

Arjan J. H. Meddens

Curriculum vitae

Assistant Professor, School of the Environment
College of Agricultural, Human, and Natural Resource Sciences
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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

48. Andrus*, R.A., Martinez*, A.J., Jones, G.M., & Meddens, A.J.H. (2021). Assessing the quality of fire refugia for wildlife habitat. *Forest Ecology and Management*, 482, 118868
47. Davidson, S.C., Bohrer, G., Gurarie, E., LaPoint, S., Mahoney, P.J., Boelman, N.T., Eitel, J.U.H., Prugh, L.R., Vierling, L.A., Jennewein, J., Grier, E., Couriot, O., Kelly, A.P., Meddens, A.J.H., Oliver, R.Y., Kays, R., Wikelski, M., Aarvak, T., Ackerman, J.T., Alves, J.A., Bayne, E., Bedrosian, B., Belant, J.L., Berdahl, A.M., Berlin, A.M., Berteaux, D., Bêty, J., Boiko, D., Booms, T.L., Borg, B.L., Boutin, S., Boyd, W.S., Brides, K., Brown, S., Bulyuk, V.N., Burnham, K.K., Cabot, D., Casazza, M., Christie, K., Craig, E.H., Davis, S.E., Davison, T., Demma, D., DeSorbo, C.R., Dixon, A., Domenech, R., Eichhorn, G., Elliott, K., Evenson, J.R., Exo, K.-M., Ferguson, S.H., Fiedler, W., Fisk, A., Fort, J., Franke, A., Fuller, M.R., Garthe, S., Gauthier, G.,

