GREGORY P. ASNER PHD
gregasner@asu.edu

I lead the Center for Global Discovery and Conservation Science (GDCS), an ASU research unit with faculty and labs based in Hawai‘i and Arizona, dedicated to the exploration and stewardship of terrestrial and marine ecosystems. I also co-direct the non-profit organization Hawai‘i Marine Education and Research Center (MERC) where we support and blend Indigenous knowledge leadership, science, and conservation for community resilience in a changing climate. My long-time scientific work combines terrestrial and marine spatial ecology, evolutionary ecology, and remote sensing research and conservation.

TABLE OF CONTENTS

I. Professional Experience *1*
II. Professional Preparation *1*
III. Honors and Awards *1*
IV. University, National and International Service *2*
V. Academic Advising *4*
VI. Peer-reviewed Publications *6*
VII. Selection of Conference Papers *40*
VIII. Open-Access Peer-reviewed Datasets *59*
IX. Books *61*
X. Book Reviews *61*
XI. Patents *61*
XII. Professional Organizations *61*
XIII. Documentary Film Appearances *61*
XIV. Examples of Mass Media Coverage *62*

I. Professional Experience

Current

- Director, ASU Center for Global Discovery and Conservation Science, Hawai‘i (2019 -)
- Co-Director, Hawai‘i Marine Education and Research Center (2018 -)
- Professor, ASU School of Ocean Futures (2022 -)
- Senior Global Futures Scientist, ASU Global Futures Laboratory (2022 -)
- Professor, ASU School of Geographical Sciences and Urban Planning (2019 -)
- Professor (adjunct), ASU School of Earth and Space Exploration (2019 -)

Previous

- Senior Staff Scientist, Dept of Global Ecology, Carnegie Institution for Science (2018 – 2019)
- Professor, Stanford Univ, Integrated Program in Environment & Resources (2002 – 2022)
- Professor, Stanford Univ, Earth System Science (2007 – 2019)
- Assoc Professor, Stanford Univ, Geological & Envir. Sciences (2004 – 2007)
- Staff Scientist, Dept of Global Ecology, Carnegie Institution for Science (2001 – 2017)
- Asst Professor, Stanford Univ, Geological & Envir. Sciences (2001 – 2004)
- Asst Professor, Univ of Colorado, Geological Sciences & Envir. Studies (1999 – 2001)
- Postdoctoral Fellow, Stanford Univ, Geological & Envir. Sciences (1998 – 1999)
- Staff, The Nature Conservancy of Hawai‘i: O‘ahu and Moloka‘i Preserves (1998 – 1999)
- Research Staff, University of Hawai‘i, Mānoa (1993 – 1995)

II. Professional Preparation

1997	Ph.D. Biology, Univ. of Colorado, Boulder (ecology thesis)
1995	M.S. Geography, Univ. of Colorado, Boulder (ecology thesis)
1991	B.S. Engineering, Univ. of Colorado, Boulder (radiative transfer thesis)

III. Honors and Awards

Major

- Recipient, Heinz Award for the Environment, 2017
- Elected Fellow, Ecological Society of America, 2016
- Elected Fellow, American Geophysical Union, 2015
- Elected Member, U.S. National Academy of Sciences, 2013
- Awardee, Presidential Early Career Award (PECASE), 2000

Additional

- Batseva Fellow, Israeli Academy of Sciences and Humanities, 2017
- Pongo Environment Award, 2017
- IFOF Honoree Award in Aviation, 2015
- Association for American Geographers Outstanding Contributions Award, 2014
- Nominet Trust 100 Award for Social Innovation, 2014
- Popular Science Magazine Brilliant Ten Award, 2007

- NASA Early Career Award, 2000
- NASA Group Achievement Award, 1999
- NASA Earth System Science Fellowship, 1996-1998
- NSF Biosphere-Atmosphere Interactions Fellowship, 1996-1998
- W.M. Keck Foundation Fellowship Award, 1995-1996
- Mabel Duncan Conservation Biology Award for Hawai‘i, 1996

IV. University, National, and International Service

Current Major Service

2024-	*Member*, State of Hawai‘i Governor’s Committee on Marine Affairs
2023-	*Founder and Director*, ‘Āko‘ako‘a Reef Restoration Program, https://akoakoa.org
2023-	Member, Promotion and Tenure Committee, ASU School of Ocean Futures
2023-	Member, Personnel Committee, ASU School of Ocean Futures
2021-	*Chief Science Officer*, Carbon Mapper Mission, http://carbonmapper.org
2021-	*Board Member*, Global Conservation
2020-	*Director*, Allen Coral Atlas, http://allencoralatlas.org
2014-	*Managing Editorial Board*, Proceedings of the National Academy of Sciences
2005-	*Director*, Global Airborne Observatory (formerly Carnegie Airborne Observatory)

Past and Current Service

1996-1997	Science Team; NASA Lewis & Clark Satellite Missions
1998	Panelist; NASA Triana Satellite Mission
1998-2008	Panelist; NASA Large-scale Biosphere-Atmosphere Experiment in Amazônia Program
1998	Co-chair; International Forum on BRDF Remote Sensing
1998	Panelist; NOAA Climate and Global Change Program
1998-2015	Panelist; Natural Environment Research Council, United Kingdom
1999-2001	Member; NSF Long-term Ecological Research (LTER) Technology Committee
1999	Panelist; University of California, Digital Media Innovation Program
1999	Co-organizer; NASA Large-scale Biosphere-Atmosphere Experiment in Amazônia
1999	Advisor; Fundaçao Floresta Tropical (Tropical Forest Foundation), Brazil
1999-2009	Panelist; U.S. Strategic Environmental Research and Development Program
2000	Panelist; NASA New Millennium Program
2000-2001	Land-use Committee; Ecological Society of America
2001-2014	Panelist; NSF Environmental Biology Panels
2001	Panelist; NASA Visions Working Group for Decadal Strategic Plan
2002	Panelist; NASA Terrestrial Ecology Program
2002	Panelist; NASA New Investigator Program
2003	Co-convener; AGU Chapman Conference “Ecosystem Interactions with Land-use Change”
2003	Steering Committee; International Symposium on Remote Sensing; Honolulu, HI
2003	Panel Chair; NASA Terrestrial Ecology Program
2003	Panel Co-chair; NASA Northern Eurasia Environmental Science Program Initiative (NEESPI), Yalta, Ukraine
2003-2007	Steering Committee; NASA-Brazil Large-scale Biosphere-Atmosphere Experiment in Amazonia Program
2003-2006	Steering Group; U.S. Carbon Cycle Program
2004	Panelist; NASA Carbon Cycle and Ecosystems Review

2004-2006	Ecological Society of America (ESA) Habitat Change Rapid Response Team
2005	Panelist; World Bank Rural Days Conference
2005	NSF Committee for Environmental Research and Education
2005-2009	NASA Senior Review Committee (Chair, 2007-2009)
2005	Co-convener; Environmental Defense Fund (EDF) Global Deforestation and Forest Degradation Workshop
2005	Search Committee; USFS Institute for Pacific Islands Forestry
2005-2006	Panel Chair; NASA North American Carbon Program
2005	Panel Chair; Tropical Deforestation and Climate Change; UN Framework Convention on Climate Change COP-11, Montreal
2006-2007	Author; U.N. Livestock in a Changing Landscape Forum
2007	Lead Author; FLORA satellite mission concept. National Academy Decadal Survey
2007	Instructor; ASP Colloquium; National Center for Atmospheric Research
2007	Author; NASA Plant Physiology and Functional Types Working Group
2006-2007	Advisory Committee; Department of Land and Natural Resources; State of Hawaii
2008-2017	Science and Technology Advisor, Peruvian Ministry of Environment
2008	Panel Chair; NASA Carbon Cycle and Ecosystems Joint Science Workshop
2008-2019	Director; CLASlite Forest Monitoring and Training Program
2008-2010	Advisor; National Ecological Observatory Network (NEON)
2008-2011	Steering Committee; bioDISCOVERY Program, Diversitas International
2008-2021	Working Group; NASA HyspIRI-SBG satellite development team
2009-2012	PI; Google Earth Engine, Google.org and Google Inc.
2009	Panelist; Tropical Extinction Symposium, Museum of Natural History; Smithsonian
2009	Panelist; US Congressional panel on satellite monitoring for carbon markets
2009	Lead Author; GOFC-GOLD Source Book on deforestation and degradation
2009	Panelist; U.S. Congressional panel on satellite monitoring of deforestation
2009	Delegate; U.N. Framework Convention on Climate Change COP-15, Copenhagen
2010	Steering Committee; Center for Tropical Forest Science, Smithsonian Institute
2010-2020	Editorial Board; *Remote Sensing of Environment*
2010	Panelist; International Plant Biology Symposium, Harvard University
2010	Co-author; UN FAO Historical Forest Degradation report
2010	Delegate; Convention on Biological Diversity COP-10, Nagoya; United Nations
2010-2013	Working Group; Governors Climate and Forests (GCF) Task Force, State of California
2010	Delegate; Ambassadors for Forests, Nagoya, World Wildlife Fund
2010	PI; Global Terrestrial Ecosystem Observatory proposal, Jet Propulsion Laboratory, NASA Earth Ventures
2010	Delegate; Framework Convention on Climate Change COP-16, Cancun
2011-2013	Senior Fellow, Energy and Climate Partnership; US State Department
2011	Advisor; World Bank; Carbon monitoring for the UNFCCC climate treaty
2012	PI; Land Ecosystem Assessment & Forecast mission proposal, Jet Propulsion Laboratory, NASA Earth Ventures
2012	Panelist; Forest Carbon Partnership Facility; World Bank
2012	Panelist; Latin American Development Bank
2013-2018	Working Group 3 Member; GEO Biodiversity Observation Network
2013	Panelist; Prince's Rainforest Project; London
2013	PI; Linnaeus mission proposal; Jet Propulsion Laboratory, NASA Earth Ventures
2013-2015	Advisory Board; Amazon Aid Foundation
2014-2017	Scientific Steering Committee, NGEE-Tropics, Department of Energy
2015-2017	Advisor; California Air Resources Board and CA Dept of Forestry and Fire Protection
2016-	Working Group; Rapid Ohia Death Task Force; State of Hawaii
2015-2018	Author; National Academy of Sciences Decadal Survey for Earth Science and Applications from Space

2017-2019	Editorial Board; *Remote Sensing for Ecology and Conservation* journal
2018-2021	Carnegie and ASU Partnership Lead, *Allen Coral Atlas*; allencoralatlas.org
2018-2022	Space Studies Board, National Academy of Sciences, Engineering and Medicine
2019-2023	*Director*, Hawai‘i Coral inter-agency program, State of Hawai‘i
2019	Committee Member; Competing Interests Committee, National Academy of Sciences
2019-present	Sustainability Speaker, Washington Speakers Bureau, Washington DC
2020	Co-Author; Campaign for Nature, https://www.campaignfornature.org/protecting-30-of-the-planet-for-nature-economic-analysis
2020	Plenary; Future Use of NASA Airborne Platforms to Advance Earth Science Priorities; NASEM; 29-31Jul20
2020	Plenary, Global Biodiversity, Planet Explore 2020 15Oct20
2021	Keynote Speaker, Hawai‘i Sustainability Summit, 15Mar21
2021	Speaker, Transportation amnd Infrastructure Roundtable for Hawai‘i. U.S. House of Representatives Sub-committee on Transportation and Infrastructure, 1Apr21.
2021	Session Chair and Speaker, International Coral Reef Symposium, Bremen, Germany
2021	Member, State of Hawaii Coral Reef Restoration Science Team
2021	Invited Audience, Pope Francis at the Vatican, 25Aug21
2021	Invited Speaker, NOAA Office of Law Enforcement, 26Oct21
2021	Invited Speaker, TEDx Hawai‘i, 13Nov21
2022	Invited Keynote, Laudato Si, Vatican, Rome, 23May22
2022	Co-author, Ecosystem Status Report for Hawai‘i. NOAA Pacific Islands Fisheries
2022-present	Board Member, Bermuda Institute of Ocean Sciences
2022-present	Member, Hawai‘i Reef Restoration Science Team. NOAA Pacific Islands Fisheries
2023-present	Search Committee Member, Bermuda Institute of Ocean Sciences Directorship
2023-present	Member, Personnel Committee, ASU School of Ocean Futures
2023-present	Member, Promotion and Tenure Committee, ASU School of Ocean Futures
2023-2024	Expert Witness on Climate and the Environment, Navahine vs. Hawai‘i Department of Transportation Climate Change Mitigation Lawsuit
2024	Invited Speaker, State of Hawai‘i Legislature, Briefing on Coral Reefs, Honolulu HI
2024-present	Member, Science Advisory Board, OneReef
2024	Session Chair for Cultural Heritage and Restoration, Reef Futures Conference, Cancun, MX
2024-present	Member, Global Coral Biorepository Task Force, Revive & Restore Program

V. Academic Advising

Primary Graduate Student Advisees: 30
Other Graduate Student Committees: 35
Postdoctoral Researcher Advisees: 43

Primary Graduate Student Advisees
Name (year, degree), last known employer

David Lobell (2003, PhD), Stanford U.
Thomas Harris (2003, MS), Planet Inc.
Timothy Varga (2007, MS), Climate Pol. Inst.
Matthew Colgan (2012, PhD), Blue River Tech
Eben Broadbent (2013, PhD), U. Florida
Kelly McManus (2016, PhD), Stanford U.
Christa Anderson (2018, PhD), WWF
Roberta Martin (2003, PhD), ASU
Charles Wheeler (2004, MS), U. Arizona
John Clark (2009, MS), Google Inc.
Kyla Dahlin (2012, PhD), Michigan State U.
Angelica Almeyda (2013, PhD), U. Florida
Dana Chadwick (2016, PhD), JPL
Rebecca Niemiec (2018, PhD), Colorado State U.

Elsa Ordway (2018, PhD), UCLA
Nicholas Johnson (2019, MA), ASU
Rachel Engstrand (2021, PhD), Pachama
Bryant Grady (2022, MA), TNC
Megs Seeley (2023, PhD), ASU
Kelly van Woesik (MA), NC State U.
Dominica Harrison (In progress, PhD), ASU
McKenna Allen (In progress, MS)
Emily Francis (2019, PhD), Univ of Texas
Randy Fulford (2019, MA), ASU
Rachel Carlson (2022, PhD), UC Berkeley
Kim Fuller (2022, MA), Hawaii Div. Aq. Res.
Victoria Sember (2023, MA), Northeastern U.
Kailey Pascoe (In progress, PhD), ASU
Mia Melamed (In progress, MS)
Teagan Roome (In progress, PhD)

Post-doctoral Research Scientist Advisees

Name (years in lab), last known employer

Sharon Hall (1999-01), ASU
Lydia Olander (2003-04), Duke U.
Roberta Martin (2004-06), ASU
Maoyi Huang (2005-08), Pacific NW Nat. Lab.
Chris Doughty (2008-10), Northern Arizona U.
Scott Loarie (2008-10), Cal Acad. of Sciences
Joseph Mascaro (2010-13), Planet Inc.
Nick Vaughn (2012-13), ASU
Claire Baldeck (2012-15), Yale U.
David Marvin (2014-2016), Planet Inc.
Tarin Paz-Kagan (2016-2017), U. Tel Aviv
Andrew Davies (2014-2019), Harvard U.
James Askew (2018-2019), U. of S. California
Philip Brodrick (2016-2019), JPL
Luke Evans (2016-2020), U. of Florida
Fredrick Draper (2016-2021), U. of Leeds
Shawna Foo (2018-2021), U. Sydney
Adrian Pascual (2020-2021), U. Maryland
Ana Gabriela Bonelli (2021-2023)
Elahe Jamalinia (2022-2023), Landi Corp.
Kelly Hondula (2022-)
Jasper Oshun (2024-)
Jeffrey Hicke (2000-03), U. Idaho
Andrew Elmore (2003-04), U. Maryland
Natalie Boelman (2005-06), Columbia U.
Choying Huang (2006-08), Taiwan Nat U.
Shaun Levick (2008-10), CSIRO, Australia
Jim Kellner (2008-11), Brown U.
Jean-Baptiste Féret (2010-13), U. Montpellier
Mark Higgins (2011-14), USAID
Paulo Brando (2013-15), Woods Hole
Jomar Barbosa (2014-2016), U. of Madrid
Dana Chadwick (2016-2017), JPL
Chris Balzotti (2015-2018), The Nature Cons.
Pramukta Kumar (2018-2019), DG Inc.
Ovidiu Csillik (2018-2019), Wageningen U.
Yaping Xu (2019-2020); U. of Tennessee
Jiwei Li (2018-2021), ASU
Yujia Zhang (2020-2021), ASU
Jie Dai (2021-2023), ASU
Rachel Mason (2022-2023)
Marcel König (2022-2023), MPI
Grace Klinges (2024-)

Student Committees Other Than Major Advisor

Arizona State Univ: William Green, Thomas Ingalls
Stanford Univ: Toby Ahrens, Michael Beman, Kate Brauman, Claire Lunch, Stephen Porder
Univ Colorado: Laura Belanger, Jon Carrasco, Cory Cleveland, Kathleen Farley, Nancy Golubiewski, David Kinner, David Mixon, Jennifer Mengan, Khatib Nader, Amanda Warner
Univ Arizona: Dawn Browning
Colorado State Univ: Lara Prihodko
Univ Brasília: Ana Paula Ferreira de Carvalho, Zayra do Prado
Univ Florida: Ane Alencar
Univ Paris: Jean-Baptiste Féret, Lena Maatoug
Univ Grenoble: Guillaume Tochon
Univ Pretoria: Russell Main, Laven Naidoo
***Univ Witwatersrand*:** Penelope Mograbi
Univ San Marcos-Peru: Felipe Sinca, Raul Tupayachi
Yale Univ: Kim Carlson
Wake Forest Univ: Stephanie Bilodeau, Cassie Freund, John Gorelick

VI. Peer-reviewed Publications

Google Scholar H-index: 153 (2024)

1996-1999

1. Asner, G.P. and S.W. Beatty. 1996. Effects of an African grass invasion on Hawaiian shrubland nitrogen biogeochemistry. *Plant and Soil* 186:205-211.
2. Asner, G.P., T.R. Seastedt, and A.R. Townsend. 1997. The decoupling of terrestrial carbon and nitrogen cycles. *BioScience* 47:226-234.
3. Asner, G.P. and G. Goldstein. 1997. Correlating stem biomechanical properties of Hawaiian canopy trees with hurricane wind damage. *Biotropica* 29:145-150.
4. Asner, G.P. and C.A. Wessman. 1997. Scaling PAR absorption from the leaf to landscape level in spatially heterogeneous ecosystems. *Ecological Modelling* 103:81-97.
5. Asner, G.P., C.A. Wessman, and J.L. Privette. 1997. Unmixing the directional reflectances of AVHRR sub-pixel landcovers. *IEEE Transactions on Geoscience and Remote Sensing* 35:868-878.
6. Asner, G.P., B.H. Braswell, D.S. Schimel, and C.A. Wessman. 1998. Ecological research needs from multi-angle remote sensing data. *Remote Sensing of Environment* 63:155-165.
7. Asner, G.P. 1998. Biophysical and biochemical sources of variability in canopy reflectance. *Remote Sensing of Environment* 64:234-253.
8. Asner, G.P., C.A. Wessman, and S. Archer. 1998. Scale dependence of absorption of photosynthetically active radiation in terrestrial ecosystems. *Ecological Applications* 8:906-925.
9. Wessman, C.A. and G.P. Asner. 1998. Ecosystems and the problems of large-scale measurements. Successes, Limitations, and Frontiers in Ecosystem Ecology. P. Groffman and M. Pace (eds.) Springer-Verlag, Berlin.
10. Asner, G.P., C.A. Wessman, D.S. Schimel, and S. Archer. 1998. Variability in leaf and litter optical properties: implications for canopy BRDF model inversions using AVHRR, MODIS, and MISR. *Remote Sensing of Environment* 63:200-215.
11. Asner, G.P., C.A. Wessman, and D.S. Schimel. 1998. Heterogeneity of savanna canopy structure and function from imaging spectrometry and inverse modeling. *Ecological Applications* 8:926-941.
12. Asner, G.P., C.A. Bateson, J.L. Privette, N. Z. El Saleous, and C.A. Wessman. 1998. Vegetation structural effects on carbon uptake using satellite data fusion and inverse modeling. *Journal of Geophysical Research* 103:28839-28853.
13. Mesarch, M.A., E.A. Walter-Shea, G.P. Asner, E.M. Middleton, and S.S. Chan. 1999. A revised measurement methodology for conifer needle spectral optical properties. *Remote Sensing of Environment* 68:177-192.
14. Asner, G.P., A.R. Townsend, and M.C.M. Bustamante. 1999. Spectrometry of pasture condition and biogeochemistry in the Central Amazon. *Geophysical Research Letters* 26:2769-2772.
15. Diner, D.J., G.P. Asner, R. Davies, J.-P. Muller, B. Pinty, C.B. Schaaf, and J. Stroeve. 1999. New directions in Earth observing: scientific applications of multiple-view-angle remote sensing. *Bulletin of the American Meteorological Society* 80 (11):2209-2228.

2000-2002

16. Bateson, C.A., G.P. Asner, and C.A. Wessman. 2000. Endmember bundles: A new approach to incorporating endmember variability in spectral mixture analysis. *IEEE Transactions on Geoscience and Remote Sensing* 38:1083-1094.
17. White, M.A., G.P. Asner, R.R. Nemani, J.L. Privette, and S.W. Running. 2000. Monitoring fractional cover and leaf area index in arid ecosystems: digital camera, radiation transmittance, and laser altimetry results. *Remote Sensing of Environment* 74:45-57.

18. Privette, J.L., G.P. Asner, F. Huemmrich, et al. 2000. The Prototype Validation Exercise (PROVE) for EOS land and atmosphere products. *Remote Sensing of Environment* 74:1-12.
19. Asner, G.P., C.A. Wessman, C.A. Bateson, and J.L. Privette. 2000. Impact of tissue, canopy and landscape factors on reflectance variability of arid ecosystems. *Remote Sensing of Environment* 74:69-84.
20. Asner, G.P. and D.B. Lobell. 2000. A biogeophysical approach for automated SWIR unmixing of soils and vegetation. *Remote Sensing of Environment* 74:99-112.
21. Asner, G.P. 2000. Contributions of multi-view angle remote sensing to land surface and biogeochemical research. *Remote Sensing Reviews* 18:137-162.
22. Asner, G.P., A.R. Townsend, and B.H. Braswell. 2000. Satellite observation of El Niño effects on Amazon forest phenology and productivity. *Geophysical Research Letters* 27:981-984.
23. Asner, G.P., A.R. Townsend, W. Riley, P.A. Matson, J.C. Neff, and C.C. Cleveland. 2001. Physical and biogeochemical controls of terrestrial ecosystems responses to nitrogen deposition. *Biogeochemistry* 54:1-39.
24. Neff, J.C. and G.P. Asner. 2001. Dissolved organic carbon in terrestrial ecosystems: synthesis and model. *Ecosystems* 4:29-48.
25. Lobell, D.B., G.P. Asner, B. Law, R. Treuhaft. 2001. Sub-pixel canopy cover estimation of coniferous forest using SWIR imaging spectrometry. *Journal of Geophysical Research* 106:5151-5160.
26. Asner, G.P. 2001. Cloud cover in Landsat observations of the Brazilian Amazon. *International Journal of Remote Sensing* 22:3855-3862.
27. Asner, G.P. and R.O. Green. 2001. Imaging spectroscopy measures desertification in the Southwest U.S. and Argentina. *EOS Transactions* 82(49):601-606.
28. Asner, G.P., M. Keller, R. Pereira, and J. Zweede. 2002. Remote sensing of selective logging in Amazônia: Assessing limitations based on detailed field measurements, Landsat ETM+ and textural analysis. *Remote Sensing of Environment* 80(3):483-496.
29. Lobell, D.B., G.P. Asner, B. Law, R. Treuhaft. 2002. View angle effects on canopy reflectance and spectral mixture analysis of coniferous forests using AVIRIS. *International Journal of Remote Sensing* 23:2247-2262.
30. Lobell, D.B. and G.P. Asner. 2002. Moisture effects on soil reflectance. *Soil Science Society of America Journal* 66:722-727.
31. Asner, G.P. and K.B. Heidebrecht. 2002. Spectral unmixing of vegetation, soil and dry carbon in arid regions: Comparing multi-spectral and hyperspectral observations. *International Journal of Remote Sensing* 23:3,939-3,958.
32. Treuhaft, R.N., G.P. Asner, B.E. Law, and S. Van Tuyl. 2002. Forest leaf area density profiles from the quantitative fusion of radar and hyperspectral data. *Journal of Geophysical Research* 107:4568 doi:10.1029/2001JD000646
33. Lobell, D.B., G.P. Asner, I. Ortiz-Monasterio, and T. Benning. 2002. Remote sensing of regional crop production in the Yaqui Valley, Mexico: Estimates and uncertainties. *Agriculture, Ecosystems and Environment* 94(2):205-220.
34. Asner, G.P., M. Palace, M. Keller, R. Pereira Jr., J.N.M. Silva, and J.C. Zweede. 2002. Estimating canopy structure in an Amazon forest from laser rangefinder and IKONOS satellite observations. *Biotropica* 34:483-492.
35. Hicke, J.A., G.P. Asner, J. Randerson, S. Los, S. Birdsey, C.J. Tucker, and C.B. Field. 2002. Changes in North American net primary production, 1982-1998. *Geophysical Research Letters* 29:69-73.
36. Hicke, J.A., G.P. Asner, J.T. Randerson, S. Los, R. Birdsey, J.C. Jenkins, C.J. Tucker, and C.B. Field. 2002. Trends in North American net primary productivity derived from satellite observations, 1982-1998. *Global Biogeochemical Cycles* 16 doi:10.1029/2001GB001550.
37. Townsend, A.R., G.P. Asner, C.C. Cleveland, M. Lefer, and M.M.C. Bustamante. 2002. Unexpected changes in soil phosphorus dynamics following forest-to-pasture conversion in the humid tropics. *Journal of Geophysical Research* 107:8,067-8,076.

38. Pereira, R., J. Zweede, G.P. Asner, and M. Keller. 2002. Forest canopy damage from conventional and reduced impact selective logging in Eastern Amazon, Brazil. *Forest Ecology and Management* 168:77-89.
39. Townsend, A.R., G.P. Asner, P.P. Tans, and J.W.C. White. 2002. Land use effects on atmospheric ^{13}C imply a sizable terrestrial CO_2 sink in tropical latitudes. *Geophysical Research Letters* 29 doi:10.1029/2001GL013454.
40. Lobell, D.B., J.I. Ortiz-Monasterio, C.L. Addams, and G.P. Asner. 2002. Soil, climate and management impacts on regional agricultural productivity. *Agricultural and Forest Meteorology* 114:31-43.
41. Lobell, D.B., J.A. Hicke, G.P. Asner, C.B. Field, C.J. Tucker, and S. O. Los. 2002. Satellite estimates of productivity and light use efficiency in United States agriculture, 1982-1998. *Global Change Biology* 8:722-735.

2003-2005

42. Asner, G.P., J.M.O. Scurlock, and J.A. Hicke. 2003. Global synthesis of leaf area index observations: Implications for ecological and remote sensing studies. *Global Ecology and Biogeography* 12:195-205.
43. Hicke, J.A., G.P. Asner, E.S. Kasishke, N.H.F. French, J.T. Randerson, G.J. Collatz, B.J. Stocks, C.J. Tucker, S.O. Los, C.B. Field. 2003. Postfire response of North American boreal forest net primary productivity. *Global Change Biology* 9:1145-1157.
44. Zavaleta, E.S, B.D. Thomas, N.R. Chariello, G.P. Asner, M.R. Shaw, and C.B. Field. 2003. Plants reverse warming effect on ecosystem water balance. *Proceedings of the National Academy of Sciences* 100:9892-9893.
45. Asner, G.P., S.A. Archer, R.F. Hughes, J.N. Ansley, and C.A. Wessman. 2003. Net changes in regional woody vegetation cover and carbon storage in North Texas rangelands, 1937-1999. *Global Change Biology* 9:316-335.
46. Lobell, D.B. and G.P. Asner. 2003. Climate and management contributions to recent trends in U.S. agricultural yields. *Science* 299:1032.
47. Lobell, D.B. and G.P. Asner. 2003. Comment on climate and management contributions to recent trends in U.S. agricultural yields. *Science* 300:1505.
48. Asner, G.P., C. Borghi, and R. Ojeda. 2003. Desertification in Central Argentina: Regional changes in ecosystem carbon-nitrogen. *Ecological Applications* 13:629-648.
49. Harris, A.T., G.P. Asner, and M.E. Miller. 2003. Changes in vegetation structure following long-term grazing in pinyon-juniper ecosystems. *Ecosystems* 6:368-383.
50. Martin, R.E., G.P. Asner, R.J. Ansley, and A.R. Mosier. 2003. Effects of woody vegetation encroachment on soil nitrogen oxide emissions in a temperate savanna. *Ecological Applications* 13:897-910.
51. Treuhaft, R.N., G.P. Asner, and B.E. Law. 2003. Structure-based forest biomass from fusion of radar and hyperspectral observations. *Geophysical Research Letters* 30:1472-1476.
52. Asner, G.P. and K.B. Heidebrecht. 2003. Imaging spectroscopy for desertification studies: Comparing AVIRIS and EO-1 Hyperion in Argentina drylands. *IEEE Transactions on Geoscience and Remote Sensing* 41:135-155.
53. Lobell, D.B. and G.P. Asner. 2003. Comparison of Earth Observing-1 ALI and Landsat ETM+ for crop identification and yield prediction in Mexico. *IEEE Transactions on Geoscience and Remote Sensing* 41:128-134.
54. Harris, A.T. and G.P. Asner. 2003. Grazing gradient detection with airborne imaging spectroscopy on a semi-arid rangeland. *Journal of Arid Environments* 55:391-404.
55. Asner, G.P., M.M.C. Bustamante, and A.R. Townsend. 2003. Scale dependence of biophysical structure in deforested lands bordering the Tapajós National Forest, Central Amazon. *Remote Sensing of Environment* 87:507-520.

