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EDUCATION

- 2006 Ph.D., Natural Resources and Environment (*Remote Sensing*);
School of Natural Resources and Environment, University of Michigan, Ann Arbor.
Dissertation: *Toward regional- to continental-scale estimates of vegetation canopy height: An empirical approach based on data from the Shuttle Radar Topography Mission.*
- 2003 Certificate of Graduate Studies in Spatial Analysis (*GIS/Spatial Statistics*);
School of Natural Resources and Environment, University of Michigan, Ann Arbor.
- 1999 M.S., Natural Resources and Environment (*Forest Ecology*);
School of Natural Resources and Environment, University of Michigan, Ann Arbor.
Thesis: *Landscape ecosystems of the Mack Lake burn, northern Lower Michigan, and the occurrence of the Kirtland's warbler.*
- 1994 B.S., Resource Ecology and Management (*Ecology*);
School of Natural Resources and Environment, University of Michigan, Ann Arbor.

RESEARCH INTERESTS

Applications of remote sensing and geospatial technologies to the measurement and monitoring of forests globally with an emphasis on understanding the role that changes in the amount and distribution of forest carbon have to play in anticipating changes in climate as well as in mitigating climate change through natural climate solutions, including the restoration, management, and protection of forests. Specific areas of interest include: (1) development of image-analysis techniques to advance large area mapping of forest structural attributes, including aboveground carbon density and carbon density change, (2) investigating synergies afforded by the fusion of multi-sensor, multi-spectral, and multi-temporal satellite and airborne data sources, (3) advancing tools and techniques for facilitating the spatial and statistical integration of field and remote sensing data, (4) education and capacity building, emphasizing the tools and techniques required to design and build operational forest monitoring systems within organizations ranging from indigenous communities to government ministries, (6) land carbon storage as a natural climate solution, and (7) the roll of indigenous peoples and local communities in the maintenance of tropical forests and their globally significant ecosystem services.

PROFESSIONAL EXPERIENCE

- Aug 2020- Associate Scientist, Carbon Program Director, Woodwell Climate Research Center
(formerly Woods Hole Research Center), Falmouth, MA.

- 2019-2020 Carbon Program Director, Woods Hole Research Center, Falmouth, MA.
- 2015-2020 Associate Scientist, Woods Hole Research Center, Falmouth, MA.
- 2009-2015 Assistant Scientist, Woods Hole Research Center, Falmouth, MA.
- 2008-2009 Research Associate, Woods Hole Research Center, Falmouth, MA.
- 2006-2008 Post-Doctoral Fellow, Woods Hole Research Center, Falmouth, MA.
- 2005-2006 Visiting Research Associate, Woods Hole Research Center, Falmouth, MA.
- 2002-2005 NASA Earth System Science Fellow, Radiation Laboratory, Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor.
Project title: *Forest structure from multispectral fusion.*
- 2000-2002 Graduate Student Research Assistant, Radiation Laboratory, Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor.
Project title: *Forest structure from multispectral fusion.*
- 1999 Computer Specialist, USDA Forest Service, North Central Research Station, Forestry Sciences Laboratory, Rhinelander, WI.
- 1995-1998 Graduate Student Research Assistant, School of Natural Resources and Environment, University of Michigan, Ann Arbor.
Project title: *Landscape ecosystems of the Mack Lake burn, northern Lower Michigan, and the occurrence of the Kirtland's warbler.*
- 1994 Research Assistant, School of Natural Resources and Environment, University of Michigan, Ann Arbor.
Project title: *The diversity of landscape ecosystems in the river valleys of the Huron-Manistee National Forests, northern Lower Michigan.*
- 1993 Forest Pest Specialist, Michigan Department of Natural Resources, Forest Management Division, Region II Headquarters, Roscommon, MI.

TEACHING EXPERIENCE

- 1997-1998 Graduate Student Instructor, SNRE, University of Michigan
Course: *Remote Sensing of Environment – NRE 441* (Prof. C.E. Olson); two terms.
- 1997-1998 Graduate Student Instructor, SNRE, University of Michigan
Course: *Map and Image Interpretation – NRE 442* (Prof. C.E. Olson); two terms.
- 1995-1997 Graduate Student Instructor, SNRE, University of Michigan
Course: *Forest/Terrestrial Ecology – NRE 435* (Prof. B.V. Barnes); three terms.

INTERNATIONAL TRAINING AND CAPACITY BUILDING EXPERIENCE*

- [1] Introduction to LiDAR Remote Sensing. Held June 4-6, 2018, San Salvador, El Salvador. (~25 participants).
- [2] SilvaCarbon LiDAR Workshop: LiDAR Data Applications to Biomass Estimation and Integration with Satellite Imagery for Upscaling Purposes. Held March 20-23, 2018, Katmandu, Nepal. (~20 participants).
- [3] USAID/M-REDD+ Workshop on Advanced Forest Measurement and Modeling Techniques. Held August 1-2, 2016, Guadalajara, Mexico. (~20 government participants).
- [4] SilvaCarbon Lidar Workshop: Concepts, Applications, and Practical Experiences. Held July 18-22, 2016, Katmandu, Nepal. (5 participants).
- [5] USAID/M-REDD+ Mayan Forest Watch/Carbon Calculator (CCAL). Held September 28-29, 2015, Merida, Mexico. (~25 state and government and NGO participants).
- [6] Introduction to LiDAR Remote Sensing for Land Management and Monitoring. Held March 23-26, 2015, Durango, Mexico. (20 NGO, academic, and government participants).
- [7] State of Mato Grosso, Brazil, MRV Methods for the Mato Grosso Jurisdictional REDD+ Program. Held November 4-6, 2014, Cuiabá, Brazil. (~25 state government and local NGO participants).
- [8] Introduction to LiDAR Remote Sensing for Land Management and Monitoring. Held October 28-30, 2013, Cusco, Peru. (21 state and federal government participants).
- [9] Governors' Climate and Forest Task Force Cross River State REDD+ Workshop on Carbon Monitoring. Held July 22-26, 2013, Calabar, Nigeria. (39 state and federal government, NGO, and university faculty participants).
- [10] Workshop on Tools for Monitoring Carbon Sequestration on Land. Held March 18-26, 2013, Valle de Bravo, Mexico. (~25 NGO and academic participants).
- [11] State of Acre, Brazil, Training Course on Mapping Aboveground Biomass and Carbon Stock. Held November 12-16, 2012, Rio Branco, Brazil. (~20 state government and federal university participants).
- [12] COICA/IDB Forest Carbon Measurement "Training the Trainers" Workshop. Held November 5-9, 2012, Puyo, Ecuador. (~8 indigenous technicians).
- [13] COICA/COIAB Forest Measurement and Monitoring Workshop. Held June 9-13, 2012, Rio de Janeiro, Brazil. (~30 indigenous participants).
- [14] COICA/APA Forest Measurement and Monitoring Workshop. Held March 12-16, 2012, Georgetown, Guyana. (~30 indigenous participants).
- [15] COICA/ORPIA Forest Measurement and Monitoring Workshop. Held July 14-15, 2011, Ciudad Bolívar, Venezuela. (~30 indigenous participants).

- [16] Methods for Biomass Estimation and Forest-Cover Mapping in the Tropics: From Carbon Policy to Technical Training. Held June 21-25, 2011, Kigali/Ruhengeri, Rwanda. (25 participants from 6 African countries).
- [17] COICA/AIDSESEP Forest Measurement and Monitoring Workshop. Held April 28-29, 2011, Quito, Peru. (~30 indigenous participants).
- [18] COICA/OIS Forest Measurement and Monitoring Workshop. Held March 10-11, 2011, Berg en Dal, Suriname. (~30 indigenous participants).
- [19] Methods for Biomass Estimation and Forest-Cover Mapping in the Tropics. Workshop held November 8-12, 2010, Mulawarman University, Samarinda, Indonesia. (27 participants from 8 S.E. Asian countries).
- [20] Indigenous REDD Readiness Forest Carbon Measurement Workshop. Held October 13-16, 2010, Sucua, Ecuador. (25 participants from 6 Amazonian countries).
- [21] New Approaches for Measuring and Monitoring Carbon Stocks and Forest Cover in the Tropics. Workshop held November 9-12, 2009, Cat Tien National Park, Vietnam. (32 participants from 7 S.E. Asian countries).
- [22] COICA/CIDOB Forest Measurement and Monitoring Workshop. Held October 30-31, 2009, Concepción, Bolivia. (~50 indigenous participants).
- [23] COICA/OPIAC Forest Measurement and Monitoring Workshop. Held September 13-14, 2009, Melgar, Colombia. (13 indigenous participants).
- [24] COICA/CONFENIAE Forest Measurement and Monitoring Workshop. Held September 4-5, 2009, Puyo, Ecuador. (21 indigenous participants).
- [25] Integrating Remote Sensing and Field Measurements in the Albertine Rift. Workshop held November 12-14, 2008, Kaniyo Pabidi Ecotourism Site, Budongo Forest, Uganda. (~40 participants from 7 east/central African countries).
- [26] Introduction to Remote Sensing/Burn Scar Mapping from Satellite Imagery. Workshop held June 18-21, 2007, Ft. Portal, Uganda. (14 participants).
- [27] Introduction to Remote Sensing: Applications to protected area management and biodiversity monitoring in the Albertine region. Workshop held June 21-23, 2006, Kampala, Uganda. (~10 participants).

