

## **Arjan J. H. Meddens**

### *Curriculum vitae*

Assistant Professor, School of the Environment  
College of Agricultural, Human, and Natural Resource Sciences  
Washington State University  
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### **Education**

2012	Ph.D., University of Idaho (United States)	Environmental Science Program
2007	M.Sc., Wageningen University (The Netherlands)	GIS and Remote Sensing
2004	B.Sc., Wageningen University (The Netherlands)	Forest and Nature Conservation

### **Professional Experience**

2019 – present, Assistant professor, School of the Environment, Washington State University, USA.  
2018 – 2019, Assistant research professor, Dept. of Natural Resources & Society, U. of Idaho, USA.  
2016 – 2018, Postdoctoral fellow, Dept. of Natural Resources & Society, U. of Idaho, USA.  
2012 – 2016, Postdoctoral fellow, Dept. of Geography, U. of Idaho, USA.  
2007 – 2012, Research assistant, Environmental Science Program, U. of Idaho, USA.  
2006 – 2007, Research intern, US Forest Service, Rocky Mountain Research Station, Moscow ID, USA.  
2004 – 2007, Graduate researcher, GIS & Remote Sensing, Wageningen University, The Netherlands.  
2004 – 2005, Graduate researcher, Wildlife Management at Landcare Research, New Zealand.  
2003, Research assistant, Crop and Weed Ecology Group, Wageningen University, The Netherlands.  
2002, Student assistant, Nature Conservation Group, Wageningen University, The Netherlands.  
2000, Operations assistant, Nunhems Seeds Co., The Netherlands.

### **Publications**

#### **Peer reviewed**

38. Huang, J., Kautz, M., Trowbridge, A.M., Hammerbacher, A., Raffa, K.F., Adams, H.D., Goodsman, D.W., Xu, C., Meddens, A.J.H., Kandasamy, D., Gershenson, J., Seidl, R., & Hartmann, H. (In press). Tree defence and bark beetles in a drying world: carbon partitioning, functioning and modelling. *New Phytologist*.
38. Spruce, J., Hicke J.A., Hargrove W., Grulke N., & Meddens, A.J.H. (In press). Use of MODIS NDVI Products to Map Tree Mortality Levels in Forests Affected by Mountain Pine Beetle Outbreaks. *Forests*.
37. Steenvoorden\*, J., Meddens, A.J.H., Martinez\*, A.J., Foster, L.J., & Kissling, W.D. (2019). The potential importance of unburned islands as refugia for the persistence of wildlife species in fire-prone ecosystems. *Ecology and Evolution*, 9, 8800-8812.