56. Asner, G.P. and A.S. Warner. 2003. Canopy shadow in IKONOS satellite observations of tropical forests and savannas. *Remote Sensing of Environment* 87:521-533.
57. Hurtt, G., X. Xiao, M. Keller, M. Palace, G.P. Asner, et al. 2003. IKONOS imagery for the Large Scale Biosphere-Atmosphere Experiment in Amazônia (LBA). *Remote Sensing of Environment* 88:111-127.
58. Asner, G.P., J.A. Hicke, and D.B. Lobell. 2003. Per-pixel analysis of forest structure: Vegetation indices, spectral mixture analysis and canopy reflectance modeling. Methods and Applications for Remote Sensing of Forests: Concepts and Case Studies. M. Wulder and S.E. Franklin (eds.) Kluwer Academic Publishers, New York.
59. Asner, G.P. 2004. Biophysical remote sensing signatures of arid and semi-arid regions. Remote Sensing for Natural Resources, Management and Environmental Monitoring. S. Ustin (ed.) John Wiley & Sons, New York.
60. Ustin, S.L., S. Jacquemoud, P.J. Zarco-Tejada, and G.P. Asner. 2004. Remote sensing of environmental processes: State of the science and new directions. Remote Sensing for Natural Resources, Management and Environmental Monitoring. S. Ustin (ed.) John Wiley & Sons, New York.
61. Ustin, S.L., D.A. Roberts, J.A. Gamon, G.P. Asner, and R.O. Green. 2004. Using imaging spectroscopy to study ecosystem processes and properties. *BioScience* 54:523-534.
62. Treuhaft, R.N., B.E. Law, and G.P. Asner. 2004. Forest attributes from radar interferometric profiling and its fusion with optical data. *BioScience* 54:561-571.
63. Hall, S.J., G.P. Asner, and K. Kitayama. 2004. Land use, climate and substrate controls over soil nitrogen dynamics and N-oxide emissions in Borneo. *Biogeochemistry* 70:27-58.
64. Galloway, J., et al., G.P. Asner, et al. 2004. Regional and global N cycles: Past, present and future. *Biogeochemistry* 70:153-226.
65. Hicke, J.A., R.L. Sherriff, T.T. Veblen, and G.P. Asner. 2004. Carbon accumulation in Colorado ponderosa pine stands. *Canadian Journal of Forest Research* 34:1283-1295.
66. Asner, G.P., A.R. Townsend, M.M.C. Bustamante, G.B. Nardoto, and L.O. Olander. 2004. Pasture degradation in the Central Amazon: Linking carbon and nutrient dynamics with remote sensing. *Global Change Biology* 10:844-862.
67. Keller, M., M. Palace, G.P. Asner, R. Pereira Jr., and J.N.M. Silva. 2004. Coarse woody debris in undisturbed and logged forests in the Eastern Brazilian Amazon. *Global Change Biology* 10:784-795.
68. Asner, G.P., M. Keller, and J.N.M. Silva. 2004. Spatial and temporal dynamics of forest canopy gaps following selective logging in the eastern Amazon. *Global Change Biology* 10:765-783.
69. Lobell, D.B., I. Ortiz-Monasterio, and G.P. Asner. 2004. Relative importance of soil and climate variability for nitrogen management in irrigated wheat. *Field Crops Research* 87:155-165.
70. Defries, R., J. Foley, and G.P. Asner. 2004. Trade-offs from land-use change: Using ecological knowledge to balance human needs and ecosystem function. *Frontiers in Ecology and Environment* 2:249-257.
71. Boyer E.W., R.W. Howarth, J.N. Galloway, F.J. Dentener, C. Cleveland, G.P. Asner, P. Green, and C. Vörösmarty. 2004. Current nitrogen inputs to world regions. Agriculture and the Nitrogen Cycle: Assessing the Impact of Fertilizer Use on Food Production and the Environment. A.R. Mosier, K. Syers, and J.R. Freney (eds.) Island Press. Washington, DC.
72. Hicke, J.A., D.B. Lobell, and G.P. Asner. 2004. Cropland area and net primary production computed from 30 years of USDA agricultural harvest data. *Earth Interactions* 8:1-20.
73. Asner, G.P., A. Elmore, L. Olander, R.E. Martin, and A.T. Harris. 2004. Grazing systems, ecosystem responses and global change. *Annual Review of Environment and Resources* 29:261-299.
74. Asner, G.P. and K.B. Heidebrecht. 2004. Desertification alters ecosystem-climate interactions. *Global Change Biology* 10:1-13.
75. Lobell, D.B. and G.P. Asner. 2004. Cropland distributions from temporal unmixing of MODIS data. *Remote Sensing of Environment* 93:412-422.

76. Keller, M., G.P. Asner, J.N.M. Silva, and M. Palace. 2004. Sustainability of selective logging of upland forests in the Brazilian Amazon: Carbon budgets and remote sensing as tools for evaluation of logging effects. Working Forests in the Tropics: Conservation through Sustainable Management? D. Zarin, J. Alavalapati, F.E. Putz, M. Schmink (eds.) Columbia University Press, New York.
77. Houghton, R.A., F. Joos, G.P. Asner. 2004. The effects of land use and management on the global carbon cycle. Land Change Science: Observing, Monitoring and Understanding Trajectories of Change on the Earth's Surface. G. Gutman, A.C. Janetos, C.O. Justice et al. (eds.) Kluwer Academic Publishers, London.
78. Wessman, C.A., S. Archer, L.C. Johnson, and G.P. Asner. 2004. Woodland expansion in the US grasslands: Assessing land-cover change and biogeochemical impacts. Land Change Science: Observing, Monitoring and Understanding Trajectories of Change on the Earth's Surface. G. Gutman, A.C. Janetos, C.O. Justice et al. (eds.) Kluwer Academic Publishers, London.
79. Asner, G.P. and R.E. Martin. 2004. Biogeochemistry of desertification and woody encroachment in grazing systems. Ecosystems and Land Use Change. R. Defries, G.P. Asner, R.A. Houghton (eds.) American Geophysical Union, Washington, DC.
80. DeFries, R., G.P. Asner, and R.A. Houghton. 2004. Trade-offs in land use decisions: Towards a framework for assessing multiple ecosystem responses to land-use change. Ecosystems and Land Use Change. R. Defries, G.P. Asner, R.A. Houghton (eds.) American Geophysical Union, Washington, DC.
81. Asner, G.P., R. DeFries, and R.A. Houghton. 2004. Typological responses of ecosystems to land use change. Ecosystems and Land Use Change. R. Defries, G.P. Asner, R.A. Houghton (eds.) American Geophysical Union, Washington, DC.
82. Asner, G.P., M. Keller, R. Pereira, J.C. Zweede, and J.N.M. Silva. 2004. Canopy damage and recovery following selective logging in an Amazon forest: Integrating field and satellite studies. *Ecological Applications* 14:280-298.
83. Keller, M., A. Alencar, G.P. Asner, B. Braswell, M. Bustamante, E. Davidson, T. Feldpausch, E. Fernandes, M. Goulden, P. Kabat, B. Kruijt, F. Luizao, S. Miller, D. Markewitz, A. Nobre, C.A. Nobre, N.P. Filho, H. da Rocha, P. Silva Dias, C. von Randow, and G. L. Vourlitis. 2004. Ecological research in the Large-scale Biosphere-Atmosphere Experiment in Amazonia: Early results. *Ecological Applications* 14(4):S3-16.
84. Asner, G.P., D. Nepstad, G. Cardinot, and D. Ray. 2004. Drought stress and carbon uptake in an Amazon forest measured with spaceborne imaging spectroscopy. *Proceedings of the National Academy of Sciences* 101:6039-6044.
85. Asner, G.P., D.E. Knapp, A.N. Cooper, M.C.C. Bustamante, and L.O. Olander. 2005. Ecosystem structure throughout the Brazilian Amazon from Landsat Observations and Automated Spectral Unmixing. *Earth Interactions* 9:1-31.
86. Lobell, D.B., J.I. Ortiz-Monasterio, G.P. Asner, R.L. Naylor, and W.P. Falcon. 2005. Combining field surveys, remote sensing, and regression trees to understand yield variations in an irrigated wheat landscape. *Agronomy Journal* 97:241-249.
87. Asner, G.P., A.J. Elmore, R.F. Hughes, A.S. Warner, and P.M. Vitousek. 2005. Ecosystem structure along bioclimatic gradients in Hawaii from imaging spectroscopy. *Remote Sensing of Environment* 96:497-508.
88. Asner, G.P., K.M. Carlson, and R.E. Martin. 2005. Substrate and precipitation effects on Hawaiian forest canopies from spaceborne imaging spectroscopy. *Remote Sensing of Environment* 98:457-467.
89. Elmore, A.J., G.P. Asner, and R.F. Hughes. 2005. Satellite monitoring of vegetation phenology and fire fuel conditions in Hawaiian drylands. *Earth Interactions* 9:1-21.
90. Hill, M. G.P. Asner, and A. Held. 2005. A biogeophysical approach to remote sensing of vegetation in coupled human-environment systems – Societal benefits and global context. *Journal of Spatial Science* 53:49-66.
91. DeFries, R., G.P. Asner, F. Achard, C. Justice, N. Laporte, K. Price, C. Small, and J. Townshend. 2005. Monitoring tropical deforestation for emerging carbon markets. *Tropical Deforestation and*

Climate Change. P. Moutinho and S. Schwartzman (eds.) Amazon Institute for Environmental Research, Belém, Brazil.

92. Lobell, D.B., J.I. Ortiz-Monasterio, G.P. Asner, R. Naylor, W. Falcon, and P. Matson. 2005. Analysis of wheat yields and climate trends in Mexico. *Field Crops Research* 94:250-256.
93. Foley, J., R. DeFries, G.P. Asner, et al. 2005. Global consequences of land use. *Science* 309:570-574.
94. Asner, G.P., D.E. Knapp, E.N. Broadbent, P.J.C. Oliveira, M. Keller, and J.N. Silva. 2005. Selective logging in the Brazilian Amazon. *Science* 310:480-482.
95. Olander, L.O., M.C.C. Bustamante, G.P. Asner, E. Telles, and Z.A. do Prado. 2005. Surface soil changes following selective logging in an Eastern Amazon forest. *Earth Interactions* 9:1-19.
96. Keller, M., R.K. Varner, J. Dias, H. Silva, P. Crill, R. De Oliveira Jr., and G.P. Asner. 2005. Soil-atmosphere exchange of nitrous oxide, nitric oxide, methane, and carbon dioxide in logged and undisturbed forest in the Tapajos National Forest, Brazil. *Earth Interactions* 9:1-28.
97. Martin, R.E. and G.P. Asner. 2005. Regional estimate of nitric oxide emissions following woody encroachment: linking imaging spectroscopy and field studies. *Ecosystems* 8:33-47.
98. Asner, G.P. and P.M. Vitousek. 2005. Remote analysis of biological invasion and biogeochemical change. *Proceedings of the National Academy of Sciences* 102:4383-4386.
99. Porder, S., G.P. Asner, and P.M. Vitousek. 2005. Field-based and remotely sensed nutrient availability across a tropical landscape. *Proceedings of the National Academy of Sciences* 102:10909-10912.

2006-2008

100. Asner, G.P., R.E. Martin, K.M. Carlson, U. Rascher, and P.M. Vitousek. 2006. Vegetation-climate interactions among native and invasive species in Hawaiian rainforest. *Ecosystems* 9:1106-1117.
101. Bustamante, M.M.C., E. Medina, G.P. Asner, G.B. Nardoto, and D.M. Garcia. 2006. Nitrogen cycling in tropical and temperate savannas. *Biogeochemistry* 79:209-237.
102. Hughes, R.F., S.R. Archer, G.P. Asner, C.A. Wessman, C. McMurtry, J. Nelson, and R.J. Ansley. 2006. Changes in aboveground primary production and carbon and nitrogen pools accompanying woody plant encroachment in a temperate savanna. *Global Change Biology* 12:1733-1747.
103. Broadbent, E.N., D.J. Zarin, G.P. Asner, M. Pena-Claros, A. Cooper, and R. Littell. 2006. Forest structure and spectral properties after selective logging in Bolivia. *Ecological Applications* 16:1148-1163.
104. Asner, G.P., E.N. Broadbent, P.J.C. Oliveira, D.E. Knapp, M. Keller, and J.N. Silva. 2006. Condition and fate of logged forests in the Brazilian Amazon. *Proceedings of the National Academy of Sciences* 103:12947-12950.
105. Elmore, A.J. and G.P. Asner. 2006. Effects of deforestation and grazing intensity on soil carbon stocks of Hawaiian dry tropical forest. *Global Change Biology* 12:1761-1772.
106. Defries, R., G.P. Asner, and J. Foley. 2006. A glimpse out the window: Landscapes, livelihoods, and the environment. *Environment* 48:22-36.
107. Bustamante, M.M.C., E. Medina, G.P. Asner, G.B. Nardoto, and D.C. Garcia-Montiel. 2006. Nitrogen cycling in tropical and temperate savannas. Nitrogen Cycling in the Americas: Natural and Anthropogenic Influences and Controls. L.A. Martinelli and R.W. Howarth (eds.) Kluwer Academic Publishers, London.
108. Palace, M., M. Keller, G.P. Asner, J.N.M. Silva, and C. Passos. 2007. Necromass in undisturbed and logged forests in the Brazilian Amazon. *Forest Ecology and Management* 238:309-318.
109. Foley, J., G.P. Asner, M.H. Costa, M.T. Coe, R. DeFries, H.K. Gibbs, E.A. Howard, S. Olson, J. Patz, N. Ramankutty, and P. Snyder. 2007. Amazon revealed: forest degradation and the loss of ecosystem goods and services in the Amazon basin. *Frontiers in Ecology and the Environment* 5:25-32.

110. Keller, M. G.P. Asner, G. Blate, J. McGlocklin, F. Merry, M. Pena-Claros, and J. Zweede. 2007. Timber production in selectively logged tropical forests in South America. *Frontiers in Ecology and the Environment* 5:213-216.
111. Oliveira, P.J., G.P. Asner, D.E. Knapp, A. Almeyda, R. Galvan-Gildemeister, S. Keene, R.F. Raybin, and R.C. Smith. 2007. Land-use allocation protects the Peruvian Amazon. *Science* 317:1233-1236.
112. Townsend, A.R., C.C. Cleveland, G.P. Asner, and M.C.C. Bustamante. 2007. Controls over foliar N:P ratios in tropical rain forests. *Ecology* 88:107-118.
113. Wheeler, C.W., S. Archer, G.P. Asner, and C. R. McMurtry. 2007. Climate and edaphic controls on soil carbon/nitrogen response to shrub encroachment in desert grassland. *Ecological Applications* 17:1911-1928.
114. Martin, R.E., G.P. Asner, and L. Sack. 2007. Genetic variation in leaf pigment, optical and photosynthetic function among diverse phenotypes of *Metrosideros polymorpha* grown in a common garden. *Oecologia* 151:387-400.
115. Ferreira, A.P., M.M.C. Bustamante, A.R. Kozovits, and G.P. Asner. 2007. Variações sazonais nas concentrações de pigmentos e nutrientes em folhas de espécies de cerrado com diferentes Estratégias fenológicas. *Revista Brasileira de Botânica* 30(1):19-27.
116. Hall, S. and G.P. Asner. 2007. Biological invasion alters regional nitrogen oxide emissions from tropical rainforests. *Global Change Biology* 13:2143-2160.
117. Boelman, N.T., G.P. Asner, P.J. Hart, and R.E. Martin. 2007. Multi-trophic invasion resistance in Hawai'i: bioacoustics, field surveys and airborne remote sensing. *Ecological Applications* 17:2137-2144.
118. Sano, E.E., L.E. Ferreira, G.P. Asner, and E.T. Steinke. 2007. Spatial and temporal probabilities of obtaining cloud-free Landsat images over the Brazilian tropical savanna. *International Journal of Remote Sensing* 28:2739-2752.
119. Chambers, J.Q., G.P. Asner, D.C. Morton, L.O. Anderson, S.S. Saatchi, D.B. Espirito-Santo, M. Palace, and C. Souza Jr. 2007. Regional ecosystem structure and function: Ecological insights from remote sensing of tropical forests. *Trends in Ecology and Evolution* 22:414-423.
120. Asner, G.P., D.E. Knapp, M.O. Jones, T. Kennedy-Bowdoin, R.E. Martin, J. Boardman, and C.B. Field. 2007. Carnegie Airborne Observatory: In-flight fusion of hyperspectral imaging and waveform light detection and ranging (wLiDAR) for three-dimensional studies of ecosystems. *Journal of Applied Remote Sensing* 1 doi:10.1117/1.2794018
121. Asner, G.P., B. Haxo, and D.E. Knapp. 2007. Computing for analysis and modeling of hyperspectral imagery. Chapter 6 in A. Plaza and C.I. Chang (eds.) High Performance Computing for Remote Sensing. Chapman and Hall Press, New York. ISBN: 1584886625
122. Carlson, K.C., G.P. Asner, R.F. Hughes, R. Ostertag, and R.E. Martin. 2007. Hyperspectral remote sensing of canopy biodiversity in Hawaiian lowland rainforests. *Ecosystems* 10:536-549.
123. Palace, M., M. Keller, G.P. Asner, S. Hagen, and B.H. Braswell. 2008. An analysis of two Amazonian forests using an automated crown detection algorithm and IKONOS imagery. *Biotropica* 40:141-150.
124. Varga, T.A., and G.P. Asner. 2008. Hyperspectral and LiDAR remote sensing of fire fuels in Hawaii Volcanoes National Park. *Ecological Applications* 18:613-623.
125. Asner, G.P., and R.E. Martin. 2008. Spectral and chemical analysis of tropical forests: Scaling from leaf to canopy levels. *Remote Sensing of Environment* 112:3958-3970.
126. Féret, J.B., C. Francois, G.P. Asner, A.A. Gitelson, R.E. Martin, L.P.R. Bidel, S.L. Ustin, G. le Maire, and S. Jacquemoud. 2008. PROSPECT-4 and 5: Advances in the leaf optical properties model separating photosynthetic pigments. *Remote Sensing of Environment* 112:3030-3043.
127. Asner, G.P. 2008. Hyperspectral remote sensing of canopy chemistry, physiology and diversity in tropical rainforests. Chapter 12 in Hyperspectral remote sensing of tropical and subtropical forests. M. Kalacska and G.A. Sanchez-Azofeifa (eds.) Taylor and Francis Group.
128. Asner, G.P., M.O. Jones, R.E. Martin, D.E. Knapp, and R.F. Hughes. 2008. Remote sensing of native and invasive species in Hawaiian forests. *Remote Sensing of Environment* 112:1912-1926.

129. Asner, G.P., D.E. Knapp, T. Kennedy-Bowdoin, M.O. Jones, R.E. Martin, J. Boardman, and R.F. Hughes. 2008. Invasive species detection in Hawaiian rainforests using airborne imaging spectroscopy and LiDAR. *Remote Sensing of Environment* 112:1942-1955.
130. Asner, G.P., R.F. Hughes, P.M. Vitousek, D.E. Knapp, T. Kennedy-Bowdoin, J. Boardman, R.E. Martin, M. Eastwood, and R.O. Green. 2008. Invasive plants alter 3-D structure of rainforests. *Proceedings of the National Academy of Sciences* 105:4519-4523.
131. Townsend, A.R., G.P. Asner, and C.C. Cleveland. 2008. Biogeochemical heterogeneity of tropical forests. *Trends in Ecology and Evolution* 23:424-431.
132. Huang, M., G.P. Asner, M. Keller, and J.A. Berry. 2008. An ecosystem model for tropical forest disturbance and selective logging. *Journal of Geophysical Research* 113 doi:10.1029/2007JG000438
133. Davidson, E.A., G.P. Asner, T.A. Stone, C. Neill, and R. de O. Figueiredo. 2008. Objective indicators of pasture degradation from spectral mixture analysis of Landsat imagery. *Journal of Geophysical Research* 133, G00B03 doi:10.1029/2007JG000622.
134. Broadbent, E.N., G.P. Asner, P.J.C. Oliveira, D.E. Knapp, M. Keller, and J.N. Silva. 2008. Forest fragmentation from deforestation and selective logging in the Brazilian Amazon. *Biological Conservation* 141:1745-1757.
135. Browning, D.W., S.R. Archer, G.P. Asner, M.P. McClaran, and C.A. Wessman. 2008. Woody plants in grasslands: post-encroachment stand dynamics. *Ecological Applications* 18(4):928-944.
136. Broadbent, E.N., G.P. Asner, M. Pena-Claros, M. Palace, and M. Soriano. 2008. Spatial partitioning of biomass in a subtropical moist forest in lowland Bolivia: linking field and remote sensing measurements. *Forest Ecology and Management* 255:2602-2616.

2009-2011

137. Asner, G.P. and R.E. Martin. 2009. Airborne spectranomics: Mapping canopy chemical and taxonomic diversity in tropical forests. *Frontiers in Ecology and the Environment* 7:269-276.
138. Giambelluca, T.W., R.E. Martin, G.P. Asner, M. Huang, R.G. Mudd, M.A. Nullet, J.K. DeLay, and D. Foote. 2009. Evapotranspiration and energy balance of native wet montane cloud forest in Hawaii. *Agricultural and Forest Meteorology* 149:230-243.
139. Asner, G.P., R.F. Hughes, T.A. Varga, D.E. Knapp, and T. Kennedy-Bowdoin. 2009. Environmental and biotic controls over aboveground biomass throughout a rainforest. *Ecosystems* 12:261-278.
140. Asner, G.P., R.E. Martin, A.J. Ford, D.J. Metcalfe, and M.J. Liddell. 2009. Leaf chemical and spectral diversity in Australian tropical forests. *Ecological Applications* 19:236-253.
141. Huang, C.-Y., G.P. Asner, R.E. Martin, N.C. Barger, and J.C. Neff. 2009. Multi-scale analysis of woody vegetation cover and aboveground biomass in pinyon-juniper woodlands of the Colorado Plateau, USA. *Ecological Applications* 19:668-681.
142. Asner, G.P., L. Levick, T. Kennedy-Bowdoin, D.E. Knapp, R. Emerson, J. Jacobson, M. Colgan, and R.E. Martin. 2009. Large-scale impacts of herbivores on the structural diversity of African savannas. *Proceedings of the National Academy of Sciences* 106:4947-4952.
143. Martin, R.E., and G.P. Asner. 2009. Leaf biochemical and optical properties of *Metrosideros polymorpha* across environmental gradients in Hawai'i. *Biotropica* 41:292-301.
144. Levick, S.R., G.P. Asner, T. Kennedy-Bowdoin, and D.E. Knapp. 2009. The relative influence of fire and herbivory on savanna three-dimensional vegetation structure. *Biological Conservation* 142:1693-1700.
145. Asner, G.P. and S.W. Ollinger. 2009. Remote sensing for terrestrial biogeochemical modeling. Handbook of Remote Sensing. G. Foody, T. Warner (eds.).
146. Huang, C. and G.P. Asner. 2009. Applications of remote sensing to alien invasive plant studies. *Sensors* 9:4869-4889.

147. Kokaly, R.F., G.P. Asner, S.V. Ollinger, M.E. Martin, and C.A. Wessman. 2009. Characterizing canopy biochemistry from imaging spectroscopy and its application to ecosystem studies. *Remote Sensing of Environment* 113:S78-S91.
148. Ustin, S.L., A.A. Gitelson, K.F. Huemmrich, S. Jacquemoud, M.E. Schaepman, G.P. Asner, and J.A. Gamon. 2009. Retrieval of quantitative and qualitative information about plant pigment systems from high resolution spectroscopy. *Remote Sensing of Environment* 113:S67-S77.
149. Jacquemoud, S., W. Verhoef, F. Baret, C. Bacour, P.J. Zarco-Tejada, G.P. Asner, C. Francois, and S.L. Ustin. 2009. PROSPECT+SAIL: 16 years of use for vegetation characterization. *Remote Sensing of Environment* 113:S56-S66.
150. Asner, G.P., M. Keller, M. Lentini, F. Merry, and C. Souza Jr. 2009. Selective logging and its relation to deforestation. In: M. Keller, J. Gash and P. Silva Dias, editors. Amazonia and Global Change. American Geophysical Union.
151. Neff, J.C., N.N. Barger, W.T. Baisden, D.P. Fernandez, and G.P. Asner. 2009. Soil carbon storage responses to expanding pinyon-juniper populations in southern Utah. *Ecological Applications* 19:1405-1416.
152. Kellner, J.R. and G.P. Asner. 2009. Convergent structural responses of tropical forests to diverse disturbance regimes. *Ecology Letters* 12:887-897.
153. Asner, G.P., D.E. Knapp, A. Balaji, and G. Paez-Acosta. 2009. Automated mapping of tropical deforestation and forest degradation: CLASlite. *Journal of Applied Remote Sensing* 3:033543.
154. Loarie, S., G.P. Asner, and C.B. Field. 2009. Boosted carbon emissions from deforestation in the Brazilian Amazon. *Geophysical Research Letters* 36:L14810.
155. Asner, G.P. 2009. Tropical forest carbon assessment: integrating satellite and airborne mapping approaches. *Environmental Research Letters* 4:034009
156. Koltunov, A., S.L. Ustin, G.P. Asner, and I. Fung. 2009. Selective logging changes forest phenology in the Brazilian Amazon. *Remote Sensing of Environment* 113:2431-2440
157. Asner, G.P., T.K. Rudel, M. Aide, R. Defries, and R. Emerson. 2009. A contemporary assessment of change in humid tropical forests. *Conservation Biology* 23:1386-1395.
158. Vitousek, P.M., G.P. Asner, P. Chadwick, and S. Hotchkiss. 2009. Top-down analysis of landscape-level variation in forest structure and biogeochemistry along a substrate age gradient in Hawaii. *Ecology* 90:3074-3086.
159. Rudel, T.K., R. Defries, G.P. Asner, and W.F. Laurance. 2009. Changing drivers of deforestation and new opportunities for conservation. *Conservation Biology* 23:1396-1405.
160. Barger, N.N., H.D. Adams, C. Woodhouse, J.C. Neff and G.P. Asner. 2009. Influence of livestock grazing and climate on pinyon pine (*Pinus edulis*) dynamics. *Rangeland Ecology and Management* 62:531-539.
161. Loarie, S.R., P.B. Duffy, H. Hamilton, G.P. Asner, C.B. Field and D.D. Ackerly. 2009. The velocity of climate change. *Nature* 462:1052-1057.
162. Asner, G. and S. Archer. 2010. Livestock and the Global Carbon Cycle. pp. 69-82 in *Livestock in a Changing Landscape: Drivers, Consequences and Responses*. Eds: H. Steinfeld, H. Mooney, F. Schneider and L. E. Neville. Washington, D.C.: Island Press.
163. Flaspohler, D.J., C.P. Giardina, G.P. Asner, P. Hart, J. Price, C.K. Lyons, and X. Castaneda. 2010. Long-term effects of fragmentation and fragment properties on bird species richness in Hawaiian forests. *Biological Conservation* 143:280-288.
164. Wolf, A. J.A. Berry, and G.P. Asner. 2010. Allometry constrains sources of variability of multi-angle reflectance measurements. *Remote Sensing of Environment* 114:1205-1219.
165. Gonzalez, P., G.P. Asner, J.J. Battles, M.A. Lefsky, K.M. Waring, and M. Palace. 2010. Forest carbon densities and uncertainties from Lidar, Quickbird, and field inventories in California. *Remote Sensing of Environment* 114:1561-1575.
166. Asner, G.P., R.E. Martin, D.E. Knapp, and T. Kennedy-Bowdoin. 2010. Effects of *Morella faya* tree invasion on aboveground carbon storage in Hawaii. *Biological Invasions* 3:477-494.