** 27 workshops led/co-led; ca. 660 international participants trained.*

FIELD CAMPAIGNS

- Italy (2014): Assisted in the planning and execution of a field campaign to obtain estimates of aboveground forest biomass in support of a global carbon density mapping project.

- Vietnam (2009): Assisted in the planning of a field campaign to estimate aboveground forest biomass in support of pan-tropical forest cover and carbon stock mapping (www.whrc.org/mapping/). Assisted in training a field team in all manner of field-based measurement tools and techniques.
- Ecuador/Colombia/Bolivia (2009): Assisted in the collection of field-based estimates of aboveground forest biomass in support of pan-tropical forest cover and carbon stock mapping (www.whrc.org/mapping/).
- Uganda, East Africa (2008): Assisted in the planning and direction of a four-week field campaign to estimate above-ground forest biomass in 110 reference plots in support of pan-tropical forest cover and carbon stock mapping (www.whrc.org/mapping/). Assisted in training field teams in all manner of field-based measurement tools and techniques.
- Sierra Nevada Range, CA (2000-2001): Planned and directed an eight-month field campaign to characterize the horizontal and vertical structure of Sierran forest communities in support of NASA-funded remote sensing research. Supervised student field crew in establishing/measuring 500+ ground reference plots; conducted GPS surveys, LAI measurements, and detailed laser-based stem mapping/measurements.
- Naval Air Engineering Station, Lakehurst, NJ (2001): Designed and directed vegetation surveys in support of long-distance, wideband propagation research in forested environments.
- Aberdeen Proving Ground, Aberdeen, MD (2000): Conducted forest canopy measurements in support of millimeter-wave foliage penetration (FOPEN) research.
- Mack Lake Burn, MI (1995-1996): Delineated, described, and mapped landscape ecosystems occupied by the federally endangered Kirtland's warbler. Designed and conducted extensive physiographic, microclimatic, edaphic, and vegetative measurements.
- Huron-Manistee National Forests, MI (1994): Characterized the diversity of riverine landscape ecosystems across federal ownership. Conducted cross-sectional elevation profiling of glacial river valleys, soil borings, and botanical surveys. Identified and catalogued 300+ herbaceous plant species.
- Northern Lower Peninsula, MI (1993): Conducted aerial survey mapping and infrared video imaging of gypsy moth defoliation. Conducted ground surveys of forest insect/disease damage and susceptibility.

PEER-REVIEWED JOURNAL ARTICLES[†]

- [1] Walker, W.S., S.R. Gorelik, A. Baccini, M.K. Farina, K.K. Solvik, S.C. Cook-Patton, P.W. Ellis, J. Sanderman, R.A. Houghton, S.M. Leavitt, B.W. Griscom. 2020. The global potential for increased storage of carbon on land. *Science Advances* (*in review*).
- [2] Lawrence, D., M. Coe, W. Walker, L. Verchot, and K. Vandecar. 2020. Biophysical effects of forests on climate: toward a more complete view of climate mitigation. *PNAS* (*in review*).
- [3] Cook-Patton, S.C., S.M. Leavitt, D. Gibbs, N.L. Harris, K. Lister, K.J. Anderson-Teixeira, R.D. Briggs, R.L. Chazdon, T.W. Crowther, P.W. Ellis, H.P. Griscom, V. Herrmann, K.D. Holl, R.A. Houghton, C. Larrosa, G. Lomax, R. Lucas, P. Madsen, Y.S. Malhi, A. Paquette, J.D. Parker, K. Paul, D. Routh, S. Roxburgh, S. Saatchi, J. van den Hoogen, W.S. Walker, C.E. Wheeler, S. Wood, A. Xu, and B.W. Griscom. In Press. Mapping Potential Carbon Capture from Global Natural Forest Regrowth. *Nature*.

- [4] Chapman, M., W.S. Walker, S. C. Cook-Patton, P.W. Ellis, M. Farina, B.W. Griscom, and A. Baccini. 2020. Large potential from adding trees to agricultural lands. *Global Change Biology*, <https://doi.org/10.1111/gcb.15121>.
- [5] Castanho, A.D.A., M. Coe, P. Brando, M. Macedo, A. Baccini, W. Walker, and E. Andrade. 2020. Potential shifts in the aboveground biomass and physiognomy of a seasonally dry tropical forest in a changing climate. *Environmental Research Letters*, doi.org/10.1088/1748-9326/ab7394.
- [6] Walker, W.S. et al. 2020. The role of forest conversion, degradation, and disturbance in the carbon dynamics of Amazon indigenous territories and protected areas. *Proceedings of the National Academy of Sciences*, [doi:10.1073/pnas.1913321117](https://doi.org/10.1073/pnas.1913321117).
- [7] Griscom, B.W., J. Busch, S.C. Cook-Patton, P.W. Ellis, J. Funk, S.M. Leavitt^c, G. Lomax, W. Turner, M.Chapman, J. Engelmann, N.P. Gurwick, E. Landis, D. Lawrence, Y. Malhi, L.S. Murray, D. Navarrete, S. Roe, S. Scull, P. Smith, C. Streck, W.S. Walker, and T.Worthington. 2020. National potential for natural climate solutions in the tropics. *Philosophical Transactions of the Royal Society B.*, [doi:10.1098/rstb.2019.0126](https://doi.org/10.1098/rstb.2019.0126).
- [8] Baccini, A., W.S. Walker, L. Carvalho, M. Farina, D. Sulla-Menashe, and R.A. Houghton. 2019. Response to Comment on Tropical forests area a net source based on aboveground measurements of gain and loss. *Science*, [doi:10.1126/science.aat1205](https://doi.org/10.1126/science.aat1205).
- [9] R. Houghton, A. Baccini, and W.S. Walker. 2018. Where is the residual terrestrial carbon sink? *Global Change Biology*, [doi:10.1111/gcb.14313](https://doi.org/10.1111/gcb.14313).
- [10] Baccini, A., W.S. Walker, L. Carvalho, M. Farina, D. Sulla-Menashe, and R.A. Houghton. 2017. Tropical forests area a net source based on aboveground measurements of gain and loss. *Science*, [doi:10.1126/science.aam5962](https://doi.org/10.1126/science.aam5962).
- [11] D. Shmelev, A. Veremeeva, G. Kraev, A. Kholodov, R. G. M. Spencer, W. S. Walker, and E. Rivkina. 2017. Estimation and sensitivity of carbon storage in permafrost of north-eastern Yakutia. *Permafrost and Periglacial Processes*, [doi:10.1002/ppp.1933](https://doi.org/10.1002/ppp.1933).
- [12] Gonçalves, F., R. Treuhaft, B. Law, A. Almeida, W. Walker, A. Baccini 5, J. R. dos Santos, and P. Graça. 2017. Estimating aboveground biomass in tropical forests: Field methods and error analysis for the calibration of remote sensing observations. *Remote Sensing*, [doi:10.3390/rs9010047](https://doi.org/10.3390/rs9010047).
- [13] Ellis, P., B. Griscom, W. Walker, F. Gonçalves, and T. Cormier. 2016. Mapping selective logging impacts in Borneo with GPS and airborne lidar. *Forest Ecology and Management*, doi.org/10.1016/j.foreco.2016.01.020.
- [14] Zarin, D., N. Harris, A. Baccini, D. Aksenov, M. Hansen, C. Ramos, T. Azevedo, B. Margono, A. Alencar, C. Gabris, A. Allegretti, P. Potapov, M. Farina, W. Walker, V. Shevade, T. Lobada, S. Turubanova, and A. Tyukavina. 2015. Can carbon emissions from tropical deforestation drop by 50% in five years? *Global Change Biology*, [doi:10.1111/gcb.13153](https://doi.org/10.1111/gcb.13153).
- [15] Goetz, S.J., M. Hansen, R.A. Houghton, W. Walker, N. Laporte, and J. Busch. 2015. Measurement and monitoring needs, capabilities and potential for addressing reduced emissions for deforestation and forest degradation under REDD+. *Environmental Research Letters*, [doi:10.1088/1748-9326/10/12/123001](https://doi.org/10.1088/1748-9326/10/12/123001).

