

## SCOTT J. GOETZ

School of Informatics, Computing & Cyber Systems  
Northern Arizona University, Flagstaff AZ

### APPOINTMENTS

PROFESSOR – Oct 2016 - present  
Northern Arizona University, Flagstaff  
ADJUNCT PROFESSOR – Feb 2003 - present  
University of Maryland, College Park

DEPUTY DIRECTOR — July 2011 - Oct 2016  
SENIOR SCIENTIST — Feb 2003 - Oct 2016  
DISTINGUISHED AFFILIATED SCIENTIST —  
Oct 2016 – present  
Woods Hole Research Center, Falmouth MA

### PROFESSIONAL SERVICE AND AWARDS

- Advisory Board, *Environmental Research Letters* (2012-present)
- Associate Editor, *Remote Sensing of Environment* (2005-2015)
- Associate Editor, *Journal of Geophysical Research - Biogeosciences* (2006-2009)
- Board of Directors, Woods Hole Research Center, 2011 – present
- Board Committees for Woods Hole Research Center: Finance, Nominations, *ad hoc* committees for Funding, Policy
- Editorial Board, *Remote Sensing of Environment* (2005-present)
- Board Search Committees for Woods Hole Research Center President and Development Director(s)
- Executive Board, *Environmental Research Letters* (2016-present)
- Food & Agricultural Organization, Team Leader, *systematic review of terrestrial carbon measurement methods* (2009-2012)
- Food & Agricultural Organization, *Expert consultation on GHG emissions and mitigation potentials in the agriculture, forestry and fisheries sectors* (2010)
- Fulbright Research Scholar, 2010, Toulouse France. Center for the Study of the Biosphere from Space
- Group on Earth Observations (GEO), advisory team member of Ecosystems theme (2010-2011)
- Guest Editor, special issues of *Environmental Research Letters* on (i) The role of forests and soils in meeting climate goals (2017-2018), (ii) Changing permafrost in a warming world (2013-2015), (iii) Arctic & boreal ecosystem change (2015-2016), (iv) Changing fire regimes: Interactions with Climate, Ecosystems, and Humans (2015-2016)
- Guest Editor, special issues of *Remote Sensing of Environment* on (i) Monitoring parks & protected areas (2009), (ii) Monitoring freshwater systems (2008), (iii) Advances in biophysical remote sensing (2002).
- IEEE Geoscience & Remote Sensing Society, Washington / N.Virginia Chapter Chair (1998-2000).
- Intergovernmental Panel on Climate Change, Contributing author to *IPCC 5<sup>th</sup> Assessment Report*, working group 2, chapter 4 (terrestrial ecosystems)
- Marine Biological Laboratory Society, Woods Hole. 2012-present.
- National Center for Ecological Analysis and Synthesis project teams (3)
- National Academy of Science, Decadal Survey for Earth Science and Applications from Space, panel on *Marine and Terrestrial Ecosystems and Natural Resource Management* (2016+)
- National Academy of Science committee on *Opportunities to use remote sensing in understanding permafrost and related ecological characteristics* (2013)
- National Academy of Science workshop on *Frontiers in understanding climate change and polar ecosystems* (2010)
- National Research Council review of US Climate Change Science Program progress & synthesis (2007).
- NASA Arctic Boreal Vulnerability Experiment (ABOVE), large interdisciplinary research program in Alaska & Canada, Science Lead (2015-present)
- NASA Arctic Boreal Vulnerability Experiment (ABOVE) scoping, formulation, and Science Definition Team member (2009-2014)

- NASA Deputy Principal Investigator for Science: Global Ecosystem Dynamics Investigation (GEDI) International Space Station Lidar (2014-2020)
- NASA vegetation structure working group (2008-present)
- NASA science teams (FIFE 1987-1989 & BOREAS 1993-1996). Team awards for both.
- North America Carbon Program, Lead member, working group synthesis on *Assessing the impacts of forest disturbance on carbon cycling* (2010 – 2012)
- NSF National Ecological Observing Network, *Land Use Change and Habitat Alteration* working group.
- Peer review for wide range of biogeochemistry, ecology and remote sensing journals (see table)
- Peer review for wide range of agency funding programs (see table)
- Science Leadership Group of the North American Carbon Program, Carbon Cycle Interagency Working Group, US Global Change Research Program (2011 – 2016)
- SilvaCarbon science advisory group (2011-2012)
- Tenure / Promotion Case Reviews (6); Colgate University, Colorado State University, Columbia University, University of California Davis, University of Maryland Baltimore County, University of Maryland Center for Environmental Studies
- University of Maryland College Park Senate Research Committee, College Academic Council, Research Faculty Committee (Chair), Faculty Search Committees (1998 – 2002)
- USGS Geographic Analysis and Monitoring Program, *National Land Cover Change Modeling Workshop*, member of steering committee (2004)
- Workshop invited participant – numerous (dozens) including US Climate Change Science Program, US National Research Council, NASA and other agency programs on Arctic science, biodiversity, carbon cycle science, climate and land use change, remote sensing, terrestrial ecology.