\* Indicates student supervised by Meddens

36. Martinez\*, A.J., Meddens, A.J.H., Kolden, C.A., Stand, E., & Hudak, A.T. (2019). Characterizing persistent unburned islands within the Inland Northwest. *Fire Ecology* 15:20, <https://doi.org/10.1186/s42408-019-0036-x>.
35. Martinez\*, A.J., Meddens, A.J.H., Kolden, C.A & Hudak, A.T. (2019). An assessment of fire refugia importance criteria ranked by land managers. *Fire* (2), 27, doi:10.3390/fire2020027.
34. Janousek W., Hicke J.A., Meddens A.J.H., and Dreitz V. (2019). Assessing the effects of bark beetle outbreaks on forest bird species richness in the Greater Rocky Mountain region. *Forest Ecology and Management*, 444, 374-381.
33. Maguire, A.J., Eitel, J.U.H., Vierling, L.A., Johnson, D.M., Griffin, K.L., Boelman, N.T., Jensen, J.E., Greaves, H.E., & Meddens, A.J.H. (2019). Terrestrial lidar scanning reveals fine-scale linkages between microstructure and photosynthetic functioning of small-stature spruce trees at the forest-tundra ecotone. *Agricultural and Forest Meteorology*, 269-270, 157-168.
32. Eitel, J.U., Maguire, A.J., Boelman, N., Vierling, L.A., Griffin, K.L., Jensen, J., Magney, T.S., Mahoney, P.J., Meddens, A.J.H., & Silva, C. (2019). Proximal remote sensing of tree physiology at northern treeline: Do late-season changes in the photochemical reflectance index (PRI) respond to climate or photoperiod? *Remote Sensing of Environment*, 221, 340-350.
31. Blomdahl, E.M., Kolden, C.A., Meddens, A.J.H., & Lutz, J.A. (2019). The importance of small fire refugia in the central Sierra Nevada, California, USA. *Forest Ecology and Management*, 432, 1041-1052.
30. Boelman, N., Liston, G.E., Gurarie, E., Meddens, A.J.H., Mahoney, P.J., Kirchner, P.B., Bohrer, G., Brinkman, T.J., Cosgrove, C.L., & Eitel, J. (2019). Integrating snow science and wildlife ecology in Arctic-boreal North America. *Environmental Research Letters*, 14(1), 010401
29. Buma, B., Harvey, B., Gavin, D., Kelly, R., Loboda, T., McNeil, B., Marlon, J., Meddens, A.J.H., Morris, J., & Raffa, K. (2019). The value of linking paleoecological and neocological perspectives to understand spatially-explicit ecosystem resilience. *Landscape Ecology*, 34 (1), 17-33.
28. Meddens, A.J.H., Vierling, L.A., Eitel, J.U.H., Jennewein, J.S., White, J.C., & Wulder, M.A. (2018). Developing 5m resolution canopy height and digital terrain models from WorldView and ArcticDEM data. *Remote Sensing of Environment* 218, 174–188.
27. Meddens, A.J.H., Kolden, C.A., Lutz, J.A., Smith, A.M.S., Cansler, C.A., Abatzoglou, J.T., Meigs, G.W., Downing, W., & Krawchuk, M.A. (2018). Fire refugia: What are they and why do they matter for global change? *Bioscience* 68, 944-954.
26. Meddens, A.J.H., Kolden, C.A., Lutz J.A., Abatzoglou J.T. and Hudak A.T. (2018). Spatial and temporal patterns of unburned areas within fire perimeters in the northwestern United States from 1984 to 2014, *Ecosphere* 9, Article e02029, DOI: e02029.02010.01002.
25. Kautz, M., Anthoni, P., Meddens, A.J.H., Pugh T.A.M., and Arneeth, A. (2018). Simulating the recent impacts of multiple biotic disturbances on forest carbon cycling across the United States. *Global Change Biology* 24, 2079–2092, <https://doi.org/10.1111/gcb.13974.24>.
24. Bright, B.C., Hudak, A.T., Meddens, A.J.H., Hawbaker, T., Briggs, J., & Kennedy, R. (2017). Prediction of Forest Canopy and Surface Fuels from Lidar and Satellite Time Series Data in a Bark Beetle-Affected Forest. *Forests*, 8, 322.

23. Berner, L.T., Law, B.E., Meddens, A.J.H., & Hicke, J.A. (2017). Tree mortality from fires, bark beetles, and timber harvest during a hot and dry decade in the western United States (2003–2012). *Environmental Research Letters*, 12, 065005, <https://doi.org/065010.061088/061748-069326/aa065006f065094>.
22. Baker, E. Painter, T.H., Schneider D., Meddens A.J.H., Hicke, J.A., and Molotch, N.P. (2017). Quantifying insect-related forest mortality with the remote sensing of snow. *Remote Sensing of Environment*, 188, 26-36.
21. Kautz, M., Meddens, A.J.H., Hall, R.J., and Arneeth, A. (2017). Biotic disturbances in Northern Hemisphere forests—a synthesis of recent data, uncertainties and implications for forest monitoring and modelling. *Global Ecology and Biogeography*, 26, 533-552
20. Meddens, A.J.H., Kolden, C.A., and Lutz, J.A. (2016). Detecting unburned areas within wildfire perimeters using Landsat and ancillary data across the northwestern United States. *Remote Sensing of Environment*, 186, 275-285.
19. Meddens, A.J.H., Hicke, J.A. and Jacobs, B.F. (2016). Characterizing the response of piñon-juniper woodlands to mechanical restoration using high-resolution satellite imagery. *Rangeland Ecology and Management*, 69, 215-223.
18. Hicke, J. A., Meddens A.J.H., Allen C.D., and Kolden C.A. (2016). Recent tree mortality in the western United States from bark beetles and forest fires. *Forest Science*, 62(2), 141-153.
17. Biederman, J.A., Somor, A.J., Harpold, A.A., Gutmann, E., Breshears, D.D., Troch, P.A., Gochis, D.J., Scott, R.L., Meddens, A.J.H., and Brooks, P.D. (2015). Tree die-off has little effect on streamflow in contrast to expected increases from historical studies. *Water Resources Research*, 51, 9775-9789.
16. Meddens, A.J.H., Hicke, J.A., Macalady, A.K., Buotte, P.C., and Cowles, T.R., (2015). Patterns and causes of recent observed piñon pine mortality in the southwestern United States. *New Phytologist*, 206, 91-97.
15. Klos, P.Z., Abatzoglou, J.T., Bean, A., Blades, J., Clark, M.A., Dodd, M., Hall, T.E., Haruch, A., Higuera, P.E., Holbrook, J.D., Jansen, V.S., Kemp, K., Lankford, A., Link, T.E., Magney, T., Meddens, A.J.H., Mitchell, L., Moore, B., Morgan, P., Newingham, B.A., Niemeyer, R.J., Soderquist, B., Suazo, A.A., Vierling, K.T., Walden, V., and Walsh, C. (2015). Indicators of Climate Change in Idaho: An Assessment Framework for Coupling Biophysical Change and Social Perception. *Weather, Climate, and Society*, 7, 238-254
14. Chen, F., Zhang, G., Barlage, M., Zhang, Y., Hicke, J.A., Meddens, A.J.H., Zhou, G., Massman, W.J., and Frank, J., (2015). An observational and modeling study of impacts of bark beetle-caused tree mortality on surface energy and hydrological cycles. *Journal of Hydrometeorology*, 16, 744–761.
13. McDowell, N.G., Coops, N.C., Beck, P., Chambers, J.Q., Gangodagamage, C., Hicke, J.A., Huang, C., Kennedy, R., Krofcheck, D., Litvak, M., Meddens, A.J.H., Muss, J., Negrón-Juarez, R., Peng, C.H., Schwantes, A., Swenson, J.J., Vernon, L., Williams, P.A., Xu, C.G., Zhao, M., Running, S., and Allen, C.D. (2015). Global satellite monitoring of climate-induced vegetation disturbances. *Trends in Plant Science*, DOI: <http://dx.doi.org/10.1016/j.tplants.2014.10.008>.
12. Bright, B.C., Hudak, A.T., Kennedy, R.E., and Meddens, A.J.H. (2014). Landsat Time Series and Lidar as Predictors of Live and Dead Basal Area Across Five Bark Beetle-Affected Forests.

*IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing* (7): 3440-3452.

11. Meddens, A.J.H. and Hicke, J.A. (2014). Spatial and temporal patterns of Landsat-based detection of tree mortality caused by a mountain pine beetle outbreak in Colorado, USA. *Forest Ecology and Management*, 322: 78-88.
10. Hicke, J.A., Meddens, A.J.H., Allen, C.D., and Kolden, C.A. (2013). Carbon stocks of trees killed by bark beetles and wildfire in the western United States. *Environmental Research Letters* (8), 035032 doi:10.1088/1748-9326/8/3/035032.
9. Bright, B.C., Hicke, J.A., and Meddens, A.J.H. (2013). Effects of bark beetle-caused tree mortality on biogeochemical and biogeophysical MODIS products. *Journal of Geophysical Research: Biogeosciences*, 118, 1–9, doi:10.1002/jgrg.20078
8. Meddens, A.J.H., Hicke, J.A., Vierling, L.A., and Hudak, A.T. (2013). Evaluating methods to detect bark beetle-caused tree mortality using single-date and multi-date Landsat imagery. *Remote Sensing of Environment*, (132), 49-58.
7. Berg, A.R., Heald, C.L., Huff Hartz, K.E., Hallar, A.G., Meddens, A.J.H., Hicke, J.A., Lamarque, J.F., and Tilmes, S. (2013). The impact of bark beetle infestations on monoterpene emissions and secondary organic aerosol formation in western North America. *Atmos. Chem. Phys.*, 13, 3149-3161.
6. Meddens, A.J.H., J.A. Hicke, and C.A. Ferguson (2012). Spatiotemporal patterns of observed bark beetle-caused tree mortality in British Columbia and the western United States. *Ecological Applications*, 22(7) 1876-1891.
5. Edburg, S.L., Hicke, J.A., Brooks, P.D., Pendall, E.G., Ewers B.E., Norton, U., Gochis, D., Gutmann, E.D., and Meddens, A.J.H. (2012). Cascading impacts of bark beetle-caused tree mortality on coupled biogeophysical and biogeochemical processes. *Frontiers in Ecology and the Environment*, 10, 416-424.
4. Goetz, S.J., Bond-Lamberty, B., Harmon, M., Hicke, J.A., Houghton, R.A., Huang, C., Law, B., McNulty, S., Meddens, A.J.H., Mildrexler D., O'Halloran, T., Pfeifer, E.M., and Kasischke, E.S. (2012). Observations and assessment of forest carbon recovery following disturbance in North America. *Journal of Geophysical Research-Biogeosciences*, Vol. 117, G02022, doi:10.1029/2011JG001733.
3. Meddens, A.J.H., Hicke, J.A., and Vierling, L.A. (2011). Evaluating the potential of multispectral imagery to map multiple stages of tree mortality. *Remote Sensing of Environment*, 115, 1632-1642.
2. Pfeifer, E.M., Hicke, J.A., and Meddens, A.J.H. (2011). Observations and modeling of aboveground tree carbon stocks and fluxes following a bark beetle outbreak in the western United States. *Global Change Biology*, 17, 339-350.
1. Meddens, A.J.H., Hudak, A.T., Evans, J.S., Gould, W.A., and Gonzalez, G. (2008). Characterizing forest fragments in boreal, temperate, and tropical ecosystems. *Ambio*, 37, 569-576.