* Indicates student or postdoc mentored by Meddens

- Gilchrist, G., Glazov, P., Gray, C.E., Grémillet, D., Griffin, L., Hallworth, M.T., Harrison, A.-L., Hennin, H.L., Hipfner, J.M., Hodson, J., Johnson, J.A., Joly, K., Jones, K., Katzner, T.E., Kidd, J.W., Knight, E.C., Kochert, M.N., Kölzsch, A., Kruckenberg, H., Lagassé, B.J., Lai, S., Lamarre, J.-F., Lanctot, R.B., Larter, N.C., Latham, A.D.M., Latty, C.J., Lawler, J.P., Léandri-Breton, D.-J., Lee, H., Lewis, S.B., Love, O.P., Madsen, J., Maftai, M., Mallory, M.L., Mangipane, B., Markovets, M.Y., Marra, P.P., McGuire, R., McIntyre, C.L., McKinnon, E.A., Miller, T.A., Moonen, S., Mu, T., Müskens, G.J.D.M., Ng, J., Nicholson, K.L., Øien, I.J., Overton, C., Owen, P.A., Patterson, A., Petersen, A., Pokrovsky, I., Powell, L.L., Prieto, R., Quillfeldt, P., Rausch, J., Russell, K., Saalfeld, S.T., Schekkerman, H., Schmutz, J.A., Schwemmer, P., Seip, D.R., Shreading, A., Silva, M.A., Smith, B.W., Smith, F., Smith, J.P., Snell, K.R.S., Sokolov, A., Sokolov, V., Solovyeva, D.V., Sorum, M.S., Tertitski, G., Therrien, J.F., Thorup, K., Tibbitts, T.L., Tulp, I., Uher-Koch, B.D., van Bemmelen, R.S.A., Van Wilgenburg, S., Von Duyke, A.L., Watson, J.L., Watts, B.D., Williams, J.A., Wilson, M.T., Wright, J.R., Yates, M.A., Yurkowski, D.J., Žydelis, R., & Hebblewhite, M. (2020). Ecological insights from three decades of animal movement tracking across a changing Arctic. *Science*, 370, 712-715.
46. Jennewein* J.S., Hebblewhite M., Mahoney P.J., Gilbert S., Meddens A.J.H., Boelman N., Joly K., Jones K., Kellie K.A., Brainerd S., Vierling L.A. and Eitel J.U.H. (2020). Behavioral modifications by a large-northern herbivore to mitigate warming conditions. *Movement, Ecology* <https://doi.org/10.1186/s40462-020-00223-9>.
45. McCarley, T.R., Hudak, A.T., Sparks, A.M., Vaillant, N.M., Meddens, A.J.H., Trader, L., Mauro, F., Kreitler, J., & Boschetti, L. (2020). Estimating wildfire fuel consumption with multitemporal airborne laser scanning data and demonstrating linkage with MODIS-derived fire radiative energy. *Remote Sensing of Environment*, 251, 112114
44. Eitel, J., Griffin, K., Boelman, N., Maguire, A., Meddens, A.J.H., Jensen, J., Vierling, L., Schmiede, S., & Jennewein*, J. (2020). Remote sensing tracks daily radial wood growth of evergreen needleleaf trees. *Global Change Biology*. 26: 4068– 4078, <https://doi.org/10.1111/gcb.15112>.
43. Hicke, J.A., Xu, B., Meddens, A.J.H., & Egan, J.M. (2020). Characterizing recent bark beetle-caused tree mortality in the western United States from aerial surveys. *Forest Ecology and Management*, 475, 118402.
42. Bright, B.C., Hudak, A.T., Meddens, A.J.H., Egan, J.M., & Jorgensen, C.L. (2020). Mapping Multiple Insect Outbreaks Across Large Regions Annually Using Landsat Time Series Data. *Remote Sensing*, 12, 1655.
41. Bright, B.C., Hudak, A.T., Egan, J.M., Jorgensen, C.L., Rex, F.E., Hicke, J.A., & Meddens, A.J.H. (2020). Using Satellite Imagery to Evaluate Bark Beetle-Caused Tree Mortality Reported in Aerial Surveys in a Mixed Conifer Forest in Northern Idaho, USA. *Forests*, 11, 529.
40. Krawchuk, M.A., Meigs, G.W., Cartwright, J.M., Coop, J.D., Davis, R., Holz, A., Kolden, C., & Meddens, A.J.H. (2020). Disturbance refugia within mosaics of forest fire, drought, and insect outbreaks. *Frontiers in Ecology and the Environment*, 18, 235-244.
39. 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. (2020). Tree defence and bark beetles in a drying world: carbon partitioning, functioning and modelling. *New Phytologist*, 225 (1), 26-36.

38. Spruce, J., Hicke J.A., Hargrove W., Grulke N., & Meddens, A.J.H. (2019). Use of MODIS NDVI Products to Map Tree Mortality Levels in Forests Affected by Mountain Pine Beetle Outbreaks. *Forests*, 10 (9), 811.
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.
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 Arneth, 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. 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 Arneth, 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 press/review/preparation

- Andrus, R.A.*, Martinez, A.J.*, & Meddens, A.J.H. (in review). Assessing the value of fire refugia for wildlife habitat: a case study of northern spotted owls in the eastern Cascade Mountains. *Forest Ecology and Management*.
- Meddens, A.J.H., R. Andrus*, Kolden, C.A., & Hudak, A.T. Identifying and protecting wildfire refugia in a warmer, drier Pacific Northwest, (2021). *Joint Fire Science Program Final Report*, JFSP Project ID: 16-1-01-1, pp. 32. https://www.firescience.gov/projects/16-1-01-1/project/16-1-01-1_final_report.pdf.
- Davidson S. C., Bohrer G., Gurarie E., LaPoint S., Mahoney P.J., Boelman N.T., Eitel J.U.H., Prugh L.R., Vierling L.A., Jennewein J., Grier E., Couriot O., Kelly A. P., Meddens A.J.H., et al. & ~80 others (in press). Ecological insights from three decades of animal movement tracking across a changing Arctic, *Science*.
- Stahl, A.*, Andrus, R.A.*, Meddens, A.J.H. & others, (in prep). A review of forest change attribution using remote sensing. *Remote Sensing of Environment*.