## MENTORING AND STUDENTS

- Sponsored 7 *Postdoctoral Fellows*;  
Currently Johanne Pelletier,  
Formerly Brendan Rogers, Patrick Jantz, Mike Loranty, Pieter Beck, Andy Bunn, Claire Jantz  
-Brendan Rogers is now an Assistant Scientist at the WHRC  
-Patrick Jantz is now Research Professor at Northern Arizona University  
-Mike Loranty is Assistant Professor in the Geography Department at Colgate University  
-Andy Bunn is Professor at Western Washington University in the Environmental Sciences Department, and Founding Director of the Institute for Energy Studies  
-Claire Jantz is Professor at Shippensburg University in the Department of Geography and Earth Science  
-Pieter Beck is a Scientist at the European Research Commission's Joint Research Center in the Forest Resources and Climate Unit
- Sponsored 15 *Research Assistants and Associates*: currently Patrick Jantz
- Sponsored 4 *Honors Interns*: J. Fisher (UMD), A. Hsu (Duke), P. Jantz (UCSB), G. Meigs (Cornell).
- Served on 10 *Ph D. committees*: P. Hyde, C. Jantz, J. Jones, D. Slayback, S. Tyukavina, M. Weiner, J. Wilson, Q. Ying (University of MD), T. Park (Boston Univ.), K. Van Ewijk (Queens University).
- Served on 9 *Masters committees*: A. Gleason, A. Johnston, B. Melchior, C. Shive, A. Smith, J. Small, M. Thawley, J. Tringe, R. Wright (University of MD).

## PUBLIC & PROFESSIONAL OUTREACH

My group's research activities have been featured in a number of public media venues, including Al Jazeera, CBSnews.com, EcoAmericas, EnvironmentalResearchWeb, the Guardian, the LA Times, Mongabay, NASA Earth Observatory, National Geographic, the New York Times, Smithsonian, Voice of America, the Washington Post, Yale360 and many others.

Some recent examples of non-print media include:

- National Public Radio interview, *Living on Earth* program (hosted by Steve Curwood). 18 Sept 2015.  
*Fires Threaten the North*,  
<http://loe.org/shows/segments.html?programID=15-P13-00038&segmentID=3>

- National Public Radio interview, *Living Lab* program (hosted by Heather Goldstone). 13 May 2013. *New Research Predicts Dramatically Greener Arctic in Near Future*, <http://capeandislands.org/post/new-research-predicts-dramatically-greener-arctic-near-future>
- American Museum of Natural History, Science Bulletins (professionally made feature video that played at the AMNH in Manhattan and hundreds of other education venues around the world). *The Ecology of Climate Change*, 2014. [www.amnh.org/explore/science-bulletins/bio/documentaries/the-ecology-of-climate-change](http://www.amnh.org/explore/science-bulletins/bio/documentaries/the-ecology-of-climate-change)
- American Museum of Natural History: Visualizations (with voice over), 2014. [www.amnh.org/explore/science-bulletins/\(watch\)/bio/visualizations/greening-of-the-arctic](http://www.amnh.org/explore/science-bulletins/(watch)/bio/visualizations/greening-of-the-arctic)

My group's research & collaborations have been featured by science writers in professional venues designed to reach a broad audience. Some recent examples include:

- Appenzeller, T. (2015), *The New North*, *Science*, 349(6250), 806-809, doi:10.1126/science.349.6250.806
- Sturm, M. (2010), *Arctic Plants Feel the Heat*, *Scientific American*, 302(5), 66-73, doi:10.1038/scientificamerican0510-66.
- Williams, A. P., Chonggang, X., & Nate, G. M. (2011). Who is the new sheriff in town regulating boreal forest growth? *Environmental Research Letters*, 6(4), 41004. <http://stacks.iop.org/1748-9326/6/i=4/a=041004>

I have given dozens of invited presentations and seminars in a range of venues.

Some recent examples include:

- Interagency Arctic Research Policy Committee (IARPC) of the Arctic Council, *An Overview of NASA's Arctic Boreal Vulnerability Experiment (ABOVE)*, November 2015. Seattle, WA
- International Climate Change Think Tank award & lecture, *Changes in the Arctic and their Climate Feedback Implications*. October 2015. International Center for Climate Governance. Milan, Italy
- *Terrestrial Ecosystems, Carbon Cycle, Land Use Land Cover Change, and Biodiversity Measurement Requirements for the Next Decade*, SPIE Remote Sensing Conference. August 2015. Toulouse, France
- Queen's University, invited plenary address, *Changes in arctic and boreal vegetation and their climate feedback implications*, April 2015. Kingston, Ontario.
- Columbia University, Earth Science Seminar Series, *Rapid change in the Arctic: vulnerabilities and opportunities*, April 2015. Palisades, New York.
- 20<sup>th</sup> Conference of the Parties to the United Nations Framework Convention on Climate Change, Official UNFCCC Side Event, *Measurement and Monitoring for REDD+: The Needs, Current Technological Capabilities and Future Potential*. December 2014. Lima, Peru
- NASA Hyperwall presentations, *Enabling conservation from space*. Society for Conservation Biology (April 2013) & American Geophysical Union (December 2013).

