

CURRICULUM VITAE

University of Idaho

NAME: SMITH, Alistair M.S.

DATE: Friday, August 23, 2019

RANK OR TITLE: Professor
Interim Associate Dean of Research and Graduate Studies

DEPARTMENT: Forest, Rangeland, and Fire Sciences

OFFICE LOCATION AND CAMPUS ZIP: CNR 204C

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EMAIL: alistair@uidaho.edu

DATE OF FIRST EMPLOYMENT AT UI: October 2003

DATE OF TENURE: Tenured

DATE OF PRESENT RANK OR TITLE: Fall 2017 (rank), October 2018 (title)

EDUCATION BEYOND HIGH SCHOOL:

Degrees:

Ph.D., King's College London, University of London, London, UK, 2004, Geography: Remote Sensing
M.Sc., (Distinction), King's College London, University of London, London, UK, 2000, Physics
B.Sc. (Honors) University of Edinburgh, Edinburgh, UK, 1999, Physics.

Certificates and Licenses:

MInstP, Member of the Institute of Physics

EXPERIENCE:

Teaching, Extension and Research Appointments: (since receipt of Bachelor's degree)

2017	Professor, Department of Forest, Rangeland, and Fire Sciences
2015 – Present	Affiliate Faculty, Center for Resilient Communities
2014 – Present	Affiliate Faculty, Department of Geography
2013 – 2017	Associate Professor, Department of Forest, Rangeland, and Fire Sciences
2007 – 2013	Assistant Professor, Department of Forest, Rangeland, and Fire Sciences
2005 - 2007	Affiliate Faculty, Rangeland Ecology and Management, University of Idaho
2005 - 2007	Research Scientist, Department of Forest Resources, University of Idaho
2003 - 2005	Post-doctorate Research Fellow, Department of Forest Resources, University of Idaho
2000 - 2003	NERC PhD Studentship, Department of Geography, King's College London
1999 - 2000	EPSRC MSc Studentship, Department of Physics, King's College London

Academic Administrative Appointments: (List position titles and locations since receipt of Bachelor's degree)

2018-	Interim Associate Dean of Research and Graduate Studies
2016-2018	Director, CNR Research and Graduate Studies
2014-2017	Program Lead, Fire Ecology and Management, University of Idaho
2014-2016	Faculty Secretary, College of Natural Resources

Non-Academic Employment including Armed Forces: (List title, brief description, date)

Consulting and Other Activities:

2016	Book Proposal Reviewer for Springer
2016	Reviewer for Idaho Forest Group
2015	Reviewer for the Davidson Institute for Talent Development

2014-2017	Education Committee, Association for Fire Ecology
2011-2017	Governing Board Member, National Coalition of Prescribed Fire Councils
2012-2013	Subject Matter Expert for the Fire Program Analysis (FPA): Business Process Review and Technical Review (2012), Commissioned by Booz Allen Hamilton for the Department of Interior
2008	NPS Sampling Protocols Reviewer for the Vital Signs Program: Aspen Monitoring Protocols

TEACHING ACCOMPLISHMENTS: (Academic and Extension teaching)

Areas of Specialization:

Fire combustion dynamics, remote sensing, vegetation structure, ecosystem vulnerability

Courses Taught:

FOR 454/454: Air Quality, Pollution, and Smoke, 2015-Present
 FOR 450: Fire Behavior, 2017-Present
 NR 501: CNR Graduate Seminar, 2016-Present
 FOR 274: Forest Measurements and Inventory, 2007-2016
 REM 144: Wildland Fire Management, 2012
 FOR 373: Forest Sampling Methods, Fall 2008-2015
 FOR 401: Forest Inventory Practicum, (with W Tinkham), Spring 2012
 FOR 435: Remote Sensing of Active Fires and Post-Fire Effects, 2007-2009
 FOR 451: Fuels Inventory and Mapping, (with C. Hoffman), Spring 2007
 FOR 472: Remote Sensing of the Environment, Fall 2005
 REM 501: Savannah Ecology (with S. Bunting and L. Lentile), Fall 2005
 FOR 501: Exploring Biogeosciences (with B. Newingham), Spring 2011
 FOR 504: Graduate Skills: Preparing for a Faculty Position, Fall 2008
 FOR 570: Advanced Remote Sensing Measurement Methods, Fall 2004, Spring 2006, Spring 2009

Under Development

REM 5YY: World Savannas (3 cr.)
 FOR 5YY: Forest Biometry (3 cr.)
 NR 220/221: Research Experience for Undergraduates (3cr.)
 INTR 501: Graduate Studies Seminar (1 cr.)
 INTR 501: Navigating the Post-PhD Gauntlet: Interview Skills (1 cr.)

Students Advised:

Undergraduate Students:

Advise ~10 students per semester in Forestry, Fire Ecology & Management
 Advisor, Student Association for Fire Ecology, University of Idaho, 2010-2012
 Advisor, Logger Sports Club, University of Idaho, 2008-2010
 Hosted a high school participant in the Helping Orient Indian Students and Teachers (HOIST)
 Responsible for 24 undergraduate physical/human geography students, Department of Geography, King's College London 2000-2001

Undergraduate Researchers (4):

Wade Steady, 2016-2017
 Krystal Krcma, 2014-2015 EPSCoR MURI Student
 Patrick Mahoney, 2014
 Grayson Stone, 2012

Graduate Students:

Member of the Master of Natural Resources Faculty
 Member of the Environmental Sciences Faculty

Currently advising as major professor or committee member (15):***Doctorates:***

Shelby Lego (**Major Advisor**), Ph.D. Natural Resources, 2019-present
 John Anderson (**Major Advisor**), Ph.D. Natural Resources, 2019-present
 Brandon McNellis (**Major Advisor**), Ph.D. Natural Resources, 2019-present
 Tom Randolph (**Major Advisor**), Ph.D. Natural Resources, 2019-present
 Doug Hardman (**Major Advisor**), Ph.D. Natural Resources, 2018-present
 Stephen Fillmore (**Major Advisor**), Ph.D. Natural Resources, 2017-present
 Raquel Partelli Feltrin (**Major Advisor**), Ph.D. Natural Resources, 2016-present
 Nuria Sanchez Lopez (**Committee Member**), Ph.D. Natural Resources, 2016-present
 Chris Bowman (**Committee Member**), Ph.D. Natural Resources, 2009-present

Masters:

Katie O’Niel (**Major Advisor**), M.S. (non-thesis) Natural Resources, 2019-present
 Dean Snyder (**Major Advisor**), M.S. (non-thesis) Natural Resources, 2018-present
 Anjel Tomayko (**Major Advisor**), M.S. Natural Resources, 2017-present
 Philip Roth (**Major Advisor**), M.S. (non-thesis) Natural Resources, 2019-present
 Heather McIntyre (**Major Advisor**), M.S. (non-thesis) Environmental Science, 2019-present
 Mikayla Geomaat (**Major Advisor**), M.S. (non-thesis) Environmental Science, 2019-present
 Skylar Watson (**Major Advisor**), M.S. (non-thesis) Environmental Science, 2019-present
 John Dodd (**Major Advisor**), M.S. (non-thesis) Natural Resources, 2019-present
 Toby Hamilton (**Major Advisor**), M.S. (non-thesis) Environmental Science, 2019-present
 Zethnoungeay Dubois (**Committee Member**), M.S. Architecture, 2019-present
 Jonathan Pangburn (**Major Advisor**), M.N.R., (non-thesis) 2019-present
 Scott Hatch (**Major Advisor**), M.N.R., (non-thesis) 2019-present

Advised to completion of degree as major professor (20) or service as a committee member (26):**2019**

Jeffrey Keenum (Major Advisor), M.S. (non-thesis) Environmental Science. *Downstream impacts on endangered species from culvert repair and replacement*, 2019.
 Wade Steady (Major Advisor), M.S. Natural Resources, *The survival of Pinus ponderosa saplings subjected to increasing levels of fire behaviour and impacts on post-fire growth*, 2019.
 Audrey Harris (Major Advisor), M.S. (non-thesis) Environmental Science, *A Comparison of Air Quality Resources in Idaho and Mississippi*, 2019.
 Cole Julson (Major Advisor), M.S. (non-thesis) Natural Resources, 2019.
 Silas Whitley (Major Advisor), M.S. (non-thesis) Natural Resources, 2019.
 Nuria Sanchez Lopez (Committee Member), Ph.D. Natural Resources, *Reconstruction of the stand-level disturbance history of a temperate coniferous forest using LiDAR data and geographic object-based image analysis (GEOBIA)*, 2019

2018

Brandyn Gartelman (Major Advisor), M.S. (non-thesis) Environmental Science, *Compiling a comprehensive list of shark attacks in Louisiana’s Lake Pontchartrain*, 2018.
 Kevin Maier (Major Advisor), M.S. (non-thesis) Environmental Science, *The 2016 Pioneer Fire: A Case Study Analysis of Initial Attack Suppression*, 2018.
 Darko Veljkovic (Major Advisor), M.S. Natural Resources, *Experimental burning of grassland fires*. 2018.
 Eric Walsh (Committee Member), Ph.D. Natural Resources, *Forest Ecosystem and Avian Niche Modeling: Improving Climate Change Forest Modeling via Interdisciplinary Model Linking*, 2018
 Andrea Stuen (Committee Member), M.S. Natural Resources, *Long-term impacts of marine derived nitrogen on forest productivity and carbon balance in central Idaho*, 2018
 Carrie Minerich (Committee Member), M.S. Natural Resources, *Assessing fuel treatment effectiveness during wildfires under future climate conditions in southern California*, 2018.