- [16] Doughty, C.L., J.A. Langley, W.S. Walker, I.C. Feller, R. Schaub, and S.K. Chapman. 2015. Mangrove range expansion rapidly increases coastal wetland carbon storage. *Estuaries and Coasts*, doi:10.1007/s12237-015-9993-8.
- [17] Walker, W., Baccini, A., Schwartzman, S., Ríos, S., Oliveira-Miranda, M., Augusto, C., Romero Ruiz, M., Soria Arrasco, C., Ricardo, B., Smith, R., Meyer, C., Jintach, J.C., and Vasquez Campos, E. 2014. Forest carbon in Amazonia: The unrecognized contribution of indigenous territories and protected natural areas. *Carbon Management*, doi:10.1080/17583004.2014. 990680.
- [18] Cartus, O., J. Kellndorfer, W. Walker, C. Franco, J. Bishop, L. Santos, J.M.M. Fuentes. 2014. A national, detailed map of forest aboveground carbon stocks in Mexico. *Remote Sensing*, 6:5559-5588.
- [19] Macedo, M.N., M.T. Coe, R. DeFries, M. Uriarte, P. Brando, C. Neill, and W.S. Walker. 2013. Land-use-driven stream warming in southeastern Amazonia. *Philosophical Transactions of the Royal Society B.*, 368, 20120153.
- [20] Fagan, M.E., R.S. DeFries, S.E. Sesnie, J.P. Arroyo, W. Walker, C. Soto, R.L. Chazdon, and A. Sanchun. 2013. Land cover dynamics following a deforestation ban in northern Costa Rica. *Environmental Research Letters*, 8, 034017.
- [21] Cartus, O., J.M. Kellndorfer, M. Rombach, and W.S. Walker. 2012. Mapping canopy height and growing stock volume using airborne lidar, ALOS PALSAR and Landsat ETM+. *Remote Sensing*, 4:3320-3345.
- [22] Baccini, A., S.J. Goetz, W. Walker, N. T. Laporte, M. Sun, D. Sulla-Menashe, J. Hackler, P.S.A. Beck, R. Dubayah, M.A. Friedl, S. Samanta, and R.A. Houghton. 2012. Estimated carbon dioxide emissions from tropical deforestation improved by carbon-density maps. *Nature Climate Change*, 2:182-185.
- [23] Houghton, R.H., N. Greenglass, A. Baccini, A. Cattaneo, S. Goetz, J. Kellndorfer, N. Laporte, and W. Walker. 2010. The role of science in Reducing Emissions from Deforestation and Forest Degradation (REDD). *Carbon Balance and Management*, 1:253-259.
- [24] Walker, W.S., C.M. Stickler, J.M. Kellndorfer, K.M. Kirsch, and D.C. Nepstad. 2010. Large-area classification and mapping of forest and land cover in the Brazilian Amazon: A comparative analysis of ALOS/PALSAR and Landsat TM data sources. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 3:594-604.
- [25] Kellndorfer, J.M., W.S. Walker, E. LaPoint, K. Kirsch, J. Bishop, and G. Fiske. 2010. Statistical Fusion of Lidar, InSAR, and Optical Remote Sensing Data for Forest Stand Height Characterization: A Regional-Scale Method based on LVIS, SRTM, Landsat ETM+, and Ancillary Data Sets. *Journal of Geophysical Research*, 115:1-10.
- [26] Stickler, C.M., D.C. Nepstad, M.T. Coe, H.O. Rodríguez, D.G. McGrath, W.S. Walker, B.S. Soares-Filho, and E.A. Davidson. 2009. The potential ecological costs and cobenefits of REDD: a critical review and case study from the Amazon region. *Global Change Biology*, 15:2803-2824.
- [27] Goetz, S.J., A. Baccini, N.T. Laporte, T. Johns, W. Walker, J. Kellndorfer, R.A. Houghton and M. Sun. 2009. Mapping and monitoring carbon stocks with satellite observations: a comparison of methods. *Carbon Balance and Management*, 4:1-7.

- [28] Walker, W.S., J.M. Kellndorfer, E. LaPoint, M. Hoppus, and J. Westfall. 2007. An empirical InSAR-optical fusion approach to mapping vegetation canopy height. *Remote Sensing of Environment*, 109:482-499.
- [29] Walker, W.S., J.M. Kellndorfer, and L.E. Pierce. 2007. Quality assessment of SRTM C- and X-band interferometric data: Implications for the estimation of vegetation canopy height. *Remote Sensing of Environment*, 106:428-448.
- [30] Hyde, P., R. Dubayah, W. Walker, J.B. Blair, M. Hofton, and C. Hunsaker. 2006. Mapping forest structure for wildlife habitat analysis using multi-sensor (LiDAR, SAR/InSAR, ETM+, Quickbird) synergy. *Remote Sensing of Environment*, 102:63-73.
- [31] Pierce, L., J. Kellndorfer, W. Walker, and O. Barros. 2006. Evaluation of the horizontal resolution of SRTM elevation data. *Photogrammetric Engineering and Remote Sensing*, 72:1235-1244.
- [32] Hyde, P., R. Dubayah, B. Peterson, J.B. Blair, M. Hofton, C. Hunsaker, R. Knox, W. Walker. 2005. Mapping forest structure for wildlife habitat analysis using waveform lidar: Validation of montane ecosystems. *Remote Sensing of Environment*, 96:427-437.
- [33] Kellndorfer, J., W. Walker, L. Pierce, C. Dobson, J.A. Fites, C. Hunsaker, J. Vona, and M. Clutter. 2004. Vegetation height estimation from Shuttle Radar Topography Mission and National Elevation Datasets. *Remote Sensing of Environment*, 93:339-358.
- [34] Nashashibi, A.Y., K. Sarabandi, S. Oveisgharan, M.C. Dobson, W. Walker, and E. Burke. 2004. Millimeter-wave measurements of foliage attenuation and ground reflectivity of tree stands at nadir incidence. *IEEE Transactions on Antennas and Propagation*, 52:1211-1222.
- [35] Kashian, D.M., B.V. Barnes, and W.S. Walker. 2003. Ecological species groups of landform-level ecosystems dominated by jack pine in northern Lower Michigan, U.S.A. *Plant Ecology*, 166:79-91.
- [36] Walker, W.S., B.V. Barnes, and D.M. Kashian. 2003. Landscape ecosystems of the Mack Lake burn, northern Lower Michigan, and the occurrence of the Kirtland's warbler. *Forest Science*, 49:119-139.
- [37] Kashian, D.M., B.V. Barnes, and W.S. Walker. 2003. Landscape ecosystems of northern Lower Michigan and the occurrence and management of the Kirtland's warbler. *Forest Science*, 49:140-159.

† *Google Scholar: total citations = 4,828, h-index = 25, i10-index = 35 (as of 8/14/20)*

PEER-REVIEWED BOOK CHAPTERS

- [1] Goetz, S.J., M. Hansen, R.A. Houghton, W. Walker, N. Laporte, and J. Busch. 2016. Monitoring Tropical Forests: Advances in Emissions, Sequestrations, and Safeguards. *In: Seymour, F. and J. Busch, eds., Why Forests? Why Now? The Science, Economics, and Politics of Tropical Forests and Climate Change.*
- [2] Lucas, R., A. Rosenqvist, J. Kellndorfer, D. Hoekman, M. Shimada, D. Clewley, W. Walker, and H. Navarro de Mesquita, Jr. 2012. Global forest monitoring with synthetic aperture radar (SAR) data. *In: F. Achard and M. Hansen eds., Global Forest Monitoring from Earth Observation, CRC Press. 254 pp.*

- [3] Laporte N., W. Walker, J. Stabach, and F. Landsberg. 2008. Monitoring forest-savannah dynamics in Kibale National Park with satellite imagery (1989-2003): Implications for the management of wildlife habitat. In: R. Wrangham and E. Ross eds., *Science and Conservation in African Forests – The Benefits of Long-term Research*, Cambridge University Press. 330 pp.