167. Huang, C.-Y., G.P. Asner, N.N. Barger, J.C. Neff, and M.L. Floyd. 2010. Regional aboveground live carbon losses due to drought-induced tree dieback in pinon-juniper ecosystems. *Remote Sensing of Environment* 114:1471-1479.
168. De Santis, A., G.P. Asner, P.J. Vaughan, and D.E. Knapp. 2010. Mapping burn severity and burning efficiency in California using simulation models and Landsat imagery. *Remote Sensing of Environment* 114:1535-1545.
169. Perroy, R.L., B. Bookhagen, G.P. Asner, and O.A. Chadwick. 2010. Comparison of gully erosion estimates using airborne and ground-based LiDAR. *Geomorphology* 118:288-300.
170. Feilhauer, H., G.P. Asner, R.E. Martin, and S. Schmidtlein. 2010. Brightness-normalized partial least squares regression for hyperspectral data. *Journal of Quantitative Spectroscopy and Radiative Transfer* 111:1947-1957.
171. Asner, G.P. and A. Alencar. 2010. Drought impacts on the Amazon forest: the remote sensing perspective. *New Phytologist* 187:569-578.
172. Vitousek, P.M., M.A. Tweiten, J. Kellner, S.C. Hotchkiss, O.A. Chadwick, and G.P. Asner. 2010. Top-down analysis of forest structure and biogeochemistry across Hawaiian landscapes. *Pacific Science* 64:359-366.
173. Asner, G.P., S.R. Loarie, and U. Heyder. 2010. Combined effects of climate and land-use change on the future of humid tropical forests. *Conservation Letters* 3:395-403.
174. Levick, S.R., G.P. Asner, O.A. Chadwick, L. Khomo, K.H. Rogers, T. Hartshorn, T. Kennedy-Bowdoin, and D.E. Knapp. 2010. Regional insight into savanna hydrogeomorphology from termite mounds. *Nature Communications* 1:65 doi:10.1038/ncomms1066
175. Asner, G.P., G.V.N. Powell, J. Mascaro, et al. 2010. High-resolution carbon stocks and emissions in the Amazon. *Proceedings of the National Academy of Sciences* 107:16738-16742.
176. Huang, M. and G.P. Asner. 2010. Regional carbon losses and recovery following selective logging in the Brazilian Amazon. *Global Biogeochemical Cycles* 24:GB3028 doi:10.1029/2009GB003727
177. Smit, I.P.J., G.P. Asner, N. Govender, T. Kennedy-Bowdoin, D.E. Knapp, and J. Jacobson. 2010. Large-scale effects of fire on woody vegetation structure in African savanna. *Ecological Applications* 20:1865-1875.
178. Levick, S.R., G.P. Asner, T. Kennedy-Bowdoin, and D.E. Knapp. 2010. The spatial extent of termite influences on herbivore browsing in an African savanna. *Biological Conservation* 143:2462-2467.
179. Vitousek, P. M., C. M. D'Antonio, and G. P. Asner. 2010. Invasions and ecosystems: vulnerabilities and the contribution of new technologies. Pages 277-288 Fifty Years of Invasion Ecology. Wiley-Blackwell.
180. Cho, M.A., P. Debba, R. Mathieu, L. Naidoo, J. van Aardt, and G.P. Asner. 2010. Improving discrimination of savanna tree species through a multiple-endmember spectral angle mapping approach: canopy-level analysis. *IEEE Transactions on Geoscience and Remote Sensing* 48:4133-4142.
181. Asner, G.P., S.R. Levick, and I.P.J. Smit. 2010. Remote sensing of fractional cover and biochemistry in savannas. Chapter 10 in Hill, M.J. and N.P. Hanan, eds. Ecosystem function in savannas: measurement and modeling at landscape to global scales. CRC Press.
182. Bucini, G., N.P. Hanan, R.B. Boone, I.P.J. Smit, S.S. Saatchi, M.A. Lefsky, and G.P. Asner. 2010. Woody fractional cover in Kruger National Park, South Africa: remote sensing-based maps and ecological insights. Chapter 11 in Hill, M.J. and N.P. Hanan, eds. Ecosystem function in savannas: measurement and modeling at landscape to global scales. CRC Press.
183. van Aardt, J.A.N., R. Mathieu, M. Cho, K.J. Wessels, B. Erasmus, G.P. Asner, and I.P.J. Smit. 2010. Assessing degradation across a land-use gradient in the Kruger National Park area using advanced remote sensing modalities. In: Observations on environmental change in South Africa, Zietsman, L (ed), p 97-103. South African Environmental Observation Network, Pretoria. 303 pp. Downloadable from: http://www.africansunmedia.co.za, ISBN 978-1-920338-24-4
184. Erasmus, B.F.N., K. Coetzer, J. Mambo, E. Archer, and G.P. Asner. 2010. Environmental change in Bushbuck Ridge. In: Observations on environmental change in South Africa, Zietsman, L (ed), p

20-26. South African Environmental Observation Network, Pretoria. 303 pp. Downloadable from: http://www.africansunmedia.co.za, ISBN 978-1-920338-24-4
185. Almeyda, A.M., E.N. Broadbent, M. Schmink, S.G. Perz, and G.P. Asner. 2010. Deforestation drivers in Southwest Amazonia: comparing smallholder farmers in Inapari, Peru and Assis Brasil, Brazil. *Conservation and Society* 8:157-170.
186. Asner, G.P. and C.-Y. Huang. 2011. Remote sensing. Pages 580-584 in *Encyclopedia of Biological Invasions* (eds: D. Simberloff and M. Rajmenak), University of California Press, Berkeley.
187. Doughty, C.E., G.P. Asner, and R.E. Martin. 2011. Predicting tropical plant physiology from leaf and canopy spectroscopy. *Oecologia* 165:289-299.
188. Wessels, K.J., R. Mathieu, B.F.N. Erasmus, G.P. Asner, I.P.J. Smit, J.A.N. van Aardt, R. Main, J. Fisher, W. Marais, T. Kennedy-Bowdoin, D.E. Knapp, R. Emerson, and J. Jacobson. 2011. Impact of communal land use and conservation on woody vegetation structure in the Lowveld savannas of South Africa. *Forest Ecology and Management* 261:19-29.
189. Asner, G.P., J. Mascaro, J.K. Clark, and G. Powell. 2011. Regarding high-resolution carbon stocks and emissions in the Amazon. *Proceedings of the National Academy of Sciences* 108:E13-E14.
190. Sasaki, N., G.P. Asner, W. Knorr, P.B. Durst, H.R. Priyadi, and F.E. Putz. 2011. Approaches to classifying and restoring degraded tropical forests for the anticipated REDD+ climate change mitigation mechanism. *iForest – Biogeosciences and Forestry* 4:1-6.
191. Loarie, S.R., D.B. Lobell, G.P. Asner, and C.B. Field. 2011. Land-cover change and surface water drive large albedo increases in South America. *Earth Interactions* 15:1-16 (paper 7).
192. Asner, G.P., and R.E. Martin. 2011. Canopy phylogenetic, chemical and spectral assembly in a lowland Amazon forest. *New Phytologist* 189:999-1012.
193. Asner, G.P., R.F. Hughes, J. Mascaro, A.L. Uowolo, D.E. Knapp, J. Jacobson, T. Kennedy-Bowdoin, and J.K. Clark. 2011. High-resolution carbon mapping on the million-hectare Island of Hawaii. *Frontiers in Ecology and Environment* 9:434-439.
194. Takahashi, M., T.W. Giambelluca, R.G. Mudd, J.K. DeLay, M.A. Nullet, and G.P. Asner. 2011. Rainfall partitioning and cloud water interception in native forest and invaded forest in Hawaii Volcanoes National Park. *Hydrological Processes* 25:448-464.
195. Loarie, S.R., D.B. Lobell, G.P. Asner, Q. Mu, and C.B. Field. 2011. Direct impacts on local climate of sugar-cane expansion in Brazil. *Nature Climate Change* 1:105-109.
196. Asner, G.P., R.E. Martin, R. Tupayachi, R. Emerson, P. Martinez, F. Sinca, G.V.N. Powell, J. Wright, and A. Lugo. 2011. Taxonomy and remote sensing of leaf mass per area (LMA) in humid tropical forests. *Ecological Applications* 21:85-98.
197. Knox, N.M., A.K. Skidmore, H.H.T. Prins, G.P. Asner, H.M.A. van der Werff, W. F. de Boer, Cornelis van der Waal, H.J. de Knegt, E.M. Kohi, R. Slotow, and R.C. Grant. 2011. Dry season mapping of savanna forage quality using the Carnegie Airborne Observatory sensor. *Remote Sensing of Environment* 115:1478-1488.
198. Somers, B., G.P. Asner, L. Tits, and P. Coppin. 2011. Endmember variability in spectral mixture analysis: a review. *Remote Sensing of Environment* 115:1603-1616.
199. Asner, G.P. 2011. Painting the world REDD: Addressing scientific barriers to monitoring emissions from tropical forests. *Environmental Research Letters* 6:021002.
200. Wu, J., J. van Aardt, and G.P. Asner. 2011. A comparison of signal deconvolution algorithms based on small-footprint LiDAR waveform simulation. *IEEE Transactions on Geoscience and Remote Sensing* 49:2402-2414.
201. Féret, J.-B., C. Francois, A. Gitelson, G.P. Asner, K.M. Berry, C. Panigada, A.D. Richardson, and S. Jacquemoud. 2011. Optimizing spectral indices and chemometric analysis of leaf chemical properties using radiative transfer modeling. *Remote Sensing of Environment* 115:2742-2750.
202. Mascaro, J., G.P. Asner, H.C. Muller-Landau, M. van Breugel, J. Hall, and K. Dahlin. 2011. Controls over aboveground forest carbon density on Barro Colorado Island, Panama. *Biogeosciences* 8:1615-1629.

203. Ferreira, L.G., G.P. Asner, D.E. Knapp, E.A. Davidson, M. Coe, M.M.C. Bustamante, and E.L. de Oliveira. 2011. Equivalent water thickness in savanna ecosystems: MODIS estimates based on ground and EO-1 Hyperion data. *International Journal of Remote Sensing* 32:7423-7440.
204. Féret, J.-B. and G.P. Asner. 2011. Spectroscopic classification of tropical forest species using radiative transfer modeling. *Remote Sensing of Environment* 115:2415-2422.
205. Kellner, J.R., G.P. Asner, K.M. Kinney, S.R. Loarie, D.E. Knapp, T. Kennedy-Bowdoin, E.J. Questad, S. Cordell, and J.M. Thaxton. 2011. Remote analysis of biological invasion and the impact of enemy release. *Ecological Applications* 21:2094-2104.
206. McCoy, M.D., G.P. Asner, and M.W. Graves. 2011. Airborne lidar survey of irrigated agricultural landscapes: an application of the slope contrast method. *Journal of Archaeological Science* 38:2141-2154.
207. Litton, C.M., C.P. Giardina, J.K. Albano, M.S. Long, and G.P. Asner. 2011. The magnitude and variability of soil-surface CO_2 efflux increase with temperature in Hawaiian tropical montane wet forest. *Soil Biology and Biochemistry* 43:2315-2323.
208. Asner, G.P., R.E. Martin, D.E. Knapp, R. Tupayachi, C. Anderson, L. Carranza, P. Martinez, M. Houcheime, F. Sinca, and P. Weiss. 2011. Spectroscopy of canopy chemicals in humid tropical forests. *Remote Sensing of Environment* 115:3587-3598.
209. Kellner, J., G. Asner, P. Vitousek, M. Tweiten, S. Hotchkiss, and O. Chadwick. 2011. Dependence of forest structure and dynamics on substrate age and ecosystem development. *Ecosystems* 14:1156-1167.
210. Alencar, A., G.P. Asner, D.E. Knapp, and D. Zarin. 2011. Temporal variability of forest fires in the eastern Amazon. *Ecological Applications* 21:2397-2412.
211. Ladefoged, T.N., M.D. McCoy, G.P. Asner, P.V. Kirch, C.O. Puleston, O.A. Chadwick, and P.M. Vitousek. 2011. Agricultural potential and actualized development in Hawaii: an airborne LiDAR survey of the leeward Kohala field system (Hawaii Island). *Journal of Archeological Science* 38:3605-3619.
212. Sarrazin, M.J.D., J. van Aardt, G.P. Asner, J. McGlinchy, D.W. Messinger, and J. Wu. 2011. Fusing small-footprint waveform LiDAR and hyperspectral data for canopy-level species classification and herbaceous biomass modeling in savanna ecosystems. *Canadian Journal of Forest Research* 37:653-665.
213. Mascaro, J., M. Detto, G.P. Asner, and H.C. Muller-Landau. 2011. Evaluating uncertainty in mapping forest carbon with airborne LiDAR. *Remote Sensing of Environment* 115:3770-3774.
214. Herold, M., R.M. Roman-Cuesta, D. Mollicone, Y. Hirata, P. van Laake, G.P. Asner, C. Souza, M. Skutsch, V. Avitabile, and K. MacDicken. 2011. Options for monitoring and estimating historical carbon emissions from forest degradation in the context of REDD+. *Carbon Balance and Management* 6:13.

2012-2014

215. Asner, G.P. and R.E. Martin. 2012. Contrasting chemical traits in tropical lianas and trees: implications for future forest composition. *Ecology Letters* 15:1001-1007.
216. Asner, G.P. and S.R. Levick. 2012. Landscape-scale effects of herbivores on treefall in African savannas. *Ecology Letters* 15:1211-1217.
217. Asner, G.P., J.K. Clark, J. Mascaro, R. Vaudry, K.D. Chadwick, G. Vieilledent, M. Rasamoelina, A. Balaji, T. Kennedy-Bowdoin, L. Maatoug, M.S. Colgan, and D.E. Knapp. 2012. Human and environmental controls over aboveground carbon storage in Madagascar. *Carbon Balance and Management* 7 doi:10.1186/1750-0680-7-2
218. Fisher, J.T., E.T.F. Witkowski, B.F.N. Erasmus, J. van Aardt, G.P. Asner, K. Wessels, and R. Mathieu. 2012. Human-modified landscapes: patterns of fine-scale woody vegetation structure in communal savanna rangelands. *Environmental Conservation* 39:72-82.

219. Asner, G.P., J. Mascaro, H.C. Muller-Landau, G. Vieilledent, R. Vaudry, M. Rasamoelina, J. Hall, and M. van Breugel. 2012. A universal airborne LiDAR approach for tropical forest carbon mapping. *Oecologia* 168:1147-1160.
220. Huang, C., G.P. Asner, and N.N. Barger. 2012. Modeling regional variation in net primary production of pinyon-juniper ecosystems. *Ecological Modelling* 227:82-92.
221. Colgan, M.S., G.P. Asner, S.R. Levick, R.E. Martin, and O.A. Chadwick. 2012. Topo-edaphic controls over woody biomass in South African savannas using airborne LiDAR. *Biogeosciences* 9:1809-1821.
222. Kirch, P.V., G.P. Asner, O.A. Chadwick, J. Field, T. Ladefoged, C. Lee, C. Puleston, S. Tuljapurkar, and P.M. Vitousek. 2012. Building and testing models of long-term agricultural intensification and population dynamics: A case study from the Leeward Kohala Field System, Hawaii. *Ecological Modeling* 227:18-28.
223. Dahlin, K.M., G.P. Asner, and C.B. Field. 2012. Environmental filtering and land-use history drive patterns in biomass accumulation in a Mediterranean-type landscape. *Ecological Applications* 22:104-118.
224. Herold, M., R.M. Roman-Cuesta, V. Heymell, Y. Hirata, P. van Laake, G.P. Asner, V. Avitabile, and K. MacDicken. 2012. A review of methods to measure and monitor historical carbon emissions from forest degradation. *Unasylva* 62:16-24.
225. Asner, G.P., R.E. Martin, and A. Bin Suhaili. 2012. Sources of canopy chemical and spectral diversity in lowland Bornean forest. *Ecosystems* 15:504-517.
226. Smit, I.P.J. and G.P. Asner. 2012. Roads increase woody cover under varying geological, rainfall and fire regimes in African savanna. *Journal of Arid Environments* 80:74-80.
227. Carlson, K.M., L.M. Curran, D. Ratnasari, A.M. Pittman, B.S. Soares-Filho, G.P. Asner, S.N. Trigg, D.A. Gaveau, D. Lawrence, and H.O. Rodrigues. 2012. Committed carbon emissions, deforestation, and community land conversation from oil palm plantation expansion in West Kalimantan, Indonesia. *Proceedings of the National Academy of Sciences* 109:7559-7564.
228. Mascaro, J., G.P. Asner, D.H. Dent, S.J. DeWalt, and J.S. Denslow. 2012. Scale-dependence of aboveground carbon accumulation in secondary forests of Panama: A test of the intermediate peak hypothesis. *Forest Ecology and Management* 276:62-70.
229. Somers, B., M. Zortea, A. Plaza, and G.P. Asner. 2012. Automated extraction of image-based endmember bundles for improved spectral unmixing. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing* 5:396-408.
230. Naidoo L., M.A. Cho, R. Mathieu and G. Asner. 2012. Classification of savanna tree species, in the Greater Kruger National Park region, by integrating hyperspectral and LiDAR data in a Random Forest data mining environment. *ISPRS Journal of Photogrammetry and Remote Sensing* 69:167-179.
231. Wu, W., J. van Aardt, J. McGlinchy, and G.P. Asner. 2012. A robust signal processing chain for small-footprint waveform LiDAR. *IEEE Transactions on Geoscience and Remote Sensing* 50:3242-3255.
232. Cho M.A., R. Mathieu, G.P. Asner, L. Naidoo, A. Ramoelo, P. Debba, K. Wessels, R. Main, J. van Aardt, I. Smit and B. Erasmus. 2012. Mapping tree species composition in South African savannas using an integrated airborne spectral and LiDAR system. *Remote Sensing of Environment* 125: 214-226
233. Asner, G.P., D.E. Knapp, J. Boardman, R.O. Green, T. Kennedy-Bowdoin, M. Eastwood, R.E. Martin, C. Anderson, and C.B. Field. 2012. Carnegie Airborne Observatory-2: Increasing science data dimensionality via high-fidelity multi-sensor fusion. *Remote Sensing of Environment* 124:454-465.
234. Féret, J.-B., and G.P. Asner. 2012. Tree species discrimination in tropical forests using airborne imaging spectroscopy. *IEEE Transactions on Geoscience and Remote Sensing* 51:73-84.
235. Asner, G.P., J.K. Clark, J. Mascaro, G.A. Galindo García, K.D. Chadwick, D.A. Navarrete Encinales, G. Paez-Acosta, E. Cabrera Montenegro, T. Kennedy-Bowdoin, Á. Duque, A. Balaji, P. von Hildebrand, L. Maatoug, J.F. Phillips Bernal, A.P. Yepes Quintero, D.E.

Knapp, M.C. García Dávila, J. Jacobson, and M.F. Ordóñez. 2012. High-resolution mapping of forest carbon stocks in the Colombian Amazon. *Biogeosciences* 9:2683-2696, doi:10.5194/bg-9-2683-2012.
236. Higgins, M.A., G.P. Asner, E. Perez, N. Elespuru, H. Tuomisto, K. Ruokolainen, and A. Alonso. 2012. Use of Landsat and SRTM data to detect widespread vegetation patch-matrix patterns in northwestern Amazonia. *Remote Sensing* 4:2401-2418.
237. Féret, J.-B. and G.P. Asner. 2012. Semi-supervised methods to identify individual crowns of lowland tropical canopy species using imaging spectroscopy and LiDAR. *Remote Sensing* 4:2457-2476.
238. Somers, B. and G.P. Asner. 2012. Hyperspectral time series analysis of native and invasive species in Hawaiian rainforests. *Remote Sensing* 4:2510-2529.
239. Kellner, J.R., G.P. Asner, S. Cordell, J.M. Thaxton, K.M. Kinney, T. Kennedy-Bowdoin, D.E. Knapp, E.J. Questad, and S. Ambagis. 2012. Potential and limitations of historical aerial photography to quantify vegetation dynamics in a dry tropical forest in Hawaii. *Pacific Science* 66(4):457-466.
240. Palminteri, S., G.V.N. Powell, G.P. Asner, and C.A. Peres. 2012. LiDAR measurements of canopy structure predict spatial distribution of a tropical mature forest primate. *Remote Sensing of Environment* 127:98-105.
241. Tits, L., W. De Keersmaecker, B. Somers, G.P. Asner, J. Farifteh, and P. Coppin. 2012. Shape-based unmixing for forest and agro-ecosystem monitoring. *ISPRS Journal of Photogrammetry and Remote Sensing* 74:163-174.
242. De Sy, V., M. Herold, F. Achard, G.P. Asner, A. Held, J. Kellndorfer, and J. Verbesselt. 2012. Synergies of multiple remote sensing data sources for REDD+ monitoring. *Current Opinion in Environmental Sustainability* 4:696-706.
243. Colgan, M., C. Baldeck, J.-B. Féret, and G.P. Asner. 2012. Mapping savanna tree species at ecosystem scales using support vector machine classification and BRDF correction on airborne hyperspectral and LiDAR data. *Remote Sensing* 4:3462-3480.
244. Levick, S.R., G.P. Asner, and I.P.J. Smit. 2012. Spatial patterns in the effects of fire on savanna vegetation three-dimensional structure. *Ecological Applications* 22:2110-2121.
245. Levick, S.R. and G.P. Asner. 2013. The rate and spatial pattern of treefall in a savanna landscape. *Biological Conservation* 157:121-127.
246. Papeş, M., R. Tupayachi, P. Martínez, A.T. Peterson, G.P. Asner, and G.V.N. Powell. 2013. Seasonal variation in spectral signatures of five genera of rainforest trees. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*. 6(2):339-350.
247. Asner, G.P. 2013. Biological diversity mapping comes of age. *Remote Sensing* 5:374-376.
248. Wessels, K.J. M.S. Colgan, B.F.N. Erasmus, G.P. Asner, W.C. Twine, R. Mathieu, J. van Aardt, J.T. Fisher, and I.P.J. Smit. 2013. Unsustainable fuelwood extraction from South African savannas. *Environmental Research Letters* 8:014007.
249. Carlson, K.M., L.M. Curran, G.P. Asner, A. McDonald Pittman, S.N. Trigg, and J.M. Adeney. 2013. Carbon emissions from forest conversion by Kalimantan oil palm plantations. *Nature Climate Change* 3:283-287.
250. Schimel, D.S., G.P. Asner, and P.R. Moorcroft. 2013. Observing changing ecological diversity in the Anthropocene. *Frontiers in Ecology and the Environment* 11(3):129-137.
251. Asner, G.P. 2013. Geography of forest disturbance. *Proceedings of the National Academy of Sciences* 110:3711-3712.
252. Allnutt, T.F., G.P. Asner, C.D. Golden, and G.V.N. Powell. 2013. Mapping recent deforestation and forest disturbance in northeastern Madagascar. *Tropical Conservation Science* 6:1-15.
253. Townsend, A.R. and G.P. Asner. 2013. Multiple dimensions of resource limitation in tropical forests. *Proceedings of the National Academy of Sciences* 110:4864-4865.
254. Jones, J.P.G., G.P. Asner, S.H.M. Butchart, and K.U. Karanth. 2013. The why, what and how of monitoring for conservation. Ch. 18 in *Key Topics in Conservation Biology*. Macdonald, D.W. and K.J. Willis (eds). John Wiley & Sons, New York.

255. Loarie, S.R., C.J. Tambling, and G.P. Asner. 2013. Lion hunting behavior and vegetation structure in an African savanna. *Animal Behaviour* 85:899-906.
256. Dahlin, K.M., G.P. Asner, and C.B. Field. 2013. Environmental and community controls on plant canopy chemistry in a Mediterranean-type ecosystem. *Proceedings of the National Academy of Sciences* 110:6895-6900.
257. Asner, G.P., J.R. Kellner, T. Kennedy-Bowdoin, D.E. Knapp, C. Anderson, and R.E. Martin. 2013. Forest canopy gap distributions in the Southern Peruvian Amazon. *PLoS One* 8(4):e60875
258. Baldeck, C.A. and G.P. Asner. 2013. Estimating vegetation beta diversity from airborne imaging spectroscopy and unsupervised clustering. *Remote Sensing* 5:2057-2071.
259. Somers, B. and G.P. Asner. 2013. Multi-temporal hyperspectral mixture analysis and feature selection for invasive species mapping in rainforests. *Remote Sensing of Environment* 136:14-27.
260. Asner, G.P. 2013. Mesoscale exploration and conservation of tropical canopies in a changing climate. Ch. 18 in *Treetops at Risk: Challenges of Global Canopy Ecology and Conservation*, editor M. Lowman et al. Springer-Verlag.
261. Colgan, M., G.P. Asner, and T. Swemmer. 2013. Harvesting tree biomass at the stand level to assess the accuracy of field and airborne biomass estimation in savannas. *Ecological Applications* 23:1170-1184.
262. Somers, B. and G.P. Asner. 2013. Invasive species mapping in rainforests using multi-temporal spaceborne imaging spectroscopy. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing* 6:351-359.
263. Bryan, J., P. Shearman, G.P. Asner, D.E. Knapp, G. Aoro, and B. Lokes. 2013. Extreme differences in forest degradation in Borneo: Comparing practices in Sarawak, Sabah and Brunei. *PLoS One* 8(7):e69679.
264. Asner, G.P., J. Mascaro, C. Anderson, D.E. Knapp, R.E. Martin, T. Kennedy-Bowdoin, M. van Breugel, S. Davies, J.S. Hall, H.C. Muller-Landau, C. Potvin, W. Sousa, J. Wright and E. Bermingham. 2013. High-fidelity national carbon mapping for resource management and REDD+. *Carbon Balance and Management* 8:7 (doi:10.1186/1750-0680-8-7)
265. Vaughn, N.R., G.P. Asner, and C.P. Giardina. 2013. Polar grid fraction as an estimator of montane tropical forest canopy structure using airborne lidar. *International Journal of Remote Sensing* 34(21):7464-7473.
266. Mathieu, R., L. Naidoo, M.A. Cho, B. Leblon, R. Main, K. Wessels, G.P. Asner, J. Buckley, J. Van Aardt, B.F.N. Erasmus, and I.P.J. Smith. 2013. Toward structural assessment of semi-arid African savannahs and woodlands: the potential of multitemporal polarimetric RADARSAT-2 fine beam images. *Remote Sensing of Environment* 138:215-231.
267. Chadwick, O.A., J.J. Roering, A.M. Heimsath, S.R. Levick, G.P. Asner, and L. Khomo. 2013. Shaping post-orogenic landscapes by climate and chemical weathering. *Geology* 41(11):1171-1174.
268. Fernandez, D.P., J.C. Neff, C. Huang, G.P. Asner, and N.N. Barger. 2013. Twentieth century carbon stock changes related to Pinon-Juniper expansion into a black sagebrush community. *Carbon Balance and Management* 8:8 (doi:10.1186/1750-0680-8-8)
269. Tochon, G., J.-B. Féret, S. Valero, R.E. Martin, R. Tupayachi, J. Chanussot, P. Salembier, and G.P. Asner. 2013. Segmentation hyperspectrale de fôrets tropicales par arbres de partition binaires. Revue Francaise de Photogrammétrie et de Télédétection 202:55-65.
270. Detto, M., J. Mascaro, H.C. Muller-Landau, and G.P. Asner. 2013. Hydrological networks and associated topographic variation as templates for the spatial organization of tropical forest vegetation. *PLoS One* 8(10):e76296 (doi:10.1371/journal.pone.0076296)
271. Asner, G.P., W. Llactayo, R. Tupayachi, and E. Ráez Luna. 2013. Elevated rates of gold mining in the Amazon revealed through high resolution monitoring. *Proceedings of the National Academy of Sciences* 110:18454-18459.
272. Mitchard, E.T.A., S.S. Saatchi, A. Baccini, G.P. Asner, S.J. Goetz, N. Harris, and S. Brown. 2013. Uncertainty in the spatial distribution of tropical forest biomass: a comparison of pan-tropical maps. *Carbon Balance and Management* 8:10.

273. Baccini, A. and G.P. Asner. 2013. Improving pantropical forest carbon maps with airborne LiDAR sampling. *Carbon Management* 4:591-600.
274. Metcalfe, D.B., G.P. Asner, R.E. Martin, J.E. Silva Espejo, W. Huaraca Huasco et al. 2014. Herbivory makes major contributions to ecosystem carbon and nutrient cycling in tropical forests. *Ecology Letters* 17:324-332.
275. Tweiten, M.A., S.C. Hotchkiss, P.M. Vitousek, J.R. Kellner, O.A. Chadwick, and G.P. Asner. 2014. Resilience against exotic species invasion in a tropical montane forest. *Journal of Vegetation Science* 25(3):734-749.
276. Asner, G.P. and J. Mascaro. 2014. Mapping tropical forest carbon: Calibrating plot estimates to a simple LiDAR metric. *Remote Sensing of Environment* 140:614-624.
277. Colgan, M.S., T. Swemmer, and G.P. Asner. 2014. Structural relationships between form factor, wood density, and biomass in African savanna woodlands. *Trees* 28:91-102.
278. Fisher, J.T., B.F.N. Erasmus, E.T.F. Witkowski, J. van Aardt, G.P. Asner, K.J. Wessels, and R. Mathieu. 2014. Management approaches of conservation areas: Differences in woody vegetation structure in a private and a national reserve. *South African Journal of Botany* 90:146-152.
279. Hahn, M.B., R.E. Gangnon, C. Barcellos, G.P. Asner, and J.A. Patz. 2014. Influence of deforestation, roads, selective logging and fire on malaria risk in the Amazon basin of Brazil. *PLoS One* 9(1):e85725.
280. Asner, G.P. 2014. Satellites and psychology for improved forest monitoring. *Proceedings of the National Academy of Sciences* 111:567-568.
281. Baldeck, C.A., M.S. Colgan, J.-B. Féret, S.R. Levick, R.E. Martin, and G.P. Asner. 2014. Landscape-scale variation in plant community composition of an African savanna from airborne species mapping. *Ecological Applications* 24:84-93.
282. Mascaro, J., G.P. Asner, D.E. Knapp, T. Kennedy-Bowdoin, R.E. Martin, C. Anderson, M. Higgins, and K.D. Chadwick. 2014. A tale of two "forests": Random Forest machine learning aids tropical forest carbon mapping. *PLoS One* 9(1):e85993
283. Fisher, J.T., B.F.N. Erasmus, E.T.F. Witkowski, J. van Aardt, K.J. Wessels, and G.P. Asner. 2014. Savanna wood vegetation classification – now in 3D. *Applied Vegetation Science* 17(1):172-184.
284. McGlinchy, J., J.A.N. van Aardt, B. Erasmus, G.P. Asner, R. Mathieu, K. Wessels, D. Knapp, T. Kennedy-Bowdoin, H. Rhody, J.P. Kerekes, E.J. Ientilucci, J. Wu, D. Sarrazin, and K. Cawse-Nicholson. 2014. Extracting structural vegetation components from small-footprint waveform LiDAR for biomass estimation in savanna ecosystems. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing* 7(2):480-490.
285. Asner, G.P. 2014. A chemical-evolutionary basis for remote sensing of tropical forest diversity. Ch. 12 in *Forests and Global Change* (D.A Coomes, D.F.R.P. Burslem, D. Simonson, eds.), Cambridge University Press.
286. Broadbent, E.N., A.M. Almeyda Zambrano, G.P. Asner, M. Soriano, C.B. Field, H. Ramos de Souza, M. Peña-Claros, R.I. Adams, R. Dirzo, and L. Giles. 2014. Integrating stand and soil properties to understand foliar nutrient dynamics during forest succession following slash-and-burn agriculture in the Bolivian Amazon. *PLoS One* 9(2):e86042.
287. Asner, G. P., C. Anderson, R.E. Martin, D.E. Knapp, R. Tupayachi, F. Sinca, and Y. Malhi. 2014. Landscape-scale changes in forest structure and functional traits along an Andes-to-Amazon elevation gradient. *Biogeosciences* 11:843-856.
288. Questad, E.J., J.R. Kellner, K. Kinney, S. Cordell, G.P. Asner, J.M. Thaxton, J. Diep, A. Uowolo, S. Brooks, N. Inman-Narahari, S.A. Evans, and B. Tucker. 2014. Mapping habitat suitability for at-risk plant species and its implications for restoration and reintroduction. *Ecological Applications* 24(2):385-395.
289. Kellner, J.R. and G.P. Asner. 2014. Winners and losers in the competition for space in tropical forest canopies. *Ecology Letters* 17(5):556-562.
290. Asner, G.P., R.E. Martin, R. Tupayachi, C.B. Anderson, F. Sinca, L. Carranza Jimenez, and P. Martinez. 2014. Amazonian functional diversity from forest canopy chemical assembly. *Proceedings of the National Academy of Sciences* 111(15):5604-5609.