## PROFESSIONAL PREPARATION

Ph.D. - UNIVERSITY OF MARYLAND

College Park, Maryland – May 1996

Dissertation: "*Modeling carbon fluxes, net primary production and light utilization of boreal forest stands*"

M.A. - UNIVERSITY OF CALIFORNIA

Santa Barbara, California – August 1987

Thesis: "*Predictive mapping of coast live oak in California using digital satellite and terrain data*"

B.S. - PENNSYLVANIA STATE UNIVERSITY

University Park, Pennsylvania – August 1982

Graduated with honors, remote sensing & digital mapping emphasis.

## REFEREED PUBLICATIONS

In Print 160 refereed journal articles, book chapters, professional commentaries and perspectives cited >13,000 times, GoogleScholar h-index=59, ISI Web of Science h-index=46 as of Oct 2016

- Grosse, G., Goetz, S., McGuire, A. D., Romanovsky, V. E., & Schuur, E. A. G. Changing permafrost in a warming world and feedbacks to the Earth system. **Environmental Research Letters**, 11(4), 040201. doi:10.1088/1748-9326/11/4/040201
- Guay, K., Jantz, P., Gross, J. E., Rogers, B. M., and Goetz, S. J.: *Historical and Projected Climates as a Basis for Climate Change Exposure and Adaptation Potential across the Appalachian Landscape Conservation Cooperative*, pages 78-94 in **Climate Change in Wildlands: Pioneering Approaches to Science and Management in the Rocky Mountains and Appalachians**, edited by Hansen, A., Monahan, B., Olliff, T., and Theobald, D., Island Press (ISBN 161091712X).
- Jantz, P., Monahan, B., Hansen, A., Rogers, B. M., Zolkos, S., Cormier, T., and Goetz, S. *Potential Impacts of Climate Change on Vegetation for National Parks in the Eastern United States*, pages 151-173 in **Climate Change in Wildlands: Pioneering Approaches to Science and Management in the Rocky Mountains and Appalachians**, edited by Hansen, A., Monahan, B., Olliff, T., and Theobald, D., Island Press (ISBN 161091712X).
- Loranty, M. M., Lieberman-cribbin, W., Berner, L. T., Natali, S. M., Goetz, S. J., Alexander, H. D., & Kholodov, A. L. *Spatial variation in vegetation productivity trends, fire disturbance, and soil carbon across arctic-boreal permafrost ecosystems*. **Environmental Research Letters**, 11, 095008. doi:10.1088/1748-9326/11/9/095008.
- Rogers, B. M., Jantz, P., Goetz, S. J., and Theobald, D. M.: *Vulnerability of Tree Species to Climate Change in the Appalachian Landscape Conservation Cooperative*, pages 212-233 in **Climate Change in Wildlands: Pioneering Approaches to Science and Management in the Rocky Mountains and Appalachians**, edited by Hansen, A., Monahan, B., Olliff, T., and Theobald, D., Island Press (ISBN 161091712X, 9781610917124)..
- Smith, A. M. S., Kolden, C. A., Paveglio, T. B., Cochrane, M. A., Bowman, D. M., Moritz, M. A., Kliskey, A. D., Alessa, L., Hudak, A. T., Hoffman, C. M., Lutz, J. A., Queen, L. P. Goetz, S. J., Higuera, P.E., Boschetti, L., Flannigan, M., Yedinak K., Watts, A. C., Strand, E. K., van Wagtendon, J. M., Anderson, J. W., Stocks, B. J., Abatzoglou, J. The science of firescapes: achieving fire-resilient communities. **BioScience**, 66(2), 130–146.
- 2015
- Berner, L. T., Alexander, H. D., Loranty, M. M., Ganzlin, P., Mack, M. C., Davydov, S. P., & Goetz, S. J. *Biomass allometry for alder, dwarf birch, and willow in boreal forest and tundra ecosystems of far northeastern Siberia and north-central Alaska*. **Forest Ecology and Management**, 337, 110–118.
- Boelman, N.T., L. Gough, J. Wingfield, S. Goetz, A. Asmus, H.E. Chmura, J.S. Krause, J.H. Perez, S.K. Sweet, and K.C. Guay. *Greater shrub dominance alters breeding habitat and food resources for migratory songbirds in Alaskan arctic tundra*. **Global Change Biology**, 21, 1508-1520.
- Goetz, S. J., Hansen, M., Houghton, R. A., Walker, W., Laporte, N., & Busch, J. Measurement and monitoring needs, capabilities and potential for addressing reduced emissions from deforestation and forest degradation under REDD+. **Environmental Research Letters - Reviews**, 10(12), 123001. doi:10.1088/1748-9326/10/12/123001
- Hall, F. G., S. J. Goetz and 48 others. *TECLUB: Terrestrial Ecosystems, Carbon Cycle, Land Use Land Cover Change, and Biodiversity Measurement Requirements for the Next Decade*. NASA Technical Report. 53 pages. [http://cce.nasa.gov/cce/pdfs/TECLUB\\_Final\\_Report.pdf](http://cce.nasa.gov/cce/pdfs/TECLUB_Final_Report.pdf)
- Pelletier, J., & Goetz, S. J. *Baseline data on forest loss and associated uncertainty: advances in national forest monitoring*. **Environmental Research Letters**, 10(2), 021001. doi:10.1088/1748-9326/10/2/021001
- Rose, R. A., Byler, D., Eastman, J. R., Fleishman, E., Geller, G., Goetz, S. & 24 others. *Ten Ways Remote Sensing Can Contribute to Conservation*. **Conservation Biology**, 29(2), 350–359
- Supp, S. R., Sorte, F. A. La, Cormier, T. A., Lim, M. C. W., Powers, D. R., Wethington, S. M., Goetz, S.J. & Graham, C. H. *Citizen-science data provides new insight into annual and seasonal variation in migration patterns*. **Ecosphere**, 6(1):10.1890/ES14-00290.1
- Tyukavina, A., Hansen, M. C., Potapov, P. V., Krylov, A. M., & Goetz, S. J. Pan-tropical hinterland forests: mapping minimally disturbed forests. **Global Ecology and Biogeography** 25(2);151-163. doi:10.1111/geb.12394
- Tyukavina, A., Hansen, M. C., Potapov, P. V., Stehman, S. V., Houghton, R. A., Krylov, A. M., Turubanova, S., Goetz, S. J. *Aboveground carbon loss in natural and managed tropical forests from 2000 to 2012*. **Environmental Research Letters**, 10(7), 074002.
- Zolkos, S. G., Jantz, P., Cormier, T., Iverson, L. R., McKenney, D. W., & Goetz, S. J. *Projected Tree Species Redistribution Under Climate Change: Implications for Ecosystem Vulnerability Across Protected Areas in the Eastern United States*. **Ecosystems**, 18(2):202-220, 10.1007/s10021-014-9822-0
- 2014
- Goetz, S. J., Sun, M., Zolkos, S., Hansen, A., & Dubayah, R. *The relative importance of climate and vegetation properties on patterns of North American breeding bird species richness*. **Environmental Research Letters**, 9(3), 034013. doi:10.1088/1748-9326/9/3/034013
- Guay, K. C., Beck, P. S. A., Berner, L. T., Goetz, S. J., Baccini, A., & Buermann, W. *Vegetation productivity patterns at high northern latitudes: a multi-sensor satellite data assessment*. **Global Change Biology**, 20(10):