### **In review/preparation**

Krawchuck et al. (in revision). Disturbance refugia: Detecting and managing refugia from climate change-induced disturbance. *Frontiers in Ecology and the Environment*.

Silva C.A., Eitel J.U.H., Maguire A., Klauberg C., Vierling L.A., Meddens A.J.H., and Hudak A.T. (in prep). Characterizing the unique Northern tree-line vegetation structure with lidar and linking it to their physical growth environment. *Remote Sensing*.

Meddens A.J.H., and Martinez A.J.\* (in prep). Chapter 1: Database of unburned areas within fire perimeters. In: A guidebook to climate-resilience spatial data for the Pacific Northwest, (Eds Cartwright J. & Lawler J). *USGS internal report*.

### **Reports / Datasets**

Picotte, J., Arkle, R.S., Bastian, H., Benson, N., Cansler, A., Caprio, T., Dillon, G., Key, C., Klein, R.N., Kopper, K., Meddens, A.J.H., Ohlen, D., Parks, S.A., Peterson, D.W., Pilliod, D., Pritchard, S., Robertson, K., Sparks, A., and Thode, A., 2019, Composite Burn Index (CBI) Data for the Conterminous US, Collected Between 1996 and 2018: *U.S. Geological Survey data release*, <https://doi.org/10.5066/P91BH1BZ>.

Meddens A.J.H., Kolden C.A., Hudak A.T., Ramirez A. and Martinez A.J.\* (2017). Managing Fire Refugia in the Pacific Northwest: Outcomes of the first Fire Refugia Workshop in the Pacific Northwest (May 17th 2017, Portland, OR, <https://arjanmeddens.weebly.com/ranking-unburned-islands.html>), p. 2.

Meddens, A.J.H., Hicke, J.A., Edburg, S.L., and Lawrence, D.M. (2016). Carbon impacts of fire- and bark beetle-caused tree mortality across the western US using the community land model. *University of Idaho internal report*, <http://arjanmeddens.weebly.com/links.html>, p. 15.

Meddens, A.J.H., and J.A. Hicke. (2014). 2013 Update of forest productivity and forest disturbance metrics for the roaring fork watershed: An update report for the Aspen Global Change Institute *University of Idaho internal report*, Moscow ID, USA, p. 14.

Meddens, A.J.H., and Hicke, J.A. (2013). Forest condition and forest disturbance metrics for the Roaring Fork watershed, Colorado: A report for the Aspen Global Change Institute. *University of Idaho internal report*, Moscow ID, USA, p. 14.

Meddens, A.J.H., J.A. Hicke, L.A. Vierling, and J.U.H. Eitel (2009). Detection of beetle-caused tree mortality from satellite imagery for use in the LANDFIRE Project: Methods development and evaluation. University of Idaho, Moscow ID, USA, p. 41.

Meddens, A.J.H. (2006). Possibilities of mapping Amazonian dark earths using remote sensing techniques. Wageningen University and Research center, the Netherlands, p. 15.

### **Conference proceedings**

Meddens, A.J.H., L. Kooistra, A.M. Schmidt, H.F. van Dobben, M.E Schaepman, and P.A. Slim (2007). Mapping dune vegetation using imaging spectroscopy for Ameland, The Netherlands. In: *Proceedings 5th EARSeL SIG IS workshop Imaging spectroscopy: innovation in environmental research*. Brugge, p. 11.

Meddens, A.J.H., A.T. Hudak, J.S. Evans, W.A. Gould, and G. González (2007). Imputation of canopy and surface fuel attributes from LiDAR and Landsat ETM+ imagery. *International Association of Landscape Ecology*, World Congress, 2007, p. 2.

## **Theses and dissertation**

- Meddens, A.J.H. (2012). Detecting and mapping bark beetle-caused tree mortality in the western United States, Environmental Science Program, University of Idaho, PhD dissertation, p. 159.
- Meddens, A.J.H. (2006). Mapping dune valley vegetation using imaging spectroscopy for Ameland, the Netherlands. Centre for Geo-Information, Wageningen University, MSc Thesis Report GIRS-2006-32, p. 63.
- B.S. Batema and Meddens, A.J.H. (2006). Effects of feral pigs on the maintenance and restoration of native forest in the Hawkswood Range, New Zealand. Nature Conservation and Plant Ecology Group-80439, Wageningen University, MSc Thesis, p. 56.