2017

- Jeff Seebach (Major Advisor), M.S. (non-thesis) Environmental Science, 2017.
 Patrick Mahoney (Major Advisor), MS. Natural Resources, *Applications of the United States Forest Inventory and Analysis dataset: a review and future directions*, 2017.
 Aaron Sparks (Co-Major Advisor), Ph.D. Natural Resources, *Development of a spatial severity model for the quantification of wildland fire effects in coniferous forests*, 2017
 Everard Baker (Major Advisor), M.N.R., 2017.
 Devin Yeatman (Committee Member), M.S. Natural Resources, *Canopy cover in the home ignition zone not a strong driver of home loss in timbered wildland-urban interface fires*, 2017

2016

- Jacob Wesson (Major Advisor), M.S. Environmental Science, “*Oil and Gas Development in the Eagle Ford Shale Play in Southwestern Texas and its Impact on Ambient Concentrations of Ozone and Ozone Precursors (NOx and VOC)*”, 2016
 Ryan McCarley, (Committee Member), M.S. Geography, “*Estimation of Landscape-scale Fire Effects from Multi-temporal LiDAR*”, 2016

2015

- Lindsay Grayson (Major Advisor), M.S. Natural Resources, “*Statistical Applications in Natural Resources*”, 2015
 Ryan Jacobson, (Committee Member), M.S. Natural Resources, “*Spatially Explicit Simulation Modeling of Local, Regional, and International Bioenergy Scenarios in the Northern Rockies*”, 2015
 Kevin Satterberg (Committee Member), M.S. Natural Resources, “*Impact of Fire Severity on Mixed Conifer Forest Recovery Ten Years Post-Fire*”, 2015
 William Matthews (Committee Member), M.S. Natural Resources, “*Estimating fire radiative power obscuration by tree canopies through laboratory experiments: estimating fire radiative energy in a longleaf pine forest from airborne thermal imagery*”, 2015
 Jack Cohen, (Committee Member), Ph.D. Natural Resources, “*Fuel Particle Heat Exchange During Wildland Fire Spread*”, 2015
 Erik Boren, (Committee Member), M.S. Natural Resources, “*Spectral characterization of agricultural burned areas for satellite mapping*”, 2015
 Tyler Bleeker (Committee Member), M.S. Geography, “*Sustainability of Historic Wildfire Refugia in Contemporary Fire Events*”, 2015

2014

- Aaron Sparks (Major Advisor), M.S. Natural Resources, “*Characterizing Biomass Burning in Shrub-steppe: Burned Area and Seasonal Trace Gas Emission Factors*”, 2014
 Nate Weiner, (Committee Member), M.S. Natural Resources, “*Influence of Duff Distribution in Post-Fire Vegetation Recovery Patterns in Juniperus occidentalis Woodlands in Southwest Idaho*,” 2014
 Chad Kooistra, Ph.D., Natural Resources, 2011-2014 (transferred to OSU)
 Jarod Blades (Committee Member), Ph.D., “*Bridging natural resource communication boundaries:*

2013

- Wade Tinkham (Major Advisor), PhD Natural Resources, “*Improved Assessments of Ecosystem Services through Active-Remote Sensing: Quantification of Timber and Snow Resources*”, 2013
 Ashley Wells (Committee Member), M.S. Natural Resources, “*Multidecadal trends in burn severity and patch size in the Selway-Bitterroot Wilderness Area, 1900-2007*”, 2013
 Donovan Birch (Committee Member), M.S. Natural Resources, “*Burn Severity and Areas of Daily Fire Growth for 42 Forest Fires in Idaho and Montana, 2005 – 2011*”, 2013

2012

- Nolan Brewer (Major Advisor), M.S. Forest Resources, “*Influences of fuel moisture and repeated burning on black carbon production and loss in masticated fuels: an experimental combustion study*”, 2012

Christopher Bernau (Committee Member), M.S. “*Fuel bed response to two-year post vegetation treatments in juniper and cheatgrass invaded sagebrush steppe; and comparisons of fuel load data collected at two spatial scales*”, 2012

Ian Leslie (Committee Member), M.S. “*Charactering soil pipes on forested hillslopes using electrical resistivity tomography*”, 2012

2010

Wade Tinkham (Major Advisor), M.S Forest Resources, “*Influence of slope, elevation, and vegetative structure on lidar-derived DEM accuracy in mixed conifer forests with complex terrain*”, 2010

Hongyu Huang (Major Advisor), M.S., Natural Resources, “*A tale of two transects: preliminary assessment of small footprint discrete LiDAR-derived shrub height and ground elevation accuracy*”, 2010

Joshua Hyde (Major Advisor), M.S Forest Resources, “*Consumption of sound and rotten coarse woody debris from a North Idaho mixed conifer forest*”, 2010

Diana Carson (Committee Member) M.S. Forest Resources, “*Snowpack mass and energy balance dynamics in discontinuous canopies*”, 2010

Jessica Xu (Committee Member), M.S. Rangeland Ecology & Management, “*Measurement of Shrub Canopy Structures Using Terrestrial Laser Scanning and Implications for Airborne LiDAR Application*” 2010

Javier Naupari (Committee Member), Ph.D. Rangeland Ecology & Management, “*Quantifying bidirectional reflectance factors for delineating shrub-steppe vegetation functional types across scales from the plant to the landscape*”, 2010

2005-2009

Heather Heward (Committee Member), M.S. Forest Resources, “*Using in-situ observations by wildland fire fighters to assess detection by MODIS*”, 2009

Zachary Holden (Committee Member), Ph.D. Natural Resources, “*Twenty year (1984-2004) temporal and spatial burn severity patterns inferred from satellite imagery in the Gila national forest, New Mexico*”, 2008

Chris Powell (Committee Member), M.S. Forest Resources, “*LIDAR Detection of Ladder Fuels in a North Idaho Mixed Conifer Forest*”, 2008

Jan Eitel (Committee Member), M.S. Forest Resources “*Suitability of Selected Spectral Indices to Detect Water Deficiency in Poplars*”, 2005

Postdocs Advised:

Dr Kara Yedinak, 2013-2017

Dr Karen Lannom, 2011-2015

Dr Wade Tinkham, 2013-2014

Technicians:

Joshua Hyde, 2010-2017

Darko Veljkovic, 2018-2019

Courses Developed or Taught:

NR 211: Research Experience for Undergraduates I

NR 212: Research Experience for Undergraduates II

REM 244: Wildland Fire Management

FOR 274: Forest Measurements and Inventory

FOR 373: Forest Sampling Methods

FOR 401: Forest Inventory Practicum

FOR 435/535: Remote Sensing of Active Fires and Post-Fire Effects

FOR 450: Fire Behavior

FOR 451: Fuels Inventory and Mapping

FOR 454/454: Air Quality, Pollution, and Smoke

FOR 472: Remote Sensing of the Environment

FOR 474: Forest Inventory

FOR 501: Exploring Biogeosciences
 NR 501: CNR Graduate Seminar
 REM 501: Savannah Ecology
 INTR 501: Navigating the Post-PhD Gauntlet: Interview Skills
 FOR 504: Graduate Skills: Preparing for a Faculty Position
 FOR 570: Advanced Remote Sensing Measurement Methods

Courses Under Development

REM 529: World Savannas (3 cr., Summer 2020)
 FOR 514: Forest Biometry (3 cr., Summer 2020)

Non-credit Classes, Workshops, Seminars, Invited Lectures, etc.:

2017 UI College of Graduate Studies Prestigious Fellowship Seminars (7)
 2016 UI College of Graduate Studies Prestigious Fellowship Seminars (2)
 2015 "Physics: the key to opening doors in applied science" Smith AMS, Invited Presentation, Department of Physics Awards Banquet, University of Idaho
 2014 "Mechanistic impacts of fire on vegetation" Smith A.M.S. Invited Presentation, University of Edinburgh
 2012 "Remote sensing of fire intensity and severity" Smith A.M.S., Invited Presentation, South Dakota State University
 2012 "Remote sensing of fire intensity and severity" Smith A.M.S., Invited Presentation, Department of Geography, University of Idaho
 2010 "Measuring the properties of Wildland Fires" Smith, A.M.S. Kremens R., Dickinson M., Invited Presentation, Michigan Technological University
 2010 "Smoke and Smoke Management: From Regulations to Remote Sensing" Smith, A.M.S., Invited Presentation, Michigan Technological University
 2009 "Effective Communication for Smoke Management in a Changing Air Quality Environment II", Supervised coordinator (Joshua Hyde), Carl T. Curtis National Park Service Midwest Regional Headquarters, February 24 - 26
 2008 "Effective Communication for Smoke Management in a Changing Air Quality Environment", Supervised coordinator (Joshua Hyde), Great Smoky Mountains National Park, September 16-18
 2005 "Workshop on Lidar Concepts and Resource Applications" Session Chair, *Remote Sensing Applications Center (RSAC)*, Salt Lake City, May
 2004 "Symposium to highlight to Senator Craig (ID) UI research activities public private partnerships" Assisted, Moscow, ID, September
 2004 "ForestPARC Lidar Technical and User's Workshop", Organized, Moscow, ID, 17th-19th May

Guest Lectures in UI courses:

FOR 102 – *Introduction to Forest Management*, 2007-2016
 FOR 429 – *Landscape Ecology*, 2004
 FOR 501 – *Forest Resources Seminar*, 2004, 2014
 FOR 426 - *Wildland Fire Management and Ecology*, 2006, 2009
 FOR 450 - *Fire Behavior*, 2011, 2012
 FOR 434 – *Fire Effects and Burn Severity*, 2007
 FOR 527 – *Landscape Ecology of Forests and Rangelands*, Spring 2004, 2005, 2006
 FOR 572 – *Spatial and Biophysical Modeling*, 2004
 REM 144 – *Wildland Fire Management*, 2013, 2014, 2015, 2016
 REM 551 – *Rangeland Vegetation Ecology*, 2005, 2007, 2009

Honors and Awards (Teaching and Advising):

2012 Alumni Award of Excellence, University of Idaho
 2012 Outstanding Continuing Education and Service Award, College of Natural Resources, University of Idaho

SCHOLARSHIP ACCOMPLISHMENTS: (Including scholarship of teaching and learning, artistic creativity, discovery, and application/integration)

Google h-index = 37

Google Scholar: <https://scholar.google.com/citations?user=LoBR9wQAAAAJ&hl=en>

Publications, Exhibitions, Performances, Recitals:

† denotes equal contribution to paper.

‡ denotes graduate student led publication.

2019

Veljkovic D, **Smith AMS**, Strand EK, Fire Behavior In Laboratory Experiments on Grass Seedlings: The Importance of Exotic and Native Species Mixtures, *Rangeland Ecology and Management*, pending revisions.

Stenzel JE, Bartowitz KJ, Hartman MD, Lutz JA, **Smith AMS**, Kolden CA, Law, B.E., Swanson ME, Larson AJ, Parton WJ, Hudiburg TW. 2019. Fixing a snag in estimating carbon emissions from wildfires, *Global Change Biology*, doi: 10.1111/gcb.14716, *in press*.

Strand EK, Satterberg KL, Hudak AT, Bryne J, Khalyani AH, **Smith AMS**. 2019. Does burn severity affect plant community diversity and composition in mixed conifer forests of the intermountain United States a decade post-fire? *Fire Ecology*, 15:25.

Steady WD, Feltrin RP, Johnson DM, Sparks AM, Kolden CA, Talhelm AF, Lutz JA, Boschetti L, Hudak AT, Nelson AS, **Smith AMS**. 2019. The survival of Pinus Ponderosa saplings subjected to increasing levels of fire intensity and impacts on post-fire growth, *Fire*, 2, 2, 23.

2018

Smith AMS, Kolden CA. 2018. How to survive a wildfire: let's copy tactics from nature. The Guardian. November 14th.

Meddens AJH, Kolden CA, Lutz JA, **Smith AMS**, Cansler A, Abatzoglou JT, Meigs GW, Downing WM, Krawchuk MA. 2018. Fire refugia: What are they and why do they matter for global change? *BioScience*, 68, 12, 944-954.

Smith AMS, Strand EK. 2018. Recognizing Women Leaders in Fire Science: Revisited, *Fire*, 1, 3, 45.

Tinkham WT, Mahoney PR, **Smith AMS**, Falkowski MJ, Woodall C, Donke G, Hudak AT. 2018. Applications of the United States Forest Service Forest Inventory and Analysis dataset: A review and future directions, *Canadian Journal of Forest Research*, 48, 11, 1251-1268.

Smith AMS Kolden CA, Bowman DMJS. 2018. Biomimicry can help humans to sustainably coexist with fire. *Nature Ecology and Evolution*, 2, 1827-1829.

Smith AMS, Kolden CA, Prichard SJ, Gray RW, Hessburg PF, Balch JK. 2018. Recognizing Women Leaders in Fire Science, *Fire*, 1, 2, 30.

Sparks AM, Talhelm AF, Feltrin RP, **Smith AMS**, Johnson DM, Kolden CA, Boschetti L. 2018. An experimental assessment of the impact of drought and fire on western larch mortality and recovery. *International Journal of Wildland Fire*, 27, 7, 490-497.

McCarley TR, **Smith AMS**, Kolden CA, Kreitler J. 2018. Evaluating the mid-infrared bi-spectral index for assessing severity and area burned in a conifer forest, *International Journal of Wildland Fire*, 27, 6, 407-412.

Talhelm AF, **Smith AMS**, 2018. Litter moisture adsorption is tied to tissue structure, chemistry, and energy concentration, *Ecosphere*, doi: 10.1002/ecs2.2198.

Lyon ZD, Morgan P, Stevens-Rumann CS, Sparks AM, Keefe RF, **Smith AMS**. 2018. Fire Behavior in Masticated Forest Fuels: Lab and Prescribed Fire Experiments, *International Journal of Wildland Fire*, 27, 280-292.

Smith AMS, Lutz JA, Hoffman CM, Williamson G, Hudak AT. 2018. Preface: Special Issue on Wildland Fires, *Land*, 7, 2, 46.

Sparks AM, Kolden CA, **Smith AMS**, Boschetti L, Johnson DM, Cochrane MA, 2018. Fire intensity

impacts on post-fire response of temperate coniferous forest net primary productivity, *Biogeosciences*, 15, 4, 1173-1183.

Smith AMS, Goldammer JG, Bowman DMJS. 2018. Introducing Fire: A trans-disciplinary journal to advance understanding and management of landscape-fires from local to global scales in the past, present, and future, *Fire*, 1, 1-4.

2017

Kolden CA, Bleeker TM, **Smith AMS**, Poulos HM, and Camp AE, 2017. Fire effects on historical refugia in contemporary wildfires, *Forests*, 8, 10, 400, doi: 10.3390/f8100400.

Worden S, Collins C, Roe A, Brown K, **Smith AMS**, Kolden CA, Nelson AS, Brooks R, Ramsay S. 2017. Wildland Firefighters' Self-Reported Nutrition and Hydration Concerns that May Impact Health and Safety. *Journal of Nutrition Education and Behavior*, 49, 7, S85.

Lewis SA, Hudak AT, Robichaud PR, Morgan P, Satterberg K, Strand EK, **Smith AMS**, Zamudio JA, Lentile LB. 2017. Indicators of burn severity at extended temporal scales: A decade of ecosystem response in mixed conifer forests of western Montana, *International Journal of Wildland Fire*, 26, 755-771.

Hyde JC, Yedinak KM, Talhelm AF, **Smith AMS**, Bowman DMJS, Johnson F, Lahm P, Fitch M, Tinkham WT. 2017. Air quality policy from fire management responses addressing smoke from wildland fires in the United States and Australia, *International Journal of Wildland Fire*, 26, 5, 347-363.

Tinkham WT, Hoffman CM, Ex SA, Battaglia M, **Smith AMS**, 2017. Sensitivity of crown fire modelling to inventory parameter dubbing in FVS, in Proceedings of the Forest Vegetation Simulator (FVS) e-Conference, e-Gen, General Technical Report, SRS-224, Asheville, NC, U.S. Department of Agriculture Forest Service, Southern Research Station, 114-123.

Abatzoglou JT, Kolden CA, Williams AP, Lutz JA, **Smith AMS**. 2017. Climatic influences on inter-annual variability in regional burn severity across western US forests, *International Journal of Wildland Fire*, 26, 4, 269-275.

Banskota A, Falkowski MJ, **Smith AMS**, Meingast K, Kane E, Bourgeois-Chavez L, French N, Miller M. 2017. Continuous wavelet analysis for spectroscopic determination of sub-surface moisture and water-table height in northern peatland ecosystems, *IEEE Transactions in Geoscience and Remote Sensing*, 55, 3, 1526-1536.

McCarley TR, Kolden CA, Vaillant NM, Hudak AT, **Smith AMS**, Wing BM, Kellogg B, Kreitler J. 2017. Multi-temporal LiDAR and Landsat quantification of fire induced changes to forest structure, *Remote Sensing of Environment*, 191, 419-432.