3147-3158

- Hansen, A. J., Phillips, L. B., Dubayah, R., Goetz, S., & Hofton, M. *Regional-scale application of lidar: Variation in forest canopy structure across the southeastern US*. **Forest Ecology and Management**, 329, 214–226.
- Hansen, M. C., Egorov, A., Potapov, P. V., Stehman, S. V., Tyukavina, A., Turubanova, S. A., Roy, D. P., Goetz, S. J., Loveland, T. R., Ju, J., Kommareddy, A., Kovalsky, V., Forsyth, C., Bents, T. *Monitoring conterminous United States (CONUS) land cover change with Web-Enabled Landsat Data (WELD)*. **Remote Sensing of Environment**, 140, 466–484.
- Jantz, P., Goetz, S. J., & Laporte, N. Tropical carbon corridors: mapping climate change mitigation and biodiversity co-benefits. **Nature Climate Change**. 4:138-142. doi:10.1038/nclimate2105
- Loranty, M., Berner, L. T., Goetz, S. J., Jin, Y., & Randerson, J. T. *Improving high latitude albedo feedbacks in climate models with satellite observations*. **Global Change Biology**. 20(4):594-606
- Loranty, M. M., Natali, S. M., Berner, L. T., Goetz, S. J., Holmes, R. M., Davydov, S. P., Zimov, N. S., Zimov, S. A. *Siberian tundra ecosystem vegetation and carbon stocks four decades after wildfire*. **Journal of Geophysical Research: Biogeosciences**, 119, doi:10.1002/2014JG002730.
- National Research Council**. Co-author. *Opportunities to Use Remote Sensing in Understanding Permafrost and Related Ecological Characteristics*. Washington, DC: The National Academies Press, 2014.
- Scholes & Settele et al. Contributing author. **IPCC 5<sup>th</sup> Assessment Report**, Working Group 2, Chapter 4. *Terrestrial and Inland Water Systems*. <http://www.ipcc.ch/report/ar5/wg2>