291. Davies, A.B., S.R. Levick, G.P. Asner, M.P. Robertson, B.J. van Rensburg, C.L. Parr. 2014. Spatial variability and abiotic determinants of termite mounds throughout a savanna catchment. *Ecography* 37:1-11. doi:10.1111/ecog.00532
292. Espirito-Santo, F.D.B., M. Gloor, M. Keller, Y. Malhi, S. Saatchi, B. Nelson, R.C. Oliveira Jr, C. Pereira, J. Lloyd, S. Frolking, M. Palace, Y.E. Shimabukuro, V. Duarte, A.M. Mendoza, G. López-González, T.R. Baker, T.R. Feldpausch, R.J.W. Brienen, G.P. Asner, D. Boyd, and O.L. Phillips. 2014. Size and frequency of natural forest disturbances and the Amazon forest carbon balance. *Nature Communications* 5: doi:10.1038/ncomms4434
293. Baldeck, C.A. and G.P. Asner. 2014. Improving remotely sensed species identification through efficient training data collection. *Remote Sensing* 6:2682-2698.
294. Somers, B. and G.P. Asner. 2014. Tree species mapping in tropical forests using multi-temporal imaging spectroscopy: wavelength adaptive spectral mixture analysis. *Int'l Journal of Applied Earth Observation and Geoinformation* 31:57-66.
295. Colgan, M.S. and G.P. Asner. 2014. Coexistence and environmental filtering of species-specific biomass in an African savanna. *Ecology* 95(6):1579-1590.
296. Broadbent, E.N., A.M. Almeyda, G.P. Asner, C. B. Field, B.E. Rosenheim, T. Kennedy-Bowdoin, D.E. Knapp, D. Burke, C. Giardina, and S. Cordell. 2014. Linking rainforest ecophysiology and microclimate through fusion of airborne LiDAR and hyperspectral imagery. *Ecosphere* 5(5):art57.
297. Hughes, R.F., G.P. Asner, J. Mascaro, A. Uowolo, and J. Baldwin. 2014. Carbon storage landscapes of lowland Hawaii: the role of native and invasive species through space and time. *Ecological Applications* 24(4):716-731.
298. Davies, A.B., M.P. Robertson, S.R. Levick, G.P. Asner, B.J. van Rensburg, and C.L. Parr. 2014. Variable effects of termite mounds on African savanna grass communities across a rainfall gradient. *Journal of Vegetation Science* 25:1405-1416.
299. Asner, G.P., R.E. Martin, R. Tupayachi, L. Carranza, F. Sinca, C.B. Anderson, P. Martinez. 2014. Functional and biological diversity of foliar spectra in tree canopies of the Andes to Amazon region. *New Phytologist* 204:127-139.
300. Higgins, M.A., G.P. Asner, E. Perez, N. Elespuru, and A. Alonso. 2014. Variation in photosynthetic and nonphotosynthetic vegetation along edaphic and compositional gradients in northwestern Amazonia. *Biogeosciences* 11:3505-3513.
301. Giardina, C.P., C.M. Litton, S.E. Crow, and G.P. Asner. 2014. Warming-related increases in soil CO_2 efflux are explained by increased below-ground carbon flux. *Nature Climate Change* 4:822-827.
302. Selmants, P.C., C.M. Litton, C.P. Giardina, and G.P. Asner. 2014. Ecosystem carbon storage does not vary with mean annual temperature in Hawaiian tropical montane wet forests. *Global Change Biology* 20:2927-2937.
303. Dahlin, K.M., G.P. Asner, and C.B. Field. 2014. Linking vegetation patterns to environmental gradients and human impacts in a Mediterranean-type island ecosystem. *Landscape Ecology* 29:1571-1585.
304. Féret, J.-B. and G.P. Asner. 2014. Mapping tropical forest canopy diversity using high-fidelity imaging spectroscopy. *Ecological Applications* 24(6):1289-1296.
305. Féret, J.-B. and G.P. Asner. 2014. Microtopographic controls on lowland Amazonian canopy diversity from imaging spectroscopy. *Ecological Applications* 24(6):1297-1310.
306. Mascaro, J., G.P. Asner, S. Davies, A. Dehgan, and S. Saatchi. 2014. These are days of lasers in the jungle. *Carbon Balance and Management* 9(1):1-3.
307. Inman-Narahari, F., R. Ostertag. G.P. Asner, S. Cordell, S.P. Hubbell, and L. Sack. 2014. Trade-offs in seedling growth and survival within and across tropical forest microhabitats. *Ecology and Evolution* 4(19):3755-3767.
308. Vaughn, N. R., G. P. Asner, and C. P. Giardina. 2014. Centennial impacts of fragmentation on the canopy structure of tropical montane forest. *Ecological Applications* 24:1638–1650.
309. Davies, A.B., and G.P. Asner. 2014. Advances in animal ecology from 3-D ecosystem mapping. *Trends in Ecology and Evolution* 29(12):681-691.

310. Asner, G.P., D.E. Knapp, R.E. Martin, R. Tupayachi, C.B. Anderson, J. Mascaro, F. Sinca, K.D. Chadwick, M. Higgins, W. Farfan, W. Llactayo, and M.R. Silman. 2014. Targeted carbon conservation at national scales with high-resolution monitoring. *Proceedings of the National Academy of Sciences* 111(47):E5016-E5022 doi:10.1073/pnas.1419550111
311. Higgins, M.A., G.P. Asner, R.E. Martin, D.E. Knapp, C. Anderson, T. Kennedy-Bowdoin, R. Saenz, A. Aguilar, and S.J. Wright. 2014. Linking imaging spectroscopy and LiDAR with floristic composition and forest structure in Panama. *Remote Sensing of Environment* 154:358-367.
312. Marvin, D.C., G.P. Asner, D.E. Knapp, C.B. Anderson, R.E. Martin, F. Sinca, and R. Tupayachi. 2014. Amazonian landscapes and the bias in field studies of forest structure and biomass. *Proceedings of the National Academy of Sciences* 111(48):E5224-E5232.
313. Miranda, J.J., L. Corral, A. Blackman, G. Asner, and E. Lima. 2014. Effects of protected areas on forest cover change and local communities: Evidence from the Peruvian Amazon. IDB Working Paper Series No. IDB-WP-559, Inter-American Development Bank, Washington DC.

2015-2017

314. Asner, G.P., R.E. Martin, C.B. Anderson, and D.E. Knapp. 2015. Quantifying forest canopy foliar traits: imaging spectroscopy versus field survey. *Remote Sensing of Environment* 158:15-27.
315. Asner, G.P. and R.E. Martin. 2015. Canopy chemistry expresses the life-history strategies of lianas and trees. Pages 299-308 in *Ecology of Lianas* (eds. S. Schnitzer, F. Bongers, R. Burnham, and F. Putz) John Wiley & Sons, Ltd, Chichester, UK doi:10.1002/9781118392409.ch21
316. Levick, S.R., C.A. Baldeck, and G.P. Asner. 2015. Demographic legacies of fire history in an African savanna. *Functional Ecology* 29:131-139.
317. Atkin, O.K., K. Bloomfield, P. Reich, M. Tjoelker, G.P. Asner, D. Bonal, et al. 2015. Global variability in leaf respiration in relation to climate, plant functional types and leaf traits. *New Phytologist* 206(2):614-636.
318. Reimer, F., G.P. Asner, and S. Joseph. 2015. Advancing reference emission levels in subnational and national REDD+ initiatives: a CLASlite approach. *Carbon Balance and Management* 10:1-11.
319. Schimel, D.S., R. Pavlick, J.B. Fisher, G.P. Asner, S. Saatchi, P. Townsend, C. Miller, C. Frankenberg, K. Hibbard, and P. Cox. 2015. Observing terrestrial ecosystems and the carbon cycle from space. *Global Change Biology* 21(5):1762-1776.
320. Fisher, J.T., Witkowski, E.T.F., Erasmus, B.F.N., Mograbi, P.J., Asner, G.P., van Aardt, J.A.N., Wessels, K.J., and Mathieu, R. 2015. What lies beneath: Detecting sub-canopy changes in savanna woodlands using a three-dimensional classification method. *Applied Vegetation Science* doi:10.1111/avsc.12160
321. Tochon, G., J.-B. Féret, S. Valero, R.E. Martin, D.E. Knapp, P. Salembier, J. Chanussot, and G.P. Asner. 2015. On the use of binary partition trees for the tree crown segmentation of tropical rainforest hyperspectral images. *Remote Sensing of Environment* 159:318-331.
322. Asner, G.P. 2015. Organismic remote sensing for tropical forest ecology. *Annals of the Missouri Botanical Garden* 100:127-140.
323. Detto, M., G.P. Asner, H.C. Muller-Landau, and O. Sonnentag. 2015. Spatial variability in tropical forest leaf area density from multireturn LiDAR and modeling. *Journal of Geophysical Research* 120, doi:10.1002/2014JG002774
324. Higgins, M.A., G.P. Asner, C.B. Anderson, R.E. Martin, D.E. Knapp, R. Tupayachi, E. Perez, N. Elespuru, and A. Alonso. 2015. Regional-scale drivers of forest structure and function in Northwestern Amazonia. *PLoS ONE* 10:e0119887.
325. Asner, G.P. and R.E. Martin. 2015. Spectroscopic remote sensing of non-structural carbohydrates in forest canopies. *Remote Sensing* 7:3526-3547.
326. Feilhauer, H., G.P. Asner, and R.E. Martin. 2015. Multi-method ensemble selection of spectral bands related to leaf biochemistry. *Remote Sensing of Environment* 164:57-65.
327. Jones, B.D., T.N. Ladefoged, and G.P. Asner. 2015. Tracing the resilience and revitalization of historic taro production in Waipio Valley, Hawaii. *Journal of the Polynesian Society* 124:83-110.

328. Naidoo, L., R. Mathieu, R. Main, M.A. Cho, K.J. Wessels, G. Asner, and B. Leblon. 2015. Savannah woody structure modelling and mapping using integrated multi-frequency (X-, C- and L-band) Synthetic Aperture Radar (SAR) data. *ISPRS Journal of Photogrammetry and Remote Sensing* 105:234-250.
329. Mograbi, P.J., B.F.N. Erasmus, E.T.F. Witkowski, G.P. Asner, K.J. Wessels, R. Mathieu, D.E. Knapp, R.E. Martin, and R. Main. 2015. Biomass increases go under cover: Woody vegetation dynamics in South African savannas. *PLoS ONE* 10(5):e0127093
330. Asner, G.P., C.B. Anderson, R.E. Martin, R. Tupayachi, D.E. Knapp, and F. Sinca. 2015. Landscape biogeochemistry reflected in shifting distributions of chemical traits in the Amazon forest canopy. *Nature Geoscience* 8:567-573.
331. Colgan, M.S., R.E. Martin, C.A. Baldeck, and G.P. Asner. 2015. Tree foliar chemistry in an African savanna and its relation to life history strategies and environmental filters. *PLoS ONE* 10(5):e0124078
332. Taylor, P., G. Asner, K. Dahlin, C. Anderson, D. Knapp, R. Martin, J. Mascaro, R. Chazdon, R. Cole, W. Wanek, F. Hofhansel, E. Malavassi, B. Vilchez-Alvarado, and A. Townsend. 2015. Landscape-scale controls on aboveground forest carbon stocks on the Osa Peninsula, Costa Rica. *PLoS ONE* 10(6):e0126748.
333. Weintraub, S.R., P.G. Taylor, S. Porder, C.C. Cleveland, G.P. Asner, and A.R. Townsend. 2015. Topographic controls on soil nitrogen availability in a lowland tropical forest. *Ecology* 96:1561-1574.
334. Kinney, K.M., G.P. Asner, S. Cordell, O.A. Chadwick, K. Heckman, S. Hotchkiss, M. Jerai, T. Kennedy-Bowdoin, D.E. Knapp, E.J. Questad, J.M. Thaxton, F. Trusdell, and J.R. Kellner. 2015. Primary succession on a Hawaiian dryland chronosequence. *PLoS ONE* 10(6):e0123995.
335. Urbazaev M., C. Thiel, R. Mathieu R, L. Naidoo, S.R. Levick S, I.P.J. Smit, G.P. Asner, and C. Schmullius. 2015. Assessment of the mapping of fractional woody cover in southern African savannas using multi-temporal and polarimetric ALOS PALSAR L-band images. *Remote Sensing of Environment* 166:138-153.
336. Baldeck, C.A. and G.P. Asner. 2015. Single-species detection with airborne imaging spectroscopy data: a comparison of support vector techniques. *IEEE Journal of Selected Topical in Applied Earth Observations and Remote Sensing* 8(6):2501-2512.
337. Phillips, N., T.N. Ladefoged, B.W. McPhee, and G.P. Asner. Location, location, location: A viewshed analysis of *heiau* spatial and temporal relationships in leeward Kohala, Hawaii. *Journal of Pacific Archeology* 6(2):21-40.
338. Somers, B., G.P. Asner, R.E. Martin, C.B. Anderson, D.E. Knapp, S.J. Wright and R. Van de Kerchove. 2015. Mesoscale assessment of tropical forest canopy diversity across a bioclimatic gradient in Panama using airborne imaging spectroscopy. *Remote Sensing of Environment* 167:111-120.
339. Alencar, A.A., P.M. Brando, G.P. Asner, and F.E. Putz. 2015. Landscape fragmentation, severe drought, and the new Amazon forest fire regime. *Ecological Applications* 25(6):1493-1505.
340. Baldeck, C.A., G.P. Asner, R.E. Martin, C.B. Anderson, D.E. Knapp, J.R. Kellner, and S.J. Wright. 2015. Operational tree species mapping in a diverse tropical forest with airborne imaging spectroscopy. *PLoS ONE* 10(7):e0118403.
341. Asner, G.P., N. Owen-Smith, S.R. Loarie, A.B. Davies, E. Le Roux, and S.R. Levick. 2015. Habitat differences do not explain population declines of sable antelope in an African savanna. *Journal of Zoology* 297(3):225-234.
342. Duffy, P.B., P. Brando, G.P. Asner, and C.B. Field. 2015. Projections of future meteorological drought and wet periods in the Amazon. *Proceedings of the National Academy of Sciences* 112(43):13172-13177.
343. Asner, G.P., S.L. Ustin, P.A. Townsend, R.E. Martin, and K.D. Chadwick. 2015. Forest biophysical and biochemical properties from hyperspectral and LiDAR remote sensing. Pages 429-448 in *Land Resources Monitoring, Modeling and Mapping with Remote Sensing* (P.S. Thenkabail, ed.), CRC Press, Taylor & Francis Group.

344. Helmer, E.H., N.R. Goodwin, V. Gond, C.M. Souza Jr, and G.P. Asner. 2015. Characterizing tropical forests with multispectral imagery. Pages 363-391 in *Land Resources Monitoring, Modeling and Mapping with Remote Sensing* (P.S. Thenkabail, ed.), CRC Press, Taylor & Francis Group.
345. Shugart, H.H., G.P. Asner, R. Fischer, A. Huth, N. Knapp, T. Le Toan, and J.K. Shuman. 2015. Computer and remote-sensing infrastructure to enhance large-sale testing of individual-based forest models. *Frontiers in Ecology and the Environment* 13:503-511.
346. Avitable, V., M. Herold, G.B.M. Heuvlink, S.L. Lewis, O.L. Phillips, G.P. Asner, J. Armston, et al. 2015. An integrated pan-tropical biomass map using multiple reference datasets. *Global Change Biology* doi:10.1111/gcb.13139
347. Vaughn, N.R., G.P. Asner, C.P. Giardina. 2015. Long-term fragmentation effects on the distribution and dynamics of canopy gaps in a tropical montane forest. *Ecosphere* 6(12): Article 271 (p. 1-15)
348. Vaughn, N.R., G.P. Asner, I.P.J. Smit, and E.S. Riddel. 2015. Multiple scales of control on the structure and spatial distribution of woody vegetation in African savanna watersheds. *PLOS One* 10(12): e0145192.
349. Molina, P.X., G.P. Asner, M.F. Abadia, J.C. Ojeda Manrique, L.A. Sánchez Diez, and R. Valencia. 2015. Spatially-explicit testing of a general aboveground carbon density estimation model in a western Amazonian forest using airborne LiDAR. *Remote Sensing* 8(9). doi:10.3390/rs8010009
350. Bustamante, M., I. Roitman, T.M. Aide, A. Alencar, L. Anderson, L. Aragao, G.P. Asner, J. Barlow, E. Berenguer, J. Chambers, M.H. Costa, T. Fanin, L.G. Ferreira, J.N. Ferreira, M. Keller, W.E. Magnusson, L. Morales, D. Morton, J.P.H.B. Ometto, M. Palace, C. Peres, D. Silvéro, S. Trumbore, and I.C.G. Vieira. 2015. Towards an integrated monitoring framework to assess the effects of tropical forest degradation and recovery on carbon stocks and biodiversity. *Global Change Biology* 22(1):92-109.
351. Asner, G.P., N. Vaughn, I.P.J. Smit, and S. Levick. 2016. Ecosystem-scale effects of megafauna in African savannas. *Ecography* 38:1-13 doi:10.1111/ecog.01640
352. Bakker, E.S., J.L. Gill, C.N. Johnson, F.W.M. Vera, C.J. Sandom, G.P. Asner, and J.-C. Svenning. 2016. Combining paleo-data and modern exclosure experiments to assess the impact of megafauna extinctions on woody vegetation. *Proceedings of the National Academy of Sciences* doi:10.1073/pnas.1502545112
353. Asner, G.P., P.G. Brodrick, C.B. Anderson, N. Vaughn, D.E. Knapp, and R.E. Martin. 2016. Progressive forest canopy water loss during the 2012-2015 California drought. *Proceedings of the National Academy of Sciences* 113(2):E249-E255 doi:20.1073pnas.523397113
354. Miranda, J.J., L. Corral, A. Blackman, G. Asner, and E. Lima. 2016. Effects of protected areas on forest cover change and local communities: evidence from the Peruvian Amazon. *World Development* 78:288-307.
355. Barbosa, J., G.P. Asner, R.E. Martin, C.A. Baldeck, F. Hughes, and T. Johnson. 2016. Determining subcanopy *Psidium cattleianum* invasion in Hawaiian forests using imaging spectroscopy. *Remote Sensing* 8(1); doi:10.3390/rs8010033
356. Davies, A.B., C.A. Baldeck, and G.P. Asner. 2016. Termite mounds alter the spatial distribution of African savanna tree species. *Journal of Biogeography* 43:301-313.
357. Asner, G.P., S. Sousan, D.E. Knapp, P.C. Selmants, R.E. Martin, R.F. Hughes, and C.P. Giardina. 2016. Rapid forest carbon assessments of oceanic islands: a case study of the Hawaiian archipelago. *Carbon Balance and Management* 11, doi:10.1186/s13021-015-0043-4
358. Chadwick, K.D., and G.P. Asner. 2016. Tropical soil nutrient distributions determined by biotic and hillslope processes. *Biogeochemistry* doi:10.1007/s10533-015-0179-z
359. Clark, K.E., A.J. West, R.G. Hilton, G.P. Asner, C.A. Quesada, M.R. Silman, S.S. Saatchi, W. Farfan-Rios, R.E. Martin, A.B. Horwath, K. Halladay, M. New, and Y. Malhi. 2016. Storm-triggered landslides in the Peruvian Andes and implications for topography, carbon cycles, and biodiversity. *Earth Surface Dynamics* 4:47-70.

360. Chadwick, K.D., and G.P. Asner. 2016. Organismic-scale remote sensing of canopy foliar traits in lowland tropical forests. *Remote Sensing* 8(87) doi:10.3390/rs8020087
361. Marvin, D.C., G.P. Asner, and S.A. Schnitzer. 2016. Liana canopy cover mapped throughout a tropical forest with high-fidelity imaging spectroscopy. *Remote Sensing of Environment* 176:98-105.
362. Chavana-Bryant, C., Y. Malhi, J. Wu, G.P. Asner, A. Anastasiou, B.J. Enquist, E.G. Cosio Caravasi, C.E. Doughty, S.R. Saleska, R.E. Martin, and E.F. Gerard. 2016. Leaf aging of Amazonian canopy trees as revealed by spectral and physiochemical measurements. *New Phytologist* doi:10.1111/nph.13853
363. Barbosa, J.M., E. Sebastián-González, G.P. Asner, D.E. Knapp, C. Anderson, R.E. Martin, and R. Dirzo. 2016. Hemiparasite-host plant interactions in a fragmented landscape assessed via imaging spectroscopy and LIDAR. *Ecological Applications* 26(1):55-66.
364. Graves, S.J., G.P. Asner, R.E. Martin, C.B. Anderson, M.S. Colgan, L. Kalantari, and S.A. Bohlman. 2016. Tree species abundance predictions in a tropical agricultural landscape with a supervised classification model and imbalanced data. *Remote Sensing* 8 doi:10.3390/rs8020161
365. Davies, A.B., C.J. Tambling, G.I.H. Kerley, and G.P. Asner. 2016. Effects of vegetation structure on the location of lion kill sites in African thicket. *PLoS One* 11(2):e0149098
366. McManus, K.M., G.P. Asner, R.E. Martin, K.G. Dexter, W.J. Kress, and C.B. Field. 2016. Phylogenetic structure of foliar spectral traits in tropical forest canopies. *Remote Sensing* 8(3):196 doi:10.3390/rs8030196
367. Jetz, W., J. Cavender-Bares, R. Pavlick, D. Schimel, F.W. Davis, G.P. Asner, R. Guralnick, J. Kattge, A.M. Latimer, P. Moorcroft, ME. Schaepman, M.P. Schildhauer, F.D. Schneider, F. Schrodt, U. Stahl, and S.L. Ustin. 2016. Monitoring plant functional diversity from space. *Nature Plants* 16024 (doi:10.1038/nplants.2016.24)
368. Feakins, S.J., L.P. Bentley, N. Salinas, A. Shenkin, B. Blonder, G.R. Goldsmith, C. Ponton, L.J. Arvin, M.S. Wu, T. Peters, A.J. West, R.E. Martin, B.J. Enquist, G.P. Asner, and Y. Malhi. 2016. Plant leaf wax biomarkers capture gradients in hydrogen isotopes of precipitation from the Andes to Amazon. *Geochimica et Cosmochimica Acta* 182:155-172.
369. McClean, K.A., A.M. Trainor, G.P. Asner, M.C. Crofoot, M.E. Hopkins, C.J. Campbell, R.E. Martin, D.E. Knapp, and P.A. Jansen. 2016. Movement patterns of three arboreal primates in a Neotropical moist forest explained by LiDAR-estimated canopy structure. *Landscape Ecology* doi:10.1007/s10980-016-0367-9
370. Asner, G.P. and R.E. Martin. 2016. Convergent elevation trends in canopy chemical traits of tropical forests. *Global Change Biology* 22:2216-2227.
371. Gillison, A.N., G.P. Asner, E.C.M. Fernandes, J. Mafalacusser, A. Banze, S. Izidine, A.R. da Fonseca, and H. Pacate. 2016. Biodiversity and agriculture in dynamic landscapes: Integrating ground and remotely-sensed baseline surveys. *Journal of Environmental Management* 177:9-19.
372. Davies, A.B., S.R. Levick, M.P. Robertson, B.J. van Rensburg, G.P. Asner, and C.L. Parr. 2016. Termite mounds differ in their importance for herbivores across savanna types, seasons and spatial scales. *Oikos* 125:726-734.
373. Niemiec, R.M., N.M. Ardoin, C.B. Wharton and G.P. Asner. 2016. Motivating residents to combat invasive species on private lands: social norms and community reciprocity. *Ecology and Society* 21 (2):30.
374. Davies, A.B., B.J. van Rensburg, M.P. Robertson, S.R. Levick, G.P. Asner, and C.L. Parr. 2016. Seasonal variation in the relative dominance of herbivore guilds in an African savanna. *Ecology* 97(6):1618-1624.
375. Marvin, D.C., G.P. Asner. 2016. Spatially explicit analysis of field inventories for national forest carbon monitoring. *Carbon Balance and Management* 11:9 (doi 10.1186/s13021-016-0050-0)
376. Naidoo, L., R. Mathieu, R. Main, K. Wessels, and G.P. Asner. 2016. L-band Synthetic Aperture Radar imagery performs better than optical datasets at retrieving woody fractional cover in deciduous, dry savannahs. *International Journal of Applied Earth Observation and Geoinformation* 52:54-64.

377. Asner, G.P., R.E. Martin, C.B. Anderson, K. Kryston, N. Vaughn, D.E. Knapp, L. Patrick Bentley, A. Shenkin, N. Salinas, F. Sinca, R. Tupayachi, K. Quispe Huaypar, M. Montoya Pillco, F.D. Ccori Álvarez, S. Díaz, B. Enquist, and Y. Malhi. 2016. Scale dependence of canopy trait distributions along a tropical forest elevation gradient. *New Phytologist* doi: 10.1111/nph.14068
378. Bahar, N.H.A., F.Y. Ishida, L.A. Weerasinghe, R. Guerrieri, O.S. O'Sullivan, K.J. Bloomfield, G.P. Asner, R.E. Martin, J. Lloyd, Y. Malhi, O.L. Phillips, P. Meir, N. Salinas, E.G. Cosio, T.F. Domingues, C.A. Quesada, F. Sinca, A. Escudero Vega, P.P. Zuloaga Ccorimanya, J. del Aguila-Pasquel, K. Quispe Huaypar, I Cuba Torres, R. Butrón Loayza, Y. Pelaez Tapia, J. Huaman Ovalle, B.M. Long, J.R. Evans, and O.K. Atkin. 2016. Leaf-level photosynthetic capacity in lowland Amazonian and high-elevation Andean tropical moist forests of Peru. *New Phytologist* doi:10.1111/nph.14079
379. Davies, A.B., C.J. Tambling, G.I.H. Kerley, and G.P. Asner. 2016. Limited spatial response to direct predation risk by African herbivores following predator reintroduction. *Ecology and Evolution* 6(16):5728-5748.
380. Messinger, M., G.P. Asner, and M. Silman. 2016. Rapid assessments of Amazon forest structure and biomass using small unmanned aerial systems. *Remote Sensing* 8:615 (doi:10.3390/rs8080615)
381. Neyret, M., L.P. Bentley, I. Oliveras, B.S. Marimon, B.H. Marimon-Junior, E. Almeida de Oliveira, F. Barbosa Passos, R. Castro Ccoscco, J. dos Santos, S. Matias Reis, P.S. Morandi, G. Rayme Paucar, A. Robles Cáceres, Y. Valdez Tejeira, Y. Yllanes Choque, N. Salinas, A. Shenkin, G.P. Asner, S. Díaz, B.J. Enquist, and Y. Malhi. 2016. Examining variation in the leaf mass per area of dominant species across two contrasting tropical gradients in light of community assembly. *Ecology and Evolution* 6(16):5674-5689.
382. Goldsmith, G.R., L. Patrick Bentley, A. Shenkin, N. Salinas, B. Blonder, R.E. Martin, R. Castro-Ccossco, P. Chambi-Porroa, S. Díaz, B.J. Enquist, G.P. Asner, and Y. Malhi. 2016. Variation in leaf wettability traits along a tropical montane elevation gradient. *New Phytologist* doi:10.1111/nph.14121
383. Smit, I.P.J., G.P. Asner, N. Govender, N.R. Vaughn, and B.W. van Wilgen. 2016. An examination of the potential efficacy of high-intensity fires for reversing woody encroachment in savannas. *Journal of Applied Ecology* 53(5):1623-1633.
384. Sasaki, N., G.P. Asner, Y. Pan, W. Knorr, P.B. Durst, H.O. Ma, I. Abe, A.J. Lowe, L.P. Koh, and F.E. Putz. 2016. Sustainable management of tropical forests can reduce carbon emissions and stabilize timber production. *Frontiers in Environmental Science* 4(5) doi:10.3389/fenvs.2016.00050
385. Marvin, D.C., L. Pin Koh, A.J. Lynam, S. Wich, A.B. Davies, R. Krishnamurthy, E. Stokes, R. Starkey, and G.P. Asner. 2016. Integrating technologies for scalable ecology and conservation. *Global Ecology and Conservation* 7:262-275.
386. Main, R., R. Mathieu, W. Kleynhans, K. Wessels, L. Naidoo, and G.P. Asner. 2016. Hyper-temporal C-band SAR for baseline woody structural assessments in deciduous savannas. *Remote Sensing* 8 (661) doi:10.3390/rs8080661
387. Feakins, S.J., T. Peters, M.S. Wu, A. Shenkin, N. Salinas, C.A.J. Girardin, L. Patrick Bentley, B. Blonder, B.J. Enquist, R.E. Martin, G.P. Asner, and Y. Malhi. 2016. Production of leaf wax *n*-alkanes across a tropical forest elevation transect. *Organic Geochemistry* 110:89-100.
388. Gonsamo, A., J.M. Chen, D.T. Shindell, and G.P. Asner. 2016. Coherence among the Northern Hemisphere land, cryosphere, and ocean responses to natural variability and anthropogenic forcing during the satellite era. *Earth System Dynamics* 7:717-734.
389. Eitel, J.U.H., B. Höfle, L.A. Vierling, A. Abellán, G.P. Asner, J.S. Deems, C.L. Glennie, P.C. Joerg, A.L. LeWinter, T.S. Magney, G. Mandlburger, D.C. Morton, J. Müller, and K.T. Vierling. 2016. Beyond 3-D: the new spectrum of lidar applications for earth and ecological sciences. *Remote Sensing of Environment* 186:372-392.
390. Marvin, D.C. and G.P. Asner. 2016. Branchfall dominates annual carbon flux across lowland Amazonian forests. *Environmental Research Letters* 11:094027.