## **Grants & Awards**

- NASA Carbon Monitoring Systems Continuing Prototype Development (CMS): *A bottom-up, stakeholder-driven CMS for regional biomass carbon dynamics: Phase 2* (NNH18ZDA001N). \$1,000,000 (2020 - 2022). (PI: A. Hudak, Co-PIs: A. Meddens, C. Babcock, G. Domke, V. Kane, R. Kennedy, J. Vogeler, J. Strunk).
- USDA- Agriculture and Food Research Initiative (AFRI): *Drought decision-support platform (DDeSuP): Deriving physical drought metrics from Earth observations for integration into ranch management and economic models*. \$199,993 (2019 - 2021). (PI: J. Brandt, Co-PIs: C. Wardropper, A. Meddens, A. Roopsind, J. Abatzoglou, K. Lee, B. Beltran).
- USDA Forest Service Western Wildland Environmental Threat Assessment Center (WWETAC) funding: *Quantifying the effects of silviculture treatments on forest resilience to spruce beetle epidemics in Colorado* (2018-2021), \$80,351 (PI: M. Battaglia, Co-PIs: A.J.H. Meddens and T.S. Davis).
- USDA Forest Service, Special Technology Development Program: *Assessing newly developed intensity metrics of aerial survey tree disturbance mapping* (2018-2021), \$207,224 (PI: A.T. Hudak, Co-PIs: A.J.H. Meddens and B.S. Bright).
- NASA Idaho Space Grant Consortium research initiation grant: *Unmanned Aerial Vehicle-based laser altimetry (lidar): new science and data products for 3-D environmental monitoring* (2017-2018), \$25,000 (PI: A.J.H. Meddens, Co-PI: L.A. Vierling).
- Joint Fire Science Program (JFSP): *Identifying and protecting wildfire refugia in a warmer, drier Pacific Northwest* (2016 – 2019). \$256,829 (PI: A.J.H. Meddens; Co-PIs: C.A. Kolden and A.T. Hudak).
- Aspen Center for Environmental Studies collaborative research project: *Forest health indicators for the roaring fork watershed* (2016). \$2,143 (PI: A.J.H. Meddens).
- Aspen Center for Environmental Studies collaborative research project: *Forest health indicators for the roaring fork watershed* (2015). \$2,025 (PI: A.J.H. Meddens).
- Novus Research coordination network Scientist Exchange Program Award (2014). \$1,500.
- Aspen Global Change Institute collaborative research project: *Forest health indicators for the roaring fork watershed* (2014). \$1,772 (PI: A.J.H. Meddens).
- Forest Ecology and Management (2014), Certificate of Outstanding Contribution in Reviewing.

Aspen Global Change Institute collaborative research project: *Forest condition and forest disturbance metrics for the Roaring Fork watershed, Colorado* (2013). \$3,000 (PI: J. Hicke, Co-PI: A. Meddens).

National Center for Atmospheric Research Computation and Information Systems Laboratory  
Postdoctoral Computational Resource Allocation (2013). 50,000 supercomputing credit hours.

Outstanding PhD student research award (2012), Environmental Science Program, University of Idaho.

The DigitalGlobe 8-Band Research Challenge (2010), awarded high-resolution satellite imagery.

University of Idaho Graduate and Professional Student Association travel award (2008), \$500.

NASA Idaho Space Grant Consortium travel grant (2008), \$500.

FONA Fonds voor Onderzoek ten behoeve van het Natuurbehoud (fund for research of nature conservation), Wageningen, the Netherlands (2006), \$450.

### **Teaching and guest lectures**

- SOE 304 (2019) Ecological Field Measurements. Essential course for the forestry program and ecology majors at Washington State University. 4 credits.
- NRS 404/505 ('18 & '19) Lidar remote sensing for environmental monitoring (Online course, Department of Natural Resources and Society), A. Meddens, primary instructor and responsible for course development (Instructor evaluation: 3.5 out of 4.0), 3 credits.
- GEOG/FOR 504 (2015) Ecosystem Vulnerability in a time of global change (cross listed at the Department of Geography and Department of Forest, Rangeland, and Fire Sciences, University of Idaho), A. Meddens, sole instructor and responsible for course development (Instructor evaluation: 3.8 out of 4.0), 3 credits.
- ENVS 102 (2010) Field activities in Environmental Science (Environmental Science Program, University of Idaho), PhD teaching assistantship (Instructor evaluation: 3.5 out of 4.0), 1 credit.

Meddens, A.J.H. (2017). Connecting the dots: LiDAR-based research. Guest lecture for Introduction to Geospatial Analysis Course, University of Idaho.

Meddens, A.J.H. (2016). The role of fire refugia in ecosystem vulnerability. Presentation for the NRS Department 501 seminar, University of Idaho.