McCarley TR, Kolden CA, Vaillant NM, Hudak AT, **Smith AMS**, Kreitler J. 2017. Landscape-scale quantification of fire effects following mountain pine beetle outbreak and timber harvest, *Forest Ecology and Management*, 391, 164-175.

Bowman DMJS, Williamson G, Kolden CA, Abatzoglou, JT Cochrane MA, **Smith AMS**. 2017. Human exposure and sensitivity to globally extreme wildfire events, *Nature: Ecology and Evolution*, 1, 0058, doi: 10.1038/s41559-016-0058.

Yedinak KM, Anderson MA, Apostol KG, **Smith AMS**. 2017. Vegetation effects on impulsive events in the acoustic signature of fires, *The Journal of the Acoustic Society of America*, 141, 557-562.

Smith AMS. 2017. Introduction, Chapter 4: Looking to the Future: Fire Education, Training, and Research Needs, in *Fire on the Land: A Retrospective Anthology of Selected Papers from the Archives of the Society of American Foresters*, Ed. S. Fillmore, Society of American Foresters, ISBN: 978-0-939970-32-2.

Smith AMS, Talhelm AF, Johnson DM, Sparks AM, Yedinak KM, Apostol KG, Tinkham WT, Kolden CA, Abatzoglou JT, Lutz JA, Davis AS, Pregitzer KS, Adams HD, Kremens RL. 2017. Effects of fire radiative energy density doses on *Pinus contorta* and *Larix occidentalis* seedling physiology and mortality, *International Journal of Wildland Fire*, 26, 1, 82-94.

Sparks AM, **Smith AMS**, Talhelm AF, Kolden CA, Yedinak KM, Johnson DM. 2017. Impacts of fire radiative flux on mature *Pinus ponderosa* growth and vulnerability to secondary mortality agents, *International Journal of Wildland Fire*, 26, 1, 95-106.

2016

Tinkham WT, **Smith AMS**, Affleck D, Saralecos JD, Falkowski MJ, Hoffman CM, Hudak AT, Wulder MA. 2016. Development of height-volume relationships in second growth *Abies grandis* for use with aerial LiDAR, *Canadian Journal of Remote Sensing*, 42, 5, 400-410.

Weiner, NI, Strand, EK, Bunting, SC and **Smith, AMS**. 2016. Influence of duff distribution on post-fire vegetation recovery patterns in sagebrush-steppe, *Ecosystems*, 19, 7, 1196-1209.

Jacobson R, Keefe RF, **Smith AMS**, Lanniga T, Inman D, Saul D, Newman S. 2016, Multi spatial analysis of forest residue utilization for biofuels, *Biofuels, Bioproducts, and Biorefining-BioFPR*, 10, 5, 560-575.

Vaillant NM, Kolden CA, **Smith AMS**, 2016. Assessing landscape vulnerability to wildfire in the United States, *Current Forestry Reports*, 2, 3, 201-213.

Hyde, Joshua C.; Blades, Jarod; Hall, Troy; Ottmar, Roger D; **Smith, AMS**. 2016. Smoke management photographic guide – A visual aid for communicating smoke impacts. Gen. Tech. Rep. PNW-GTR-925. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 59 p.

Matthews B, Strand EK, **Smith AMS**, Hudak AT, Dickinson MB, Kremens RJ. 2016. Estimating fire radiative energy obscuration by tree canopy for remote sensing applications, *International Journal of Wildland Fire*, 25, 1009-1014.

Sparks AM, Kolden CA, Talhelm AF, **Smith AMS**, Apostol KG, Johnson DM, Boschetti L. 2016. Spectral indices accurately quantify changes in tree physiology following fire: toward mechanistic assessments of landscape post-fire carbon cycling, *Remote Sensing*, 8, 7, 572, doi: 10.3390/rs8070572.

Grayson L, Keefe RF, Tinkham WT, Eitel JU, Saralecos JD, **Smith AMS**, and Zimelman EG. 2016. Accuracy of WAAS-enabled GPS-VHF warning signal when crossing a terrestrial geofence, *Sensors*, 16, 6, 912.

Smith AMS, Talhelm AF, Kolden CA, Newingham BA, Adams HD, Cohen JD, Yedinak KM, Kremens RL. 2016. The ability of winter grazing to reduce wildfire size and fire-induced plant mortality was not demonstrated: A comment on Davies et al. (2015), *International Journal of Wildland Fire*, 25, 484-488.

Smith, AMS, Kolden, CA, Paveglio, T, Cochrane, MA, Mortitz, MA, Bowman, DMJS, Hoffman, CM, Lutz, J, Queen, LP, Hudak, AT, Alessa, L, Kliskey, AD, Goetz, S, Yedinak, KM, Boschetti, L, Higuera, PE, Flannigan, M, Strand, EK, van Wagendonk, JW Anderson, JW Stocks, BJ and Abatzoglou, JT. 2016. The science of firescapes: achieving fire resilient communities, *BioScience*, 66, 2, 130-146.

Smith AMS, Sparks AM, Kolden CA, Abatzoglou JT, Talhelm AF, Johnson DM, Boschetti L, Lutz JA, Apostol KG, Yedinak KM, Tinkham WT, Kremens RJ. 2016. Towards a new paradigm in fire severity research using dose-response experiments *International Journal of Wildland Fire*, 25, 158-166.

Tinkham WT, **Smith AMS**, Higuera PE, Hatten JA, Brewer NB, Doerr SH. 2016. Replacing time with space: Using laboratory fires to explore the effects of repeated burning on black carbon degradation, *International Journal of Wildland Fire*, 25, 242-248.

2015

Kolden, CA, **Smith, AMS**, Abatzoglou, JT. 2015. Limitations and utilization of Monitoring Trends in Burn Severity products for assessing wildfire severity in the USA, *International Journal of Wildland Fire*, 24, 7, 1023-1028. <http://dx.doi.org/10.1071/WF15082>.

Sparks, AM, Boschetti, L, **Smith, AMS**, Tinkham, WT, Lannom KO, and Newingham, BA. 2015, An accuracy assessment of the MTBS burned area polygons for shrub-steppe fires in the northern

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- “Remote sensing techniques to assess active fire characteristics and post-fire effects: clarification of terminology” Smith, A.M.S., Lentile, L., Holden, Z., et al, 11th Biennial USDA Forest Service RSAC conference, Salt Lake City, 24th-26th April, 2006.
- “Application of an airborne digital camera system for mapping white ash distribution to support rapid assessment of burn severity” Gessler, P.E., Gorsevski, P. and Smith, A.M.S., 11th Biennial USDA Forest Service RSAC conference, Salt Lake City, 24th-26th April, 2006.
- “Beyond Landsat: Multiscale assessment of four satellite sensors for measuring burn severity” Holden, Z., Morgan, P., Smith, A.M.S., and Vierling L., 11th Biennial USDA Forest Service RSAC conference, Salt Lake City, 24th-26th April, 2006.
- “Remote sensing and land management in a shrub-dominated landscape” Garrity, S.R., Vierling, L.A., and Smith, A.M.S., UMAC Annual Meeting, Grand Forks, ND, February 2006.
- “Automated detection of individual shrub location and crown area using aerial imagery and 2-D wavelet analysis” Garrity, S.R., Vierling, L.A., and Smith, A.M.S. SRM 59th Annual Meeting, Vancouver, B.C., Canada, 12-17 February 2006.
- “Remote Sensing: An Alternative Career in Applied Physics”, Department of Physics, UI, January 30th 2006.
- “Suitability of existing NIR and novel SWIR spectra indices to remotely detect water stress in populus spp.” Eitel, J.U., Gessler, P.E., Smith, A.M.S. and Robbrecht, R., Eos transactions, American Geophysical Union, 86, 52, Fall Meeting, Dec 2005, Supplemental, B53B-07.
- “A comparison of four individual tree height prediction methods for forest inventory” Falkowski, M.J., Hudak, A.T., Smith, A.M.S. and Gessler, P.E., 26th *Canadian Symposium on Remote Sensing*, Wolfville, Nova Scotia, Canada, 14-16 Jun 2005
- “Predicting plot basal area and tree density in mixed-conifer forest from lidar and Advanced Land Imager (ALI) data” Hudak, A.T., Evans, J.S., Falkowski, M.J., Crookston, N.L., Gessler, P.E., Morgan, P., and Smith, A.M.S.. 26th *Canadian Symposium on Remote Sensing*, Wolfville, Nova Scotia, Canada, 14-16 Jun 2005
- “Wavelet estimation of tree crown widths from Lidar data” Smith, A.M.S., Falkowski, M.J., Strand, E.K., Evans, J., Vierling, L.A., Hudak, A.T., Gessler, P.E. and Hann, D.B, *Remote Sensing Applications Center (RSAC) Workshop on Lidar Concepts and Resource Applications*, Salt Lake City, May, 2005
- “ForestPARC – The extension of forestry remote sensing research” Smith, A.M.S. *UMAC Annual Meeting*, Grand Forks, ND, February, 2005.
- “Improved Nitrogen Emission Estimates from Southern African Savanna Fires” Smith, A.M.S. *Global Nitrogen Enrichment Conference*, Nottingham, 2002