2013

- Beck, P.S.A., Andreu-Hayles, L., D'Arrigo, R., Anchukaitis, K.J., Tucker, C.J., Pinzon, J.E., & Goetz, S.J. *A large-scale coherent signal of canopy status in maximum latewood density of tree rings at arctic treeline in North America*. **Global and Planetary Change**, 100, 109-118
- French, N.H.F., Bourgeau-Chavez, L.L., Falkowski, M., Goetz, S., Jenkins, L.K., Powell, R., & Camill, P. Chapter 5: *Remote sensing for mapping and modeling of land-based carbon flux and storage*. In D.G. Brown, N.H.F. French, B.C. Reed & D.T. Robinson (Eds.), **Land Use and the Carbon Cycle: Science and Applications in Coupled Natural-Human Systems** (pp. 95-143): Cambridge University Press.
- Goetz, S. J., Fiske, G. & Jantz, C. A. *On the relationship between stream biotic diversity and urbanization, past and future, in New England USA*. **Geospatial Techniques as applied to urban water issues** (ed. by L. Patrick). Pages 61-78. Springer Press.
- Hansen, M. C., Potapov, P. V., Moore, R., Hancher, M., Turubanova, S. A., Tyukavina, A., Thau, D., Stehman, S.V., Goetz, S.J., Loveland, T.R., Kommareddy, A., Egorov, A., Chini, L., Justice, C.O. and Townshend, J. R. G. *High-Resolution Global Maps of 21st-Century Forest Cover Change*. **Science**, 342(6160), 850–853. doi:10.1126/science.1244693
- Kasischke, E.S., Amiro, B.D., Barger, N.N., French, N.H.F., Goetz, S.J., Grosse, G., Harmon, M.E., Hicke, J.A., Liu, S., & Masek, J.G. (2013). *Impacts of disturbance on the terrestrial carbon budget of North America*. **Journal of Geophysical Research – Biogeosciences** 118(1):303-316, doi: 10.1002/jgrg.20027
- Pearson, R.G., Phillips, S.J., Loranty, M.M., Beck, P.S.A., Damoulas, T., Knight, S.J., & Goetz, S.J. (2013). *Shifts in Arctic vegetation and associated feedbacks under climate change*. **Nature Climate Change**, 3(7): 673-677, doi:10.1038/nclimate1858
- Tyukavina, S. V., Stehman, S., Potapov, P. V., Turubanova, S. A., Baccini, A., Goetz, S. J., Laporte, N T, Houghton, R A, Hansen, M. C. (2013). *National-scale estimation of gross forest aboveground carbon loss: a case study of the Democratic Republic of the Congo*. **Environmental Research Letters**, 8(4), 044039. doi:10.1088/1748-9326/8/4/044039
- Xu, L., Myneni, R., Chapin-III, F.S., Callaghan, T.V., Pinzon, J.E., Tucker, C.J., Zhu, Z., Bi, J., Ciais, P., Tømmervik, H., Euskirchen, E.S., Forbes, B.C., Piao, S.L., Anderson, B.T., Ganguly, S., Nemani, R.R., Goetz, S.J., Beck, P.S.A., Bunn, A.G., Cao, C., & Stroeve, J.C. (2013). *Diminished temperature and vegetation seasonality over northern high latitudes*. **Nature Climate Change**, 3(6): 581-586, doi:10.1038/nclimate1836
- Zolkos, S., Goetz, S.J., & Dubayah, R.O. *A meta-analysis of terrestrial above-ground biomass estimation using lidar remote sensing*. **Remote Sensing of Environment**, 128, 289-298. doi:10.1016/j.rse.2012.10.1017
- Zhuravleva, I., Turubanova, S., Potapov, P., Hansen, M., Tyukavina, A., Minnemeyer, S., Laporte, N., Goetz, S., Verbelen, F., Thies, C. (2013). *Satellite-based primary forest degradation assessment in the Democratic Republic of the Congo, 2000-2010*. **Environmental Research Letters**, 8(2), 24034.

2012

- Alexander, H.D., Mack, M., Goetz, S.J., & Beck, P.S.A. *Effects of alternative post-fire successional trajectories on*