Reports / Datasets

- Meddens, A.J.H., R. Andrus*, Kolden, C.A., & Hudak, A.T. Identifying and protecting wildfire refugia in a warmer, drier Pacific Northwest, (2021). *Joint Fire Science Program Final Report*, JFSP Project ID: 16-1-01-1, pp. 32.
- Meddens, A.J.H., Martinez*, AJ. and Cartwright J.M. (2020). Chapter 8: Database of unburned areas within fire perimeters, *in: A guidebook to spatial datasets for conservation planning under climate change in the Pacific Northwest*, J.M. Cartwright (Ed.) p. 65–71, U.S. Geological Survey, <https://doi.org/10.5066/P92L1H7O>.
- 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 (Total funding amount: \$1,980,446)

Washington State University, CAHNRS Undergraduate Internships for Spring and Summer 2021. *Detecting climate and fire-driven changes in the resiliency of subalpine forests in the Inland Northwest*, \$2,500 (PI: A.J.H. Meddens, Co-PIs: R. Andrus and M. Franz).

Washington State University, Office of Research Advancement and Partnerships – 2020 ORAP Research Team Planning Grant: “*Living with Fire- creating a network for institutional-wide collaboration to advance wildfire science and engineering excellence*”, \$10,000 + one semester RA funding, (PI: Julie Padowski, Co-PI A. Meddens and others)

USDA Forest Service, Forest Health Protection: *Attributing Landsat-based Disturbance Products for Reporting 2020 Insect and Diseases* (2020-2021), \$72,700 (PI: A.J.H. Meddens).

NASA Carbon Monitoring Systems Continuing Prototype Development (CMS): *A bottom-up, stakeholder-driven CMS for regional biomass carbon dynamics: Phase 2* (NNH18ZDA001N). \$1,113,959 (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 ('19 & '20)	Ecosystem Field Measurements (Essential course for the forestry program and ecology majors at Washington State University), A. Meddens, sole instructor and responsible for course development (Instructor evaluation: 4.7 out of 5.0), 4 credits.
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- 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. (2020). The importance of fire refugia in the northwestern US. Guest lecture for SOE 100 – An Introduction to Our Environment: Geology, Ecology, and Environmental Stewardship, Washington State University, Nov 14.

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.

Postdoc advising

Robert Andrus, Postdoctoral Researcher, Washington State University (Major advisor, 2020 – current).

Amanda Stahl, Postdoctoral Researcher, Washington State University (Major advisor, 2020 – current).

Graduate advising

- Madeline Franz, PhD student, Natural Resource Science, Washington State University (Major advisor, 2020 – current).
- Aaron Wold, MS student, Natural Resource Science, Washington State University (Major advisor, 2019 – current).
- Alex Thompson PhD student, Natural Resource Science, Washington State University (Committee member, 2020 – current).
- Cullen Chapman, MS student, Natural Resource Science, Washington State University (Committee member, 2020 – current).
- Travis King, PhD student, Natural Resource Science, Washington State University (Committee member, 2019 – current).
- Daniel Auerbach, PhD student, Natural Resource Science, Washington State University (Committee member, 2019 – current).
- Ty Reinemann, MS student, College of Science, University of Idaho (Committee member, 2019 – current).
- Paul Jensen, MS student, Natural Resource Science, Washington State University (Committee member, 2018 – 2020).
- Jyoti Jennewein, PhD candidate, College of Natural Resources, University of Idaho (Committee member, 2017 – 2020).
- Sean Alexander, MS student, School of the Environment, Washington State University (Committee member, 2019 – 2020).
- 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).

Undergraduate advising

Cailin O'Malley, SOE Honors student. Class of 2021.

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

Meddens, A.J.H. (2020). The importance of fire refugia in the northwestern US. Washington State University CEREO Seminar Series Fall 2020, Oct 14.