Professional Meeting Papers, Workshops, Showings, Recitals:

- “The suitability of statistics to assess extreme fire years: observations via a case study evaluating fire-climate interactions in the northern Rocky Mountains. Grayson LM, Smith AMS. SAF Annual Meeting, November 2017.
- “Use of publicly available FIA data to validate a carbon monitoring system”. Hudak, A., P. Fekety, M. Falkowski, R. Kennedy, N. Crookston, A. Smith, N. Glenn, J. Dong, V. Kane and G. Domke. FIA Stakeholder Science Meeting, Park City, Utah, 24-26 Oct 2017. (oral presentation, published abstract).
- “Multi-scale mapping of vegetation biomass” Hudak, A.T., P. Fekety, M. Falkowski, R. Kennedy, N. Crookston, A.M.S. Smith, P. Mahoney, N. Glenn, J. Dong, V. Kane, C. Woodall and G. Domke. American Geophysical Union Fall Meeting. San Francisco, California, 12-16 Dec 2016.
- “LiDAR: What is it and what will it do for me?” Hudak, A.T., P.A. Fekety, B. Flagor, J. Jerman, C. Roth, P. Mahoney, A.M.S. Smith, M.J. Falkowski and R.E. Kennedy. Family Forest Landowners and Managers Conference and Exposition, Moscow, Idaho, 29 Mar 2016.
- “Mapping annual forest biomass from 2000-2012 across northern Idaho from field plot, airborne

- LiDAR, and Landsat image records “Hudak, A.T., P.A. Fekety, M.J. Falkowski, N.L. Crookston, R.E. Kennedy, P. Mahoney, A.M.S. Smith, C. Roth and C. Woodall.. 15th Annual Forester’s Forum, Coeur d’Alene, Idaho, 4 Feb 2016.
- “Mapping annual forest biomass from 2000-2012 across northern Idaho from field plot, airborne LiDAR, and Landsat image records” Hudak, A.T., P.A. Fekety, M.J. Falkowski, N.L. Crookston, R.E. Kennedy, P. Mahoney, A.M.S. Smith, C. Roth and C. Woodall.. Watershed Advisory Group, Coeur d’Alene, Idaho, 1 Feb 2016.
- “Accuracy of the LiDAR-derived Dem in dense shrub area in mountainous NW US” Huang, H., Link, T.A., Smith, A.M.S., Chongcheng, C. 2011., IEEE International Conference on Spatial Data Mining and Geographical Knowledge Services, ICSDM 2011, Fuzhou, China, June 29 - July 1, 2011; 01/2011
- "Development of a Three Dimensional Wireless Sensor Network for Terrain-Climate Research in Remote Mountainous Environments", Kavanagh, K., Davis, A., Gessler, P., Hess, H., Holden, Z.A., Link, T.E., Newingham, B.A., Smith, A.M.S., Robinson, P., Abstract B13A-0524, presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.
- "Effects of Repeated Burning and Fuel Moisture on Black Carbon Production in Masticated Fuelbeds", Brewer, N., Smith, A.M.S., Higuera, P.E., Hatten, J.A., Hudak, A.T. and Ottmar, R.D., Abstract B31F-0379, presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.
- "Ecohydrological consequences of drought- and infestation-triggered tree die-off: insights and hypotheses", Adams, H.D., Luce, C., Breshears, D.D., Weiler, M., Hale, C., Allen, C.D., Smith, A.M.S., Huxman, T.E. Abstract B33B-0462, presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.
- "Spatial accounting for errors in LiDAR-derived products: Snow volume and snow water equivalent estimation". Tinkham, W.T., Hoffman, C.M., Falkowski, M.J., Smith, A.M.S., Link, T.E. and Marshall, H-P. Abstract C33D-0672, presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.
- "Calculations of North American wildfire emissions and smoke plume heights using MODIS and MISR.". Rengel, A.P., Leung, F-Y., Ichoku, C.M. and Smith, A.M.S. Abstract A54B-07, presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec.
- “Consumption of sound and rotten coarse woody debris from a North Idaho mixed conifer forest”. Joshua Hyde, A.M.S. Smith, Roger Ottmar, and Penny Morgan. International Association of Wildland Fire, Spokane, WA., 2010.
- “Spatial assessment of snow volume using lidar and field measurements” Tinkham W.T., Smith A.M.S., Link, T.E., Hudak, A.T., Falkowski, M.J. and Marks, D.G., 2010, EOS Trans, presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- “LiDAR DEM validation in shrub areas at Reynolds Mountain East subwatershed” Huang, H., Smith, A.M.S., Link, T.E., Marks, D.G., 2009 EOS Trans, 90, 52, Fall Meet. Suppl. Abstract U12B-0066
- “Comparative Influence of Terrain Slope and Canopy Closure on Lidar DEM Accuracy”, Tinkham W., Smith, A.M.S., Hudak, A.T., Gessler, P.E., Swanson, M., 2009 EOS Trans, 90, 52, Fall Meet. Suppl. Abstract B31A-0314
- “Forests, fire, floods and fish: nonlinear biophysical responses to changing climate: Pierce, J.L., Baxter, C., Yager, E.M., Fremier, A.K., Crosby, B.T., Smith, A.M.S., Kennedy, B., Hicke, J.A., Feris, K., 2009 EOS Trans, 90, 52, Fall Meet. Suppl. Abstract U13B-0074.
- “Wildfire Inputs to Regional Air Quality Remote Spatial-Temporal Measures for Improved Inventory Assessments” Start, R., Lamb, B., Smith, A.M.S*. Potter, B., Hyde, J., International Fire Congress, Savannah, GA, December 2009. *presented
- “The effect of decomposition on coarse woody debris combustion: a preliminary investigation” Hyde, J., Smith, AM.S., Ottmar, R., Morgan P., Robberecht, R. International Fire Congress, Savannah, GA, December 2009
- “Comparative Influence of Terrain Slope and Canopy Closure on Lidar DEM Accuracy “, Tinkham, W., Smith, A.M.S., Hudak, A.T., Brewer, N., Bedient, W., Society of American Foresters annual meeting, 2009.
- “Comparing field, LiDAR, and spectral measures of percentage tree canopy cover in a mixed canopy forest” Smith, A.M.S., Falkowski, M.J., Evans, J.S., Robinson, A. and Hudak,

- A.T., 2008, , *EOS Trans*, 89 (53), Fall Meet. Suppl., Abstract B41A-0345
- “Using MODIS FRP values to estimate forest fire PM2.5 emissions, percentage tree canopy cover in a mixed canopy forest” Start, R., Lamb, B., Smith, A.M.S., and Potter, B., 2008, , *EOS Trans*, 89 (53), Fall Meet. Suppl., Abstract B31C-0306
- “The contribution of vegetation cover and bare soil to pixel reflectance in a semi-arid ecosystem” Steele, C.M., Smith, A.M.S., Campanella, A. and Rango, A., 2008, , Abstract B32A-02
- “Effect of Lidar point density on the Ability to Monitor Stand-Level Growth and Disturbance in Coniferous Forest” Hudak, A.T., Huang, H., Smith, A.M.S., Falkowski, M.J., Tinkham, W., and Evans, J.S., 2008, , Abstract B41C-0398
- “A machine learning approach to modelling old-growth using spectral and topographic data” Evans J.S., Smith, A.M.S., Cushman, S.A., Mital J. and Hudak A.T. *Eos transactions*, American Geophysical Union, 88, 52, Fall Meeting, Dec 2007, Supplemental, B43C-1459.
- “Automatically measuring individual tree crown diameter and height from LiDAR data: A comprehensive evaluation of spatial wavelet analysis” Falkowski, M.J., Gessler, P.E., Smith, A.M.S., Hudak, A.T. and Vierling, L.A. *Eos transactions*, American Geophysical Union, 87, 52, Fall Meeting, Dec 2006, Supplemental, B41A-0156.
- “Wavelet estimation of plant spatial patterns in multi-temporal aerial photography” Strand, E.K., Vierling L.A., Smith, A.M.S., Bunting, S.C., Hann, D.B. and Gessler, P.E., *Eos transactions*, American Geophysical Union, 86, 52, Fall Meeting, Dec 2005, Supplemental, B43B-0287.
- “Evaluating ASTER satellite imagery and gradient modeling for mapping and characterizing wildland fire fuels” Falkowski, M.J., P.E. Gessler, P. Morgan, Smith, A.M.S. and A.T. Hudak. 2004., *Proceedings of the Tenth Biennial USDA FS Remote Sensing Applications Conference*. CD-ROM. April, 2004 Salt Lake City, UT.
- “Evaluating ASTER satellite imagery and gradient modeling for mapping and characterizing wildland fire fuels” Falkowski, M.J., P.E. Gessler, P. Morgan, A.M.S. Smith, and A.T. Hudak. 2004.. *Proceedings of the 2004 American Society for Photogrammetry and Remote Sensing Annual Meetings*. CD-ROM May, 2004. Denver.
- “Experimental testing of relationships between post-fire surface reflectance and fire characteristics in Southern African savannas” Smith, A.M.S., Wooster, M.J. and Drake, N.A., *AGU/EGS/EGU joint Assembly*, Nice, 2003
- “The Potential for Estimating Fire Intensity from Remote Sensing; Towards Estimation of N and C Emissions from African Savanna Fires” Smith, A.M.S. Wooster, M.J. and Drake, N.A., *Joint GOFD/GOLD Fire and IGBP-IGAC/BIBEX Workshop*, Maryland, 2002
- “The Potential for Remote Sensing to Retrospectively Determine N and C Emissions from African Savanna Fires” Smith, A.M.S., Wooster, M.J. and Drake, N.A., *NERC EPFS Meeting Programme Field Spectral Measurements in Remote Sensing*, Southampton, 2002
- “The Potential for Remote Sensing to Retrospectively Fire Intensity from African Savanna Fires” Smith, A.M.S. Wooster, M.J. and Drake, N.A., *The Oxford University/Rutherford Appleton Laboratory Spring School in Quantitative Earth Observation (EO) in Earth Radiation and Climate Studies*, Oxford, 2002