Meddens, A.J.H. (2016). Connecting the dots: LiDAR-based research. Guest lecture for Introduction to Geospatial Analysis Course, University of Idaho.

Meddens, A.J.H. (2015). Forest Disturbances in the Western United States: Bark Beetles, Drought, and Wildfires. Research presentation, University of Wyoming.

Meddens, A.J.H. (2015). Bark Beetles and Climate Change. Guest lecture for Climate Change Seminar Course, University of Wyoming.

Meddens, A.J.H. (2014). Bark beetles as Forest Disturbances. Guest lecture for Biogeography Course, University of Idaho.

Meddens, A.J.H. (2013). Bark beetles and Climate Change. Guest lecture for Climate Change and Ecosystems Course, University of Idaho.

Meddens, A.J.H. (2008). Climate Change: What Does It Mean for Idaho? Guest lecture for Biogeography Course, University of Idaho.

## **Advising**

Jyoti Jennewein, PhD student, College of Natural Resources, University of Idaho (Committee member, 2017 – current).

Anthony Martinez, MSc Student, College of Natural Resources, University of Idaho (Major advisor, 2017 – 2019)

Mary Engels PhD, Water Resources, Science and Management, University of Idaho (Committee member, 2018 – 2019).

Jasper Steenvoorden, MSc Student Earth Science, University of Amsterdam (Daily advisor, 2017 – 2018).

Seth Gorelik, MSc Student, Department of Geography, University of Idaho (MSc committee member, 2015 – 2017).

## **Presentations**

### **Invited oral presentations**

Meddens, A.J.H., M. Kautz, K. Bleiker, and J.A. Hicke (2018). Recent insect disturbances in boreal forests across North America. National Academy of Science Workshop on Greening and Browning in High Latitude Regions, 6-7 December, Washington DC.

Meddens, A.J.H., J.A. Hicke, S.L. Edburg, and D.M. Lawrence (2013). Carbon impacts of fire- and bark beetle-caused tree mortality across the western US using the Community Land Model. AGU Fall Meeting, 9-13 December, San Francisco, CA.

### **Contributed oral presentations**

Eitel, J.U.H., Maguire, A.J., Boelman, N., Vierling, L.A., Griffin, K.L., Jensen, J., Magney, T.S., Mahoney, P.J., Meddens, A.J.H., Silva, C., Sonnentag, O. (2018). Evaluating the potential of fall trends in photochemical reflectance index (PRI) time-series to improve understanding of climate change effects at northern treeline. AGU Fall Meeting, 10-14 December, Washington DC.

McCarley R., Hudak A.T., Sparks A., Boschetti L., Meddens A.J.H. (2018) Quantifying the fuel consumption for two western US fires using repeat lidar. AGU Fall meeting, 10-14 December, Washington DC.

Meddens A.J.H. (2018). The role of fire refugia in ecosystem recovery. Physics Colloquium University of Idaho, 22 October, Moscow ID.

Meddens A.J.H. (2018). The role of fire refugia in ecosystem recovery. Central Idaho Fire and Fuels Workshop, 11 June, McCall ID.