Bright, B.C., A.T. Hudak, A.J.H. Meddens, J.M. Egan, C.L. Jorgensen, J.A. Hicke, and F.E. Rex. Complementing aerial surveys with satellite remote sensing. Bark Beetle Technical Working Group and Western North American Defoliator Working Group Meeting, 20-22 Oct 2020 (virtual oral presentation).

Meg A. Krawchuk, Garrett W. Meigs, Jennifer Cartwright, Jonathan D. Coop, Raymond Davis, Andrés Holz, Crystal Kolden, Arjan J. H. Meddens (2020). Disturbance refugia within mosaics of forest fire, drought, and insect outbreaks. Conservation Biology meeting, Denver July 27-31.

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, 6th 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 4th, 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.
- Hicke J.A., A.J.H. Meddens, S.L. Edburg, E.P. Creeden, and H.K. Preisler (2012). Impacts of Western Bark Beetle Outbreaks on Carbon Cycling, Oak Ridge National Laboratory, Department of Energy, 16 February, Oak Ridge, TN.
- Klos Z., Abatzoglou J., Blades J., Clark M., Currie C., Dodd M., Eigenbrode S., Hall T., Haruch A., Hicke J., Higuera P., Holbrook J., Jansen V., Kemp K., Lamar A., Lankford A., Link T., Magney T., Meddens A., Mitchell L., Moore B., Morgan P., Newingham B., Niemeyer R., Soderquist B., Suazo A., Teston C., Vierling K., Walden V., Walsh C. (2012). Indicators of Climate Change in Idaho: The intersection of biophysical change with social perception across a diverse landscape. Pacific Northwest Climate Conference, 12 October, Boise, Idaho.
- Edburg S.L., J.A. Hicke, A.J.H. Meddens, D. Lawrence, P. Thornton (2011). The impact of bark beetle outbreaks on carbon cycling in the Western US, NCAR 16th Annual Community Earth System Model Workshop, 20-23 June, Breckenridge, CO.
- Edburg S.L., J.A. Hicke, D.M. Lawrence, P.E. Thornton, and A.J.H. Meddens (2010). The impact of bark beetle outbreaks on carbon cycling in the western US from 1997 to 2009, American Geophysical Union Fall Meeting, 13-17 December 2010, San Francisco, CA.
- Ewers B.E., E. Pendall, U. Norton, D. Reed, J. Franks, T. Aston, F. Whitehouse, H. R. Barnard, P. D. Brooks, J. Angstmann, W.J. Massman, D.G. Williams, A.A. Harpold, J. Biederman, S.L. Edburg, A.J.H. Meddens, D.J. Gochis, and J.A. Hicke (2010). The rocky mountain epidemic of bark beetles and blue stain fungi cause cascading effects on coupled water, C and N cycles, American Geophysical Union Fall Meeting, 13-17 December 2010, San Francisco, CA.