Grants and Contracts Awarded:

Active:

LSAMP BD: University of Idaho University of Idaho All-nations ANLSAMP, NSF, **\$1.1M, Senior Personnel** with PI J. Wiencek, 2019-2022

FireEarth; Advancing Resilience to Compounding Disasters: An Integrated Natural-Human Systems Assessment of Wildfire Vulnerability, NSF, **\$2.8M, Senior Personnel** with PI C Kolden.

Reducing logging fatality and non-fatal trauma incidence rates with new real-time operational GPS-VHF communications, recommended safety procedures, and education, NIH-NIOSH, **\$823,000, Co-Principal Investigator** with PI Keefe.

Developing Professionals and Science in the Wildland Fire Program, University of Idaho (**\$482,000**, USDA Forest Service), **Co-Principal Investigator** with PI Strand and CoPI Morgan, 2017-2020.

Understanding vulnerability of whitebark pine in eastern Idaho and furthering forestry graduate education on tribal lands, USDA McIntire-Stennis Award IDAZ-MS-0117, **\$75,615, Principal Investigator** with Collaborator Richard Everett (SKC), 2016-2020

Past:

Developing Professionals and Science in the Wildland Fire Program, University of Idaho (**\$482,000**, USDA Forest Service), **Co-Principal Investigator** with PI Strand and CoPI Morgan, 2017-2019

How vegetation recovery and fuel conditions in past fires influences fuels and future fire management in five western U.S. ecosystems, **\$450,000**, JFSP, **Collaborator** with PI Hudak

Wildland Fire Infrasound, USFS, **\$61,605, CoPI** with PI K Yedinak

Air Quality for Land Managers, NPS, **Principal Investigator**, \$20,000

Prototyping a methodology to develop regional-scale forest aboveground biomass carbon maps predicted from Landsat time series, trained from field and lidar data collections, and independently validated with FIA data, NASA CMS, **\$659,923, Co-Investigator** with PI Hudak

Masticated fuels and fire behaviour in forests of the Interior West, (**\$369.893**, JFSP) **Co-Principal Investigator** with PI P Morgan

Wildfire decisions and air quality: 4-hour online course (**\$129,854** National Park Service), **Principal Investigator**

EPSCoR RII Track II: Collaborative Research: The Western Consortium for Watershed Analysis, Visualization, and Exploration (WC-WAVE) (NSF, IIA-**\$3,000,000**), Participant (Visualization Team), with PI B. Michener

EPSCOR RII Track I: Managing Idaho's Landscapes for Ecosystem Services, (NSF, IIA - **\$20,000,000**), **Science Team**, with PI P Goodwin.

Prototyping global industrial forest mapping, a Landsat spatio-temporal approach, **Co-I** with PI L. Boschetti, NASA. **\$700,000**.

Enhancing Tools and Geospatial Data to Support Operational Forest Management and Regional Forest Planning in the Face of Climate Change (NASA ROSES New Investigator), **Collaborator** with PI MJ Falkowski.

Fuel Consumption and Carbon cycling in northern peatland ecosystems: Understanding vulnerability to burning, fuel consumption, and emissions via remote sensing of fuel moisture and fire radiative energy (NASA ROSES Terrestrial Ecology), **Collaborator** with PI MJ Falkowski.

Quantifying the characteristics and investigating the biogeoscientific and societal impacts of extreme wildland fires in the United States northern Rockies region (**\$1,221,279**, NASA ROSES Interdisciplinary Research in Earth Science), **Principal Investigator**

NSF IGERT Evaluating resilience of ecological and social systems in changing landscapes: a doctoral research and education program in Idaho and Costa Rica, **Participant**

Smoke Management Guide for Prescribed and Wildland Fire, 2001 Edition Revision Project (**\$75,161**, National Park Service), **Principal Investigator**

MRI: Development of a smart 3-D wireless sensor network for terrain-climate research in remote mountainous environments (**\$563,326** NSF), **Co-Principal Investigator** with PI T. Link (formerly K. Kavanagh)

Air Quality and Smoke Management for Land Managers and Smokepedia for use by Fire Managers in the IMR (**\$29,997**, Department of Interior). **Principal Investigator**

- Public Perceptions of Smoke: Evaluating Regional Variations Via a Comparison of the Interior West and the Southeastern United States (**\$380,052**, JFSP). **Principal Investigator** with Co-PI T.E. Hall, former PI.
- Masticated fuels and carbon storage: effects of particle size and fuel moisture on black carbon production (**\$24,919**, JFSP), **Principal Investigator** with Co-Principal Investigator Nolan W Brewer
- Smoke Management Guide for Prescribed and Wildland Fire, 2001 Edition Revision Project (Phase 1: **\$92,568**, NPS), **Principal Investigator**, 2010-2012
- Our Changing Climate: Interactive Online Modules Highlighting North Dakotan Applications (**\$67,945**, NASA), **Principal Investigator** with EK Strand
- Assessment of NWCG Courses and Positions for Smoke and Air Quality Content, Training Requirements and Material Delivery (Phase 1: **\$30,000**, Phase 2: **\$40,000** NPS), **Principal Investigator**
- Remote Sensing Extension via Interactive Online Environments: Highlighting Applications in North Dakota, (**\$70,817**, NASA), **Principal Investigator** with EK Strand and R Robberecht
- Reconciliation of the MODIS active fire and burned product for improved emission and uncertainty estimation, (**\$22,428** component of \$90K NASA: *Earth Science Applications Feasibility Studies Solicitation*), **Co-Investigator** with PI Luigi Boschetti (UMD).
- Idaho EPSCoR RII: Water resources in a changing climate, (**\$350K** component of \$15M, NSF), **Junior Faculty**, PI V. Walden.
- Forestry remote sensing extension to tribal colleges and land managers, (**\$75,586**, NASA), **Principal Investigator** with EK Strand and R Robberecht
- LiDAR remote sensing for Inventory and Management of Forest Landscapes, (**\$91,094**, USDA FS Agenda 2020 program), **UI Principal Investigator** with A Hudak (PI). 2008-2013
- Active learning environments for mastery-oriented learning: Integrating the *virtual tutor* in science education, (**\$56,000**, Idaho SBOE). **Co-Principal Investigator** with R Robberecht (PI), E Strand, and D Schlater. 2008-2009.
- Smoke Management: Development of Online Training Resources and Workshops (**\$134,967**, National Park Service), **Principal Investigator**, With Co-PIs Penelope Morgan and Chad Hoffman. 2007-2012.
- Integrated cross-disciplinary vegetation, water, and energy research (**\$24,710**, Idaho NSF EPSCoR Instrument Acquisition and Startup Augmentation Funds Competition), **Principal Investigator** with Co-PI Tim Link, 2007.
- Wildfire inputs to regional air quality: remote spatial-temporal measures for improved inventory assessments (**\$204,104**, Joint Fire Sciences Program), **Principal Investigator**, with Co-PIs Brian Lamb (Washington State University) and Brian Potter (USDA FS). 2007-2010.
- ForestPARC – Year 3 (**\$135,000**, UMAC/NASA, **Principal Investigator**, with Co-Is Paul E. Gessler and Lee A. Vierling.), 2007 –2008
- Development of Radiometric and Geometric Processing Steps for the UND AgCam Sensor (**\$30,000**, NASA, **Principal Investigator**, with Co-PI Peter Gorsevski), 2007–2008
- ForestPARC – The Forestry Remote Sensing Outreach Program (**\$109,870** UMAC/NASA **Co-Investigator** with PI Paul E. Gessler and Lee A. Vierling.), 2006-2007
- Meeting Fire Management Needs for Science Synthesis, Workshops and Online Academic Courses: An Innovative Technology Transfer Approach (**\$370,000** Joint Fire Sciences Program; **Co-Principal Investigator** with Co-PIs P.E. Morgan, L. Lentile, A. Campbell, and A.Hudak), 2005-2007
- Integrated Multisensor Remote Sensing and Modelling to Manage Mixed-Conifer Forest Fuels, Agenda 2020 (**\$35,000**) **Co-Principal Investigator** with PI Hudak (USFS). 2005-2007
- Forest Public Access Resource Center Continuation Funding (**\$103,400** UMAC/NASA; **Co-Principal Investigator** with PI P.E Gessler), 2004-2005
- Joint Venture Agreement between the US Forest Service and University of Idaho to Investigate the Fusion of Lidar and Hyperspectral Remote Sensing (**\$56,050** USDA FS; **Co-Investigator** with PIs A.T Hudak, P.E Gessler, P. Morgan), 2004-2005

