19 December 2011, Lafayette, LA.

20. Watts, A. C., L. N. Kobziar, J. R. Snyder, and T. A. Martin. Feedbacks to structure and microclimate from large drought fires in wetland landscapes. Presentation, Exploring the Mega-fire Reality: Forest Ecology and Management conference, 14-17 November 2011, Tallahassee, FL.

19. Watts, A. C. Nonlinear chaotic dynamics in fire occurrence. Poster, Exploring the Mega-fire Reality: Forest Ecology and Management conference, 14-17 November 2011, Tallahassee, FL.

18. Watts, A. C. and H. F. Percival. University of Florida 2011 Activities. NASA/U.S. Forest Service Tactical Fire Remote Sensing Advisory Committee, 25 May 2011, Sacramento, CA.

17. Watts, A. C. Fire in cypress swamps. Invited seminar, H. T. Odum Center for Wetlands, 9 February 2011, Gainesville, FL.

16. Watts, A. C., J. R. Snyder, and L. N. Kobziar. Delayed cypress mortality following the Deep Fire. Invited Presentation, Big Cypress Research Symposium, 10 November 2010, Ochopee, FL.

15. Watts, A. C. University of Florida unmanned aircraft systems program. Presentation, NASA/U.S. Forest Service Tactical Fire Remote Sensing Advisory Committee, 4 November 2010, Boise, ID.

14. Watts, A. C., C. Cox, D. L. Watts, I. Kisekka, L. M. Colley, T. Z. Osborne, and Matthew J. Cohen. Landform elevation as evidence of regular surface patterning in Big Cypress National Preserve, Florida. Poster, Greater Everglades Ecosystem Restoration (GEER) Planning, Policy, and Science Meeting, 12-16 July 2010, Naples, FL.

13. Watts, A. C. Management implications of delayed Deep Fire mortality among cypress: a workshop for fire managers. 15 October 2010, Big Cypress National Preserve, FL.

12. Watts, A. C. Fire in wetland landscapes: climate, soil, and hydrologic interactions. Invited Seminar, Florida Fish and Wildlife Conservation Commission, 21 May 2010, Gainesville, FL.

11. Watts, A. C., L. N. Kobziar, and J. R. Snyder. Severity and post-fire mortality in cypress domes following the Deep Fire, Big Cypress National Preserve, Florida. Presentation, International Fire Congress, 30 November-3 December 2009, Savannah, GA.

10. Frederick, P. C., A. C. Watts, M. Burgess. Prospects of the use of unmanned aircraft systems for assessing the size of wading bird populations in the Everglades. Invited Presentation, South Florida Water Management District, 5 September 2008, West Palm Beach, FL.

9. Bowman, W. S., A. C. Watts, J. H. Perry, M. Morton, P. G. Ifju. UAS as monitoring tools for assessing the Nation's levees and monitoring invasive plant populations. Invited workshop and demonstration, US Army Corps of Engineers Research and Development Center, 19 March 2008, Vicksburg, MS.

8. Watts, A. C. Scientific applications of unmanned aircraft systems: biological research and natural resource monitoring. Invited panel speaker, National symposium on civilian applications of unmanned aircraft systems, 1-3 October 2007, Boulder, CO.

7. Bowman W. S., H. F. Percival, A. C. Watts. Unmanned aircraft capability demonstration. Invited demonstration for US Army Corps of Engineers, 26 July 2007, Jacksonville, FL.

6. Watts, A. C. Production and Evaluation of an Autonomous UAV System for Natural Resources Management. Presentation to US Army Corps of Engineers Research and Development Center and US Department of Homeland Security Science Directorate, 17 July 2007, Gainesville, FL.

5. Watts, A. C., H. F. Percival, L. G. Pearlstine, P. G. Ifju, B. A. Dewitt, S. E. Smith, A. Mohamed, and W. S. Bowman. Unmanned aircraft systems for natural resource monitoring and ecological research. Presentation, Association for Unmanned Vehicle Systems International, 6-9 August 2007, Washington, DC.

4. Watts, A. C., H. F. Percival, L. G. Pearlstine, P. G. Ifju, B. A. Dewitt, S. E. Smith, A. Mohamed, K. Lee, and W. S. Bowman. Unmanned aerial vehicles for natural resource management and wildlife

surveillance. Invited Presentation, US Army Corps of Engineers Jacksonville District Headquarters, 28 November 2006, Jacksonville, FL.

3. Pearlstine, L. G., A. C. Watts, and K. Lee. Unmanned aerial vehicles for natural resource management and surveillance. Invited demonstration, Restoration Coordination and Verification (RECOVER) Leadership group, 6 September 2006, Fort Lauderdale, FL.

2. Watts, A. C., H. F. Percival, K. G. Rice, G. R. Masson, A. R. Woodward, and C. L. Abercrombie. Variation in egg viability among seven American alligator populations in Florida. Poster, Florida Cooperative Fish & Wildlife Unit Coordinating Committee Meeting, 23 July 2003, Gainesville, FL.

1. Watts, A. C. and G. W. Tanner. Monitoring long-term dry prairie restoration efforts: a progress report from Myakka River State Park, Florida. Presentation, Joint Meetings of the Ecological Society of America and Society for Ecological Restoration, 4-9 August 2002, Tucson, AZ.

CERTIFICATIONS

Certified Wildland Fire Ecologist, Association for Fire Ecology, 2015-current

Certified Wildland Fire Practitioner, Association for Fire Ecology, 2012-current

Federal Wildland Type II Firefighter (FFT2), 2008-2014
Relevant NWCG Coursework:
S130 Firefighter Training
L180 Human Factors on the Fireline
S190 Wildland Fire Behavior
I100 Incident Command System

Interagency Aviation Training (B-3), 2010
Relevant IAT Coursework:
A101 Aviation Safety
A105 Aviation Life Support Equipment
A106 Aviation Mishap Reporting
A108 Preflight Checklist & Briefing/Debriefing
A113 Crash Survival

Unmanned Aircraft Pilot in Command Certification, Nevada Institute for Autonomous Systems, 2017-current.

Small Unmanned Aircraft System Pilot, Federal Aviation Administration, 2016-current.

SCUBA: Advanced Open Water, Rescue Diver, Nitrox (NAUI); UF Science Diver Training, 2012