- Meddens A.J.H. (2018). Management of Fire Refugia in the Northwestern US. Fire continuum conference, 22 May, Missoula MT.
- Meddens A.J.H., Vierling L.A., Eitel J.U.H, Jennewein J., Silva C.A., Boelman N.T., White J., Wulder M. (2017). Estimating vegetation height from WorldView-02 and ArcticDEM data for broad ecological applications. American Geophysical Union, December 11-14, New Orleans LA.
- Martinez A.\*, Meddens A.J.H., Kolden C.A., Lutz J.A., Abatzoglou J.T., and Hudak A.T., (2017) Spatiotemporal patterns of unburned areas within fire perimeters in the northwestern United States from 1984 to 2014. Seventh Association for Fire Ecology (AFE) International Fire Congress, November 28 – December 2, Orlando FL.
- Meddens, A.J.H. (2017). Management of Fire Refugia in the Pacific Northwest. Northwest Refugia Research Coalition (RCC) workshop 2. October 13, Reed College, Portland OR.
- Kolden C.A., Meddens A.J.H., Abatzoglou J.T., Cansler C.A., and Lutz J.A. (2017). Refugia under fire: the impacts of climate change on wildfire refugia persistence and resilience. Ecological Society of America (ESA) annual meeting, August 6-11, Portland, OR.
- Meddens, A.J.H., C.A. Kolden, J.A. Lutz, and J.T. Abatzoglou (2015). The distribution and occurrence of wildfire refugia under a changing climate, 6<sup>th</sup> Annual Northwest Climate Conference. November 3-5, Coeur d'Alene, ID.
- Hicke, J.A., A.J.H. Meddens, C.D. Allen, and C.A. Kolden (2014). Spatial and temporal characteristics of recent bark beetle outbreaks and wildfire in the forests of the western United States. ESA annual meeting, August 10-15, Sacramento CA.
- Meddens, A.J.H., J.A. Hicke, and B.C. Bright (2013). Detecting mountain pine beetle-caused tree mortality in the western US using high- and medium-resolution imagery. Los Alamos National Laboratory - Remote Sensing Workshop. September 4<sup>th</sup>, Santa Fe, NM.
- Meddens, A.J.H. and J.A. Hicke (2013). Characterizing spatial and temporal patterns of mountain pine beetle-caused tree mortality using Landsat imagery. Western Forest Insect Work Conference, 4-8 March 2013, Coeur d'Alene, ID.
- Hicke J.A., A.J.H. Meddens, and C.D. Allen (2013). Extreme disturbance events and the carbon cycle: Bark beetle outbreaks and wildfire in the western US. North American Carbon Program Fourth All-Investigator's Meeting, 4-7 February 2013, Albuquerque, NM.
- Hicke J.A., A.J.H. Meddens, C.D. Allen, and S. Edburg (2013). Impacts of Insects on Western U.S. Forests. North American Carbon Program Fourth All-Investigator's Meeting, 4-7 February 2013, Albuquerque, NM.
- Hicke, J.A., A.J.H. Meddens, and S. Edburg (2013). Representing Insect Outbreaks in the Community Land Model," North American Carbon Program Fourth All-Investigator's Meeting, 4-7 February 2013, Albuquerque, NM.
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### **Conference posters**

- Fanok L. \*, Meddens A.J.H., Wardropper C., & Abatzoglou J. (2018). Assessing drought resilience in rangelands using drought metric comparisons. University of Idaho GIS Day, Nov. 15, Moscow ID.
- Martinez A. \*, Meddens A.J.H., Silva C.A., Vierling L.A., & Eitel J.U.H. (2018). High-resolution lidar from unmanned aerial vehicles for forestry applications. University of Idaho GIS Day, Nov. 15, Moscow ID.
- Martinez A. \*, Meddens A.J.H., Silva C.A., Vierling L.A., & Eitel J.U.H. (2018). High-resolution lidar from unmanned aerial vehicles for forestry applications. University of Idaho 2<sup>nd</sup> Drone Summit, Nov. 1, Moscow ID.
- Meddens A.J.H., Vierling L.A., Eitel J.U.H, Jennewein J., Silva C.A., Boelman N.T., White J., Wulder M. (2018). Developing high-resolution canopy height and digital terrain models using WorldView-2 and ArcticDEM data. Fourth ABoVE Science Team Meeting, January 23–26, Seattle, WA.
- Jennewein J.S. \*, Hebblewhite M., Meddens A.J.H., Gilbert S., Vierling L.A., Boelman N.T., Eitel J.U.H. (2017). Assessing the utility of temporally dynamic terrain indices in Alaskan moose resource selection. American Geophysical Union, December 11-14, New Orleans LA.
- Meddens A.J.H., Vierling L.A., Eitel J.U.H., Boelman N.T., Jennewein J., and McGuire A. (2017). Characterizing and evaluating the Arctic Digital Elevation Model product with LiDAR data for spatial modeling. 3rd ABoVE Science Team Meeting, Boulder, CO, January, 2017.
- Jensen, J.E., Maguire, A., Oelkers, R., Andreu, L., Boelman, N., D'Arrigo, R., Griffin, K., Jennewein, J., Meddens, A.J.H., Russell, M., Vierling, L.A., & Eitel, J.U.H. (2017). Chasing Treeline: Reconstructing the history of the Forest-Tundra Ecotone using lidar-derived tree height (2017). 3rd ABoVE Science Team Meeting, Boulder, CO, January, 2017.
- Eitel J.U.H., Boelman, N.T., Griffin, K.L., Vierling, L.A., Jensen, J., Maguire, A., Jennewein, J., Meddens, A.J.H., Russell, M. (2017). LiDAR, passive spectral, and ecophysiological