Small Grants Awarded:

Ecological Society of America grant for ESA publication costs: \$540

Travel, workshop registration, and subsistence costs to attend The Oxford University/Rutherford Appleton Laboratory Spring School in Quantitative Earth Observation (EO) in Earth Radiation and Climate Studies, Oxford, 2002 (equiv. \$5000, Natural Environmental Research Council)

Large Research Grants/Pre-Proposals in Review:

Effects of different fire intensities on *Pinus ponderosa* sapling physiology and mortality (\$24,850 Joint Fire Sciences Program, **Principal Investigator** with Student Investigator R Partelli Feltrin).

ICARiSS: The Wildfire Integrated Center for Advanced Research in Security and Sustainability, National Science Foundation, **Senior Personnel** with PI C. Goebel.

Honors and Awards (Scholarship):

2017	Research and Creative Activity Excellence Award, University of Idaho
2016	Presidential Mid-Career Award, University of Idaho
2011	Outstanding Researcher, College of Natural Resources, University of Idaho
2009	Outstanding Researcher, College of Natural Resources, University of Idaho
1998	Second Class Merit Certificate, Physics, University of Edinburgh
1997	Second Class Merit Certificate, Geophysics, University of Edinburgh
1995	Credit Award: Young Enterprise Scotland
1994	Bronze Certificate (United Kingdom National Mathematics Contest)
1992	Bronze Certificate (United Kingdom National Mathematics Contest)
1992	Highly Commended (The Scottish Mathematical Council: Mathematical Challenge)
1991	Highly Commended (The Scottish Mathematical Council: Mathematical Challenge)
1990	Highly Commended (The Scottish Mathematical Council: Mathematical Challenge)
1989	Blue Peter Badge (Conservation)

SERVICE:

Major Committee Assignments:

2019-2022	University of Idaho Faculty Senate
2019-	Center for Resilient Communities Executive Committee
2019-	Lead, Center for Resilient Communities-Hazards Hub
2019	Chair, Graduate Programs Coordinator Search Committee
2017-2019	Chair, IRIC Facility Committee
2016-2017	Vice-Chair, IRIC Facility Committee
2016-	IRIC Facility Committee
2015-2021	Member, Graduate Council
2018-	Associate Deans Group
2018	University Distinguished Professor Advisory Committee
2017	Member, Program Prioritization Metric Committee
2017	Chair, Heady Endowed Chair Search Committee
2017	Chair, FRFS Department Chair Search Committee
2016-2017	Northwest Knowledge Network Advisory Committee
2016-2017	Program Prioritization Metric Committee
2014	Chair, Ecosystem Modeler Search Committee
2012	Chair, Spatial Fire Science Search Committee
2012-2014	University of Idaho Faculty Senate
2011-2013	Chair, University Safety and Loss Control Committee
2010-2014	Member, University Safety and Loss Control Committee
2010-2013	Member, College of Natural Resources, Safety Committee
2008-2013	Member, College of Natural Resources, Geospatial Committee
2008-2011, 2017	Member, University Committee on General Education (UCGE)
2008	Member, Fire Science Search Committee
Var. Years	CNR Curriculum Committee

External Program Reviews and Assessment

2015-2016	Served on External Program Review Panel for the FireCenter, University of Montana
2015-2016	Drafted Self-Study Report for B.S. Fire Ecology and Management External Program Review; Organized and led B.S. in Fire Ecology and Management External Program Review visit, April 2016
2015-2016	Drafted Self Study Report for B.S. Forest Resources (Forestry) External Program Review; Co-organized and co-led (with R. Brooks) B.S. in Forestry External Program Review visit, March 2016
2015-2016	Co-drafted Self Study Report for B.S. Forest Resources, Society of American Foresters Re-accreditation
2014	Organized Employers' Summit for B.S. in Fire Ecology and Management
2014- Present	Conducted annual assessments of B.S. in Fire Ecology and Management

Professional and Scholarly Organizations (including memberships, committee assignments, editorial services, offices held and dates)

Leadership roles in scientific journals

2019-present	Editorial Board, <i>Forests</i>
2018-2020	Guest Editor, <i>Remote Sensing</i>
2018-present	Editorial Board, <i>Sci</i>
2017-present	Editor-in-Chief, <i>Fire</i>
2016-2018	Guest Editor, <i>Land</i> on "Wildland Fires"
2009-Present	Associate Editor, <i>International Journal of Wildland Fire</i>
2009-2016	Editorial Board, <i>Remote Sensing</i>
2007-Present	Editorial Board, <i>Sensors</i>
2016-2017	Guest Editor, <i>Land</i>
2016	Book Proposal Reviewer for Springer
2013-2014	Guest Editor, <i>Remote Sensing of Environment</i> on "Remote Characterization of Vegetation Structure, Function, and Condition"
2012	Subject Matter Expert for the Fire Program Analysis (FPA): Business Process Review and Technical Review, Commissioned by Booz Allen Hamilton for the Department of Interior, 92pp.
2011, 2013	Book reviewer for <i>Cambridge University Press</i>
2010	Guest Editor, <i>Remote Sensing</i> on "Lidar"
2008	Guest Editor, <i>Canadian Journal of Remote Sensing</i> on "Remote characterization of vegetation structure and productivity: plant to landscape scales"
2008	Guest Associate Editor, <i>Journal of Geophysical Research – Biogeosciences</i> on the "Remote Characterization of Vegetation Structure: New methods and applications to landscape-regional-global scale processes"
2007-2008	Guest Associate Editor, <i>Canadian Journal of Remote Sensing</i>

Membership and roles in professional organizations

2018-Present	Association of American Geographers
2017-Present	Committee on Publication Ethics (COPE)
2016-Present	Xi Sigma Pi
2002-Present	American Geophysical Union:
2011-2012	Program Committee, Asia Oceania Geosciences Society / American Geophysical Union Joint Assembly
2007-2009	Fall Meeting Organizing Committee - AGU-Biogeosciences Representative
1995-Present	Institute of Physics (Nominated and voted by Fellows to Full Member in 2005)
2006-2012	Society of American Foresters
2007-2011	Xigma Si
2005-2011	Institute of Electronic and Electrical Engineers
2004-2011	Ecological Society of America

Reviewing of scholarly work

2019	DoD SERDP Weapon Systems and Platforms
2018-2019	DoD SERDP Fire Sciences
2017-present	International Association of Wildland Fire (IAWF) Scholarship Committee
2015	Davidson Institute for Talent Development
2008, 2009, 2012	Engineering design EXPO judge, University of Idaho
2008-Present	Various NASA panels
2008-Present	Various NSF Panels / ad hoc reviews including DEB, PASI, MRI
2005-2009	Review panel member for the Interagency Joint Fire Sciences Program
2003-Present	Reviewed manuscripts for: <i>International Journal of Wildland Fire, Computers and Geosciences, Geophysical Research Letters, International Journal of Remote Sensing, Journal of Geophysical Research, Remote Sensing of Environment, Photogrammetric Engineering and Remote Sensing, Plos One, Canadian Journal of Forest Research, Canadian Journal of Remote Sensing, African Journal of Geoinformation, Journal of Environmental Management, Ecological Applications, Frontiers in Ecology and the Environment Forest Ecology and Management, Remote Sensing, among others</i>