REFEREED CONFERENCE PROCEEDINGS

- [1] Stickler, C.M., D.C. Nepstad, B. Soares-Filho, F. Merry, M. Bowman, W. Walker, J. Kellndorfer, and O. Almeida. 2008. The opportunity costs of reducing carbon emissions in an agroindustrial region: The Xingu River headwaters. Berlin Conference on the Human Dimensions of Global Environmental Change. February 22-23, Berlin, Germany. (Presentation)
- [2] Kellndorfer, J.M., W.S. Walker, M.C. Dobson, John Vona, and Mike Clutter. 2004. Vegetation height derivation from Shuttle Radar Topography Mission data in southeast Georgia, USA. *IEEE Geoscience and Remote Sensing Symposium Proceedings* Vol. 7, pp. 4512-4515. September 20-24, Anchorage, AK. (Poster)
- [3] Walker, W.S., L.E. Pierce, J.M. Kellndorfer, M.C. Dobson, C.T. Hunsaker, and J.A. Fites. 2004. A comparison of forest canopy height estimates derived from SRTM and TOPSAR in the Sierra Nevada of California. *IEEE Geoscience and Remote Sensing Symposium Proceedings* Vol. 4, pp. 2336-2339. September 20-24, Anchorage, AK. (Poster)
- [4] Pierce, L.E., W.S. Walker, M.C. Dobson, C.T. Hunsaker, J.A. Fites-Kaufman, and R. Dubayah. 2002. Fusion of optical and SAR data for forestry applications in the Sierra Nevada of California. *IEEE Geoscience and Remote Sensing Symposium Proceedings* Vol. 3, pp. 1771-1773. June 24-28, Toronto, CA. (Poster)

REFEREED CONFERENCE SUMMARIES AND ABSTRACTS

- [1] Walker, W.S., S. Gorelik, A. Baccini, C. Josee, et al. 2019. The Role of Amazon Indigenous Territories and Protected Natural Areas in Region-Wide Gains and Losses of Aboveground Carbon. *American Geophysical Union Fall Meeting*. December 9-13, San Francisco. (Poster)
- [2] Baccini, A., W.S. Walker, R.N. Treuhaft, et al. 2019. Carbon Density Dynamics from MODIS, Landsat, and TanDEM-X. *American Geophysical Union Fall Meeting*. December 9-13, San Francisco. (Poster)
- [3] Baccini, A., W.S. Walker, et al. 2019. Global Measurements of Annual Gain and Loss (2003-2016) in Aboveground Carbon Density. *American Geophysical Union Fall Meeting*. December 9-13, San Francisco. (Presentation)
- [4] Walker, W.S., S. Gorelik, A. Baccini, C. Josee, et al. 2019. The Contribution of Amazon Indigenous Territories to the Protection of Forest Carbon and Climate. *25th Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP 25)*. December 4, 2019, Madrid Spain (Presentation)

- [5] Walker, W., A. Baccini, et al. 2019. Protecting Carbon and Climate: The Role of Amazon Indigenous Territories and Protected Natural Areas. *50th Session of the Subsidiary Body for Scientific and Technological Advice (SBSTA) to the United Nations Framework Convention on Climate Change (UNFCCC COP 24)*. June 19, 2019, Bonn Germany (Presentation)
- [6] Chapman, M., W.S. Walker, S. Cook-Patton, A. Baccini, M. Farina, and B. Griscom. 2018. Global Analysis of Woody Aboveground Carbon Storage in Crop and Pasture Lands. *American Geophysical Union Fall Meeting*. December 10-14, Washington D.C. (Presentation)
- [7] Treuhaft, R.N., A. Baccini, F.G. Gonçalves, Y. Lei, and W.S Walker. 2018. Tropical Forest Biomass Dynamics from Comparison and Combination of Interferometric SAR and MODIS Observations. *American Geophysical Union Fall Meeting*. December 10-14, Washington D.C. (Poster)
- [8] Walker, W., A. Baccini, et al. 2018. Amazon Forest Carbon Dynamics Shows Indigenous Territories Avoiding CO₂ Emissions: Tracking Threats to Forests and Carbon in and Around Amazon Indigenous territories. *24th Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP 24)*. December 7, 2018, Katowice Poland (Presentation)
- [9] Baccini, A., W.S. Walker, L. Carvalho, M. Farina, D.J. Sulla-Menashe, and R.A. Houghton. 2017. Annual Measurements of Gain and Loss in Aboveground Carbon Density. *American Geophysical Union Fall Meeting*. December 11-15, New Orleans, Louisiana. (Presentation)
- [10] Castanho, A.D.A, M.T. Coe, E.M. Andrade, W.S Walker, A. Baccini, P.M. Brando, and M. Farina. 2017. Biomass and the Climatic Space from Historical to Future Scenarios of a Seasonally Dry Tropical Forest. 2017. *American Geophysical Union Fall Meeting*. December 11-15, New Orleans, Louisiana. (Presentation)
- [11] Treuhaft, R.N., A. Baccini, F.G. Gonçalves, Y. Lei, M. Keller, and W.S Walker. 2017. Time Series of Tropical Forest Structure from TanDEM-X Transformed to Time Series of Biomass by MODIS. *American Geophysical Union Fall Meeting*. December 11-15, New Orleans, Louisiana. (Presentation)
- [12] Walker, W., A. Baccini, et al. 2017. Beyond Deforestation: Tracking Threats to Forests and Carbon in and Around Amazon Indigenous territories. *23rd Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP 23)*. November 7, 2017, Bonn Germany (Presentation)
- [13] Walker, W., A. Baccini, et al. 2016. Beyond Deforestation: Measuring Carbon Changes from Degradation and Growth at Local to Global Scales. *22nd Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP 22)*. November 9, 2016, Marrakech Morocco. (Presentation)
- [14] Walker, W., Baccini, A., Schwartzman, S., Ríos, S., Oliveira-Miranda, M., Augusto, C., Romero Ruiz, M., Soria Arrasco, C., Ricardo, B., Smith, R., Meyer, C., Jintach, J.C., and Vasquez Campos, E. 2015. Forest Carbon in Amazonia: The Unrecognized Contribution of Indigenous Territories and Protected Natural Areas. *Society for Conservation GIS 18th Annual Conference*. July 26-29, Monterey, CA. (Presentation)

- [15] Walker, W., Baccini, A., Schwartzman, S., Ríos, S., Oliveira-Miranda, M., Augusto, C., Romero Ruiz, M., Soria Arrasco, C., Ricardo, B., Smith, R., Meyer, C., Jintach, J.C., and Vasquez Campos, E. 2015. Forest Carbon in Amazonia: The Unrecognized Contribution of Indigenous Territories and Protected Natural Areas. *Our Common Future Under Climate Change*. July 7-10, Paris, France. (Presentation)
- [16] Walker, W., Baccini, A., Schwartzman, S., Ríos, S., Oliveira-Miranda, M., Augusto, C., Romero Ruiz, M., Soria Arrasco, C., Ricardo, B., Smith, R., Meyer, C., Jintach, J.C., and Vasquez Campos, E. 2014. Forest Carbon in Amazonia: The Unrecognized Contribution of Indigenous Territories and Protected Natural Areas. Official Side Event. *20th Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP 20)*. December 4, 2014, Lima Peru. (Presentation and Poster)
- [17] Doughty, C.L., J.A. Langley, I.C. Feller, W. Walker, and S.K. Chapman. 2013. Expansion of the Florida Mangrove-Marsh Ecotone: Implications for wetland carbon storage. *22nd Biennial Conference of the Coastal and Estuarine Research Federation*. November 3-7, San Diego, CA. (Poster)
- [18] Cartus, O., J.M. Kellndorfer, W.S. Walker, E. LaPoint, T. Cormier, J. Bishop, G. Fiske. 2012. Mapping forest carbon from optical/radar fusion in North America. *ForestSAT 2012*. September 11-14, Oregon State University, Corvallis, OR. (Presentation)
- [19] Fagan, M.E., R.S. DeFries, S.E. Sesnie, J.P. Arroyo, W. Walker, C. Soto, R.L. Chazdon, and A. Sanchun. 2012. Tracking deforestation and tree plantation expansion in a Costa Rican biological corridor using a Landsat time series. *ForestSAT 2012*. September 11-14, Oregon State University, Corvallis, OR. (Presentation)
- [20] Baccini, A., W.S. Walker, C.M. Stickler, J.M. Kellndorfer, S.J. Goetz, and N. Laporte. 2012. Aboveground biomass derived from multi-sensor satellite data and field measurements (Invited). *IEEE Geoscience and Remote Sensing Symposium*. July 22-27, Munich, Germany. (Presentation)
- [21] Cartus, O., J.M. Kellndorfer, W.S. Walker, M. Rombach, and S. Gonzales. 2012. Fusion of small-footprint lidar, ALOS PALSAR and Landsat for the retrieval of canopy height and growing stock volume. *IEEE Geoscience and Remote Sensing Symposium*. July 22-27, Munich, Germany. (Presentation)
- [22] Kellndorfer, J.M., W.S. Walker, O. Cartus, T. Cormier, J. Bishop, G. Fiske, and E. LaPoint. 2012. Mapping forest carbon in North America from optical/radar data fusion (Invited). *IEEE Geoscience and Remote Sensing Symposium*. July 22-27, Munich, Germany. (Presentation)
- [23] Walker, W.S., A. Baccini, J.M. Kellndorfer, and C.M. Stickler. 2012. Mapping of aboveground biomass in the Amazon basin: Exploring sensors, scales, and strategies for optimal data linkage. *IEEE Geoscience and Remote Sensing Symposium*. July 22-27, Munich, Germany. (Poster)
- [24] Fagan, M.E., S.E. Sesnie, J.P. Arroyo, W.S. Walker, C. Soto, R.L. Chazdon, A. Sanchun, C. Small, and R.S. DeFries. 2012. Tracking deforestation and tree plantation expansion in a Costa Rican biological corridor using a Landsat time series. *NASA Land-Cover and Land-Use Change Science Team Meeting*. April 4-5, Rockville, Maryland. (Presentation)
- [25] Cartus, O., J.M. Kellndorfer, W.S. Walker, S.J. Goetz, N. Laporte, J. Bishop, T. Cormier, and A. Baccini. 2011. Large-area mapping of forest cover and biomass using ALOS-PALSAR. *American Geophysical Union Fall Meeting*. December 5-9, San Francisco, California. (Presentation)