- approaches to link Forest Tundra Ecotone structure and function (2017). 3rd ABoVE Science Team Meeting, Boulder, CO, January, 2017.
- Meddens, A.J.H., Kolden, C.A., Lutz J.A., Abatzoglou J.T. and Hudak A.T. Spatial and temporal patterns of unburned areas within fire perimeters in the northwestern United States from 1984 to 2014 (2016). AGU Fall meeting, San Francisco, December 2016.
- Meddens, A.J.H., Kolden, C.A., Lutz J.A., Abatzoglou J.T. and Hudak A.T. Spatial and temporal patterns of unburned areas within fire perimeters in the northwestern United States from 1984 to 2014 (2016). 8<sup>th</sup> Annual Northwest Climate Conference, October 2016.
- Meddens, A.J.H., Hicke J.A., and Ferguson C.A. (2011). Spatial and temporal patterns of observed bark beetle-caused tree mortality in British Columbia and the western US. AGU Fall meeting, San Francisco, December 2011.
- Gorelik S.R, Hicke J.A., Meddens A.J.H., and Cowles T.R. (2016). Spatiotemporal patterns of drought-induced tree mortality in northern New Mexico using a time series of Landsat imagery. AAG, March 29–April 2, San Francisco.
- Meddens, A.J.H., Hicke J.A., and Ferguson C.A. (2011). Spatial and temporal patterns of observed bark beetle-caused tree mortality in British Columbia and the western US. AGU fall meeting, San Francisco, December 2011.
- Edburg, S.L., Hicke J.A., Lawrence D.M., Thornton P.E., and Meddens A.J.H. (2011). Quantifying the impact of bark beetle outbreaks on carbon cycling in the western US from 1997 to 2009, Regional Approaches to Climate Change in Pacific Northwest Agriculture Launch Meeting, 9 May 2011, Moscow, ID.
- Edburg, S.L., J.A. Hicke, D.M. Lawrence, P.E. Thornton, and A.J.H. Meddens (2011). Quantifying the Impact of Bark Beetle Outbreaks on Carbon Cycling in the Western US from 1997 to 2009, 3<sup>rd</sup> North American Carbon Program All-Investigators Meeting, 1-4 February 2011, New Orleans, LA.
- Meddens, A.J.H., J.A. Hicke, and L.A. Vierling (2010). Evaluating the ability of multispectral imagery to map multiple stages of tree mortality. AGU fall meeting, San Francisco, December 2010.
- Meddens, A.J.H., and J.A. Hicke (2009). Estimating the effects of mountain pine beetle outbreaks on biophysical and biogeochemical variables using MODIS products. AGU fall meeting, San Francisco, December 2009.
- Hicke, J.A., A.J.H. Meddens, E. Pfeifer, C.D. Allen, and R.D. Sheridan (2009). Assessing the impacts of bark beetle outbreaks on carbon budgets in the western United States. Western Forest Insect Work Conference, Spokane, March 2009.
- Hicke, J.A., A.J.H. Meddens, E. Pfeifer, C.D. Allen, and R.D. Sheridan (2009). Assessing the impacts of bark beetle outbreaks on carbon budgets in the western United States. Second North American Carbon Program All-Investigators Meeting, San Diego, February 2009.
- Meddens, A.J.H., Hicke J.A., and Vierling L.A. (2008). Multi-scale validation of forest insect mortality using QuickBird and aerial imagery. AGU fall meeting, San Francisco, December 2008.
- Hicke J. A. and A.J.H. Meddens (2008). Climate influences on plant growth: Spatiotemporal patterns in mountain ecosystems of the west. MtnClim, Silverton CO, June 2008.

Meddens, A.J.H., Hicke J.A., Vierling L.A., and Hudak A.T. (2007). Estimating aboveground biomass mortality of lodgepole pine caused by mountain pine beetle in the Sawtooth Mountains, Idaho. NASA ISGC Research Symposium, Moscow Idaho, September 2007.

### **In the news**

New York Times article: *Lifeboats' Amid the World's Wildfires* by Carl Zimmer. (2018) NYT, Oct. 12.

### **Reviewing**

#### **Manuscript reviews**

Nature Communications, BioScience, Global Change Biology, Environmental Research Letters, Forest Ecology and Management, Remote sensing of Environment, International Journal of Remote Sensing, International Journal of Applied Earth Observation and Geo-information, Journal of Applied Remote Sensing, Ecological Applications, OIKOS, Environmental Management, Ecosystems, Environmental Monitoring and Assessment, Forests, Canadian Journal of Remote Sensing, Journal of Applied Meteorology and Climatology, Geoscience, Journal of Forestry Research, Journal of Arid Environments, European Journal of Forest Research, Annals of Forest Science, PLOS One, and Remote Sensing Letters.

#### **Scientific committees**

Scientific reviewing member for 35<sup>th</sup> and 37<sup>th</sup> annual International Geoscience and Remote Sensing Symposium (IGARSS) symposium.

### **Ecosystem modeling experience**

Community Land Model (CLM), Biome-BGC, Forest Vegetation Simulator (FVS)

### **Computer and programming skills**

IDL, R, Linux/Unix, Fortran, ArcGIS, Python, Erdas Imagine