391. Asner, G.P., D.E. Knapp, C.B. Anderson, R.E. Martin, and N. Vaughn. 2016. Large-scale climatic and geophysical controls on the leaf economics spectrum. *Proceedings of the National Academy of Sciences* 113(28):4043-4051.
392. Cordell, S., E.J. Questad, G.P. Asner, K.M. Kinney, J.M. Thaxton, A. Uowolo, S. Brooks, and M.W. Chynoweth. 2016. Remote sensing for restoration planning: how the big picture can inform stakeholders. *Restoration Ecology* 25:S147-S154 doi:10.1111/rec.12448
393. Asner, G.P. and R.E. Martin. 2016. Spectranomics: emerging science and conservation opportunities at the interface of biodiversity and remote sensing. *Global Ecology and Conservation* 8:212-219.
394. Olah, G., A.L. Smith, G.P. Asner, D.J. Brightsmith, R.G. Heinsohn, and R. Peakall. 2016. Exploring dispersal barriers using landscape genetic resistance modelling in scarlet macaws of the Peruvian Amazon. *Landscape Ecology* doi:10.1007/s10980-016-0457-8
395. Balzotti, C.S., G.P. Asner, P.G. Taylor, C.C. Cleveland, R. Cole, R.E. Martin, M. Nasto, B.B. Osborne, S. Porder, and A.R. Townsend. 2016. Environmental controls on canopy foliar nitrogen distributions in a Neotropical lowland forest. *Ecological Applications* 26(8):2449-2462.
396. Caughlin, T.T., S.J. Graves, G.P. Asner, M. van Breugel, J.S. Hall, R.E. Martin, M.S. Ashton, and S.A. Bohlman. 2016. A hyperspectral image can predict tropical tree growth rates in single-species stands. *Ecological Applications* 26(8):2367-2373.
397. Davies, A.B., D.G. Marneweck, D.J. Druce, and G.P. Asner. 2016. Den site selection, pack composition, and reproductive success in endangered African wild dogs. *Behavioral Ecology* 27(6):1869-1879.
398. Skowronek, S., G.P. Asner, and H. Feilhauer. 2017. Performance of one-class classifiers for invasive species mapping using airborne imaging spectroscopy. *Ecological Informatics* 37:66-75.
399. Osborne, B.B., M.K. Nasto, G.P. Asner, C.S. Balzotti, C.C. Cleveland, B.W. Sullivan, P.G. Taylor, A.R. Townsend, and S. Porder. 2017. Climate, topography, and canopy chemistry exert hierarchical control over soil N cycling in a Neotropical lowland forest. *Ecosystems* doi:10.1007/s10021-016-0095-7
400. Mograbi, P.J. G.P. Asner, E.T.F. Witkowski, B.F.N. Erasmus, K.J. Wessels, R. Mathieu, and N.R. Vaughn. 2017. Humans and elephants as treefall drivers in African savannas. *Ecography* 10.1111/ecog.02549
401. Barbosa, J.M. and G.P. Asner. 2017. Prioritizing landscapes for restoration based on spatial patterns of ecosystem controls and plant-plant interactions. *Journal of Applied Ecology* doi:10.1111/1365-2664.12857
402. Caughlin, T.T., S.W. Rifai, S.J. Graves, G.P. Asner, and S.A. Bohlman. 2017. Integrating LiDAR-derived tree height and Landsat satellite reflectance to estimate forest regrowth in a tropical agricultural landscape. *Remote Sensing in Ecology and Conservation* 2(4):190-203.
403. Asner, G.P., R.E. Martin, D.E. Knapp, et al. 2017. Airborne laser-guided imaging spectroscopy to map forest trait diversity and guide conservation. *Science* 355:385-389.
404. Barbosa, J.M., G.P. Asner, R.F. Hughes, and M.T. Johnson. 2017. Landscape-scale GPP and carbon density inform patterns and impacts of an invasive tree across wet forests of Hawaii. *Ecological Applications* 27:403-415.
405. Nasto, M.K., B.B. Osborne, Y. Lekberg, G.P. Asner, C.S. Balzotti, S. Porder, P.G. Taylor, A.R. Townsend, and C.C. Cleveland. 2017. Nutrient acquisition, soil phosphorus partitioning and competition among trees in a lowland tropical rain forest. *New Phytologist* 214:1506-1517.
406. Clark, K.E., R.G. Hilton, A.J. West, A. Robles Caceres, D.R. Grocke, T.R. Marthews, R.I. Ferguson, G.P. Asner, M. New, and Y. Malhi. 2017. Erosion of organic carbon from the Andes and its effects on ecosystem carbon dioxide balance. *J. of Geophysical Research – Biogeosciences* doi:10.1002/2016JG003615
407. Wu, M.S., S.J. Feakins, R.E. Martin, A. Shenkin, L. Patrick Bentley, B. Blonder, N. Salinas, G.P. Asner, and Y. Malhi. 2017. Altitude effect on leaf wax carbon isotopic composition in humid tropical forests. *Geochimica et Cosmochimica Acta* 206:1-17. doi:10.1016/j.gca.2017.02.022

408. Asner, G.P., R.E. Martin, and J. Mascaro. 2017. Coral reef atoll assessment in the South China Sea using Planet Dove satellites. *Remote Sensing for Ecology and Conservation* doi:10.1002/rse2.42
409. Blackman, A., L. Corral, E. Santo Lima, and G.P. Asner. 2017. Titling indigenous communities protects forests in the Peruvian Amazon. *Proceedings of the National Academy of Sciences* doi:10.1073/pnas.1603290114
410. Ordway, E.M., G.P. Asner, and E. Lambin. 2017. Deforestation risk due to commodity crop expansion in sub-Saharan Africa. *Environmental Research Letters* 12:044015.
411. Blonder, B., N. Salinas, L. Patrick Bentley, A. Shenkin, P.O. Chambi Porroa, Y. Valdez Tejeira, C. Violle, N.M. Fyllas, G.R. Goldsmith, R. Martin, G.P. Asner, S. Diaz, B.J. Enquist, and Y. Malhi. 2017. Predicting trait-environment relationships for venation networks along an Andes-Amazon elevation gradient. *Ecology* doi:10.1002/ecy.1747
412. Coomes, D.A., M. Dalponte, T. Jucker, G.P. Asner, L.F. Banin, D.F.R.P. Burslem, S.L. Lewis, R. Nilus, O.L. Phillips, M.-H. Phua, and L. Qie. 2017. Area-based vs tree-centric approaches to mapping forest carbon in Southeast Asian forests from airborne laser scanning data. *Remote Sensing of Environment* 194:77-88.
413. Asner, G.P., R.E. Martin, R. Tupayachi, and W. Llactayo. 2017. Conservation assessment of the Peruvian Andes and Amazon based on mapped forest functional diversity. *Biological Conservation* 210:80-88.
414. Balzotti, C.S., and G.P. Asner. 2017. Biotic and abiotic controls over canopy function and structure in humid Hawaiian forests. *Ecosystems* doi:10.1007/s10021-017-0151-y
415. Fyllas, N.M., L. Patrick Bentley, A. Shenkin, G.P. Asner, et al. 2017 Solar radiation and functional traits explain the decline of forest primary productivity along a tropical elevation gradient. *Ecology Letters* doi:10.1111/ele.12771.
416. Balzotti, C.S., G.P. Asner, P.G. Taylor, R. Cole, B.B. Osborne, C.C. Cleveland, S. Porder, and A.R. Townsend. 2017. Topographic distributions of emergent trees in tropical forests of the Osa Peninsula, Costa Rica. *Ecography* 40:829-839 (doi 10.1111/ecog.02062)
417. Davies, A.B., M. Ancrenaz, F. Oram, and G.P. Asner. 2017. Canopy structure drives orangutan habitat selection in disturbed Bornean forests. *Proceedings of the National Academy of Sciences* doi:10.1073/pnas.1706780114
418. Evans, L.J., B. Goossens, and G.P. Asner. 2017. Underproductive agriculture aids connectivity in tropical forests. *Forest Ecology and Management* 401:159-165.
419. Thompson, D.R., E.J. Hochberg, G.P. Asner, R.O. Green, D.E. Knapp, B.-C. Gao, R. Garcia, M. Gierach, Z. Lee, S. Maritorena, and R. Fick. 2017. Airborne mapping of benthic reflectance spectra with Bayesian linear mixtures. *Remote Sensing of Environment* 200:18-30.
420. Balzotti, C.S, and G.P. Asner. 2017. Episodic canopy structural transformations and biological invasion in a Hawaiian forest. *Frontiers in Plant Science* doi:10.3389/fpls.2017.01256
421. Asner, G.P. and R. Tupayachi. 2017. Accelerated losses of protected forests from gold mining in the Peruvian Amazon. *Environmental Research Letters* 12:094004.
422. Barbosa, J.M. and G.P. Asner. 2017. Effects of long-term rainfall decline on the structure and functioning of Hawaiian forests. *Environmental Research Letters* 12:094002.
423. North, M.P., J.T. Kane, V.R. Kane, G.P. Asner, W. Berigan, D.J. Churchill, S. Conway, R.J. Gutierrez, S. Jeronimo, J. Keane, A. Koltunov, T. Mark, M. Moskal, T. Munton, Z. Peery, C. Ramirez, R. Sollmann, A.M. White, and S. Whitmore. 2017. Cover of tall trees best predicts California spotted owl habitat. *Forest Ecology and Management* 405:166-178.
424. Paz-Kagan, T., and G.P. Asner. 2017. Drivers of woody canopy water content responses to drought in a Mediterranean-type ecosystem. *Ecological Applications* DOI: 10.1002/eap.1603
425. Evans, L.J., A.B. Davies, B. Goossens, and G.P. Asner. 2017. Riparian vegetation structure and the hunting behavior of adult estuarine crocodiles. *PLoS One* doi:10/1371/journal.pone.0184804
426. Enquist, B.J., L.P. Bentley, A. Shenkin, B. Maitner, V. Savage, S. Michaletz, B. Blonder, V. Buzzard, T.E. Boza Espinoza, W. Farfan-Rios, C.E. Doughty, G.R. Goldsmith, R.E. Martin, N. Salinas, M. Silman, S. Diaz, G.P. Asner, and Y. Malhi. 2017. Assessing trait-based scaling theory

in tropical forests spanning a broad temperature gradient. *Global Ecology and Biogeography* doi:10.1111/geb.12645

427. Brodrick, P.G., and G.P. Asner. 2017. Remotely sensed predictors of conifer tree mortality during severe drought. *Environmental Research Letters* 115013. doi:10.1088/1748-9326/aa8f55
428. Doughty, C.E., P.E. Santos-Andrade, G.R. Goldsmith, B. Blonder, A. Shenkin, L.P. Bentley, C. Chavana-Bryant, W. Huaraca-Huasco, S. Diaz, N. Salinas, B.J. Enquist, R. Martin, G.P. Asner, and Y. Malhi. 2017. Can leaf spectroscopy predict leaf and forest traits along a Peruvian tropical forest elevation gradient? *Journal of Geophysical Research* 10.1002/2017JG003883
429. Paz-Kagan, T., P.G. Brodrick, N.R. Vaughn, A.J. Das, N.L. Stephenson, K.R. Nydick, and G.P. Asner. 2017. What mediates tree mortality during drought in the southern Sierra Nevada? *Ecological Applications* 27(8):2443-2457.

2018-2019

430. Niemiec, R.M., G.P. Asner, P.G. Brodrick, J.A. Gaertner, N.M. Ardoin. 2018. Scale-dependence of environmental and socioeconomic drivers of Albizia invasion in Hawaii. *Landscape and Urban Planning* 169:70-80.
431. Asner, G.P., P.G. Brodrick, C. Philipson, N.R. Vaughn, R.E. Martin, D.E. Knapp, J. Heckler, L.J. Evans, T. Jucker, B. Goossens, D.J. Stark, G. Reynolds, R. Ong, N. Renneboog, F. Kugan, and D.A. Coomes. 2017. Mapped aboveground carbon stocks to advance forest conservation and recovery in Malaysian Borneo. *Biological Conservation* 217:289-310.
432. Bouvet, A., S. Mermoz, T. Le Toan, L. Villard, R. Mathieu, L. Naidoo, and G.P. Asner. 2018. An above-ground biomass map of African savannahs and woodlands at 25 m resolution derived from ALOS PALSAR. *Remote Sensing of Environment* 206:156-173.
433. McManus Chauvin, K., G.P. Asner, R.E. Martin, W.J. Kress, S.J. Wright, and C.B. Field. 2018. Decoupled dimensions of leaf economic and anti-herbivore defense strategies in a tropical canopy tree community. *Oecologia* doi:10.1007/s00442-017-4043-9.
434. Veenendaal, E.M. M. Torello-Raventos, H.S. Miranda, N.M. Sato, I. Oliveras, F. van Langevelde, G.P. Asner, and J. Lloyd. 2018. On the relationship between fire regime and vegetation structure in the tropics. *New Phytologist* doi:10.1111/nph.14940.
435. Martin, R.E., K.D. Chadwick, P.G. Brodrick, L. Carranza-Jimenez, N.R. Vaughn, and G.P. Asner. 2018. An approach for foliar trait retrieval from airborne imaging spectroscopy of tropical forests. *Remote Sensing* 10:199 doi:10.3390/rs10020199
436. Davies, A.B., A. Gaylard, and G.P. Asner. 2018. Megafaunal effects on vegetation structure throughout a densely wooded African landscape. *Ecological Applications* doi:10.1002.eap.1655
437. Blonder, B., N. Salinas, L. Patrick Bentley, A. Shenkin, P.O. Chambi Porroa, Y. Valdez Tejeira, T.E. Boza Espinoza, G.R. Goldsmith, L. Enrico, R. Martin, G.P. Asner, S. Diaz, B.J. Enquist, and Y. Malhi. 2018. Structural and defensive roles of angiosperm leaf venation network reticulation across an Andes-Amazon elevation gradient. *Journal of Ecology* 106:1683-1699.
438. Evans, L.J., G.P. Asner, and B. Goossens. 2018. Protected area management priorities crucial for the future of Bornean elephants. *Biological Conservation* doi:10.1016/j.biocon.2018.03.015
439. Asner, G.P., R.E. Martin, L.M. Keith, W.P. Heller, M.A. Hughes, N.R. Vaughn, R.F. Hughes, and C. Balzotti. 2018. A spectral mapping signature for the Rapid Ohia Death (ROD) pathogen in Hawaiian forests. *Remote Sensing* 10:404, doi:10.3390/rs10030404
440. Vaughn, N.R., G.P. Asner, P.G. Brodrick, R.E. Martin, J.W. Heckler, D.E. Knapp, and R.F. Hughes. 2018. An approach for high-resolution mapping of Hawaiian Metrosideros forest mortality using laser-guided imaging spectroscopy. *Remote Sensing* 10:502, doi:10.3390/rs10040502
441. Chadwick, K.D., and G.P. Asner. 2018. Landscape evolution and nutrient rejuvenation reflected in Amazon forest canopy chemistry. *Ecology Letters* doi:10.1111/ele.12963
442. Paz-Kagan, T., N.R. Vaughn, R.E. Martin, P.G. Brodrick, N.L. Stephenson, A.J. Das, K.R. Nydick, and G.P. Asner. 2018. Landscape-scale variation in canopy water content of giant sequoias during drought. *Forest Ecology and Management* 419-420:291-304.

443. Martin, R.E., G.P. Asner, E. Francis, A. Ambrose, W. Baxter, A.J. Das, N.R. Vaughn, T. Paz-Kagan, T. Dawson, K. Nydick, and N.L. Stephenson. 2018. Remote measurement of canopy water content in giant sequoias (*Sequoiadendron giganteum*) during drought. *Forest Ecology and Management* 419-420:279-290.
444. Ambrose, A.R., W.L. Baxter, R.E. Martin, E. Francis, G.P. Asner, K.R. Nydick, and T.E. Dawson. 2018. Leaf- and crown-level adjustments help giant sequoias maintain favorable water status during severe drought. *Forest Ecology and Management* 419-420:257-267.
445. Nydick, K.R., N.L. Stephenson, A.R. Ambrose, G.P. Asner, W.L. Baxter, A.J. Das, T. Dawson, R.E. Martin, and T. Paz-Kagan. 2018. Leaf to landscape responses of giant sequoia to hotter drought: An introduction and synthesis for the special section. *Forest Ecology and Management* 419-420:249-256.
446. Hughes, R.F., G.P. Asner, J.A. Baldwin, J. Mascaro, L.K.K. Bufil, and D.E. Knapp. 2018. Estimating aboveground carbon density across forest landscapes of Hawaii: combining FIA plot-derived estimates and airborne LiDAR. *Forest Ecology and Management* 424:323-337.
447. Jucker, T., G.P. Asner, M. Dalponte, P.G. Brodrick, C.D. Philipson, N.R. Vaughn, Y.A. Teh, C. Brelsford, D.F.R.P. Burslem, et al., and D.A. Coomes. 2018. Estimating aboveground carbon density and its uncertainty in Borneo's structurally complex tropical forests using airborne laser scanning. *Biogeosciences* 15:3811-3830.
448. Anderson, C.M., G.P. Asner, W. Llactayo, and E.F. Lambin. 2018. Overlapping land allocations reduce deforestation in Peru. *Land Use Policy* 79:174-178.
449. Sloan, S., J.C. Zamora Pereira, G. Labbate, G.P. Asner, and P. Imbach. 2018. The cost and distribution of forest conservation for national emissions reductions. *Global Environmental Change* 53:39-51.
450. Graves, S.J., T.T. Caughlin, G.P. Asner, and S.A. Bohlman. 2018. A tree-based approach to biomass estimation from remote sensing data in a tropical agricultural landscape. *Remote Sensing of Environment* 218:32-43.
451. Mahlangu, P., R. Mathieu, K. Wessels, L. Naidoo, M. Verstaete, G. Asner, and R. Main. 2018. Indirect estimation of structural parameters in South African forests using MISR-HR and LiDAR remote sensing data. *Remote Sensing* 10:1537.
452. Mayoral, C., van Breugel, M., Turner, B.L., G.P. Asner, N.R. Vaughn, and J.S. Hall. 2019. Effect of microsite quality and species composition on tree growth: a semi-empirical modeling approach. *Forest Ecology and Management* 432:534-545.
453. Mograbi, P.J., E.T.F. Witkowski, B.F.N. Erasmus, G.P. Asner, J.T. Fisher, R. Mathieu, and K.J. Wessels. 2018. Fuelwood extraction intensity drives compensatory regrowth in African savanna communal lands. *Land Degradation and Development* doi:10.1002/ldr.3210, 1-12.
454. Doughty, C.E., P.E. Santos-Andrade, A. Shenkin, G.R. Goldsmith, L.P. Bentley, B. Blonder, S. Diaz, N. Salinas, B.J. Enquist, R.E. Martin, G.P. Asner, and Y. Malhi. 2018. Tropical forest leaves may darken in response to climate change. *Nature Ecology and Evolution* doi:10.1038/s41559-018-0716-y
455. Wieczynski, D.J., B. Boyle, V. Buzzard, S.M. Duran, A.N. Henderson, C.M. Hulshof, A.J. Kerkhoff, M.C. McCarthy, S.T. Michaletz, N.G. Swenson, G.P. Asner, L. Patrick Bentley, B.J. Enquist, and V.M. Savage. 2018. Climate shapes and shifts functional biodiversity in forests worldwide. *Proceedings of the National Academy of Sciences* doi:10.1073/pnas.1813723116
456. Rodriguez-Veiga, P., et al. 2019. Forest biomass retrieval approaches from earth observation in different biomes. *Int'l Journal of Applied Earth Obs Geoinformation* 77:53-68.
457. Draper, F.C., C. Baraloto, P.G. Brodrick, O.L. Phillips, R. Vasquez Martinez, E.N. Honorio Coronado, T.R. Baker, R. Zarate Gomez, C.A. Amasifuen Guerra, M. Flores, R. Garcia Villacorta, P.V.A. Fine, L. Freitas, A. Monteagudo-Mendoza, R.J.W. Brienen, G.P. Asner. 2019. Imaging spectroscopy predicts variable distance decay across contrasting Amazonian tree communities. *Journal of Ecology* 1-15. DOI:10.1111/1365-2745.13067

458. Jeronimo, S.M.A., V.R. Kane, D.J. Churchill, J.A. Lutz, M.P. North, G.P. Asner, and J.F. Franklin. 2019. Forest structure and pattern vary by climate and landform across active-fire landscapes in the montane Sierra Nevada. *Forest Ecology and Management* 437:70-86.
459. Davies, A.B., F. Oram, M. Ancrenaz, and G.P. Asner. 2019. Combining behavioural and LiDAR data to reveal relationships between canopy structure and orangutan nest site selection in disturbed forests. *Biological Conservation* 232:97-107.
460. Francis, E.J., and G.P. Asner. 2019. High-resolution mapping of redwood (Sequoia sempervirens) distributions in three Californian forests. *Remote Sensing* 11, doi:10.3390/rs11030351
461. Davies, A.B. and G.P. Asner. 2019. Elephants limit aboveground carbon gains in African savannas. *Global Change Biology* doi:10.1111/gcb.14585
462. Brodrick, P.G., L.D.L. Anderegg, and G.P. Asner. 2019. Forest drought resistance at large geographic scales. *Geophysical Research Letters* doi:10.1029/2018GL081108
463. Draper, F. C., G. P. Asner, E. N. Honorio Coronado, T. R. Baker, R. Garcıa-Villacorta, N. C. A. Pitman, P. V. A. Fine, O. L. Phillips, R. Zarate Gomez, C. A. Amasifuen Guerra, M., Flores Arevalo, R. Vasquez Martınez, R. J. W. Brienen, A. Monteagudo-Mendoza, L. A. Torres, Montenegro, E. Valderrama Sandoval, K. H. Roucoux, F. R. Ramırez Arevalo, I. Mesones, J. Del Aguila Pasquel, X. Tagle Casapia, G. Flores Llampazo, M. Corrales Medina, J., Reyna Huaymacari, and C. Baraloto. 2019. Dominant tree species drive beta diversity patterns in western Amazonia. *Ecology* e02636. 10.1002/ecy.2636
464. Foo, S.A. and G.P. Asner. 2019. Scaling up coral reef restoration using remote sensing technology. *Frontiers in Marine Science* 6(79) doi:10.3389/fmars.2019.00079
465. Anderson, C.M., G.P. Asner, and E.F. Lambin. 2019. Lack of association between deforestation and either sustainability commitments or fines in private concessions in the Peruvian Amazon. *Forest Policy and Economics* 104:1-8. doi.org/10.1016/j.forpol.2019.03.010
466. Dinerstein, E., C. Vynne, E. Sala, A.R. Joshi, S. Fernando, T.E. Lovejoy, J. Mayorga, D. Olson, G.P. Asner, J.E.M. Baillie, N.D. Burgess, K. Burkart, R.F. Noss, Y.P. Zhang, A. Baccini, T. Birch, N. Hahn, L.N. Joppa, and E. Wikramanayake. 2019. A Global Deal for Nature: guiding principles, milestones, and targets. *Science Advances* 5
467. Fauset, S., M. Gloor, N.M. Fyllas, O.L. Phillips, G.P. Asner, T.R. Baker, et al. 2019. Individual-based modeling of Amazon forests suggests that climate controls productivity while traits control demography. *Frontiers in Earth Science* doi.org/10.3389/feart.2019.00083
468. Staver, A.C., G.P. Asner, I. Rodriguez-Iturbe, S.A. Levin, and I. Smit. 2019. Spatial patterning among savanna trees in high-resolution, spatially extensive data. *Proceedings of the National Academy of Sciences* doi:10.1073/pnas.1819391116
469. Brodrick, P.G., A.B. Davies, and G.P. Asner. 2019. Uncovering ecological patterns with convolutional neural networks. *Trends in Ecology and Evolution* doi: 10.1016/j.tree.2019.03.006
470. Baker, P.A., S.C. Fritz, D.S. Battisti, C.W. Dick, O.M. Vargas, G.P. Asner, R.E. Martin, A. Wheatley, and I. Prates. 2020. Beyond Refugia: New insights on Quaternary climate variation and the evolution of biotic diversity in tropical South America. In Neotropical diversification: Patterns and processes (pp. 51-70). Springer, Cham.
471. Caughlin, T.T., S.J. Graves, G.P. Asner, B.C. Tarbox, and S.A. Bohlman. 2019. High-resolution remote sensing data as a boundary object to facilitate interdisciplinary collaboration. Pages 295-326 in *Collaboration Across Boundaries for Social-Ecological Systems Science.* Springer, New York.
472. Csillik, O., M. Belgiu, G.P. Asner, and M. Kelly. 2019. Object-based time-constrained dynamic time warping classification of crops using Sentinel-2. *Remote Sensing* 11:1257 https://doi.org/10.3390/rs11101257
473. Huang, C.-Y., W.R.L. Anderegg, and G.P. Asner. 2019. Remote sensing of forest die-off in the Anthropocene: From plant ecophysiology to canopy structure. *Remote Sensing of Environment* 231:111233.
474. Li, J., S.R. Schill, D.E. Knapp, and G.P. Asner. 2019. Object-based mapping of coral reef habitats using Planet Dove satellites. *Remote Sensing* 11:1445 doi:10.3390/rs11121445

475. Li, J., D.E. Knapp, S.R. Schill, C. Roelfsema, S. Phinn, M. Silman, J. Mascaro, and G.P. Asner. 2019. Adaptive bathymetry estimation for shallow coastal waters using Planet Dove satellites. *Remote Sensing of Environment* 232:111302.
476. Rouzbeh Kargar, A.R., R. MacKenzie, G.P. Asner, and J. van Aardt. 2019. A density-based approach for leaf area index assessment in a complex forest environment using a terrestrial laser scanner. *Remote Sensing* 11, 1791, doi:10.3390/rs11151791.
477. Brando, P.M., D. Silverio, L. Maracahipes-Santos, C. Oliveira-Santos, S.R. Levick, M.T. Coe, M. Migliavacca, J.K. Balch, M.N. Macedo, D.C. Nepstad, L. Maracahipes, E. Davidson, G.P. Asner, P. Kolle, S. Trumbore. *Global Change Biology* 25:2855-2868 doi:10.1111/gcb.14659.
478. Maximenko, N., et al. 2019. Toward the Integrated Marine Debris Observing System. *Frontiers in Marine Science* 6(447). doi: 10.3389/fmars.2019.00447.
479. Carlson, R.R., S.A. Foo, and G.P. Asner. 2019. Land use impacts on coral reef health: a ridge-to-reef perspective. *Frontiers in Marine Science* 10.3389/fmars.2019.00562
480. Niemiec, R.M., G.P. Asner, J.A. Gaertner, PG. Brodrick, N. Vaughn, J. Heckler, F. Hughes, L. Keith, and T. Matsumoto. 2019. Using spatially explicit, time-dependent analysis to understand how social factors influence conservation outcomes. *Conservation Biology* doi:10.1111/cobi.13409.
481. Calders, K., S. Phinn, R. Ferrari, J. Leon, J. Armston, G.P. Asner, and M. Disney. 2019. 3D imaging into forests and coral reefs. *Trends in Ecology and Evolution* doi:10.1016/j.tree.2019.10.004
482. Gove, J.M., J.L. Whitney, M.A. McManus, J. Lecky, F.C. Carvalho, J.M. Lynch, J. Li, P. Neubauer, K.A. Smith, J.E. Phipps, D.R. Kobayashi, K.B. Balagso, E.A. Contreras, M.E. Manuel, M.A. Merrifield, J.J. Polovina, G.P. Asner, J.A. Maynard, and G.J. Williams. 2019. Prey-size plastics are invading larval fish nurseries. *Proceedings of the National Academy of Sciences* doi:10.1073/pnas.1907496116
483. Csillik, O., P. Kumar, J. Mascaro, T. O'Shea, and G.P. Asner. 2019. Monitoring tropical forest carbon stocks and emissions using Planet satellite data. *Scientific Reports* 9:17831 doi:10.1038/s41598-019-S4386-6
484. Duran, S.M., R.E. Martin, S. Diaz, B.S. Maitner, Y. Malhi, N. Salinas, A. Shenkin, M.R. Silman, D.J. Wieczynski, G.P. Asner, L. Patrick Bentley, V.M. Savage, and B.J. Enquist. 2019. Informing trait-based ecology by assessing remotely sensed functional diversity across a broad tropical temperature gradient. *Scientific Advances* 5:eaaw8114.

2020-2022

485. Dudley, B.D., R.F. Hughes, G.P. Asner, J.A. Baldwin, Y. Miyazawa, H. Dulai, C. Waters, J. Bishop, N.R. Vaughn, J. Yeh, S. Kettwich, R.M. MacKenzie, R. Ostertag, and T. Giambelluca. 2020. Hydrological effects of tree invasion on a dry coastal Hawaiian ecosystem. *Forest Ecology and Management* 458:117653.
486. Kattge, J. et al. 2020. TRY plant trait database – enhanced coverage and open access. *Global Change Biology* 26:119-188. Doi:10.1111/gcb.14904
487. Evans, L.J., B. Goossens, A.B. Davies, G. Reynolds, and G.P. Asner. 2020. Natural and anthropogenic drivers of Bornean elephant movement strategies. *Global Ecology and Conservation* 22:e00906.
488. Csillik, O., and G.P. Asner. 2020. Aboveground carbon emissions from gold mining in the Peruvian Amazon. *Environmental Research Letters* 014006.
489. Asner, G.P., N.R. Vaughn, C. Balzotti, P.G. Brodrick, and J. Heckler. 2020. High-resolution reef bathymetry and coral habitat complexity from airborne imaging spectroscopy. *Remote Sensing* 12:310 (doi:10.3390/rs12020310)
490. Martin, R.E., G.P. Asner, L.P. Bentley, A. Shenkin, N. Salinas, K.Q. Huaypar, M.M. Pilco, F.D. Ccori Alvarez, B.J. Enquist, S. Diaz, and Y. Malhi. 2020. Covariance of sun and shade leaf traits along a tropical forest elevation gradient. *Frontiers in Plant Science* 10 doi.org/10.3389/fpls.2019.01810

491. Li, J., N.S. Fabina, D.E. Knapp, and G.P. Asner. 2020. The sensitivity of multi-spectral satellite sensors to benthic habitat change. *Remote Sensing* 12(532) doi:10.3390/rs12030532.
492. Osborne, B.B., M.K. Nasto, F.M. Soper, G.P. Asner, C.S. Balzotti, C.C. Cleveland, P.G. Taylor, A.R. Townsend, S. Porder. 2020. Leaf litter inputs reinforce islands of nitrogen fertility in a lowland tropical forest. *Biogeochemistry* https://doi.org/10.1007/s10533-020-00643-0
493. Oliveras, I., L. Bentley, N.M. Fyllas, A. Gvozdevaite, A.F. Shenkin, T. Prepah, P. Morandi, K.S. Peixoto, M. Boakye, S. Adu-Bredu, B.S. Marimon, B.H. Marimon Jr., R. Martin, G. Asner, S. Diaz, B.J. Enquist, and Y. Malhi. 2020. The influence of taxonomy and environment on leaf trait variation along tropical abiotic gradients. *Frontiers in Forests and Global Change* 3(18); doi:10.3389/ffgc.2020.00018
494. Barnardo, T., C.J. Tambling, A.B. Davies, S. Klein-Snakenborg, G.P. Asner, E. le Roux, J.P.G.M. Cromsigt, D.J. Druce, and G.I.H. Kerley. 2020. Opportunistic feeding by lions: non-preferred prey comprise an important part of lion diets in a habitat where preferred prey are abundant. *Mammal Research* doi.org/10.1007/s13364-020-00481-3
495. Lyons, M.B., C.M. Roelfsema, E.V. Kennedy, E.M. Kovacs, R. Borrego-Acevedo, K. Markey, M. Roe, D.M. Yuwono, D.L. Harris, S.R. Phinn, G.P. Asner, J. Li, D.E. Knapp, N.S. Fabina, K. Larsen, D. Traganos, and N.J. Murray. 2020. Mapping the world's coral reefs using a global multiscale earth observation framework. *Remote Sensing in Ecology and Conservation* doi:10.1002/rse2.157
496. Ordway, E.M. and G.P. Asner. 2020. Carbon declines along tropical forest edges correspond to heterogeneous effects on canopy structure and function. *Proceedings of the National Academy of Sciences* doi:101073/pnas.1914420117
497. Baker, P.A., S.C. Fritz, D.S. Battisti, C.W. Dick, O.M. Vargas, G.P. Asner, R.E. Martin, A. Wheatley, and I. Prates. 2020. Beyond refugia: New insights on quaternary climate variation and the evolution of biotic diversity in tropical South America. Ch. 3 (pp. 51-70) in *Neotropical Diversification: Patterns and Processes* (Rull, V., and A.C. Carnaval, eds.) Springer Nature. doi:10.1007/978-3-030-31167-4_3
498. Csillik, O., P. Kumar, and G.P. Asner. 2020. Challenges in estimating tropical forest canopy height from Planet Dove imagery. *Remote Sensing* 12 (1160), doi:10.3390/rs12071160
499. Chadwick, K.D., and G.P. Asner. 2020. Geomorphic transience moderates topographic controls on tropical canopy foliar traits. *Ecology Letters* doi:10.1111/ele.13531
500. Balzotti, C.S., G.P. Asner, E.D. Adkins, and E.W. Parsons. 2020. Spatial drivers of composition and connectivity across endangered tropical dry forests. *Journal of Applied Ecology* doi:10.1111/1365-2664.13632
501. Francis, E.J., G.P. Asner, K.J. Mach, and C.B. Field. 2020. Landscape scale variation in the hydrologic niche of California coast redwood. *Ecography* 43 doi:10.1111/ecog.05080
502. Foo, S.A. and G.P. Asner. 2020. Sea surface temperature in coral reef restoration outcomes. *Environmental Research Letters* 15:074045. doi:10.1088/1748-9326/ab7dfa
503. Meireles, J.E., J. Cavender-Bares, P.A. Townsend, S. Ustin, J.A. Gamon, A.K. Schweiger, M.E. Schaepman, G.P. Asner, R.E. Martin, A. Singh, F. Schrodt, A. Chlus, and B.C. O'Meara. 2020. Leaf reflectance spectra capture the evolutionary history of seed plants. *New Phytologist* doi:10.1111/nph.16771
504. Philipson, C.D., M. Cutler, P.G. Brodrick, G.P. Asner, D. Boyd, P. Costa, J. Fiddes, G. Foody, G. van der Heijden, A. Ledo, P. Lincoln, J. Margrove, R.E. Martin, S. Milne, M. Pinard, G. Reynolds, M. Snoep, H. Tangki, Y. Wai, C. Wheeler, and D. Burslem. 2020. Active restoration accelerates the carbon recovery of human-modified tropical forests. *Science* 369 (6505): 838-841.
505. Davies, A.B., P.G. Brodrick, C.J. Parr, and G.P. Asner. 2020. Resistance of mound-building termites to anthropogenic land-use change. *Environmental Research Letters* 15:094038.
506. Dinerstein, E., A.R. Joshi, C. Vynne, A.T.L. Lee, F. Pharand-Deschenes, M. Franca, S. Fernando, T. Birch, K. Burkart, G.P. Asner, and D. Olson. 2020. A "Global Safety Net" to reverse biodiversity loss and stabilize Earth's climate. *Science Advances* 6:eabb2824.