- [26] Kelldorfer, J.M., A. Baccini, J. Bishop, O. Cartus, T. Cormier, W.S. Walker, and M. Santoro. 2011. Biomass mapping of US forests using synergy of synthetic aperture radar and optical remote sensing. *American Geophysical Union Fall Meeting*. December 5-9, San Francisco, California. (Presentation)
- [27] Kelldorfer, J.M., O. Cartus, S. Goetz, W.S. Walker, R. Dubayah, M. Rombach, and S. Gonzales. 2011. Ecosystem structure measurements from DESDynI: Technological options and data fusion using small-footprint lidar and ALOS/PALSAR data over central Chile (Invited). *IEEE Geoscience and Remote Sensing Symposium*. July 24-29, Vancouver, British Columbia. (Presentation)
- [28] Kelldorfer, J.M., W.S. Walker, T. Cormier, J. Bishop, G. Fiske, E. LaPoint, A. Baccini, O. Cartus, S. Goetz, F. Holecz, N. Laporte, and R. Houghton. 2011. Regional to global scale medium resolution mapping of forest height, biomass, and carbon from multi-source satellite and field data. *IEEE Geoscience and Remote Sensing Symposium*. July 24-29, Vancouver, British Columbia. (Presentation)
- [29] Baccini, A., S.J. Goetz, W.S. Walker, N.T. Laporte, M. Sun, D. Sulla-Menashe, M.A. Friedl, P.S. Beck, J.M. Kelldorfer, and R.A. Houghton. 2010. Satellite and field derived aboveground carbon stock in tropical regions. *American Geophysical Union Fall Meeting*. December 13-17, San Francisco, California. (Presentation)
- [30] Baccini, A., W.S. Walker, M. Sun, C. Stickler, N.T. Laporte, J.M. Kelldorfer, and S.J. Goetz. 2010. Tropical vegetation height and aboveground biomass derived from field and multi-sensor satellite data (Invited). *American Geophysical Union Fall Meeting*. December 13-17, San Francisco, California. (Presentation)
- [31] Cartus, O., W. Walker, J. Kelldorfer, J. Bishop, and T. Cormier. 2010. Quantification of carbon flux (2000-2007) in Northeastern U.S. forests using the NBCD 2000 biomass map and ALOS PALSAR data. *American Geophysical Union Fall Meeting*. December 13-17, San Francisco, California. (Poster)
- [32] Kelldorfer, J., W. Walker, J. Bishop, T. Cormier, A. Baccini, S.J. Goetz, N. Laporte, and F. Holecz. 2010. Pan-tropical forest cover from ALOS-PALSAR data. *American Geophysical Union Fall Meeting*. December 13-17, San Francisco, California. (Presentation)
- [33] Laporte, N., W.S. Walker, A. Baccini, N. Horning, D. Knight, P. Mekui, A. Bausch, S.J. Goetz, G. Fiske, J.M. Kelldorfer, P. Ndunda, and G. Bush. 2010. Building capacity for national level carbon Measurement, Reporting, and Verification (MRV) systems for a “Reduction of Emissions from Deforestation and Degradation (REDD).” *American Geophysical Union Fall Meeting*. December 13-17, San Francisco, California. (Poster)
- [34] Laporte, N., A. Baccini, G. Bush, S. Goetz, W. Walker, R.A. Houghton, J. Ipalaka, and V. Kasulu. 2010. Monitoring CO₂ emissions from forest loss in the Democratic Republic of Congo (1990-2000). *Forest Day 4, (convened by the Center for International Forestry Research at the 16th UNFCCC Conference of the Parties)*. December 5, Cancun, Mexico. (Poster)
- [35] Laporte, N., A. Baccini, S. Goetz, M. Sun, A. Bausch, W. Walker, J. Kelldorfer, and R. Houghton. 2010. Mapping tropical aboveground biomass with MODIS and LiDAR sensors. *International Biomass Workshop*. November 15-17, Paris, France. (Presentation)

- [36] Laporte, N., A. Baccini, W. Walker, A. Bausch, S. Goetz, M. Sun, and J. Kellndorfer. 2010. Tropical forest carbon mapping - From local to continental scales - Application to REDD+. *Workshop on Forest Carbon Stock Mapping and Monitoring Methodologies: From Communities to National Scales*. October 28-29, Bagamoyo, Tanzania. (Presentation)
- [37] Walker, W.S., C.S. Stickler, J.M. Kellndorfer, K.M. Kirsch, and D.C. Nepstad. 2010. Large-area classification and mapping of forest and land cover in the Brazilian Amazon: A comparative analysis of ALOS/PALSAR and Landsat TM data sources. 2010. *American Geophysical Union Meeting of the Americas*. August 8-12, Foz Du Iguacu, Brazil. (Poster)
- [38] Walker, W.S., C.S. Stickler, J.M. Kellndorfer, K.M. Kirsch, and D.C. Nepstad. 2010. Large-area classification and mapping of forest and land cover in the Brazilian Amazon: A comparative analysis of ALOS/PALSAR and Landsat TM data sources. *IEEE Geoscience and Remote Sensing Symposium*. July 26-30, Honolulu, HI. (Presentation)
- [39] Stabach, J., G. Reinartz, N. Laporte, and W. Walker. 2007. Utilizing remote sensing information to identify bonobo (*Pan paniscus*) habitat in Salonga National Park, Democratic Republic of Congo. *21st Annual Meeting of the Society for Conservation Biology*. July 2-5, Port Elizabeth, South Africa. (Presentation)
- [40] Laporte, N., J. Stabach, W. Walker, M. McLennan, L. Pintea, and A. Plumptre. 2007. Habitat modeling utilizing remote sensing tools for chimpanzee conservation in western Uganda. *21st Annual Meeting of the Society for Conservation Biology*. July 2-5, Port Elizabeth, South Africa. (Presentation)
- [41] Walker, W., N. Laporte, and L. Pintea. 2006. Remote sensing and geographic information systems: An introduction to tools and techniques for Great Apes research and conservation. *20th Congress of the International Primatological Society*. June 25-30, Entebbe, Uganda. (Presentation)
- [42] Laporte, N., L. Pintea, and W. Walker. 2006. Operational habitat monitoring for species conservation: Remote sensing tools for chimpanzee conservation in Western Uganda. *20th Congress of the International Primatological Society*. June 25-30, Entebbe, Uganda. (Presentation)
- [43] Kellndorfer, J., W. Walker, J. Bishop, E. LaPoint, M. Hoppus, and J. Westfall. 2006. The National Biomass and Carbon Dataset 2000: A high spatial resolution baseline to reduce uncertainty in carbon accounting and flux modeling. Joint Workshop on NASA Biodiversity, Terrestrial Ecology, and Related Applied Sciences. August 21-25, Adelphi, MD. (Poster)
- [44] Kellndorfer, J., W. Walker, E. LaPoint, M. Hoppus, and J. Westfall. 2006. Modeling height, biomass, and carbon in U.S. forests from FIA, SRTM, and ancillary national scale data sets. *USDA Forest Service Remote Sensing Applications Conference (RS-2006)*. April 24-28, Salt Lake City, UT. (Presentation)
- [45] Kellndorfer, J., W. Walker, E. LaPoint, M. Hoppus, and J. Westfall. 2006. Modeling vegetation height, biomass and carbon in the U.S. from SRTM, Landsat ETM, and ancillary data sets. *IEEE Geoscience and Remote Sensing Symposium*. July 31st-August 4th, Denver, CO. (Presentation)
- [46] Walker, W., N. Laporte, and L. Pintea. 2006. Remote sensing and geographic information systems: An introduction to tools and techniques for great ape research and conservation. *21st Congress of the International Primatological Society*. June 25-30, Entebbe, Uganda. (Symposium Presentation)