- aboveground carbon pools within boreal forests of Interior Alaska. **Ecosphere** 3(5):article 45
- Alexander, H.D., Mack, M.C., Goetz, S., Loranty, M., Beck, P.S.A., & Earl, K. Zimov, S., Davydov, S., & Thompson, C.C. *Effects of successional stage and tree density on carbon accumulation patterns of post-fire Cajander larch (*Larix cajanderi*) forests within Far Northeastern Siberia.* **Ecosystems** DOI: 10.1007/s10021-012-9567-6.
- Baccini, A., Goetz, S.J., Walker, M., Laporte, N.T., Sun, M., Sulla-Menashe, D., Hackler, J., Friedl, M., Dubayah, R.O. & Houghton, R.A. *Estimated carbon dioxide emissions from tropical deforestation improved by carbon-density maps.* **Nature Climate Change**, 2:182-185 doi:10.1038/nclimate1354
- Berner, L.T., Beck, P.S.A., Loranty, M.M., Alexander, H.D., Mack, M.C., & Goetz, S.J. (2012). *Larch (*Larix cajanderi*) biomass distribution, fire regime and post-fire recovery in northeastern Siberia.* **Biogeosciences**, 9, 7555-7600, doi:7510.5194/bg-7559-7555-2012.
- Epstein, H.E., D.A. Walker, U.S. Bhatt, P. Bieniek, J. Comiso, J. Pinzon, M.K. Reynolds, C.J. Tucker, G.J. Jia, H. Zeng, I.H. Myers-Smith, B.C. Forbes, D. Blok, M.M. Loranty, P.S.A. Beck, S.J. Goetz, T.V. Callaghan, G.H.R. Henry, C.E. Tweedie, P.J. Webber, A.V. Rocha, G.R. Shaver, J.M. Welker (2012). *Vegetation.* **Arctic Report Card: Update for 2012.** NOAA
- Goetz, S. J., Bond-Lamberty, B., Law, B., Hicke, J., Houghton, R. A., O'Halloran, T., McNulty, S., Meddens, A. J. H., Pfeifer, E. M., Mildrexler, D. & Kasischke, E. *Observations and assessment of forest carbon recovery following disturbance in North America.* **Journal of Geophysical Research – Biogeosciences** 117(G2): G02022, doi:10.1029/2011JG001733
- Jin, Y., Randerson, J.T., Goetz, S.J., Beck, P.S.A., Loranty, M.M., & Goulden, M.L. *The influence of burn severity on post-fire vegetation recovery and albedo change during early succession in North American boreal forests.* **Journal of Geophysical Research – Biogeosciences** 117, G01036, doi:10.1029/2011jg001886
- Jin, Y., Randerson, J.T., Goulden, M.L. & Goetz, S.J. *Post-fire changes in surface net radiation along a latitudinal gradient in boreal North America.* **Geophysical Research Letters** 39, doi:10.1029/2012GL051790
- Loranty, M.M., & Goetz, S.J. (2012). *Shrub expansion and climate feedbacks in Arctic tundra.* **Environmental Research Letters**, 7, 011005
- Margono, B.A., Turubanova, S., Zhuravleva, I., Potapov, P., Tyukavina, A., Baccini, A., Goetz, S.J., & Hansen, M.C. (2012). *Mapping and monitoring deforestation and forest degradation in Sumatra (Indonesia) using Landsat time series data sets from 1990 to 2010.* **Environmental Research Letters**, 7, 034010
- Petrokofsky, G., Kanamaru, H., Achard, F., Goetz, S., Joosten, H., Holmgren, P., Lehtonen, A., Menton, M., Pullin, A.S., & Wattenbach, M. *Comparison of methods for measuring and assessing carbon stocks and carbon stock changes in terrestrial carbon pools. How do the accuracy and precision of current methods compare? A systematic review protocol.* **Environmental Evidence**, 1:6
- Rocha, A.V., Loranty, M., Higuera, P.E., Mack, M., Sheng-Hu, F., Jones, B.M., Breen, A.L., Rastetter, E.B., Goetz, S.J., & Shaver, G.R. *The footprint of Alaskan tundra fires during the past half-century: implications for ecosystem function and resilience.* **Environmental Research Letters**, 7, 044039, doi:10.1088/1748-9326/1087/1084/044039
- Swatantran, A., R. Dubayah, S. Goetz, M. Hofton, M.G. Betts, M. Sun, M. Simard, and R. Holmes, *Mapping migratory bird prevalence using remote sensing data fusion.* **PLoS ONE**, 7, e28922

## 2011

- Andreu-Hayles, L., D'Arrigo, R.D., Anchukaitis, K.J., Beck, P., Frank, D., Verstege, A., & Goetz, S. *Varying northern forest response to arctic environmental change at the Firth River, Alaska.* **Environmental Research Letters** 6, 045503. doi:10.1088/1748-9326/6/4/045503
- Baccini, A., Goetz, Laporte, N.T., Sun, M., Dong, H. *Response to "Interpreting and improving first generation biomass maps."* **Environmental Research Letters** 6 049002 doi:10.1088/1748-9326/6/4/049002
- Beck, P. S. A., Juday, G. P., Goetz, S. J., Alix, C., Winslow, S., Sousa, E. & Heiser, P. *Changes in forest productivity across Alaska consistent with biome shift.* **Ecology Letters** 14:373–379 doi:10.1111/j.1461-0248.2011.01598.x
- Beck, P. S. A., Goetz, S. J., Mack, M., Alexander, H., Jin, Y. & Randerson, J. T. *The impacts and implications of an intensifying fire regime on Alaskan boreal forest composition and albedo.* **Global Change Biology** 17:2853-2866, doi:10.1111/j.1365-2486.2011.02412.x
- Beck, P. S. A., Horning, N., Goetz, S. J. & Tape, K. *Shrub cover on the North Slope of Alaska: a circa 2000 baseline map.* **Arctic, Antarctic and Alpine Research** 43:355-363.
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## RESEARCH GRANTS & SUPPORT

### Current

- NASA Terrestrial Ecology Program – Arctic Boreal Vulnerability Experiment (ABoVE), Science Team Lead, Aug 2015 – Dec 2019 (\$746,673 to WHRC)
- NASA Terrestrial Ecology Program – Mapping and modeling attributes of an arctic - boreal biome shift, Principal Investigator, Aug 2015 – Dec 2019 (\$349,804 to WHRC)
- NASA Terrestrial Ecology Program – Developing a spatially-explicit understanding of fire-climate forcings and their management implications across the ABoVE domain, Co-Investigator (B. Rogers, PI), Aug 2015 – Dec 2019 (\$730,446 to WHRC)
- NASA Terrestrial Ecology Program – Winter respiration in the Arctic: Constraining current and future estimates of CO<sub>2</sub> emissions during the non-growing season, Co-Investigator (S. Natali, PI), Aug 2015 – Dec 2019 (\$886,179 to WHRC)
- NASA Terrestrial Ecology Program – Increasing fire severity and the loss of legacy carbon from forest and tundra ecosystems of northwestern North America, Co-Investigator (M.Mack, PI), Aug 2015 – Dec 2019 (\$240,200 to WHRC)
- NASA Earth Venture Program – GEDI Lidar: The Global Ecosystem Dynamics Investigation Lidar, Deputy Principal Investigator (R.Dubayah, PI), January 2015 – May 2020 (\$393,751 to WHRC)
- NSF Office of Polar Programs - Fire regime influences on carbon dynamics of Siberian boreal forests, Co-Investigator (H.Alexander, PI), Sept 2014 – Aug 2017 (\$370,883 to WHRC)
- NASA IceSat program – LiDAR and optical data fusion for global carbon stock mapping, Co-Investigator (A.Baccini, PI), Aug 2013 – July 2016 (\$499,473 to WHRC)
- NASA Applied Sciences Program - Forest carbon assessment for REDD+ in the East Africa SERVIR Region, Principal Investigator, Jan 2013 – Dec 2016 (\$1,068,095 to WHRC)