507. Li, J., D.E. Knapp, N.S. Fabina, E.V. Kennedy, K. Larsen, M.B. Lyons, N.J. Murray, S.R. Phinn, C.M. Roelfsema, and G.P. Asner. 2020. A global coral reef probability map generated using convolutional neural networks. *Coral Reefs* doi:10.1007/s00338-020-02055-6
508. Xu, Y., N.R. Vaughn, D.E. Knapp, R.E. Martin, C. Balzotti, J. Li, S.A. Foo, and G.P. Asner. 2020. Coral bleaching detection in the Hawaiian Islands using spatio-temporal standardized bottom reflectance and Planet Dove satellites. *Remote Sensing* 12, 3219 (doi:10.3390/rs12193219)
509. Shenkin, A., L.P. Bentley, I. Oliveras, N. Salinas, S. Adu-Bredu, B.H. Marimon, B.S. Marimon, T. Peprah, E. Lopez Choque, L. Trujjilo Rodriguez, E.R. Clemente Arenas, C. Adonteng, J. Seidu, F.B. Passos, S.M. Reis, B. Blonder, M. Silman, B.J. Enquist, G.P. Asner, and Y. Malhi. 2020. The influence of ecosystem and phylogeny on tropical tree crown size and shape. 2020. *Frontiers in Forests and Global Change* 3:501757.
510. Aguirre-Gutierrez, J., et al., G.P. Asner, et al. 2020. Pantropical modelling of canopy functional traits using Sentinel-2 remote sensing data. *Remote Sensing of Environment* 252:112122.
511. Williams, S.H., S.A. Scriven, D.F.R.P. Burslem, J.K. Hill, G. Reynolds, A.L. Agama, F. Kugan, C.R. Maycock, E. Khoo, A.Y.L. Hastie, J.B. Sugau, R. Nilus, J.T. Pereira, S.L.T. Tsen, L.Y. Lee, S. Juiling, J.A. Hodgson, L.E.S. Cole, G.P. Asner, L.J. Evans, and J.F. Brodie. 2019. Incorporating connectivity into conservation planning for the optimal representation of multiple species and ecosystem services. *Conservation Biology* 34(4):934-942.
512. Csillik, O., and G.P. Asner. 2020. Near-real time aboveground carbon emissions in Peru. *PLOS One* 15(11):e0241418 doi:10.1371/journal.pone.0241418.
513. Draper, F.C., T.R. Baker, C. Baraloto, J. Chave, F. Costa, R.E. Martin, R.T. Pennington, A. Vicentini, and G.P. Asner. 2020. Quantifying tropical plant diversity requires an integrated technological approach. *Trends in Ecology and Evolution* 35(12):1100-1109.
514. Davies, A.B., J.P.G.M. Cromsigt, C.J. Tambling, E. le Roux, N. Vaughn, D.J.Druce, D.G. Marneweck, and G.P. Asner. 2020. Environmental controls on African herbivore responses to landscapes of fear. *Oikos* 10.1111/oik.07559
515. Foo, S.A. and G.P. Asner. 2020. Impacts of remotely sensed environmental drivers on coral outplant survival. *Restoration Ecology* 10.1111/rec.13309
516. Asner, G.P., N.R. Vaughn, J. Heckler, D.E. Knapp, C. Balzotti, E. Shafron, R.E. Martin, B.J. Neilson, and J.M. Gove. 2020. Large-scale mapping of live corals to guide reef conservation. *Proceedings of the National Academy of Sciences* doi:10.1073/pnas.2017628117
517. Caughlin, T.T., C. Barber, G.P. Asner, N.F. Glenn, S.A. Bohlman, and C.H. Wilson. 2021. Monitoring tropical forest succession at landscape scales despite uncertainty in Landsat time series. *Ecological Applications* 31(1):e02208 doi:10.1002/eap.2208.
518. Foo, S.A., W.J. Walsh, J. Lecky, S. Marcoux, and G.P. Asner. 2021. Impacts of pollution, fishing pressure, and reef rugosity on resource fish biomass in West Hawaii. *Ecological Applications* 31(1):e02213.
519. Seeley, M., and G.P. Asner. 2021. Imaging spectroscopy for conservation applications. *Remote Sensing* 13:292 doi:10.3390/rs13020292
520. Evans, M.N., C.T. Muller, P. Kille, G.P. Asner, S. Guerrero-Sanchez, M.S. Abu Baker, and B. Goossens. 2021. Space-use patterns of Malay civets (*Viverra tangalunga*) persisting within a landscape fragmented by oil palm plantations. *Landscape Ecology* https://doi.org/10.1007/s10980-020-01187-2
521. Whitney, J.L., J.M Gove, M.A. McManus, K.A. Smith, J. Lecky, P. Neubauer, J.E. Phipps, E.A. Contreras, D.R. Kobayashi, and G.P. Asner. 2021. Surface slicks are pelagic nurseries for diverse ocean fauna. *Scientific Reports* 11:3197. Doi:10.1038/s41598-021-81407-0
522. Asner, G.P., N.R. Vaughn, S.A. Foo, J. Heckler, and R.E. Martin. 2021. Abiotic and human drivers of reef habitat complexity throughout the Main Hawaiian Islands. *Frontiers in Marine Science* 8:631842 doi:10.3389/fmars.2021.631842
523. Fine, P.V.A., D. Salazar, R.E. Martin, M.R. Metz, T.M. Misiewicz, and G.P. Asner. 2021. Exploring the links between secondary metabolites and leaf spectral reflectance in a diverse genus of Amazonian trees. *Ecosphere* 12(2):e03362.

524. Lepczyk, C.A., L.M. Wedding, G.P. Asner, S.J. Pittman, T. Gouldan, M.A. Linferman, J. Gang, and R. Wright. 2021. Advancing landscape and seascape ecology form a 2D to a 3D science. *BioScience* doi:10.1093/biosci/biab001
525. Nunes, M.H., T. Jucker, T. Riutta, M. Svatek, J. Kvasnica, M. Rejzek, R. Matula, N. Majalap, R.M. Ewers, T. Swinfield, R. Valbuena, N.R. Vaughn, G.P. Asner, and D.A. Coomes. 2021. Recovery of logged forest fragments in a human-modified tropical landscape during the 2015-16 El Nino. *Nature Communications* 12:1526 doi:10.1038/s41467-020-20811-y
526. Roelfsema, C.M., M. Lyons, ..., G.P. Asner, ..., S.R. Phinn. 2021. Workflow for the generation of expert-derived training and validation data: a view to global scale habitat mapping. *Frontiers in Marine Science* doi:10.3389/fmars.2021.643381
527. Draper, F.C., F.R.C. Costa, G. Arellano, O.L. Phillips, A. Duque, M.J. Macia, H. ter Steege, G.P. Asner, et al. 2021. Amazon tree dominance across forest strata. *Nature Ecology and Evolution* https://doi.org/10.1038/s41559-021-01418-y
528. Li, J., D.E. Knapp, M. Lyons, C. Roelsema, S. Phinn, S.R. Schill, and G.P. Asner. 2021. Automated global shallow water bathymetry mapping using Google Earth Engine. *Remote Sensing* 13:1469 doi:10.3390/rs13081469
529. Davies, A.B., C.J. Tambling, D.G. Marneweck, N. Ranc, D.J. Druce, J.P. Cromsigt, E. le Roux, and G.P. Asner. 2021. Spatial heterogeneity facilitates carnivore coexistence. *Ecology* 102(5):e03319 doi:org/10.1002/ecy.3319
530. Osborne, B.B., F.M. Soper, M.K. Nasto,, D. Bru, S. Hwang, M.B. Machmuller, M.L. Morales, L. Philippot, B.W. Sullivan, G.P. Asner, C.C. Cleveland, A.R. Townsend, and S. Porder. 2021. Litter inputs drive patterns of soil nitrogen heterogeneity in a diverse tropical forest: Results from a litter manipulation experiment. *Soil Biology and Biochemistry* 158:108247.
531. Pascual, A. C.P. Giardina, P.C. Selmants, L.J. Laramee, and G.P. Asner. 2021. A new remote sensing-based carbon sequestration potential index (CSPI): a tool to support land carbon management. *Forest Ecology and Management* 494:119343.
532. Cusworth, D.H., R.M. Duren, A.K. Thorpe, M.L. Eastwood, R.O. Green, P.E. Dennison, C. Frankenberg, J.W. Heckler, G.P. Asner, and C.E. Miller. 2021. Quantifying global power plant carbon dioxide emission with imaging spectroscopy. *AGU Advances* 2:e2020AV000350.
533. ForestPlots.net et al. 2021. Taking the pulse of Earth's tropical forests using networks of highly distributed plots. *Biological Conservation* doi.org/10.1016/j.biocon.2020.108849
534. Carlson, R.R., L.J. Evans, S.A. Foo, B.W. Grady, J. Li, M. Seeley, Y. Xu, and G.P. Asner. 2021. Synergistic benefits of conserving land-sea ecosystems. *Global Ecology and Conservation* e01684.
535. Asner, G.P., N. Vaughn, B.W. Grady, S.A. Foo, H. Anand, R.R. Carlson, E. Shafron, C. Teague, and R.E. Martin. 2021. Regional reef fish survey design and scaling using high-resolution mapping and analysis. *Frontiers in Marine Science* 8:683184 doi:10.3389/fmars.2021.683184
536. Freund, C.A., K.E. Clark, J.F. Curran, G.P. Asner, and M.R. Silman. 2021. Landslide age, elevation and residual vegetation determine tropical montane forest canopy recovery and biomass accumulation after landslide disturbances in the Peruvian Andes. *Journal of Ecology* doi:10.1111/1365-2745.13737
537. Cusworth, D.H., R.M. Duren, A.K. Thorpe, W. Olson-Dduvall, J. Heckler, J.W. Chapman, M.L. Eastwood, M.C. Helmlinger, RO. Green, G.P. Asner, P.E. Dennison, and C.E. Miller. 2021. Intermittency of large methane emitters in the Permian Basin. *Environmental Science and Technology Letters* 8:567-573.
538. Baeza, A., R. E. Martin, N. L. Stephenson, A. J. Das, P. Hardwick, K. Nydick, J. Mallory, M. Slaton, K. Evans, and G. P. Asner. 2021. Mapping the vulnerability of giant sequoias after extreme drought in California using remote sensing. *Ecological Applications* e02395. 10.1002/eap.2395
539. Schill, S.R., G.P. Asner, V.P. McNulty, F.J. Pollock, A. Croquer, N.R. Vaughn, X. Escovar-Fadul, G. Raber, and E. Shaver. 2021. Site selection for coral reef restoration using airborne imaging spectroscopy. *Frontiers in Marine Science* 10.3389/fmars.2010.698004
540. Foo, S.A. and G.P. Asner. 2021. Depth-dependent indicators of algal turf herbivory throughout the Main Hawaiian Islands. *Coral Reefs* doi:10.1007/s00338-021-02162-2

541. Pascual, A., C.P. Giardina, N.A. Povak, P.F. Hessburg, C. Heider, E. Salminen, and G.P. Asner. 2022. Optimizing invasive species management using mathematical programming to support stewardship of water and carbon-based ecosystem services. *Journal of Environmental Management* 301:113803 doi:10.1016/j.jenvman.2021.113803
542. Schill, S.R., V.P. McNulty, F.J. Pollock, F. Luthje, J. Li, D.E. Knapp, J.D. Kington, T. McDonald, G.T. Raber, X. Escovar-Fadul, and G.P. Asner. 2021. Regional high-resolution benthic habitat data from Planet Dove imagery for conservation decision-making and marine planning. *Remote Sensing* 13:4215. Doi:10.3390/rs13214215
543. Selmants, P.C., B.M. Sleeter, J. Liu, T.S. Wilson, C. Trauernicht, A.G. Frazier, and G.P. Asner. 2021. Ecosystem carbon balance in the Hawaiian Islands under different scenarios of future climate and land use change. *Environmental Research Letters* 104020 doi:10.1088/1748-9326/ac2347
544. Hall, J.S., J.S. Plisinski, S.K. Mladinich, M. van Breugel, H.R. Lai, G.P. Asner, K. Walker, and J.R. Thompson. 2022. Deforestation scenarios show the importance of secondary forest for meeting Panama's carbon goals. *Landscape Ecology* doi:10.1007/s10980-021-01379-4
545. Das, A.J., M.R. Slaton, J. Mallory, G.P. Asner, R.E. Martin, and P. Hardwick. 2022. Empirically validated drought vulnerability mappign in the mixed conifer forests of the Sierra Nevada. *Ecological Applications* e2514 doi:10.1002/eap/2514
546. Luiz, B.C., C.P. Giardina, L.M. Keith, D.F. Jacobs, R.A. Sniezko, M.A. Hughes, J.B. Friday, P. Cannon, R. Hauff, K. Francisco, M.M. Chau, N. Dudley, A. Yeh, G. Asner, R.E. Martin, R. Perroy, B.J. Tucker, A. Evangelista, V. Fernandez, C. Martins-Keliihoomalu, K. Santos, and R. Ohara. 2022. A framework for establishing a rapid Ohia death resistance program. *New Forests* doi:10.1007/s11056-021-09896-5
547. Weingarten, E., R.E. Martin, R.F. Hughes, N.R. Vaughn, E. Shafron, and G.P. Asner. 2022. Early detection of a tree pathogen using airborne remote sensing. *Ecological Applications* e2519 doi:10.1002/eap.2519
548. Pasqual, A., C.P. Giardina, N.A. Povak, P.F. Hessburg, and G.P. Asner. 2022. Integrating ecosystem services modeling and efficiencies in decision-support models conceptualization for watershed management. *Ecological Modelling* 466:109879 doi:10.1016/j.ecolmodel.2022.109879
549. Asner, G.P., S.F. Giardina, C. Balzotti, C. Drury, S. Hopson, and R.E. Martin. 2022. Are sunken warships biodiversity havens for corals? *Diversity* 14 (139), doi:10.3390/d14020139
550. Foo, S.A., C.H. Teague, and G.P. Asner. 2022. Warming alters the relationship between benthic cover and herbivores on Hawaiian reefs. *Frontiers in Marine Science* 9:787314 doi:/10.3389/fmars.2022.787314
551. Li, J., R.R. Carlson, D.E. Knapp, and G.P. Asner. 2022. Shallow coastal water turbidity monitoring using Planet Dove satellites. *Remote Sensing in Ecology and Conservation* doi:10.1002/rse2.259
552. Drury, C., R.E. Martin, D.E. Knapp, J. Heckler, J. Levy, R.D. Gates, and G.P. Asner. 2022. Ecosystem-scale mapping of coral species and thermal tolerance. *Frontiers in Ecology and Environment* doi:10.1022/fee.2483
553. Barber, C., S.J. Graves, J.S. Hall, P.A. Zuidema, J. Brandt, S.A. Bohlman, G.P. Asner, M. Bailon, and T.T. Caughlin. 2022. Species-level tree corwn maps improve predictions of tree recruit abundance in a tropical landscape. *Ecological Applications* e2585. doi:10.1002/eap.2585
554. Asner, G.P., N.R. Vaughn, R.E. Martin, S.A. Foo, J. Heckler, B.J. Neilson, and J.M. Gove. 2022. Mapped coral mortality and refugia in an archipelago-scale marine heat wave. *Proceedings of the National Academy of Sciences* 119(9):e2123331119
555. Aguirre-Gutierrez, J., et al. 2022. Functional susceptibility of tropical forests to climate change. *Nature Ecology and Evolution* doi:10.1038/s41559-022-01747-6
556. Wieczynski, D.J., S. Diaz, S.M. Duran, N.M. Fyllas, N. Salinas, R.E. Martin, A. Shenkin, M.R. Silman, G.P. Asner, L. Patrick Bentley, Y. Malhi, B.J. Enquist, and V.M. Savage. 2022. Improving landscape-scale productivity estimates by integrating trait-based models and remotely-sensed foliar-trait and canopy-structural data. *Ecography* e06078 doi:10.1111/ecog.06078

557. Donovan, M.K., C. Alves, J. Burns, C. Drury, O.W. Meier, R. Ritson-Williams, R. Cunning, R.P. Dunn, G. Goodbody-Gringley, L.M. Henderson, I.S.S. Knapp, J. Levy, C.A. Logan, L. Mudge, C. Sullivan, R.D. Gates, and G.P. Asner. 2022. From polyps to pixels: understanding coral reef resilience to local and global change across scales. *Landscape Ecology* doi:10.1007/s109800-022-01463-3
558. Rocchini, D., M.J. Santos, S.L. Ustin, J.-B. Feret, G.P. Asner, et al. 2022. The spectral species concept in living color. *Journal of Geophysical Research – Biogeosciences* 10.1029/2022JG007026
559. Winston M., T. Oliver, C. Couch, M.K. Donovan, G.P. Asner, et al. 2022. Coral taxonomy and local stressors drive bleaching prevalence across the Hawaiian Archipelago in 2019. *PLOS One* 17(9): e0269068
560. Cusworth, D.H., A.K. Thorpe, A.K. Ayasse, D. Stepp, J. Heckler, G.P. Asner, C.E. Miller, V. Yadav, J.W. Chapman, M.L. Eastwood, R.O. Green, B. Hmiel, D.R. Lyon, and R.M. Duren. 2022. Strong methane point sources contribute a disproportionate fraction of total emissions across multiple basins in the United States. *Proceedings of the National Academy of Sciences* 119(38):e2202338119
561. Ordway, E.M., G.P. Asner, D.F.R.P. Burslem, S.L. Lewis, R. Nilus, R.E. Martin, M.J. O'Brien, O.L. Phillips, L. Qie, N.R. Vaughn, and P.R. Moorcroft. 2022. Mapping tropical forest functional variation at satellite remote sensing resolutions depends on key traits. *Communications Earth and Environment* 3:247 doi:10.1038/s43247-022-00564-w
562. Carlson, R.R., J. Li, L.B. Crowder, and G.P. Asner. 2022. Large-scale effects of turbidity on coral bleaching in the Hawaiian Islands. *Frontiers in Marine Science* doi:10.3389/fmars.2022.969472
563. Grady, B.W., R.P. Kittle III, A. Pugh, M.R. Lamson, J.L. Richards, S. Fredericq, K.J. McDermid, Q. Allen, and G.P. Asner. 2022. Long-term ecological monitoring of reefs on Hawai'i Island (2003-2020): Characterization of a common cryptic crust, *Ramicrusta hawaiiensis*. Frontiers in Marine Science 10.3389/fmars.2022.1009471
564. Beese, L., M. Dalponte, G.P. Asner, D.A. Coomes, and T. Jucker. 2022. Using repeat airborne LiDAR to map the growth of individual oil palms in Malaysian Borneo during the 2015-16 El Niño. *International Journal of Applied Earth Observations and Geoinformation* 115:103117 doi:10.1016/j.jag.2022.103117
565. Dai, J., N.R. Vaughn, M. Seeley, J. Heckler, D.R. Thompson, and G.P. Asner. 2022. Spectral dimensionality of imaging spectroscopy data over diverse landscapes and spatial resolutions. *Journal of Applied Remote Sensing* 16(4):044518-1.
566. Carlson, R.R., S.A. Foo, J.H.R. Burns, and G.P. Asner. 2022. Untapped policy avenues to protect coral reef ecosystems. *Proceedings of the National Academy of Sciences* 119(49):e2117562119.
567. Gove, J.M., J.A. Maynard, J. Lecky, D.P. Tracey, M.E. Allen, G.P. Asner, C. Conklin, C. Couch, K. Hum, R.J. Ingram, T.L. Kindinger, K. Leong, K.L.L. Oleson, E.K. Towle, R. van Hooidonk, G.J. Williams, and J. Hospital. 2022. 2022 Ecosystem Status Report for Hawai'i. Pacific Islands Fisheries Science Center, PIFSC Special Publication, SP-23-01, 91p. doi:10.25923/r53p-fn97

2023-2024

568. Wessels, K., X. Li, A. Bouvet, R. Mathieu, R. Main, L. Naidoo, B. Erasmus, and G.P. Asner. 2023. Quantifying the sensitivity of L-Band SAR to a decade of vegetation structure changes in savannas. *Remote Sensing of Environment* 284:113369
569. Lin, B., Y. Zeng, G.P. Asner, and D.S. Wilcove. 2023. Coral reefs and coastal tourism in Hawaii. *Nature Sustainability* doi:10.1038/s41893-022-01021-4
570. Li, J. and G.P. Asner. 2023. Global analysis of benthic complexity in shallow coral reefs. *Environmental Research Letters* 18:024038 doi:10.1088/1748-9326/acb3e6
571. Seeley, M.M., R.E. Martin, N.R. Vaughn, D.R. Thompson, J. Dai, and G.P. Asner. 2023. Quantifying the variation in reflectance spectra of Metrosideros polymorpha canopies across environmental gradients. *Remote Sensing* 15(6):1614 doi:10.3390/rs15061614

572. Vaughn, N.R., R.F. Hughes, and G.P. Asner. 2023. Multi-scale remote sensing-based landscape epidemiology of the spread of rapid ʻŌhiʻa death in Hawaiʻi. *Forest Ecology and Management* 538:120983.
573. Netoskie, E.C., K.L. Paxton, E.H. Paxton, G.P. Asner, and P.J. Hart. 2023. Linking vocal behaviours to habitat structure to create behavioural landscapes. *Animal Behaviour* 201:1-11 doi:10.1016/j.anbehav.2023.04.006
574. Seeley, M.M., E.A. Stacy, R.E. Martin, and G.P. Asner. 2023. Foliar functional and genetic variation in a keystone Hawaiian tree species estimated through spectroscopy. *Oecologia* doi:10.1007/s00442-023-05374-1
575. Fukunaga, A., G.P. Asner, B.W. Grady, and N.R. Vaughn. 2023. Fish assemblage structure, diversity and controls on reefs of South Kona, Hawaiʻi Island. *PLOS One* 18(7):e0287790 doi:10.1371/journal.pone.0287790
576. Gove, J.M., G.J. Williams, J. Lecky, E. Brown, E. Conklin, C. Counsell, G. Davis, M.K. Donovan, K. Falinski, L. Kramer, K. Kozar, N. Li, J.A. Maynard, A. McClutheon, S.A. McKenna, B.J. Neilson, A. Safaie, C. Teague, R. Whittier, and G.P. Asner. 2023. Coral reefs benefit from reduced land-sea impacts under ocean warming. *Nature* doi.org/10.1038/s41586-023-06394-w
577. Keller, N., I. van Meerveld, C.D. Philipson, G.P. Asner, E. Godoong, H. Tangki, and J. Ghazoul. 2023. Does heterogeneity in regenerating secondary forests affect mean throughfall? *Journal of Hydrology* 625:130083 doi.org/10.1016/j.jhydrol.2023.130083
578. Seeley, M.M., N.R. Vaughn, B.L. Shanks, R.E. Martin, M. Konig, and G.P. Asner. 2023. Classifying a highly polymorphic tree species across landscapes using airborne imaging spectrscopy. *Remote Sensing* 15:4365 doi:10.3390/rs15184365
579. Mason, R.E., N.R. Vaughn, and G.P. Asner. 2023. Mapping buildings across heterogeneous landscapes: Machine learning and deep learning applied to multi-modal remote sensing data. *Remote Sensing* 15:4389 doi:10.3390/rs15184389
580. Seeley, M.M. and G.P. Asner. 2023. Large-scale controls on the leaf economic spectrum of the overstory tree species *Metrosideros polymorpha*. *Remote Sensing* 15:4707 doi:10.3390/rs15194707
581. Dai, J., E. Jamalinia, N.R. Vaughn, R.E. Martin, M. König, K.L. Hondula, J. Calhoun, J. Heckler, and G.P. Asner. 2023. A general methodology for the quantification of crop canopy nitrogen across diverse species using airborne imaging spectroscopy. *Remote Sensing of Environment* 298:113836. Doi:10.1016/j.rse.2023.113836
582. Carlson, R.R., L.B. Crowder, R.E. Martin, and G.P. Asner. 2024. The effect of reef morphology on coral recruitment at multiple spatial scales. *Proceedings of the National Academy of Sciences* 121(4):e2311661121
583. Foo, S.A., R.R. Carlson, C. Teague, and G.P. Asner. 2024. Anomalous sea temperatures can impair coral reef fish recruitment. *Environmental Research Letters* 19:014074 doi:10.1088/1748-9326/ad193c
584. Seeley, M.M., N.R. Vaughn, and G.P. Asner. 2024. Evaluating individual tree species classification performance across diverse environments. *Environmental Research* 3:011001 doi:10.1088/2752-664X/ad1f49
585. Asner, G.P., C. Drury, N.R. Vaughn, J.R. Hancock, and R.E. Martin. 2024. Variability in symbiont chlorophyll of Hawaiian corals from field and airborne spectroscopy. *Remote Sensing* 16:732 doi:10.3390/rs16050732.
586. Harrison, D.E. and G.P. Asner. 2024. Sensitivity of spectral communities to shifts in benthic composition in Hawaiʻi. *Remote Sensing of Environment* 304:114050 doi:10.1016/j.rse.2024.114050
587. Ingalls, T.C., J. Li, Y. Sawall, R.E. Martin, D.R. Thompson, and G.P. Asner. 2024. Imaging spectroscopy investigations in wet carbon ecosystems: A review of the literature from 1995 to 2022 and future directions. *Remote Sensing of Environment* 305:114051 doi:10.1016/j.rse.2024.114051
588. Lyons, M.B., N.J. Murray, E.V. Kennedy, E.M. Kovacs, C. Castro-Sanguino, S.R. Phinn, R.B. Acevedo, A.O. Alvarez, C. Say, P. Tudman, K. Markey, M. Roe, R.F. Canto, H.E. Fox, B. Bambic, Z. Lieb, G.P. Asner, P.M. Martin, D.E. Knapp, J. Li, M. Skone, E. Goldenberg, K. Larsen, and

C.M. Roelfsema. 2024. New global area estimates for coral reefs from high-resolution mapping. *Cell Reports Sustainability* 100015 doi:10.1016/j.crsus.2024.100015

589. Fuller, K., R.E. Martin, and G.P. Asner. 2024. Spectral signatures of macroalgae on Hawaiian reefs. *Remote Sensing* 16:1140 doi:10.3390/rs16071140
590. Cusworth, D.H., R.M. Duren, A.K. Ayasse, R. Jiorle, K. Howell, A. Aubrey, R.O. Green, M.L. Eastwood, J.W. Chapman, A.K. Thorpe, J. Heckler, G.P. Asner, M.L. Smith, E. Thoma, M.J. Krause, D. Heins, and S. Thorneloe. Quantifying methane emissions from United States landfills. *Science* 383:1499-1504
591. Bonelli, A.G., P. Martin, P. Noel, and G.P. Asner. 2024. Global chlorophyll concentration distribution and effects on bottom reflectance on coral reefs. *Oceans* 5:210-226 doi://10.3390/oceans5020013
592. Jamalinia, E., J. Dai, N.R. Vaughn, R.E. Martin, K. Hondula, M. Konig, J. Heckler, and G.P. Asner. 2024. Crop canopy nitrogen estimation from mixed pixels in agricultural lands using imaging spectroscopy. *Remote Sensing* 15:1382 doi:/10.3390/rs16081382
593. Dai, J., E. Jamalinia, K.L. Hondula, N.R. Vaughn, J. Heckler, and G.P. Asner. 2024. Canopy-level spectral variation and classification of diverse crop species with fine spatial resolution imaging spectroscopy. *Remote Sensing* 16:1447 doi:/10.3390/rs16081447
594. Hondula, K.L., M. Konig, B.K. Grunert, N.R. Vaughn, R.E. Martin, J. Dai, E. Jamalinia, and G.P. Asner. 2024. Mapping water quality in nearshore reef environments using airborne imaging spectroscopy. *Remote Sensing* 16:1845 doi:/10.3390/rs16111845
595. Engstrand, R.C., J. Caballero Espejo, M.R. Silman, and G.P. Asner. 2024. Repeated mining accounts for the majority of artisanal and small-scale gold mining activity in Southeastern Peru. *Environmental Research Letters* 19:064036 doi://10.1088/1748-9326/ad44b0
596. Dinerstein, E., A.R. Joshi, N.R. Hahn, A.T.L. Lee, C. Vynne, K. Burkart, G.P. Asner, C. Backham, G. Ceballos, R. Cuthbert, R. Dirzo, O. Fankem, S. Hertel, B.V. Li, H. Mellin, F. Pharand-Deschenes, D. Olson, B. Pandav, C.A. Peres, R. Putra, A. Rosenthal, C. Verwer, E. Wikramanayake, and A. Zolli. 2024. Conservation Imperatives: securing the last unprotected terrestrial sites harboring irreplaceable biodiversity. *Frontiers in Science* 2:1349350. doi:/10.3389/fsci.2024.1349350
597. Rosen, A., F.J. Fischer, D.A. Coomes, T.D. Jackson, G.P. Asner, and T. Jucker. 2024. Tracking shifts in forest structural complexity through space and time in human-modified tropical landscapes. *Ecography* e07377 doi:10.1111/ecog.07377
598. Asner, G.P., N.R. Vaughn, and J. Heckler. 2024. Operational mapping of submarine groundwater discharge into coral reefs: Application to West Hawai‘i Island. *Oceans* 5, 547-559 doi:10.3390/oceans50300031
599. Vaughn, N.R., M. Konig, K.L. Hondula, D.E. Harrison, and G.P. Asner. 2024. Rapid water quality mapping from imaging spectroscopy with a superpixel approach to bio-optical inversion. *Remote Sensing* 16:4344 doi:10.3390/rs16234344
600. Weng, Q., Z. Li, Y. Cao, X. Lu, P. Gamba, X. Zhu, Y. Xu, F. Zhang, R. Qin, M.Y. Yang, P. Ma, W. Huang, T. Yin, Q. Zheng, Y. Zhou, and G. Asner. 2024. How will AI transform urban observing, sensing, imaging, and mapping? *Urban Sustainability* 4:50 doi:10.1038/s42949-024-00188-3
601. Scarpelli, T.R., D.H. Cusworth, R.M. Duren, J. Kim, J. Heckler, G.P. Asner, E. Thoma, M.J. Krause, D. Heins, and S. Thorneloe. 2024. Investigating major sources of methane emissions at US landfills. *Environmental Science and Technology* doi:10.1021/acs.est.4c07572