- [47] Kelldorfer, J.M., W.S. Walker, M. Hoppus, J. Westfall, and E. LaPoint. 2005. The National Biomass and Carbon Dataset 2000: A high spatial resolution baseline to reduce uncertainty in carbon accounting and flux modeling. *EOS Transactions of the American Geophysical Union* 85(52) Fall Meet. Suppl., Abstract B54B-07. December 11-15, San Francisco, CA. (Poster)
- [48] Kelldorfer, J.M., W.S. Walker, M. Hoppus, J. Westfall, and E. LaPoint. 2005. The National Biomass and Carbon Dataset 2000 (NBCD 2000): A high spatial resolution baseline to reduce uncertainty in carbon accounting and flux modeling. *Seventh Annual Forest Inventory and Analysis Symposium*. October 3-6, 2005, Portland, Maine. (Poster)
- [49] Kelldorfer, J.M. and W.S. Walker. 2005. SRTM, NED, and NLCD 2001 data: Synergy of national datasets for biomass and carbon quantification in the U.S. *The Shuttle Radar Topography Mission – Data Validation and Applications Workshop*. June 14-16, Reston, VA. (Poster)
- [50] Walker, W.S., J.M. Kelldorfer, and L.E. Pierce. 2005. Quality assessment of Shuttle Radar Topography Mission C- and X-band interferometric data: Implications for the retrieval of vegetation canopy height. *The Shuttle Radar Topography Mission – Data Validation and Applications Workshop*. June 14-16, Reston, VA. (Presentation)
- [51] Casciato, M., L. Pierce, A. Hartz, B. Lyons, W. Walker, and K. Sarabandi. 2003. Long distance wideband propagation measurements in a forested environment. *IEEE International Symposium on Antennas and Propagation & USNC/CNC/URSI North American Radio Science Meeting*. June 22-27, Columbus, OH. (Presentation)
- [52] Fites-Kaufman, J.A., C. Hunsaker, P. Hyde, R. Dubayah, L. Pierce, W. Walker, B. Peterson, J.B. Blair, H. Hyde, and M. Hofton. 2002. Mapping Sierra Nevada vegetation structure with radar, lidar, and multispectral fusion of remote sensors. *Sierra Nevada Science Symposium*. October 1-10, Lake Tahoe, CA. (Poster)
- [53] Kashian, D.M., W.S. Walker, and B.V. Barnes. 1998. Landscape ecosystems of the Highplains of northern Lower Michigan and the occurrence of the Kirtland's warbler. *National Convention of the Society of American Foresters (SAF)*. September 19-23, Traverse City, MI. (Presentation)
- [54] Walker, W.S., and B.V. Barnes. 1998. Landscape ecology of the Mack Lake Basin and the occurrence of Kirtland's warbler. *13th Annual Conference of the United States Regional Association, International Association for Landscape Ecology*. March 17-21, East Lansing, MI. (Presentation)

NON-REFEREED PUBLICATIONS AND REPORTS

- [1] Walker, W., A. Baccini, M. Nepstad, N. Horning, D. Knight, E. Braun, and A. Bausch. 2011. *Field Guide for Forest Biomass and Carbon Estimation*. Version 1.0. Woods Hole Research Center, Falmouth, Massachusetts, USA (<http://www.whrc.org/resources/fieldguides/index.html>).
- [2] Baccini, A., N. Laporte, S. Goetz, M. Sun, and W. Walker. 2009. *Pantropical forest carbon mapped with satellite and field observations*. Woods Hole Research Center report prepared for the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP), Fifteenth session, December 7-18, Copenhagen, Denmark.

- [3] Goetz, S., A. Baccini, N. Laporte, T. Johns, W. Walker, J. Kellndorfer, and R.A. Houghton. 2008. *Mapping and monitoring carbon stocks with satellite observations: An update*. Woods Hole Research Center report prepared for the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP), Fourteenth session, December 1-12, Poznan, Poland.
- [4] Kellndorfer, J., M. Shimada, A. Rosenqvist, W. Walker, K. Kirsch, D. Nepstad, N. Laporte, C. Stickler, and P. Lefebvre. 2007. *New eyes in the sky: Cloud-free tropical forest monitoring for REDD with the Japanese Advanced Land Observing Satellite (ALOS)*. Woods Hole Research Center report prepared for the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP), Thirteenth session, December 3-14, Bali, Indonesia.

INVITED WORKSHOPS/BRIEFINGS/LECTURES

- [1] Invited lecture. *Seeing the forest for the trees: Natural solutions for a changing climate*. March 11, 2020, Falmouth, MA. Sponsored by Barbara Woll Jones/Highfield Hall & Gardens.
- [2] Invited lecture. *Seeing the forest for the trees: Natural solutions for a changing climate*. February 9, 2020, Hyannis, MA. Sponsored by the Harvard Club of Cape Cod.
- [3] Invited lecture. *Seeing the forest for the trees: Natural solutions for a changing climate*. February 9, 2020, Hyannis, MA. Sponsored by the Harvard Club of Cape Cod.
- [4] Invited lecture. *Seeing the forest for the trees: Greening the planet in the age of climate change*. October 18, 2019, Hyannis, MA. Sponsored by Cape Cod Community College.
- [5] Invited lecture. *Connecting faith and science for a healthy planet and a hopeful future; Seeing the forest for the trees: Greening the planet in the age of climate change*. May 19, 2019, South Yarmouth, MA. Sponsored by the Cape Cod Faith Community Environmental Network and St. David's Episcopal Church.
- [6] Invited lecture. *Seeing the forest for the trees: Making the planet green again in the age of climate change*. April 12, 2018, Sandwich MA. Sponsored by Oakridge Elementary School.
- [7] Invited lecture. *Seeing the forest for the trees: Making the planet green again in the age of climate change*. November 1, 2017, Hyannis MA. Sponsored by the Cornell Club of Cape Cod.
- [8] Invited lecture. *Seeing the forest for the trees: Making the planet green again in the age of climate change*. December 8, 2016, Medfield MA. Sponsored by Medfield High School.
- [9] Invited webinar/seminar for the World Bank - Forest Carbon Partnership Facility. *The unrecognized contribution of indigenous territories and protected natural areas*. March 4/6, 2015, Washington, D.C. Sponsored by the World Bank - Forest Carbon Partnership Facility.
<http://einstitute.worldbank.org/ei/webinar/forest-carbon-assessment-amazons-indigenous-and-protected-areas>.
- [10] Invited technical expert. *REDD+ negotiator dialogue: MRV and reference levels*. February 8-9, 2012, Siem Reap, Cambodia. Sponsored by the Forum on Readiness for REDD.

- [11] Invited briefing before the Government of Acre, Brazil, Institute of Climate Change and Regulation of Environmental Services (IMC). *Large-Area mapping of forest cover and carbon density: Potential contributions to Acre's System of Incentives for Environmental Services (SISA)*. September 27-29, 2011, Rio Branco, Brazil. Sponsored by WWF.
- [12] Invited technical expert. *Workshop on linking community monitoring with national MRV for REDD+*. September 12-14, 2011, Mexico City, Mexico. Sponsored by the World Bank - Forest Carbon Partnership Facility.
- [13] Invited seminar for the World Bank - Forest Carbon Partnership Facility. *The role of local communities and indigenous peoples in forest monitoring for REDD+*. March 25, 2011, Washington, D.C. Sponsored by the World Bank - Forest Carbon Partnership Facility.
- [14] Invited briefing before the California Air Resources Board. *Mapping forest cover and carbon for REDD+*. February 9, 2011, Sacramento, CA. Sponsored by the Environmental Defense Fund
- [15] Invited participant. *DESDynI Applications Workshop*. Sponsored by the National Aeronautics and Space Administration (NASA). October 29-31, 2008, Sacramento, CA.
- [16] Invited participant. *Kibale Chimpanzee Project 20th anniversary workshop – Kibale Forest: A model for exploring the relationship between long term research and conservation*. June 15-17, 2007, Kibale National Park, Uganda.
- [17] Invited participant. *Multidimensional forested ecosystem structure workshop: Requirements for remote sensing observations*. Sponsored by the National Aeronautics and Space Administration (NASA). June 23-25, 2003, Annapolis, MD.
- [18] Invited keynote speaker. *Watershed wonders: The big benefits of big trees. Johnson Creek Protection Group – Fifth annual Volunteer Rally and Informational Meeting*. February 21, 2005, Plymouth, MI.

INTERNATIONAL POLICY ENGAGEMENT

- [1] 25th Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP 25). December 2-13, 2019, Madrid Spain. Accredited Civil Society Observer/WHRC delegation.
- [2] 50th Session of the Subsidiary Body for Scientific and Technological Advice (SBSTA) to the United Nations Framework Convention on Climate Change (UNFCCC COP 25). June 17-27, 2019, Bonn Germany. Accredited Civil Society Observer/WHRC delegation.
- [3] 24th Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP 24). December 3-14, 2018, Katowice Poland. Accredited Civil Society Observer/WHRC delegation.
- [4] 23rd Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP 23). November 6-17, 2017, Bonn Germany. Accredited Civil Society Observer/WHRC delegation.