### Past

- NASA Applied Sciences Program – Combining remote sensing and biological data to predict the consequences of climate change on hummingbird diversity, Co-Investigator (Graham, PI), July 2012 – August 2015 (\$375,223 to WHRC)
- NASA Applied Sciences Program – Using NASA resources to inform climate and land use adaptation: Ecological forecasting, vulnerability assessment, and evaluation of management options, Co-Investigator (A.Hansen, PI), July 2012 – August 2015 (\$461,019 to WHRC)
- World Resources Institute / NORAD – Global biomass mapping for *Global Forest Watch*, Co-Investigator, March 2014 – Dec 2015 (\$597,908 to WHRC)
- NASA Terrestrial Ecology Program – Climate and land use change at the Amazonian agro-frontier: Historical and future effects on the surface energy balance, Co-Investigator (M.Coe, PI), June 2012 – May 2015 (\$653,933 to WHRC)
- NASA Terrestrial Ecology Program – Spatially explicit sources and sinks of carbon from deforestation, reforestation, growth, and degradation in the tropics: Development of a method and a 10-year data set 2000-2010, Co-Investigator (R.A.Houghton, PI), June 2012 – May 2015 (\$558,439 to WHRC)
- NASA Terrestrial Ecology Program – Fusing MODIS, Landsat and GLAS in characterizing forest extent, structure and change, Co-Investigator (M.Hansen, PI), March 2012 – Feb 2015 (\$309,231 to WHRC)
- NASA Land Cover / Land Use Change Program - Modeling Strategies for Adaptation to Linked Climate and Land Use Change in the United States, Principal Investigator, June 2009 – May 2012 (\$465,311)
- NSF Office of Polar Programs - Shifting Seasonality of Northern Forest Response to Arctic Environmental Change, June 2009 – May 2013 (\$221,838 to WHRC)
- NASA Applied Sciences Program – Continental Scale Modeling of Bird Diversity Using Canopy Structure Metrics of Habitat Heterogeneity, Principal Investigator, June 2009 – May 2012 (\$752,328)