- Edburg S.L., A.J.H. Meddens, J.A. Hicke, B.D. Pettit, D.M. Lawrence, and P.E. Thornton (2010). A gridded forest insect disturbance data set developed for ecosystem impacts studies, American Meteorological Society 29th Conference on Agricultural and Forest Meteorology, 2–6 August 2010, Keystone, CO.
- Chen F., M. Barlage, C. Wiedinmyer, Y. Zhang, J.A. Hicke, and A.J.H. Meddens (2010). Impacts of beetle-kill and wildland fire on regional water and energy cycles in western North America, American Meteorological Society 29th Conference on Agricultural and Forest Meteorology, 2–6 August 2010, Keystone, CO.
- Hicke J.A. and A.J.H. Meddens (2010). Using remotely sensed imagery to map insect-caused tree mortality. Western Forest Insect Work Conference, Flagstaff AZ, April 2010.
- Bright B.C., J.A. Hicke, and A.J.H. Meddens (2010). Comparison of mountain pine beetle attack classification methods using Landsat. Association of American Geographers Annual Meeting, April 2010, Washington DC.
- Chen F., C. Wiedinmyer, M. Barlage, Y. Zhang, J.A. Hicke, and A.J.H. Meddens (2010). Impacts of beetle-kill and wildland fire on regional water and energy cycles in western North America. MPB Science Symposium: Impacts on the Hydrologic Cycle and Water Quality, April 2010, Boulder CO.
- Brooks P.D., H.R. Barnard, B.E. Ewers, D. Gochis, A. Guenther, E. Gutmann, P. Harley, A. Harpold, J.A. Hicke, A.J.H. Meddens, U. Norton, E. Pendall, A. Somor, P. Troch. (2010). Quantifying the effects of large-scale vegetation change on coupled water, carbon and nutrient cycles: Beetle kill in western montane forests. MPB Science Symposium: Impacts on the hydrologic cycle and water quality, 8 April 2010, Boulder CO.
- Briggs J.J., J. Negron, J. Klutsch, M. Battaglia, D. West, S. Costello, J.A. Hicke, A.J.H. Meddens, A. Hudak, L. Kurth, and D. Helmbrecht (2009). Evaluating changes in fuels and potential fire behavior in Colorado's mountain pine beetle-affected lodgepole forests: Integrating field data, remotely sensed imagery, and modeling. 4th International Fire Ecology and Management Congress: Fire as a Global Process, November 2009, Savannah GA.
- Hicke J.A., J.A. Logan, A.J.H. Meddens, R. Sheridan, and L. Vierling (2009). Mapping and monitoring mountain pine beetle outbreaks in whitebark pine ecosystems with satellite imagery. North American Forest Ecology Workshop, June 2009, Logan UT.
- Hicke J.A., A.J.H. Meddens, E. Pfeifer, and C.D. Allen (2009). Impacts of bark beetle-caused tree mortality on forest carbon stocks. Association of American Geographers Annual Meeting, March 2009, Las Vegas NV.
- Hicke J.A., A.J.H. Meddens, E. Pfeifer, and C.D. Allen (2008). Impacts of bark beetle outbreaks on forest carbon stocks. American Geophysical Union Fall Meeting, December 2008, San Francisco CA.
- Meddens, A.J.H., A.T. Hudak, J.S. Evans, W.A. Gould, and G. González (2007). Surface fuel estimation from segmented Landsat ETM+ imagery. Caribbean Fire Ecology Conference, April 2007, Puerto Rico.
- Hudak A.T., A.J.H. Meddens, J.S. Evans, W.A. Gould, G. Gonzalez, and T. Hollingsworth (2007). A mixed-effects model of canopy and surface fuels across temperate, tropical, and boreal forest edges. Caribbean Fire Ecology Conference, April 2007, Puerto Rico.

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, June 2007, Wageningen, The Netherlands.

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 2nd 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). 8th 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, 3rd 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

WSU CAHNRS News: New professor uses high-tech sensors to study forest threats, resilience. CAHNRS News, Dec 3, 2019.

Daily Evergreen article: Opinion: Everyone needs to do their part to slow effects of climate change (2019), Daily evergreen, Nov 5, 2019.

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, Frontiers in Ecology and the Environment, 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, International Journal of Wildland Fire, Science of the Total Environment, and Remote Sensing Letters.

Scientific committees

Panel leader and proposal reviewer: Graduate Research Innovation (GRIN) awards administered by the Joint Fire Science Program (JFSP), Spring 2020.

Proposal reviewer: AAAS Research Competitiveness Program, Maine Small Campus Initiative, February 2020.

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

University Service

WSU, School of the Environment (SOE) – Undergraduate sub-committee (preparation for Society of American Foresters (SAF) Forestry accreditation visit)

WSU, School of the Environment (SOE) – Graduate sub-committee (recommended changes on SOE MS Degree in Pullman)

Ongoing activities to increase WSU Undergraduate Forestry degree program (Recruitment, curriculum development, increasing awareness)

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