- [5] 22nd Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP 22). November 7-18, 2016, Marrakech Morocco. Accredited Civil Society Observer/WHRC delegation.
- [6] 21st Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP 21). November 30-December 11, 2015, Paris France. Accredited Civil Society Observer/WHRC delegation.
- [7] 20th Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP 20). December 1-14, 2014, Lima Peru. Accredited Civil Society Observer/WHRC delegation.
- [8] 17th Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP 17). November 28-December 9, 2011, Durban South Africa. Accredited Civil Society Observer/WHRC delegation.
- [9] 16th Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP 16). November 29-December 10, 2010, Cancun Mexico. Accredited Civil Society Observer/WHRC delegation.
- [10] 15th Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP 15). December 7-18, 2009, Copenhagen Denmark. Accredited Civil Society Observer/WHRC delegation.

POPULAR PRESS

Coverage of Trillion Trees:

- [1] Trump and GOP push to help plant 1 trillion trees won't be easy. *Washington Examiner*. February 6, 2020
<https://www.washingtonexaminer.com/policy/energy/trump-and-gop-push-to-help-plant-1-trillion-trees-wont-be-easy>
- [2] Planting 1 trillion trees might not actually be a good idea. *The Verge*. January 31, 2020
<https://www.theverge.com/2020/1/31/21115862/davos-1-trillion-trees-controversy-world-economic-forum-campaign>

Coverage of Walker et al. 2020 (a selection from among 25+ articles):

- [1] Amazon emissions lowest from indigenous and protected lands, scientists say. *Reuters (UK)*. January 27, 2020
<https://www.reuters.com/article/us-climate-change-forests-amazon-trfn/amazon-emissions-lowest-from-indigenous-and-protected-lands-scientists-say-idUSKBN1ZQ2A3>
- [2] Amazon forest carbon study reveals indigenous territories, protected areas under siege, yet remain best climate solution. *Phys.org*. January 27, 2020
<https://phys.org/news/2020-01-amazon-forest-carbon-reveals-indigenous.html>
- [3] Indigenous, protected lands in Amazon emit far less carbon than areas outside. *Mongabay*. January 28, 2020
<https://news.mongabay.com/2020/01/indigenous-protected-lands-in-amazon-emit-far-less-carbon-than-areas-outside/>

- [4] Trust our expertise or face catastrophe, Amazon peoples warn on environment. *The Guardian*. January 28, 2020
<https://www.theguardian.com/environment/2020/jan/28/trust-our-expertise-or-face-catastrophe-amazon-peoples-warn-on-environment-aoe>
- [5] Protected Amazon ‘climate buffer’ lands are now emitting carbon. *Radio France International*. January 30, 2020
<https://www.rfi.fr/en/environment/20200129-protected-amazon-lands-now-emitting-carbon>

Coverage of 2019 Amazon fires and carbon emissions:

- [1] Where is the Amazon rainforest vanishing? *New York Times*. August 30, 2019
<https://www.nytimes.com/2019/08/30/world/americas/amazon-rainforest.html>
- [2] Woods Hole researchers see Amazon damage firsthand. *Cape Cod Times*. August 30, 2019.
<https://www.capecodtimes.com/news/20190830/woods-hole-researchers-see-amazon-damage-firsthand>.
- [3] Local Researchers Say Amazon Fire Emissions Equal That of 22M Cars. *NECN*. August 31, 2019.
<https://www.necn.com/news/new-england/Local-Researchers-Say-Amazon-Fire-Emissions-Equal-That-of-22M-Cars-558938221.html>.

Coverage of 2018 report on Carbon Storage in Collective Lands:

- [1] Climate mitigation has an ally in need of recognition and land rights: indigenous peoples in tropical countries. *Mongabay*. September 10, 2018.
<https://news.mongabay.com/2018/09/climate-mitigation-has-an-ally-in-need-of-recognition-and-land-rights-indigenous-peoples-in-tropical-countries/>.
- [2] Estimate of carbon in indigenous lands rises five-fold. *SciDev.Net*. October 9, 2018.
<https://www.scidev.net/global/forestry/news/estimate-of-carbon-in-indigenous-lands-rises-five-fold.html>.

Coverage of Baccini et al. 2017 (a selection from among 25+ articles):

- [1] Tropical forests may be sources not sinks. *Nature*. September 29, 2017.
<https://www.nature.com/news/tropical-forests-may-be-carbon-sources-not-sinks-1.22692>
- [2] Startling study finds tropical forests are filling the air with carbon-worsening climate change. *Washington Post*. September 28, 2017.
<https://www.nature.com/news/tropical-forests-may-be-carbon-sources-not-sinks-1.22692>
- [3] Tropical forests now emit more carbon than they soak up. *PBS Newshour*. September 28, 2017.
<https://www.pbs.org/newshour/science/tropical-forests-now-emit-carbon-soak>.
- [4] Alarm as study reveals world’s tropical forests are huge carbon emission source. *The Guardian*. September 28, 2017.
<https://www.theguardian.com/environment/2017/sep/28/alarm-as-study-reveals-worlds-tropical-forests-are-huge-carbon-emission-source>.

- [5] Tropical forests have flipped from sponges to sources of carbon dioxide. *ScienceNews*. September 28, 2017.
<https://www.sciencenews.org/article/tropical-forests-have-flipped-sponges-sources-carbon-dioxide>
- [6] New research suggests tropical forests area now a net source of carbon emissions. *Mongabay*. September 28, 2017.
<https://news.mongabay.com/2017/09/new-research-suggests-tropical-forests-are-now-a-net-source-of-carbon-emissions/>.

Coverage of Walker et al. 2014 (a selection from among 45+ articles):

- [1] Murder in the rainforest. *Rolling Stone*. December 16, 2014.
<http://www.rollingstone.com/politics/news/murder-in-the-rainforest-20141216>.
- [2] Forest groups want climate schemes that violate rights to be suspended. *The Guardian*. December 8, 2014.
<http://www.theguardian.com/global-development/2014/dec/08/indigenous-groups-land-rights-deforestation-lima-climate-talks>.
- [3] Amazon indigenous land loss threatens climate, says study. *BBC*. December 3, 2014.
<http://www.bbc.com/news/world-latin-america-30304658>.
- [4] Amazon forests at risk from both legal and illegal activities. *The Irish Times*. December 3, 2014.
<http://www.irishtimes.com/news/world/amazon-forests-at-risk-from-both-legal-and-illegal-activities-1.2023110>.
- [5] Indigenous people call for scaled up REDD as study highlights precarious state of territorial forests land loss threatens climate. *Ecosystem Marketplace*. December 3, 2014.
<http://www.ecosystemmarketplace.com/articles/indigenous-people-call-scaled-redd-study-highlights-precarious-state-territorial-forests/>.
- [6] Amazon indigenous land loss threatens climate. *Agence France-Presse*. December 2, 2014.
<http://www.globalpost.com/dispatch/news/afp/141202/amazon-indigenous-land-loss-threatens-climate>.
- [7] Threatened indigenous forests store more than half of Amazon's carbon. *Mongabay*. December 2, 2014.
<http://news.mongabay.com/2014/12/threatened-indigenous-forests-store-more-than-half-the-amazons-carbon/>.
- [8] Ignoring indigenous rights in Amazon fuels global warming: study. *Reuters*. December 2, 2014.
<http://www.reuters.com/article/2014/12/02/us-rights-carbon-amazon-idUSKCN0JG23O20141202>.

Coverage of Kellndorfer et al. 2013:

- [1] Where the trees are: American forests tell the history – and likely future – of human habitation. *National Geographic*. September 2012, pp. 24-25.
- [2] Seeing forests for the trees and the carbon: Mapping the world's forests in three dimensions. *NASA Earth Observatory*. January 9, 2012.
<http://earthobservatory.nasa.gov/Features/ForestCarbon/>.

Miscellaneous coverage

- [1] Study finds local technicians effective at forest monitoring. *Mongabay*. February 20, 2015. <http://news.mongabay.com/2015/02/study-finds-local-technicians-effective-at-forest-monitoring>.

DATASETS/OTHER MEDIA

- [1] RAISG/WHRC/EDF/COICA. 2014. Amazonia Carbon Density: Indigenous Territories and Protected Areas. Wall poster two-sided in three languages. <http://raisg.socioambiental.org/mapa>.
- [2] Kelldorfer, J., W. Walker, K. Kirsch, G. Fiske, J. Bishop, E. LaPoint, M. Hoppus, and J. Westfall. 2013. NACP Aboveground Biomass and Carbon Baseline Data, V. 2 (NBCD 2000), U.S.A., 2000. Data set. Available on-line [<http://daac.ornl.gov>] from ORNL DAAC, Oak Ridge, Tennessee, U.S.A. <http://dx.doi.org/10.3334/ORNLDAAC/1161>.

GOVERNMENT AND FOUNDATION GRANTS/AWARDS

Principal Investigator[‡]

Forest monitoring and human health.

Health in Harmony; \$28,000 (2020)

Global carbon monitoring project.

Robinson-Acevedo Family Foundation; \$500,000 (2020-2021)

Evaluation of next-generation spaceborne LiDAR sensors for aboveground biomass.