2025

602. Peng, J., J. Li, T.C. Ingalls, S.R. Schill, H.R. Kerner, and G.P. Asner. 2025. A novel deep learning algorithm for broad scale seagrass extent mapping in shallow coastal environments. *ISPRS Journal of Photogrammetry and Remote Sensing* 220:277-294 doi:10.1016/j.isprsjprs.2024.12.008

VII. Selection of Conference Papers

603. Asner, G.P. 1994. Tree biomechanics and Hurricane Iniki: predicting forest response. Association of American Geographers, San Francisco, CA.
604. Asner, G.P. and S.W. Beatty. 1995. Effects of an African grass invasion on Hawaiian shrubland nitrogen dynamics. Association of American Geographers, Chicago, IL.
605. Asner, G.P., J.L. Privette, C.A. Wessman, and C.A. Bateson. 1996. Extracting sub-pixel vegetation endmember bidirectional reflectance for canopy model inversions using NOAA AVHRR satellite imagery. International Geoscience and Remote Sensing Symposium, Lincoln, NE.
606. Asner, G.P., T.R. Seastedt, and A.R. Townsend. 1996. Land-use/land-cover change and the nitrogen cycle: can a terrestrial carbon sink persist? Carbon America Meeting, National Oceanic and Atmospheric Administration, Boulder, CO.
607. Asner, G.P. and C.A. Wessman. 1996. Scaling vegetation biophysical properties from the leaf to landscape level: implications for PAR absorption and remote sensing of the biosphere. Ecological Society of America, Providence, RI.
608. Privette, J.L., B.H. Braswell, D.S. Schimel, and G.P. Asner. 1996. Quantifying vegetation parameters through satellite remote sensing of the angular reflectance distribution. Oak Ridge Institute for Science and Education, Oak Ridge, TN.
609. Asner, G.P., J.L. Privette, J.L., C.A. Wessman, C.A., and C.A. Bateson. 1997. Unmixing the directional reflectances of AVHRR sub-pixel landcovers. NASA Workshop on Multi-angular Remote Sensing, University of Maryland, College Park, MD.
610. Asner, G.P., C.A. Wessman, and D.S. Schimel. 1997. Constraint of leaf and litter optical properties in BRDF models and inversions: AVHRR, MODIS, and MISR optical channels. NASA Workshop on Multi-angular Remote Sensing, University of Maryland, College Park, MD.
611. Privette, J.L., W.J. Emery, D.S. Schimel, B.H. Braswell, and G.P. Asner. 1997. Inversion of a vegetation reflectance model with NOAA AVHRR data. NASA Workshop on Multi-angular Remote Sensing, University of Maryland, College Park, MD.
612. Asner, G.P., C.A. Wessman, S. Archer, and D.S. Schimel. 1997. Scale dependence of PAR absorption in terrestrial ecosystems. Ecological Society of America, Albuquerque, NM.
613. Wessman, C.A. and G.P. Asner. 1997. Structural heterogeneity at regional scales and its effect on regional and global processes. Ecological Society of America, Albuquerque, NM.
614. Asner, G.P., C.A. Wessman, and C.A. Bateson. 1998. Sources of variability in canopy hyperspectral reflectance data. Annual Airborne Earth Science Workshop, Pasadena, CA.
615. Bateson, C.A., G.P. Asner, and C.A. Wessman. 1998. Incorporating endmember variability into spectral mixture analysis through endmember bundles. Annual JPL Airborne Earth Science Workshop, Pasadena, CA.
616. Wessman, C.A. and G.P. Asner. 1998. Large-scale measurement of vegetation and landscape structure: beyond NDVI. Earth's Changing Land: Global Change and Terrestrial Ecosystems-Land-use/Cover Change (GCTE-LUCC) Open Science Conference, Barcelona, Spain.
617. Braswell, B.H., G.P. Asner, and D.S. Schimel. 1998. Toward global retrieval of land surface parameters from EOS data using inverse radiative transfer modeling. Workshop on Inverse Methods in Global Biogeochemical Cycles, Crete, Greece.
618. Asner, G.P., A.R. Townsend, G.K. Cardinot, and M.C.M. Bustamante. 1998. Regional analysis of pasture function in the Central Amazon: Linking biogeochemistry and remote sensing. Ecological Society of America, Baltimore, MD.
619. Townsend, A.R., G.P. Asner, G.K. Cardinot, and M.C.M. Bustamante. 1998. Changes in soil chemistry along a pasture age and soil texture gradient in the Central Amazon. Ecological Society of America, Baltimore, MD.
620. Asner, G.P., J. Carrasco, A.R. Townsend, and C.A. Wessman. 1998. Functioning of aspens – remote sensing of structure experiment. Niwot Ridge LTER Annual Research Workshop, Boulder, CO.

621. Townsend, A.R. and G.P. Asner. 1998. Effects of tropical land use change on atmospheric 13CO2-based estimates of sources and sinks in the global carbon cycle. American Geophysical Union, San Francisco, CA.
622. Asner, G.P., A.R. Townsend, B.H. Braswell, and G. de Negreiros. 1998. Impacts of net primary production and atmospheric processes on the satellite vegetation index of Brazilian tropical ecosystems. American Geophysical Union, San Francisco, CA.
623. Neff, J.C. and G.P. Asner. 1999. Dissolved organic carbon: processes, models and implications for global carbon cycling. American Geophysical Union, Boston, MA.
624. Privette, J.L. and G.P. Asner. 1999. The Prototype Validation Exercise (PROVE) for EOS land and atmosphere products. International Geoscience and Remote Sensing Symposium, Hamburg, Germany.
625. Hughes, R.F., G.P. Asner, C.A. Wessman. S. Archer, and C. McMurtry. 1999. Ecosystem-level impacts of woody encroachment: mesquite alteration of C and N storage and cycling in a north Texas savanna. Ecological Society of America, Spokane, WA.
626. Asner, G.P., A.R. Townsend, and M.M.C. Bustamante. 1999. Multiple nutrient fluxes and losses along a pasture age and texture gradient in the Central Amazon. Ecological Society of America, Spokane, WA.
627. Cleveland, C.C., G.P. Asner, C.B. Field, and N.B. Grimm. 1999. Global-scale correlates of terrestrial biological nitrogen fixation. Ecological Society of America, Spokane, WA.
628. Townsend, A.R., G.P. Asner, and J.C. Neff 1999. Limitations to the estimation of nitrogen deposition effects in terrestrial ecosystems. Ecological Society of America, Spokane, WA.
629. Galloway, J., G.P. Asner, E.W. Boyer, F.J. Dentener, R.W. Howarth, and A.R. Townsend. 1999. The global nitrogen cycle: current status and future needs. Ecological Society of America, Spokane, WA.
630. Asner, G.P., J.C. Neff, W. Riley, R. Jackson, P.A. Matson, and C.B. Field. 1999. Global estimates of dissolved organic carbon fluxes and storage in terrestrial ecosystems. American Geophysical Union, San Francisco, CA.
631. Lobell, D.B. and G.P. Asner. 1999. A biogeophysical approach for detecting vegetation change in arid ecosystems resulting from climate and land-use variation. American Geophysical Union, San Francisco, CA.
632. Lohse, K., G.P. Asner, and P.A. Matson. 1999. Effects of experimental nitrogen additions on nitrate soil solution losses from tropical forests of different nutrient status in the Hawaiian Islands. American Geophysical Union, San Francisco, CA.
633. Treuhaft, R.N., B.E. Law, and G.P. Asner 1999. The vertical structure of vegetated surfaces from interferometric and polarimetric radar data, Proceedings of the Remote Sensing and Kyoto Protocol Workshop, University of Michigan, Ann Arbor.
634. Asner, G.P. 2000. A hyperspectral photon transport system for simulating imaging spectrometer observations of terrestrial ecosystems. Proceedings of the Annual Airborne Earth Science Workshop. Jet Propulsion Laboratory, Pasadena, CA.
635. Asner, G.P., R.N. Treuhaft, and B.E. Law. 2000. Vegetation structure from quantitative fusion of hyperspectral optical and radar interferometric remote sensing. Proceedings of the Annual Airborne Earth Science Workshop. Jet Propulsion Laboratory, Pasadena, CA.
636. Asner, G.P. and D.B. Lobell. 2000. AutoSWIR: A general spectral unmixing algorithm based on 2000-2400 nm endmember datasets and Monte Carlo analysis. Proceedings of the Annual Airborne Earth Science Workshop. Jet Propulsion Laboratory, Pasadena, CA.
637. Treuhaft, R.N., G.P. Asner, and B.E. Law 2000. Structural approaches to biomass monitoring with multibaseline, multifrequency, polarimetric interferometry, EUSAR2000, Munich.
638. Treuhaft, R.N., G.P. Asner, and B.E. Law 2000. Forest vegetation profiling with AIRSAR polarimetric radar interferometry, Progress in Electromagnetics Research Symposium, Cambridge.
639. Treuhaft, R.N., G.P. Asner, and B.E. Law 2000. Vegetation structure from the quantitative fusion of radar interferometric and hyperspectral optical remote sensing, Progress in Electromagnetics Research Symposium, Cambridge.

640. Treuhaft, R. N., G. P. Asner, and B.E. Law 2000. Vegetation profile estimates from multialtitude, multifrequency radar interferometric and polarimetric data, Proceedings of the International Geoscience and Remote Sensing Symposium, Honolulu.
641. Asner, G.P., J.C. Neff, W. Riley, and P.A. Matson. 2000. Dissolved organic carbon and nutrient modeling in terrestrial ecosystems: Integrating plant-soil physics and biogeochemistry. Ecological Society of America, Snowbird, UT.
642. Naylor, R., T. Benning, P. Matson, I. Ortiz-Monasterio, and G.P. Asner. 2000. Trajectories of agricultural intensification and consequences for non-agricultural systems in Sonora, Mexico. Ecological Society of America, Snowbird, UT.
643. Townsend, A.R., C.C. Cleveland, M. Lefer, G.P. Asner, and B. Constance. 2000. Biogeochemical patterns along gradients in soil type and land use history in southwestern Costa Rica: Comparisons to the central Amazon. Ecological Society of America, Snowbird, UT.
644. Hughes, R.F., C.R. McMurtry, G.P. Asner, S. Archer, and C.A. Wessman. 2000. Ecosystem-level impacts of mesquite (Prosopis glandulosa) encroachment on C and N pools of herbaceous vegetation and soils in a temperate savanna. Ecological Society of America, Snowbird, UT.
645. Lohse, K.A., H. Farrington, J. Moen, P.A. Matson, and G.P. Asner. 2000. Interactions of soil hydrologic and biotic processes in regulating nitrate retention in wet tropical forests: Comparisons using isotope tracers. Ecological Society of America, Snowbird, UT.
646. Asner, G.P., M.C. Bustamante, and A.R. Townsend. 2000. Linking soil biogeochemical processes to imaging spectroscopy along a pasture age-texture gradient in the Central Amazon. American Geophysical Union, San Francisco, CA.
647. Townsend, A.R., G.P. Asner, C.C. Cleveland, and M.C. Bustamante. 2000. Unexpected changes in phosphorus cycling following tropical deforestation to cattle pasture. American Geophysical Union, San Francisco, CA.
648. Asner, G.P., M.M. Keller, R. Pereira Jr., J.N. Silva, and J.C. Zweede. 2000. Spatial and temporal variation of forest damage from conventional and reduced-impact logging in Amazônia: Implications for satellite monitoring. American Geophysical Union, San Francisco, CA.
649. Martin, R.E., G.P. Asner, R.J. Ansley, and A.R. Mosier. 2000. Effects of woody encroachment on soil N oxide gas emissions in a Texas rangeland savanna. American Geophysical Union, San Francisco, CA.
650. Lohse, K.A., H. Farrington, J. Moen, P. Matson, and G.P. Asner. 2000. Relative importance of soil hydrologic and biotic processes in regulating nitrate retention in wet tropical forests in the Hawaiian Islands: Comparisons using dual isotope tracers. American Geophysical Union, San Francisco, CA.
651. Asner, G.P. and P.M. Vitousek. 2001. Canopy structure and chemistry of Hawaiian tropical forests using imaging spectroscopy. Proceedings of the Airborne Earth Science Workshop. Pasadena, CA.
652. Asner, G.P. and K.B. Heidebrecht. 2001. Green canopy cover and dry carbon content in arid regions using imaging spectroscopy. Proceedings of the Airborne Earth Science Workshop. Pasadena, CA.
653. Ustin S.L., P.J. Zarco-Tejada, and G.P. Asner. 2001. The role of hyperspectral data in understanding the global carbon cycle. Proceedings of the Airborne Earth Science Workshop. Pasadena, CA.
654. Ustin, S.L., D.A Roberts, G.P. Asner and R.O. Green. 2001. An ESSP mission for AVIRIS-class measurements and science from space. Proceedings of the Airborne Earth Science Workshop. Pasadena, CA.
655. Asner, G.P., S. Archer, R.F. Hughes, R. Martin, and J. Ansley. 2001. Changes in vegetation cover, aboveground carbon stocks, and soil carbon-nitrogen dynamics following woody plant encroachment in Texas rangelands, 1937-1999 (invited). American Geophysical Union, Boston, MA.
656. Harris, A., G.P. Asner, and M. Miller. 2001. Investigation of regional-scale indicators of grazing impacts: Integrating field-level research and remotely sensed imaging spectrometer data. American Geophysical Union, Boston, MA.

657. Lobell, D.B., J.A. Hicke, and G.P. Asner. 2001. Carbon uptake in United States agriculture: Modeling, variability and comparison with USDA yields. American Geophysical Union, Boston, MA.
658. Hicke, J.A., G.P. Asner, J.R. Randerson, S. Los, R. Birdsey, J. Jenkins, C.J. Tucker, and C.B. Field. 2001. North American NPP from 1982-1998 using a new satellite record: Trends and comparisons with field measurements. American Geophysical Union, Boston, MA.
659. Huete, A., X. Gao, G.P. Asner, H.J. Kim, and T. Miura. 2001. Characterization of vegetation conditions at the Nacunan and Chancani Reserves in Argentina with ground-, air- and EO-1 Hyperion data. International Geoscience and Remote Sensing Symposium, Sydney, Australia.
660. Lobell, D.B., G.P. Asner, and J.I. Ortiz-Monasterio. 2001. Regional wheat yield prediction using Landsat 7 satellite imagery. Third International Conference on Geospatial Information in Agriculture and Forestry, Denver, CO.
661. Hall, S., G.P. Asner, and K. Kitayama. 2001. Effects of N additions on N-oxide emissions and soil N dynamics across a matrix of land use, elevation, soil age and soil type on Mt. Kinabalu, Borneo (Malaysia). Ecological Society of America, Madison, WI.
662. Wessman, C.A., G.P. Asner, and N. Buchmann. 2001. Remote sensing of forest structure and biophysical properties indicating forest response to chronic N deposition. Ecological Society of America, Madison, WI.
663. Lobell, D.B. and G.P. Asner. 2001. Modeling regional carbon fluxes in agriculture with new remote sensing observations. American Geophysical Union, San Francisco, CA.
664. Martin, R.E., G.P. Asner, R.J. Ansley, and A. Mosier. 2001. Land-cover change mediating nitrogen trace gas emissions from savanna soils of North Texas. American Geophysical Union, San Francisco, CA.
665. Hicke, J.A., G.P. Asner, E.S. Kasischke, N.H. French, J.T. Randerson, C.J. Tucker, and C.B. Field. 2001. Post-fire response of North American net primary productivity derived from satellite observations. American Geophysical Union, San Francisco, CA.
666. Asner, G.P., K.B. Heidebrecht, R. Ojeda, and C. Borghi. 2002. Desertification analysis in Central Argentina using imaging spectroscopy: I. Linking AVIRIS and carbon cycle studies. Proceedings of the Airborne Earth Science Workshop. Pasadena, CA.
667. Treuhaft, R.N., G.P. Asner, and B.V. Law. 2002. Forest biomass based on leaf area densities from multialtitude AIRSAR and AVIRIS spectroscopy. Proceedings of the Airborne Earth Science Workshop. Pasadena, CA.
668. Treuhaft, R.N., G.P. Asner, and B.V. Law. 2002. Biomass from forest density profiles from multi-altitude radar interferometry and imaging spectroscopy. PIERS2002. Cambridge, MA.
669. Zavaleta, E.S., B.D. Thomas, N.R. Chiariello, G.P. Asner, R. Shaw, and C.B. Field. 2002. Plants reverse warming effect on ecosystem water balance in a California grassland. Ecological Society of America, Tucson, AZ.
670. Asner, G.P., M. Keller, and J.N.M. Silva. 2002. Selective logging and forest canopy damage in Amazônia from Landsat ETM+ and EO-1 Hyperion data. Ecological Society of America, Tucson, AZ.
671. Martin, R.E., G.P. Asner, R.J. Ansley, and A. Mosier. 2002. Regional quantification of soil N oxide emission from savanna soils of North Texas. Ecological Society of America, Tucson, AZ.
672. Hicke, J.A., G.P. Asner, R.L. Sherriff, and T.T. Veblen. 2002. Using dendroecology to assess the impact of forest encroachment on the carbon budget. Ecological Society of America, Tucson, AZ.
673. Hicke, J.A., G. van der Werf, F. Mouillot, J.T. Randerson, C.B. Field, and G.P. Asner. 2002. Spatial patterns of nitrogen loss from fire. American Geophysical Union, San Francisco, CA.
674. Martin, R.E, and G.P. Asner. 2002. Changes in regional nitric oxide emissions from savanna soils associated with woody encroachment. American Geophysical Union, San Francisco, CA.
675. Randerson, J.T., J.W. Lindfors, H.P. Liu, J.A. Hicke, G.P. Asner, E.G. Schuur, and S.C. Olsen. 2002. Assessing the impact of fire on the seasonal dynamics of atmospheric CO2 at high northern latitudes. American Geophysical Union, San Francisco, CA.

676. Palace, M., M. Keller, G.P. Asner, S. Hagen, and B. Braswell. 2002. Automated crown detection algorithm: An analysis of two tropical Amazônian forests. American Geophysical Union, San Francisco, CA.
677. Martin, R.E., and G.P. Asner. 2003. Ecosystem impacts of woody encroachment in Texas: A spatial analysis using AVIRIS. Proceedings of the Airborne Earth Science Workshop. Pasadena, CA.
678. Lobell, D.B., and G.P. Asner. 2003. Hyperion studies of crop stress in Mexico. Proceedings of the Airborne Earth Science Workshop. Pasadena, CA.
679. Asner, G.P., A.T. Harris, and D. Nepstad. 2003. EO-1 Hyperion measures of canopy drought stress in the Amazon. Proceedings of the Airborne Earth Science Workshop. Pasadena, CA.
680. Asner, G.P. 2003. EO-1 Hyperion studies of tropical forest dynamics in the Brazilian Amazon and Hawaii (invited). ASPRS Annual Conference, Anchorage, Alaska.
681. Hicke, J.A., D.B. Lobell, and G.P. Asner. 2003. The roles of changing crop area and yields in driving increases in net primary productivity in the Central U.S. AGU Chapman Conference on Ecosystem Interactions with Land-use Change, Santa Fe, NM.
682. Wessman, C.A., S. Archer, G.P. Asner. 2003. Woodland expansion in Southwest U.S. rangelands. AGU Chapman Conference on Ecosystem Interactions with Land-use Change, Santa Fe, NM.
683. Asner, G.P., M.M.C. Bustamante, A.R. Townsend, G.B. Nardoto, L. Olander. 2003. Pasture degradation and biogeochemistry in the Central Amazon. Agro-ecosystems Conference, Brasilia, Brazil. (invited)
684. Asner, G.P., J.N.M. Silva, M. Keller, M.M.C. Bustamante. 2003. Forest canopy damage and gap dynamics following selective logging in Amazônia. LBA Science Conference, Fortaleza, Brazil.
685. Asner, G.P. 2003. Spatial data analysis in the LBA-ECO program. LBA Science Conference, Fortaleza, Brazil.
686. Lobell, D.B., G.P. Asner, and I. Ortiz-Monasterio. 2003. Application of MODIS land products to estimate regional cropland area and production. American Geophysical Union, San Francisco, CA.
687. Martin, R.E. and G.P. Asner. 2003. Spatially distributed effects of woody encroachment on soil NO emissions from a North Texas rangeland. American Geophysical Union, San Francisco, CA.
688. Elmore, A.J. and G.P. Asner. 2003. Effects of introduced grasses, grazing and fire on regional biogeochemistry in Hawaii. American Geophysical Union, San Francisco, CA.
689. Olander, L.P., G.P. Asner, and M.M. Bustamante. 2003. Carbon and nutrient transfer due to selective logging in the Amazon using remote sensing data. American Geophysical Union, San Francisco, CA.
690. Palace, M., M. Keller, G.P. Asner, B. Braswell, and S. Hagen. 2003. An analysis of two Amazonian forests using an automated crown detection algorithm and IKONOS imagery. American Geophysical Union, San Francisco, CA.
691. Asner, G.P., A. Cooper, D. Knapp, L. Olander, C. Souza, M.M.C. Bustamante, M. Keller, D. Williams. 2004. Remote sensing of selective logging: Challenges, successes and the future. LBA Science Conference, Brasilia, Brazil.
692. Asner, G.P., A. Cooper, D. Knapp, L. Olander, C. Souza, M.M.C. Bustamante, M. Keller, D. Williams. 2004. Basin-wide forest gap fraction and selective logging from satellite analysis. LBA Science Conference, Brasilia, Brazil.
693. Souza, C.M., G.P. Asner, and D.A. Roberts. 2004. A review and Intercomparison of remote sensing techniques to map selective logging in the Brazilian Amazon. LBA Science Conference, Brasilia, Brazil.
694. Keller, M., M. Palace, J.N. Silva, G.P. Asner. 2004. Selective logging effects on carbon budgets at three sites in the Brazilian Amazon. LBA Science Conference, Brasilia, Brazil.
695. Palace, M., M. Keller, G.P. Asner, J.N. Silva. 2004. Necromass density estimates from two Brazilian Amazon forests. LBA Science Conference, Brasilia, Brazil.
696. Knapp, D.E., G.P. Asner, A.N. Cooper, M.M.C. Bustamante, M. Keller, J.N. Silva, D. Williams. 2004. Sensitivity of automated Monte Carlo unmixing to surface reflectance uncertainties caused by aerosols, water vapor, and terrain slope-aspect. LBA Science Conference, Brasilia, Brazil.

697. Carvalho, A.P.F., M.M.C. Bustamante, G.P. Asner, B. Orthen. 2004. Relação entre Parâmetros Bioquímicos Foliares e a Reflectância Espectral de Espécies Lenhosas em dois sítios de Cerrado no Parque Nacional de Brasília, DF. LBA Science Conference, Brasilia, Brazil.
698. Asner, G.P. 2004. The central role of land use complexes in the greenhouse gas problem. International Climate-Energy Conference, Washington, DC.
699. Asner, G.P., D. Knapp, E. Broadbent, P. Oliveira, M. Bustamante, M. Keller, J.N. Silva, and D. Williams. 2004. Remote sensing of forest disturbance and selective logging throughout the Brazilian Amazon. American Geophysical Union. San Francisco, CA.
700. Lobell, D.B and G.P. Asner. 2004. Testing hyperspectral indices for crop identification and stress detection. American Geophysical Union. San Francisco, CA.
701. Defries, R., D. Ojima, J. Foley, G. Asner, and R. Houghton. 2004. A framework for assessing ecosystem responses to land use change. American Geophysical Union. San Francisco, CA.
702. Keller, M., R.K. Varner, J.D. Dias, H. Silva, P.M. Crill, R.C. de Oliveira, and G.P. Asner. 2004. Soil-atmosphere exchange of nitrous oxide, nitric oxide, methane and carbon dioxide in logged and undisturbed forest in the Tapajos National Forest, Brazil. American Geophysical Union. San Francisco, CA.
703. Asner, G.P. 2005. New cutting-edge remote sensing approaches for monitoring forest disturbance, selective logging and invasive species in tropical forests. Rural Days Conference. The World Bank, Washington, DC. (invited)
704. Asner, G.P. 2005. 21st century approaches to the global land degradation monitoring problem. Israel Society for Ecology and Environmental Quality Services, Tel Aviv, Israel. (invited)
705. Asner, G.P. 2005. Frontiers in remote sensing of ecosystem chemistry and physiology. Gordon Research Conference on CO2 Assimilation in Plants: Genome to Biome. Aussois, France. (invited)
706. Knapp, D.E., G.P. Asner, E.N. Broadbent, P.J.C. Oliveira, M. Keller, and J.N. Silva. 2005. The Carnegie Landsat Analysis System. LBA Science Conference, Sao Paulo, Brazil.
707. Asner, G.P., D.E. Knapp, E.N. Broadbent, P.J.C. Oliveira, M. Keller, and J.N. Silva. 2005. Selective logging in the Brazilian Amazon. LBA Science Conference, Sao Paulo, Brazil.
708. Huang, M., G.P. Asner, M. Keller, and D. Knapp. 2005. Impacts of selective logging on the regional carbon budget of the Tapajos National Forest: A modeling study. American Geophysical Union, San Francisco, CA.
709. Asner, G.P. 2006. Remote sensing for canopy chemistry, biogeochemistry, and diversity in Hawaiian ecosystems. Hawai'i Conservation Conference, Honolulu, HI.
710. Martin, R.E., G.P. Asner. 2006. Remote sensing of plant pigments at leaf and canopy scales in Hawaiian forest ecosystems. Hawai'i Conservation Conference, Honolulu, HI.
711. Asner, G.P. 2006. Bringing cost-effective and efficient hyperspectral and LiDAR technologies to Hawai'i. Hawai'i Conservation Conference, Honolulu, HI. (invited)
712. Jacquemoud, S., W. Verhoef, F. Baret, P.J. Zarco-Tejada, G.P. Asner, C. Francois, and S.L. Ustin. 2006. PROSPECT+SAIL: 15 years of use for land surface characterization. International Geoscience and Remote Sensing Symposium, Denver, CO.
713. Ustin, S.L., G.P. Asner, J.A. Gamon, K.F. Huemmrich, S. Jacquemoud, M.E. Schaepman, and P.J. Zarco-Tejada. 2006. Retrieval of quantitative and qualitative information on plant pigment systems from high resolution spectroscopy. Int'l Geoscience and Remote Sensing Symposium, Denver, CO.
714. Kokaly, R.F., G.P. Asner, M.E. Martin, S.V. Ollinger, and C.A. Wessman. 2006. Quantifying non-pigment plant components from imaging spectrometer data: Using biochemical absorption features to study ecosystem processes. Int'l Geoscience and Remote Sensing Symposium, Denver, CO.
715. Goodenough, D.G., G.P. Asner, M.E. Schaepman, S.L. Ustin, J.Y. Li, and A. Dyk. 2006. Combining hyperspectral remote sensing and physical modeling for applications in land ecosystems. International Geoscience and Remote Sensing Symposium, Denver, CO.
716. Roberts, D.A., G.P. Asner, P. Dennison, K. Halligan, and S.L. Ustin. 2006. Ecological applications of imaging spectrometry: Examples from fire danger, plant functional types and disturbance. International Geoscience and Remote Sensing Symposium, Denver, CO.