- NOAA Global Carbon Cycle program - Carbon Implications of Ecosystem Responses to North American Climate Change, Principal Investigator, Jan. 2008 – Dec. 2011 (\$547,254)
- NASA Terrestrial Ecology Program - Integrating vegetation 3D structure and ecological modeling for continental scale assessments of biodiversity, biomass and disturbance, Co-Investigator (Dubayah, PI), June 2008 – May 2011, (\$660,000 - WHRC \$200,000)
- NSF Office Polar Programs – Observation and Modeling of Tundra Ecosystem Responses to Climate Change, Principal Investigator, March 2008 – Feb 2012 (\$796,041)
- NSF Emerging Topics in Biogeochemical Cycles – Collaborative Research: Controls on the Flux, Age, and Composition of Terrestrial Organic Carbon Exported by Rivers to the Ocean, Co-Investigator (Peucker, PI) June 2009 – 2012 (\$842,431 to WHRC)
- Gordon and Betty Moore Foundation, Packard Foundation and Google.org, Pan-Tropical Mapping of Forest Cover and Associated Above-Ground Carbon Stock, Co-Investigator Nov 2008 – Oct 2011 (\$6,730,717)
- NASA Terrestrial Ecology Program - Ecosystem Structure Measurements from DESDynI: Technological options and data fusion, Co-Investigator (Kellndorfer, PI), June 2008 – May 2011 (\$340,031)
- NASA Carbon Program - Quantifying Changes in Northern High Latitude Ecosystems and Associated Feedbacks to the Climate System, Principal Investigator, Jan. 2008 – Dec 2010 (\$742,124)
- NASA Applied Sciences Program - Ecological condition of US National Parks: Enhancing decision support through monitoring, analysis, and forecasting (subcontract, Montana State University, A.Hansen PI), Jan 2007 – Dec 2009 (\$273,840)
- NASA Terrestrial Ecology Program – Vulnerability and Resiliency of Arctic and Sub-Arctic Landscapes - the Role of Interactions between Climate, Permafrost, Hydrology, and Disturbance in Driving Ecosystem Processes (Kasischke, PI), June 2009 – 2010 (\$28,567 to WHRC)
- NSF Office Polar Programs – Past, present and future productivity of arctic woody vegetation in a warming climate (subcontract, Western Washington University – A.Lloyd, PI) NSF 8/15/06 – 8/14/09, 1.0 mo./year (\$45,000)
- NASA – Urban Growth Impacts on Surface Hydrology in Mid-Atlantic and New England Watersheds, Principal Investigator, Sept. 2005 – Aug. 2008 (\$571,661)
- NASA - Characterizing Forest Structure for Assessments of Carbon Cycling and Biodiversity using Laser Remote Sensing, Co-Investigator (Subcontract from UMD – Dubayah, PI), March 2004 – Feb. 2007 (\$229,377)
- EPA STAR Program - A Watershed Classification System for Improved Monitoring and Restoration, Co-Investigator (Subcontract from CRC, Prince, PI), Jan. 2004 - Dec. 2006 (\$224,359)
- USDA Forest Service – Remote Sensing of Land Cover in the Urban-Wildland Interface and Intermix, Jan – Dec 2006 (\$40,000)
- EPA Chesapeake Bay Program - Modeling Land Use Change in the Chesapeake Bay Watershed, Principal Investigator, June 2004 - May. 2006 (\$100,000)
- NOAA - Carbon Dynamics of North American Boreal Forest Regrowth using Satellite Observations, Principal Investigator, April 2003 - March 2006 (\$554,300)
- NASA - Remote Sensing Applications for Forest Resource Assessment, Principal Investigator, Nov. 2001 - Oct. 2005 (\$600,000)
- NASA - Spatial Predictive Modeling and Remote Sensing of Land Use Change in the Chesapeake Bay Watershed, Co-Principal Investigator (with Bockstael), Sept. 2001 - Aug. 2004 (\$232,000)
- National Center for Smart Growth, Modeling Future Land Use Change in Maryland, Principal Investigator, June 2003 - August 2004 (\$25,000)
- Metropolitan Washington Council of Governments – Metropolitan Washington Area Land Cover / Land Use Study, Principal Investigator, June 2002 – Dec. 2002 (\$46,600)
- Conservation International - Application of a Satellite Model of Tropical Forest Flammability, Principal Investigator, Sept. 2001 - August 2002 (\$98,201).
- EPA Chesapeake Bay Program - Chesapeake Bay basin land cover mapping, Co-Principal Investigator, Sept. 2001 – August 2002 (\$300,000).
- USGS - Development and evaluation of techniques for impervious surface area estimation, Principal-Investigator. July 2001 - June 2002 (\$30,550).

- Chesapeake Bay Foundation - Projected Land Use Change in the Baltimore / Washington Metropolitan Region. Principal Investigator. May 2001 - December 2001 (\$21,000).
- NASA - Special issue of Remote Sensing of Environment on Recent Advances in Biophysical Remote Sensing, Principal-Investigator. Jan. 2001 - Dec. 2001 (\$5,920)
- NASA - Integrating Radar data with other satellite imagery to estimate net primary production in fire-disturbed boreal forests, Co-Investigator. Oct. 2000 - Sept. 2003 (\$417,000).
- NASA - Mid-Atlantic Regional Earth Science Applications Center, Co-Investigator and Manager, Feb 1999 - March 2002 (\$1,730,000).

## PEER REVIEW ACTIVITIES

### *Funding Agencies & Panels:*

- EPA STAR Program (Panel)
- NASA Applied Sciences Program (Panels)
- NASA Earth System Science Fellowships (Panels)
- NASA Interdisciplinary Science (Panel)
- NASA LCLUC Program (Panels)
- NASA New Investigator Program
- NASA Scientific and Educational Outreach Projects
- NOAA Global Carbon Cycle Program (Panels)
- NSF OPP Arctic Sciences Program
- NSF Ecosystems Program
- NSF Hydrology Program
- Sustainable Forest Management Network
- USGS Geographic Analysis and Monitoring Program
- World Wildlife Fund, Fuller Postdoctoral Program

### *Professional Journals (excerpt):*

- Applied Vegetation Science
- BioScience
- Canadian Journal of Remote Sensing
- Carbon Balance and Management
- Climatic Change
- Ecology and Ecological Monographs
- Ecosystems
- Environmental Management

### *Professional Journals (continued):*

- Environmental Research Letters (*Associate Editor*)
- Environmental Science and Policy
- Frontiers in Ecology and the Environment
- Geophysical Research Letters
- Global Change Biology
- Global Ecology and Biogeography
- International Journal of Health Geographics
- International Journal of Remote Sensing
- International Journal of Wildland Fire
- Journal of Biogeography
- Journal of Applied Ecology
- Journal of Environmental Management
- Journal of Geophysical Research (*Associate Editor*)
- Journal of Plant Ecology
- Journal of Vegetation Science
- *Nature*
- *Nature Climate Change*
- *Nature GeoScience*
- Photogrammetric Engineering & Remote Sensing
- Proceedings of the National Academy of Sciences
- Regional Environmental Change
- Remote Sensing of Environment (*Associate Editor*)
- Remote Sensing Reviews
- *Science*
- Science of the Total Environment