Fund for Climate Solutions; \$119,020 (2020-2021)

Advancing the state-of-the-art in peer-reviewed science on global aboveground carbon stocks and change.

Fund for Climate Solutions; \$86,055 (2019-2021)

Northeast forest project.

Bill Moomaw; \$25,000 (2019)

Tracking the impact of operational biomass facilities on forests in the southeastern U.S.

Natural Resources Defense Council (NRDC); \$25,565 (2018-2019)

Mapping of global land carbon restoration opportunities with a focus on primary forests.

Leonardo DiCaprio Foundation/Global Wildlife Conservation; \$100,000 (2018-2020)

A global baseline of carbon storage in collective lands.

Rights and Resources Initiative; \$63,450 (2018)

Biomass change monitoring system.

Leonardo DiCaprio Foundation/Global Wildlife Conservation; \$100,000 (2017-2020)

Climate Stabilization through land carbon management.

Cassiopeia/Blue Moon Fund; \$599,500 (2016-2020)

Direct Measurement of Aboveground Carbon Dynamics in Support of Large-Area CMS Development.
NASA Carbon Monitoring System; \$932,727 (2014-2019)
Designated a core project of the North American Carbon Program (NACP)

Building capacity for tropical forest monitoring and management in Acre, Brazil, and Indonesia.
David and Lucille Packard Foundation; \$234,834 (2012-2013)

Institutional Principal Investigator (sub-grant awards) ‡

Woody biomass burning in the European Union.
David and Lucille Packard Foundation; \$99,905 (2020-2021)
PI Watts, Chatham House

Amazonian indigenous territories: Recognizing and responding to risks from forest loss.
Norwegian Agency for Development Cooperation (NORAD); \$434,110 (2016-2020)
PI Josse, EcoCiencia

Mapping global potential land carbon storage.
Doris Duke Charitable Foundation; \$590,483 (2017-2019)
PI Griscom, The Nature Conservancy (TNC)

Improving MRV capabilities on carbon accounting to support REDD+ jurisdictional programs in Brazilian Amazon states.
GCF Fund; \$37,500 (2015-2016)
PI Alencar, Amazon Environmental Research Institute (IPAM)

Supporting jurisdictional REDD+ programs of the states and provinces of the Governors' Climate and Forests Task Force (GCF).
GCF Fund; \$75,000 (2014)
PI Nepstad, Earth Innovation Institute (EII)

Mangroves marching northward: Investigating the impacts of sea level and temperature rise on the coastal ecosystems at Kennedy Space Center.
NASA; \$40,424 (2012-2015)
PI Chapman, Villanova University

Forest carbon in Amazonian indigenous territories
The World Bank; \$8,000 (2012-2014)
PI Meyer, Environmental Defense Fund (EDF)

Climate change and indigenous peoples of the Amazon basin.
Inter-American Development Bank (IDB); \$33,662 (2012-2014)
PI Jintiach, Coordinators of Indigenous Organizations of the Amazon Basin (COICA)

Mexico's Reduced Emissions from Deforestation and Degradation Program.
U.S. Agency for International Development (USAID); \$3,034,682 (2011-2016)
Co-PIs Gutierrez/Ginn, The Nature Conservancy (TNC)

The Forum on Readiness for REDD: Partnerships for long-term capacity in REDD design and implementation.

Norwegian Agency for Development Cooperation (NORAD); \$96,535 (2010-2013)
PI Johns, Amazon Environmental Research Institute (IPAM)

Building a forest Carbon Monitoring and Accounting System (CMAS) for the Registry of Socio-Environmental Responsibility.

International Finance Corporation (IFC)/World Bank Group; \$30,000 (2010-2011)
PI Nepstad, Amazon Environmental Research (IPAM)

‡ *Have secured/managed 7+ million in grants since 2010.*

Co-Investigator

Growing a green economy in the Democratic Republic of Congo – Project Equateur.

The Congo Basin Forest Fund (CBFF); PI Bush, Woods Hole Research Center. (2014-2016)

Global Carbon Emission Data for Global Forest Watch (GFW).

World Resources Institute (WRI); PI Baccini, Woods Hole Research Center. (2014-2015)

LiDAR and optical data fusion for global carbon stock mapping.

NASA; PI Baccini, Woods Hole Research Center. (2013-2016)

Sustainable Landscapes in Brazil & Indonesia.

The Nature Conservancy (TNC); PI Baccini, Woods Hole Research Center. (2014)

Linking historical and future land-use change to the economic drivers and biophysical limitations of agricultural expansion in the Brazilian cerrado.

NASA; PI Coe, Woods Hole Research Center. (2011-2013)

Ecosystem structure measurements from DESDynI: Studies of technological options and data fusion using ICESat/GLAS, Airborne Lidar and ALOS/PALSAR data sets over Central Chile.

NASA; PI Kellndorfer, Woods Hole Research Center. (2008-2012)

Pan-Tropical mapping of forest cover and associated aboveground carbon stock.

The Gordon and Betty Moore Foundation, Google.org, and the David and Lucile Packard Foundation; Co-PIs Kellndorfer/Laporte, Woods Hole Research Center. (2008-2011)

Towards spatially explicit quantification of carbon flux (2000-2007) in Northeastern U.S. forests linking remote sensing with forest inventory data.

USDA; PI Kellndorfer, Woods Hole Research Center. (2006-2012)

The National Biomass and Carbon Data set 2000.

NASA; PI Kellndorfer, Woods Hole Research Center. (2005-2011)

Collaborator

NASA Carbon Monitoring System Science Definition Team.

NASA; PI Kellndorfer, Woods Hole Research Center. (2011-2012)

AWARDS AND HONORS

- National Aeronautics and Space Administration Earth System Science Fellowship (2002-2005)
- Samuel A. Graham Award for “outstanding scholarship and superior capability in writing,” SNRE, University of Michigan (2003)
- Jeffery Lund Forest Ecology Award for “demonstrating academic excellence, research capability, and professional promise,” SNRE, University of Michigan (2003)
- Samuel A. Graham Award for “outstanding scholarship and superior capability in writing,” SNRE, University of Michigan (2000)
- Resource Ecology and Management Superior Teaching Award, SNRE, University of Michigan (1998)
- Terrestrial Ecosystems Faculty Award, SNRE, University of Michigan (1997)
- SNRE Merit Scholarship, University of Michigan (6 semesters: 1995-1997)
- Undergraduate Dean’s List Honors, SNRE, University of Michigan (4 semesters: 1993-1994)

PROFESSIONAL SOCIETIES AND SERVICE

Societies

American Association for the Advancement of Science (AAAS)
American Geophysical Union (AGU)

Service – Professional

Science Team Member: NASA Carbon Monitoring System (CMS) (2014-present).

Graduate student mentor: *Official capacity* – Jill Derwin, Ph.D. committee member, Virginia Tech University, 2014-present. *Unofficial capacity*[§] – Cheryl Doughty, M.S. student, Villanova University, 2013-2015; Fabio Gonçalves, Ph.D. student, Oregon State University, 2012-2014; Matt Fagan, M.S. student, Columbia University, 2011-2012; Marcia Macedo, Ph.D. student, Columbia University, 2010-2012; Claudia Stickler, Ph.D. student, University of Florida, 2007-2010.

[§] *Mentorship has resulted in co-authored, peer-reviewed publications in all cases.*

Manuscript reviewer: *ASPRS Photogrammetric Engineering and Remote Sensing, Biological Conservation, Canadian Journal of Remote Sensing, Environmental Management, Carbon Balance and Management, Carbon Management, Ecology, Ecology and Evolution, Frontiers in Forests and Global Change, Global Biogeochemical Cycles, Greenhouse Gas Measurement & Management, IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing, IEEE Transactions on Geoscience and Remote Sensing, ISPRS Journal of Photogrammetry and Remote Sensing, International Journal of Remote Sensing, Journal of Geophysical Research – Biogeosciences, Nature Scientific Reports, Remote Sensing, Remote Sensing of Environment, and Science Advances.*

Proposal reviewer: *NASA, Gordon and Betty Moore Foundation.*

Service – Woods Hole Research Center

Committees/Working Groups: Numerous promotion, staff recruitment, strategic planning, and other administrative/programmatic contributions (2005-2020).

Other: Scheduled all in-house presentations/lectures (2008-2014).

Service – Community

Land Steward, The 300 Committee, Falmouth, MA (2006-2011).

Volunteer, Waquoit Bay National Estuarine Research Reserve, East Falmouth, MA (2006-2011).

Member, The 300 Committee Land Trust, Falmouth, MA (2015-).
Member, Highfield Hall and Gardens, Falmouth, MA (2015-).

Service – University of Michigan

Ph.D. Program Review Committee, SNRE, University of Michigan (2000).
Undergraduate/Graduate Student Mentorship Program, SNRE, University of Michigan (1999-2000).
Xi Sigma Pi Upsilon Chapter officer (1995).