Organizational Roles at Conferences and Professional Meetings

2017	“Fire Resilient Communities Workshop: Community, Science, and Technology”, Organizing Committee , Sun Valley, June 7-8, 2017
2017	“Core Fire Science Forum”, Organized + Convener , Moscow, June 1-2, 2017
2016	“Remote Sensing of Vegetation Biomass”, Convener , AGU Fall Meeting, San Francisco, December 2016
2013	“Vulnerability, Disturbance Impacts, and Responses”, Convener + Session Chair , AGU Fall Meeting, San Francisco, December 2013
2012	"Remote Characterization of Vegetation Structure, Function, and Condition", Convener , AGU Fall Meeting, San Francisco, December 2012
2012	"Disturbance Impacts and Responses", Convener , AGU Fall Meeting, San Francisco, December 2012
2011-2012	Asia Oceania Geosciences Society / American Geophysical Union Joint Assembly Program Committee
2009	“Effective Communication for Smoke Management in a Changing Air Quality Environment II”, Supervised coordinator (Joshua Hyde), Carl T. Curtis National Park Service Midwest Regional Headquarters, February 24 - 26, 2009
2009	“Remote Characterization of Vegetation Structure: Parts I, II, and III”, Convener + Session Chair , AGU Fall Meeting, San Francisco, December 2009.
2009	Fall Meeting Organizing Committee : AGU-Biogeosciences
2008	“Effective Communication for Smoke Management in a Changing Air Quality Environment”, Supervised coordinator (Joshua Hyde), Great Smoky Mountains National Park, September 16-18, 2008:
2008	“Remote Characterization of Vegetation Structure: Parts I, II, III, IV, and V”, Convener + Session Chair , AGU Fall Meeting, San Francisco, December 2008.
2008	Fall Meeting Organizing Committee : AGU-Biogeosciences
2007	“Remote Characterization of Vegetation Structure: Parts I, II, and III”, Convener + Session Chair , AGU Fall Meeting, B03, San Francisco, December 10-14 2007.
2007	“Fire Severity and Climate: Impacts on Biogeochemical and Ecological Processes: Parts I, II, and III”, Convener + Session Chair , AGU Fall Meeting, B04, San Francisco, December 10-14 2007.
2007	Fall Meeting Organizing Committee : AGU-Biogeosciences
2006	“Remote Characterization of Vegetation Structure: Parts I, II, and III”, Convener + Session Chair , AGU Fall Meeting, B07-Biogeosciences, San Francisco, December 11-15 2006.
2006	“Post Fire Mapping Session”, Session Chair , 11th Biennial USDA Forest Service Remote Sensing Applications Center Conference, Salt Lake City, 24th-28th April

	2006.
2006	“11th Biennial USDA Forest Service Remote Sensing Applications Center Conference”, Organizing Committee , Salt Lake City, 24th-28th April 2006.
2005	“Workshop on Lidar Concepts and Resource Applications” Session Chair , <i>Remote Sensing Applications Center (RSAC)</i> , Salt Lake City, May, 2005
2004	“ForestPARC Lidar Technical and User’s Workshop”, Organizing Committee , Moscow, Idaho, 2005
2003-2007	Various Session Chair, Upper Midwest Aerospace Consortium (UMAC) annual meetings, University of North Dakota

Outreach Service:

The primary focus of my extension program at the University of Idaho has been in fostering a partnership with the National Wildfire Coordination Group (NWCG) Smoke Committee to update federal smoke management trainings. Through the ongoing supervision of my employee Joshua Hyde, we have developed a considerable web presence and reputation for smoke management and air quality extension at the University of Idaho. We host these extension efforts via the FRAMES Emissions and Smoke portal: <https://www.frames.gov/smoke>

The highlights of my extension portfolio with the NWCG Smoke Committee include:

Online Case Studies: Describing recent smoke management situations (such as super fog incidents), how they were addressed by agency personnel, and the lessons learned from these events

Online Tutorial: Designed for Line Officers and Land Managers who are seeking an overview of air quality regulations and smoke management approaches. This tutorial contains four sections outlining basic smoke management and air quality topics including impacts of smoke, air quality regulations, smoke management, and communication and collaboration.

Smokepedia: An interactive glossary of air quality and smoke management terms.

Recordings from Past Workshops: These are a series of workshop recordings from the 2008-2009 workshop Effective Communication for Smoke Management in a Changing Air Quality Environment.

Air Quality Library: This page contains PDF links of several helpful air quality guides and links to related web sites, several of which were used in the development of this tutorial.

Revision of the Smoke Management Guide: The 2001 Smoke Management Guide was a valuable resource for fire managers wishing to learn more about protecting air quality while using fire for land and resource management purposes. As research, regulations, and methodology continue to evolve to reflect the latest knowledge, so must this resource. The revision will incorporate the latest science and policy pertinent to smoke management on a national level

Public Perceptions of Smoke from Wildland Fires: This webpage includes four YouTube webinars on the public values, beliefs, attitudes, and community aspects of smoke perceptions. This webpage also includes links to publications and other resources regarding public perceptions from fires.

Smoke Photoguide for Communicating Smoke Impacts: The Photographic Guides are developed with images from US National Park and USDA Forest Service locations. The primary purpose of this guide is to serve as a tool for communicating potential particulate matter (PM 2.5) levels using visual representation. There are eight guides, one to represent each USDA forest service region in the continental United States.

Reviews and Synthesis: Review of the content of smoke management and air quality related trainings and position requirements of federal positions. The review assessed 125 position task books, 6 supporting policy and guidance documents from individual agencies including the interagency 310-1, and 91 NWCG trainings. This led to two agency reports.

Press Contributions:

2018 From pine cones to hobbit holes, mimicking nature can help humans adapt to wildfires
Interview for Scientific American (and picked up by PBS) on “From pine cones to hobbit holes, mimicking nature can help humans adapt to wildfires: Looking to fire-adapted trees and animals could reduce the impacts of California’s deadly blazes”
<https://www.scientificamerican.com/article/from-pine-cones-to-hobbit-holes-mimicking-nature-can-help-humans-adapt-to-wildfires/>

2018 Interview on Nieuwsuur, Dutch News

- 2018 How to survive a wildfire: let's copy tactics from nature
https://www.theguardian.com/environment/2018/nov/14/wildfire-survival-california-nature-trees?CMP=share_btn_tw
- 2016 http://dotearth.blogs.nytimes.com/2016/07/25/burning-issues-build-as-sand-fire-spreads-on-l-a-s-parched-wild-fringe/?partner=rss&emc=rss&_r=2
- 2016 Trees of life: tiny beetles turn California forests into tinder for energy, The Guardian,
<https://www.theguardian.com/sustainable-business/2016/jun/19/bark-beetle-california-forests-trees-electricity-drought>
- 2016 Addressing the 'wicked' wildfire problem, CDAPress, printed and online
http://cdapress.com/news/local_news/article_787e50c8-ca43-11e5-b158-ab647811c6d5.html
- 2015 National Public Radio: <http://nwpr.org/post/fire-may-be-out-above-ground-not-below>
- 2011 Lewiston Tribune (printed)

Community Service:

- Participate (various roles) in Palouse Youth Hockey Association (PYHA), 2015-present
 "Cub Scout Assistant Den Leader", Pack 323, Inland Northwest Council, 2014-2015
 "Cub Scout Den Leader", Pack 323, Inland Northwest Council, 2013-2014.
 "SCI-FUN Demonstrator", Department of Physics, University of Edinburgh, 1995-1996

PROFESSIONAL DEVELOPMENT:

Scholarship:

- Responsible Conduct of Research - SBE (2018)
 NIH FCOI Online Tutorial (2015, 2018)
 IRB Investigator Module (2015)
 CITI Investigators Training Modules:
 History and Ethical Principals - SBE (2015, 2018)
 The Federal Regulations for Protecting Research Subjects - SBE (2015, 2018)
 Informed Consent - SBE (2015, 2018)
 Defining Research with Human Subjects – SBE (2015, 2018)
 Assessing Risk – SBE (2015, 2018)
 Privacy and Confidentiality – SBE (2015, 2018)
 Research with Children – SBE (2015, 2018)
 CITI (2015 only):
 Internet-Based Research – SBE (2015)
 Research in Public Elementary and Secondary Schools – SBE (2015)
 Unanticipated Problems and Reporting Requirements in Social and Behavioral Research (2015)

Administration/Management:

- Title IX Training (2018)
 Creating a Respectful Community (2018)
 Section 508: What is It and Why is It Important to You? (2018)
 FERPA Tutorial (annually)
 Defensive Driving (2017)
 AppReview Training (2017)
 IT Security at the University of Idaho (2016)
 P Card and Travel Training at the University of Idaho (2016)
 Diversity & Inclusion at the University of Idaho (2016)
 Safety & security Awareness at the University of Idaho (2016)
 Our Inclusive Workplace (2016)
 University of Idaho Mission and Goals (2016)
 University of Idaho Stewardship of Resources & Ethical Conduct (2016)
 Supervisor Training Modules (2016)
 How to be an Effective Science Communicator – Ninja Communications Training (2015)
 Fire Extinguisher Use (2012)

Safety Matters (2011)
WebEdit (~2008)

Other:

Youth Protection Training – BSA (2014, 2015)
Den Leader Training – BSA (2014, 2015)
Weather Hazards – BSA (2014, 2015)