717. Asner, G.P. 2006. Trends in remote sensing of ecosystem function, structure and biodiversity. Australasian Remote Sensing and Photogrammetry Conference, Canberra, Australia. (invited)
718. Giambelluca, T.W., G.P. Asner, R.E. Martin, J.K. DeLay, R.G. Mudd, M.A. Nullet, and M. Takahashi. 2006. Microclimate and hydrology of native cloud forest in Hawai'i Volcanoes National Park. American Geophysical Union, San Francisco, CA.
719. Hunter, M.O., M. Keller, P. Carmargo, M. Palace, R.C. de Oliveira, F.D. Espirito-Santo, E. Keizer, M. Lefsky, and G.P. Asner. 2006. Forest structure at five sites in the Brazilian Amazon. 2006. American Geophysical Union, San Francisco, CA.
720. Huang, M., G.P. Asner, M. Keller, J.A. Berry, and M.M.C. Bustamante. 2006. Assessing the impact of Amazonia logging with a new ecosystem model. American Geophysical Union, San Francisco, CA.
721. Féret, J.-B., G.P. Asner, C. Francois, R. Martin, S.L. Ustin, and S. Jacquemoud. 2007. An advanced leaf optical properties model including photosynthetic pigments. 10th Intl. Symposium on Physical Measurements and Signatures in Remote Sensing. Davos, Switzerland.
722. Asner, G.P., D.E. Knapp, J. Boardman, T. Kennedy-Bowdoin, M. Jones, R. Martin, M. Eastwood, and R.O. Green. 2007. A new era in ecosystems studies using integrated LiDAR and imaging spectroscopy (invited). Proceedings of the Airborne Earth Science Workshop. Pasadena, CA.
723. Boardman, J., G.P. Asner, and R.O. Green. 2007. Precision alignment of AVIRIS imagery with Carnegie Airborne Observatory LiDAR data. Proceedings of the Airborne Earth Science Workshop. Pasadena, CA.
724. Kennedy-Bowdoin, T., G.P. Asner, M. Eastwood, J. Boardman, D. Knapp, R. Martin, and M. Jones. 2007. In-flight fusion of the CAO LiDAR and AVIRIS: the advantages of combining spatial and spectral datasets. Proceedings of the Airborne Earth Science Workshop. Pasadena, CA.
725. Knapp, D.E., G.P. Asner, T. Kennedy-Bowdoin, M. Jones, R. Martin, and J. Boardman. 2007. Effects of canopy structure on hyperspectral reflectance. Proceedings of the Airborne Earth Science Workshop. Pasadena, CA.
726. Jones, M.O., G.P. Asner, D. Knapp, T. Kennedy-Bowdoin, R. Martin, and J. Boardman. 2007. Integrating hyperspectral remote sensing and LiDAR forest structure data to map canopy biodiversity in Hawaiian rainforests. Proceedings of the Airborne Earth Science Workshop. Pasadena, CA.
727. Martin, R.E., G.P. Asner, D. Knapp, and M. Jones. 2007. Remote sensing of plant pigments at leaf and canopy scales in Hawaiian forest ecosystems. Proceedings of the Airborne Earth Science Workshop. Pasadena, CA.
728. Ustin, S.L., J-B. Féret, G.P. Asner, C. Francois, R. Martin, S.L. Ustin, and S. Jacquemoud. 2007. New developments toward including photosynthetic pigments in an advanced leaf optical properties model (PROSPECT). Proceedings of the Airborne Earth Science Workshop. Pasadena, CA.
729. Asner, G.P. 2007. Remote sensing of ecosystem function and physiology. Ecological Society of America, San Jose, CA. (invited)
730. Townsend, A.R., G.P. Asner, C.C. Cleveland, S.C. Reed, and W.R. Wieder. 2007. Causes and consequences of biogeochemical diversity in tropical rain forests. Ecological Society of America, San Jose, CA.
731. Oliveira, P.J.C., G.P. Asner, D.E. Knapp, and R.F. Raybin. 2007. Remote sensing and tropical forest damage: Using CLAS for the detection of forest disturbance and deforestation in the Peruvian Amazon. Ecological Society of America, San Jose, CA.
732. Huang, C. and G.P. Asner. 2007. Integration of airborne imaging spectroscopy and spaceborne-multispectral images for regional scale mapping of woody cover in pinyon-juniper ecosystems of the Colorado Plateau. Ecological Society of America, San Jose, CA.
733. Martin, R.E. and G.P. Asner. 2007. Leaf biochemical and optical properties of Metrosideros polymorpha across environmental gradients in Hawaii. Ecological Society of America, San Jose, CA.

734. Huang, C., G.P. Asner, R. Martin, N. Barger, and J. Neff. 2007. A cross-scale remote sensing approach to estimate tree cover and aboveground biomass in pinyon-juniper woodlands of the Colorado Plateau, USA. American Geophysical Union, San Francisco, CA.
735. Giambelluca, T.W., G.P. Asner, R.E. Martin, M.M. Nullet, M. Huang, J.K. DeLay, R.G. Mudd, and M. Takahashi. 2007. Impacts of alien tree invasion on evapotranspiration in tropical montane cloud forest in Hawaii. American Geophysical Union, San Francisco, CA.
736. Asner, G.P. 2008. Contributions of remote sensing to biodiversity research and applications. NASA Carbon Cycle and Ecosystems Workshop, University of Maryland, MD. (invited)
737. Huang, M., G.P. Asner, and M. Keller. 2008. The impact of selective logging on carbon storage and fluxes over the Brazilian Amazon. NASA Carbon Cycle and Ecosystems Workshop, University of Maryland, MD.
738. Asner, G.P. 2008. Disturbance and diversity in tropical forests from remote sensing. Association for Tropical Biology and Conservation, Paramaribo, Suriname. (invited)
739. Martin, R.E. and G.P. Asner. 2008. Leaf chemical and spectral diversity in Australian tropical forests. Association for Tropical Biology and Conservation, Paramaribo, Suriname.
740. Dahlin, K., G.P. Asner, C.B. Field and R. Shaw. 2008. Using Airborne Remote Sensing to Map Sweet Fennel on Santa Cruz Island. California Invasive Plant Council Symposium, Oct. 2-4, Chico, CA.
741. Villegas, Z., E. Broadbent, G. Asner, M. Pena-Claros, M. Palace and M. Soriano. 2008. Distribución espacial de biomasa y diversidad de árboles en un bosque de tierras bajas de Bolivia: Combinando mediciones de campo con sensores remotos. IV Reunión Nacional de Investigación Forestal, Cobija, Bolivia.
742. Perroy, R., G.P. Asner, B. Bookhagen, and O. Chadwick. 2008. Comparing different spatial and temporal scales of erosion measurements on Santa Cruz Island, CA. Geological Society of America, Houston, TX.
743. Wolf, A., J.A. Berry, and G.P. Asner. 2008. Allometric constraints to inversion of canopy structure from remote sensing. American Geophysical Union. San Francisco, CA.
744. Huang, M., G.P. Asner, and T. Giambelluca. 2008. Carbon dynamics of montane native Hawaiian rainforests under climate change: Empirical and modeling studies. American Geophysical Union. San Francisco, CA.
745. Wolf, A., J.A. Berry, G. Asner, and R. Myneni. 2008. Sequential data assimilation of canopy attributes from multispectral bidirectional reflectance. European Geophysical Union, vol. 10, EGU2008-A-09997.
746. Perroy, R.L., G. Asner, B. Bookhagen, and O. Chadwick. 2008. Patterns of re-vegetation on western Santa Cruz Island, CA in the post-grazing era. American Geophysical Union. San Francisco, CA.
747. Féret, J., G.P. Asner, S. Jacquemoud, and C. Francois. 2008. Improved retrieval of chlorophyll and carotenoid contents at the canopy scale using hyperspectral CAO data and PROSAIL model. American Geophysical Union. San Francisco, CA.
748. Lobell, D., E. Campbell, L. Fernandez, S. Loarie, M. Georgescu, G. Asner, and C. Field. 2008. Climate effects of biofuels: measuring some key parameters. American Geophysical Union. San Francisco, CA.
749. Giambelluca, T.W., J.K. DeLay, G.P. Asner, R.E. Martin, M.A. Nullet, M. Huang, R. Mudd, and M. Takahashi. 2008. Stand structural controls on evapotranspiration in native and invaded tropical montane cloud forest in Hawaii. American Geophysical Union. San Francisco, CA.
750. Perroy, R., G.P. Asner, B. Bookhagen, and O. Chadwick. 2009. Quantifying geomorphic processes in a disturbed landscape, southwestern Santa Cruz Island, CA. Association of American Geographers, Las Vegas, NV.
751. Huang, M., and G.P. Asner. 2009. Long-term loss and recovery following selective logging in Amazon forests. American Geophysical Union. San Francisco, CA.
752. Doughty, C., G.P. Asner, and R.E. Martin. 2009. Predicting tropical plant physiology from leaf and canopy spectroscopy. American Geophysical Union. San Francisco, CA.

753. Dahlin, K., G.P. Asner, and C.B. Field. 2009. Topographically mediated controls on aboveground biomass across a Mediterranean-type landscape. American Geophysical Union. San Francisco, CA.
754. Colgan, M., G.P. Asner, and S.R. Levick. 2009. Topo-edaphic controls over woody biomass in South African savannas. American Geophysical Union. San Francisco, CA.
755. Giambelluca, T.W., J.K. DeLay, M. Takahashi, R.G. Mudd, M. Huang, G.P. Asner, R.E. Martin, and M.A. Nullet. 2009. Effects of canopy wetness on evapotranspiration in native and invaded tropical montane cloud forest in Hawaii. American Geophysical Union. San Francisco, CA.
756. Asner, G.P. 2010. Ready for REDD: High resolution carbon stocks and emissions in the Amazon. 2010. Association for Tropical Biology and Conservation, Bali, Indonesia. (invited)
757. Asner, G.P. and R.E. Martin. 2010. Chemical diversity of humid tropical forest canopies: New global data from the Spectranomics Project. Association for Tropical Biology and Conservation, Bali, Indonesia.
758. Martin, R.E. and G.P. Asner. 2010. The Carnegie Spectranomics Project: Building a chemical, spectral and taxonomic library for biodiversity mapping. Association for Tropical Biology and Conservation, Bali, Indonesia.
759. Taylor, P.G., W.R. Wieder, A.R. Townsend, G.P. Asner, and C.C. Cleveland. 2010. Divergent responses of tropical rainforest net primary production to shifts in rainfall: results from a new tropical forest carbon dynamics database. Ecological Society of America, Pittsburg, PA.
760. Townsend, A.R., W.R. Wieder, P.G. Taylor, C.C. Cleveland, and G.P. Asner. 2010. Patterns in and controls over nitrogen loss from wet lowland tropical forests. Ecological Society of America, Pittsburg, PA.
761. Kinney, K.M., G.P. Asner, J.R. Kellner, D.E. Knapp, T. Kennedy-Bowdoin, E.J. Questad, S. Cordell, and J.M. Thaxton. 2010. Remote sensing of potential restoration in a Hawaiian subalpine dry forest. Ecological Society of America, Pittsburg, PA.
762. Kellner, J.R. and G.P. Asner. 2010. Transient dynamics and the future of tropical forests. Ecological Society of America, Pittsburg, PA.
763. Dahlin, K.M., G.P. Asner, and C. Field. 2010. Quantifying the effects of topography, substrate, and land-use history on aboveground biomass in a California ecosystem. Ecological Society of America, Pittsburg, PA.
764. Dahlin, K.M. and G.P. Asner. 2010. Integrated airborne lidar and multiple endmember spectral mixture analysis (MESMA) for plant species mapping across multiple functional groups. American Geophysical Union, San Francisco, CA.
765. Baguskas, S.A., B. Bookhagen, S.H. Peterson, and G.P. Asner. 2010. Investigating tree mortality at multiple spatial and temporal scales in the Bishop pine forest on Santa Cruz Island, California. American Geophysical Union, San Francisco, CA.
766. Van Aardt, J.A., J. Wu, and G.P. Asner. 2010. Combining high fidelity simulations and real data for improved small-footprint waveform lidar assessment of vegetation structure. American Geophysical Union, San Francisco, CA.
767. Taylor, P., W. Wieder, A. Townsend, G.P. Asner, C. Cleveland, and S. Loarie. 2010. Divergent trajectories in tropical rainforest carbon-climate relationships: results from a new tropical forest carbon inventory database. American Geophysical Union, San Francisco, CA.
768. Asner, G.P. 2011. Mapping forest carbon and canopy diversity in humid tropical forests. Annual Symposium of the British Ecological Society, Cambridge. (invited)
769. Asner, G.P. 2011. Advancing research on biosphere-atmosphere interactions in the tropics. XV Brazilian Remote Sensing Symposium, Curitiba, Brazil. (invited)
770. Somers, B., Asner, G.P., Tits, L., Knaeps, E., and P. Coppin. 2011. Multitemporal unmixing of mixed vegetation systems: a focus on invasive plant species monitoring. Belgian Earth Observation Day 2011, Oudenburg, Belgium, 25 May, 2011
771. Cordell, S., E.J. Questad, K.M. Kinney, J.R. Kellner, J.M. Thaxton, and G.P. Asner. 2011. Guiding ecological restoration in invaded landscapes. Ecological Society of America, Austin, TX.

772. Mascaro, J., G.P. Asner, H.C. Muller-Landau, M. van Breugel, J. Hall, and K.M. Dahlin. 2011. Controls over aboveground forest carbon density on Barro Colorado Island, Panama. Ecological Society of America, Austin, TX.
773. Dahlin, K. and G.P. Asner. 2011. Plant species mapping using integrated airborne lidar and hyperspectral imagery across multiple functional groups. Ecological Society of America, Austin, TX.
774. Colgan, M. and G.P. Asner. 2011. Topo-edaphic controls over woody biomass in South African savannas. Ecological Society of America, Austin, TX.
775. Colgan, M., G.P. Asner, and T. Swemmer. 2011. Improving estimation of tree carbon stocks by harvesting aboveground woody biomass within airborne LiDAR flight areas. American Geophysical Union, San Francisco, CA.
776. Asner, G.P. 2012. The gold mining boom in the Western Amazon. Association for Tropical Biology and Conservation, Bonito, Brazil. (invited)
777. Martin, R.E. and G.P. Asner. 2012. Contrasting chemical traits in tropical lianas and trees: implications for future forest composition. Association for Tropical Biology and Conservation, Bonito, Brazil.
778. Higgins, M., G.P. Asner, E. Perez, N. Elespuru, H. Tuomisto, K. Ruokolainen, and A. Alonso. 2012. Long-term Andean uplift controls productivity in Amazonian forests. Association for Tropical Biology and Conservation, Bonito, Brazil.
779. Alencar, A. and G.P. Asner. 2012. Vulnerability of smallholders livelihood in Amazon frontier due to global warming and forest fires. Association for Tropical Biology and Conservation, Bonito, Brazil.
780. Carlson, K., L.M. Curran, D. Ratnasari, A.M. Pittman, B.S. Soares-Filho, G.P. Asner, S.N. Trigg, D.L.A. Gaveau, D. Lawrence, and H.O. Rodrigues. 2012. Committed carbon emissions and deforestation from oil palm plantation expansion in West Kalimantan, Indonesia. Association for Tropical Biology and Conservation, Bonito, Brazil.
781. Dahlin, K.M., G.P. Asner, and C.B. Field. 2012. Ecosystem assembly meets geostatistics: Using airborne remote sensing and simultaneous autoregression to understand vegetation patterns in a recently disturbed landscape. Ecological Society of America, Portland, OR.
782. Hughes, R.F., G.P. Asner, and D. Grossman. 2012. Recovery of native species diversity and biomass following deforestation of wet forests on Hawaii Island: The hope of native ohia (Metrosideros polymorpha) populations and the curse of alien and/or “novel" forests. Ecological Society of America, Portland, OR.
783. Hall, L.S., K.M. Kinney, J.R. Kellner, S. Cordell, G.P. Asner, J.M. Thaxton, E.J. Questad, D.E. Knapp, and T. Kennedy-Bowdoin. 2012. Detecting a prehistoric fire regime in a Hawaiian sub – alpine dry forest. Ecological Society of America, Portland, OR.
784. Colgan, M.S., G.P. Asner, and T. Swemmer. 2012. Destructive sampling within airborne LIDAR flight areas to improve airborne estimation of aboveground woody plant biomass. Ecological Society of America, Portland, OR.
785. Asner, G.P. 2012. Integrated approaches for assessing carbon stocks in tropical forests. 4th International EcoSummit, Columbus, OH. (invited)
786. Asner, G.P. 2012. 3D explorations of tropical forests and savannas. 6th International Canopy Conference, Oaxaca, Mexico. (invited)
787. Asner, G.P., T. Kennedy-Bowdoin, J.R. Kellner, R.E. Martin, C. Anderson, L. Carranza-Jimenez, and D.E. Knapp. 2012. Impacts of the 2010 Amazon drought on forest structure and function using CAO AToMS. American Geophysical Union, San Francisco, CA. (invited)
788. Baldeck, C.A., M. Colgan, J.-B. Féret, and G.P. Asner. 2012. Tree species identification in an African Savanna with airborne imaging spectroscopy and LiDAR from the Carnegie Airborne Observatory (CAO) using stacked support vector machines. American Geophysical Union, San Francisco, CA.

789. Chadwick, K.D., and G.P. Asner. 2012. Landscape-scale tropical forest dynamics: Relating canopy traits and topographically derived hydrologic indices in a floodplain system using CAO-AToMS. American Geophysical Union, San Francisco, CA.
790. Dahlin, K., G.P. Asner, and C.B. Field. 2012. Environmental controls on plant chemical traits: Using the CAO-VSWIR to characterize patterns in a Mediterranean-type ecosystem. American Geophysical Union, San Francisco, CA.
791. Detto, M., H. Muller-Landau, G.P. Asner, and J. Mascaro. 2012. Hydrographic network control of the spatial variation in tropical forest structure revealed by airborne LIDAR-derived mean canopy profile height. American Geophysical Union, San Francisco, CA.
792. Féret, J.-B., and G.P. Asner. 2012. Characterization of forest biodiversity in Western Amazon using CAO-VSWIR imaging spectroscopy. American Geophysical Union, San Francisco, CA.
793. Knapp, D.E., G.P. Asner, J.W. Boardman, T. Kennedy-Bowdoin, M. Eastwood, C. Anderson, R.E. Martin, and R.O. Green. 2012. Fusing hyperspectral and LiDAR data from CAO-VSWIR for increased data dimensionality. American Geophysical Union, San Francisco, CA.
794. Higgins, M., G.P. Asner, R.E. Martin, and D.E. Knapp. 2012. Geological control of canopy structure and function in Panamanian forests as identified by CAO-AToMS. American Geophysical Union, San Francisco, CA.
795. Martin, R.E., and G.P. Asner. 2012. Canopy spectral and chemical diversity from lowland to tree line in the Western Amazon using CAO-VSWIR. American Geophysical Union, San Francisco, CA.
796. Perez-Leiva, P., D.E. Knapp, G.P. Asner, K. Salcedo, S. Sousan, E. Tassar, and E. Victoria. 2012. Mapping humid and dry forest change at the national level in Peru using CLASlite with automated per-pixel mosaicking. American Geophysical Union, San Francisco, CA.
797. Davies, A.B., S.R. Levick, G.P. Asner, M.P. Robertson, B.J. van Rensburg, and C.L. Parr. 2013. Termite mound influences on savanna grass communities. 11th Annual Savanna Science Network Meeting, Skukuza, South Africa.
798. Baldeck, C. A., M. Colgan, J-B. Féret, S. R. Levick, R. E. Martin, and G. P. Asner. 2013. Understanding plant community composition of a savanna landscape through airborne species mapping. 11th Annual Savanna Science Network Meeting. Skukuza, South Africa.
799. Chadwick, O. A., S. R. Levick, J. J. Roering, L. M. Khomo and G. P. Asner. 2013. The spacing of hills and valleys in Kruger National Park: Rock control on topography. 11th Annual Savanna Science Network Meeting. Skukuza, Kruger National Park, South Africa. 3-8 March 2013.
800. Asner, G. P. and S. R. Levick. 2013. Treefall and tree-growth in Kruger National Park. 11th Annual Savanna Science Network Meeting. Skukuza, South Africa.
801. Levick, S. R., G.P. Asner and S.E. Trumbore. 2013. The allometric signature of fire. 11th Annual Savanna Science Network Meeting. Skukuza, South Africa.
802. Roering, J. J., O. A. Chadwick, S. R. Levick and G. P. Asner. 2013. Climate controls on the spacing of hills and valleys in Kruger National Park. 11th Annual Savanna Science Network Meeting. Skukuza, South Africa.
803. Davies, A.B., S.R. Levick, G.P. Asner, M.P. Robertson, B.J. van Rensburg, and C.L. Parr. 2013. The functional importance of termite mounds for savanna heterogeneity across a rainfall gradient. Zoological Society of Southern Africa Conference, Tshipise, Limpopo.
804. Somers, B., and G.P. Asner 2013. Mapping tropical rainforest canopies using multi-temporal space-borne imaging spectroscopy. SPIE Remote Sensing, September 23-26, 2013, Dresden, Germany.
805. Inman-Narahari, F., R. Ostertag, G.P. Asner, S. Cordell, S.P. Hubbell, and L. Sack. 2013. Niche differentiation of tree seedlings in tropical wet forest. Association for Tropical Biology and Conservation, San Jose, Costa Rica.
806. Palminteri, S. G.V.N. Powell, G.P. Asner, and C.A. Peres. 2013. Remotely-sensed LiDAR canopy structure data help predict occupancy and use of space of a tropical arboreal vertebrate. Association for Tropical Biology and Conservation, San Jose, Costa Rica.

807. Davies, A.B., M.P. Robertson, S.R. Levick, G.P. Asner, B.J. van Rensburg, and C.L. Parr. 2013. Termite mounds: functional importance for savanna heterogeneity across a rainfall gradient. International Congress of Ecology, London.
808. Urbazaev, M., C. Thiel, C. Schmullius, R. Mathieu, L. Naidoo, S. Levick, I. Smit, G.P. Asner, and B. Leblon. 2013. Mapping of fractional woody cover using full, dual and single polarimetric L- and C-band datasets in the Kruger National Park region, SA. European Space Agency Living Planet Symposium, Edinburgh.
809. Levick, S.R., G.P Asner, and C.A Baldeck. 2013. Bridging scales in savanna ecology and conservation through the fusion of airborne LiDAR and imaging spectroscopy. 43rd Annual Meeting of the Ecological Society of Germany, Austria and Switzerland. Potsdam.
810. Avitabile, V., M. Herold, K. Calders, S. Lewis, O. Phillips, G. Newnham, S. Murphy, N. Aguilar-Amuchastegui, J. Armston, G.P. Asner, A. Burt, R. Cazzolla Gatti, D. Culvenor, B. DeVries, M. Disney, C. Girardin, B. de Jong, E. Kearsley, E. Klop, X. Lin, J. Lindsell, R. Lucas, Y. Malhi, A. Morel, E. Mitchard, D. Pandey, S. Piao, P. Raumonen, C. Ryan, M. Sales, M. Santoro, G. Vaglio Laurin, R. Valentini, H. Verbeeck, A. Wijaya and S. Willcock. 2014. Integrating different data sources for validating large area biomass maps. European Space Agency Land Product Validation and Evolution Conference, Frascati.
811. Avitabile, V., M. Herold, S. Lewis, O. Phillips, N. Aguilar-Amuchastegui, G.P. Asner, A. R. Cazzolla Gatti, B. DeVries, Girardin, B. de Jong, E. Kearsley, E. Klop, X. Lin, J. Lindsell, R. Lucas, Y. Malhi, A. Morel, E. Mitchard, D. Pandey, S. Piao, C. Ryan, M. Sales, M. Santoro, G. Vaglio Laurin, R. Valentini, H. Verbeeck, A. Wijaya and S. Willcock. 2013. Comparative analysis and fusion for improved global biomass mapping. Global Vegetation Monitoring and Modeling International Conference, Avignon.
812. Avitabile, V., M. Herold, K. Calders, S. Lewis, O. Phillips, G. Newnham, S. Murphy, N. Aguilar-Amuchastegui, J. Armston, G.P. Asner, A. Burt, R. Cazzolla Gatti, D. Culvenor, B. DeVries, M. Disney, C. Girardin, B. de Jong, E. Kearsley, E. Klop, X. Lin, J. Lindsell, R. Lucas, Y. Malhi, A. Morel, E. Mitchard, D. Pandey, S. Piao, P. Raumonen, C. Ryan, M. Sales, M. Santoro, G. Vaglio Laurin, R. Valentini, H. Verbeeck, A. Wijaya and S. Willcock. 2014. Multiple data sources for analyzing, integrating and validating biomass maps. EARSeL Frontiers in Earth Observation for Land System Science Workshop, Berlin.
813. Somers, B., G.P. Asner, C.B. Anderson, D.E. Knapp, and R.E. Martin. 2013. Biodiversity patterns along a climate gradient in Panama from imaging spectroscopy. Belgian Earth Observation Days, 19-20 November 2013, Feluy, Belgium
814. Somers, B., and G.P. Asner. 2013. Remote mapping of tree species in Hawaiian rainforests: demonstrating the potential of hyperspectral time series analysis. Belgian Earth Observation Days, 19-20 November 2013, Feluy, Belgium
815. Baldeck, C., G.P. Asner, J.R. Kellner, R. Martin, C. Anderson, and D.E. Knapp. 2013. Remote tree species identification in a diverse tropical forest using airborne imaging spectroscopy. American Geophysical Union, San Francisco, CA.
816. Chadwick, K.D., and G.P. Asner. 2013. Linking terrace geomorphology and canopy characteristics in the Peruvian Amazon using high resolution airborne remote sensing. American Geophysical Union, San Francisco, CA.
817. Chavana-Bryant, C., G. France, Y. Malhi, B.J. Enquist, and G.P. Asner. 2013. Leaf phenology of Amazonian canopy trees as revealed by spectral and physiochemical measurements. American Geophysical Union, San Francisco, CA.
818. Clark, K.E., A.J. West, R.G. Hilton, Y. Malhi, G.P. Asner, M. Silman, S.S. Saatchi, C. Quesada, W. Farfan Rios, R.E. Martin, and M.G. New. 2013. Links between river incision, landslide activity, organic material erosion, and plant species diversity in an Andean valley. American Geophysical Union, San Francisco, CA.
819. Féret, J.-B., and G.P. Asner. 2013. Mapping the geographic distribution of canopy species communities in lowland Amazon rainforest with CAO-AToMS. American Geophysical Union, San Francisco, CA.

820. Martin, R.E., C. Anderson, D.E. Knapp, and G.P. Asner. 2013. Airborne imaging spectroscopy of forest canopy chemistry in the Andes-Amazon Corridor. American Geophysical Union, San Francisco, CA.
821. McManus, K.M., G.P. Asner, and R.E. Martin. 2013. Spatial and phylogenetic variation in plant defense in a tropical moist forest canopy community. American Geophysical Union, San Francisco, CA.
822. Higgins, M., G.P. Asner, C. Anderson, R. Martin, D.E. Knapp, E. Perez, N. Elespuru, and A. Alonso. 2013. Meso-scale drivers of forest structure and function in northwestern Amazonia. American Geophysical Union, San Francisco, CA.
823. Weintraub, S.R., R.F. Stallard, P. Taylor, G.P. Asner, and A.R. Townsend. 2013. Erosional nitrogen losses in a geomorphologically dynamic wet tropical watershed. American Geophysical Union, San Francisco, CA.
824. West, A.J., M.A. Torres, E. Kleinsasser, K. Clark, G.P. Asner, Y. Malhi, and C. Quesada. 2013. Geomorphic controls on availability of weathering-derived nutrients across an erosional gradient in the Andes. American Geophysical Union, San Francisco, CA.
825. Inman-Narahari, F., R. Ostertag, G.P. Asner, S. Cordell, S.P. Hubbell, and L. Sack. 2014. Niche differentiation of native tree seedlings in Hawaiian wet forest. Island Biology 2014, Honolulu, HI.
826. Levick, S.R., C.A. Baldeck, and G.P. Asner. 2014. Demographic legacies of alternate fire histories in savannas. 12th Annual Savanna Science Network Meeting. Skukuza, South Africa.
827. Asner, G.P., C.A. Baldeck, M. Colgan, S.R. Levick, and R.E. Martin. 2014. Environmental and phylogenetic controls on savanna woody plant dynamics in Kruger. 12th Annual Savanna Science Network Meeting. Skukuza, South Africa.
828. Davies, A.B., G.P. Asner, and A. Gaylard. A new project to advance geospatial animal-habitat analysis in South Africa. 12th Annual Savanna Science Network Meeting. Skukuza, South Africa.
829. Asner, G.P. 2014. Effects of soaring elephant numbers on South African savanna habitats. Megafauna and Ecosystem Function: Pleistocene to Anthropocene. Oxford, U.K.
830. McManus, K.M., G.P. Asner, R.E. Martin, and C.B. Field. 2014. Plant defense syndromes in a tropical moist forest canopy community. 99th Ecological Society of America Annual Meeting, Sacramento CA.
831. Marvin, D.C., G.P. Asner, C. Anderson, J.-B. Féret, D.E. Knapp, R.E. Martin and S.A. Schnitzer. 2014. Mapping lianas in tropical forests using high-resolution imaging spectroscopy. 99th Ecological Society of America Annual Meeting, Sacramento CA.
832. Baldeck, C.A., G.P. Asner, R.E. Martin, C.B. Anderson, D.E. Knapp, J.R. Kellner, and S.J. Wright. 2014. Tree species mapping in a diverse tropical forest with airborne imaging spectroscopy. 99th Ecological Society of America Annual Meeting, Sacramento CA.
833. Baldeck, C.A. and G.P. Asner. 2014. Mapping species from above with hyperspectral remote sensing. 99th Ecological Society of America Annual Meeting, Sacramento CA.
834. McLean, K.A., A.M. Trainor, O.J. Schmitz, P.A. Jansen, G.P. Asner, M.C. Crofoot. 2014. Use of step selection functions to model movement of three Neotropical primates using LiDAR-derived measures of forest structure. 99th Ecological Society of America Annual Meeting, Sacramento CA.
835. Asner, G.P., R.E. Martin, C.B. Anderson, and D.E. Knapp. 2014. Mapping Amazonian canopy foliar traits with imaging spectroscopy. American Geophysical Union, San Francisco, CA.
836. Marvin, D., G.P. Asner, C.B. Anderson, D.E. Knapp, R.E. Martin, and N. Vaughn. 2014. Detecting and comparing static and dynamic gaps in a western Amazonian tropical forest landscape. American Geophysical Union, San Francisco, CA.
837. Shenkin, A., L.P. Bentley, G.P. Asner, and Y. Malhi. 2014. Light in tropical forest models: what detail matters? American Geophysical Union, San Francisco, CA.
838. Brando, P.M., C. dos Santos, A. Alencar, G.P. Asner, M.T. Coe, and D.V. Silverio. 2014. How can historical responses of Amazonian forests to drought and fire inform future prediction? American Geophysical Union, San Francisco, CA.
839. McManus, K.M., G.P. Asner, R.E. Martin, and C.B. Field. 2014. Landscape variation in plant defense syndromes across a tropical rainforest. American Geophysical Union, San Francisco, CA.

840. Schimel, D.S., J.B. Fisher, R. Pavlick, S.S. Saatchi, G.P. Asner, and C. Frankenberg. 2014. Filling gaps in global data sets: the role of new vegetation remote sensing data products. American Geophysical Union, San Francisco, CA.
841. Feilhauer, H., G.P. Asner, and R.E. Martin. 2015. Identification of spectral bands related to leaf biochemistry with a multi-method ensemble regression approach. Proceedings of the 9th EARSeL SIG Imaging Spectroscopy Workshop, Luxembourg, 14-16 April 2015.
842. Atkin, O.K., et al. 2015. Global variability in leaf respiration in relation to climate and leaf traits. European Geosciences Union General Assembly, Vienna, Austra, 12-17 April 2015.
843. Shenkin, A., et al. 2015. Inferring life history strategies of tropical trees from leaf and crown spectral signatures. Association for Tropical Biology and Conservation, Honolulu HI, 13-16 July 2015.
844. Malhi, Y., et al. 2015. CHAMBASA: variation in tree functional traits along a 3300 m elevation gradient in the Amazon and Andes. Association for Tropical Biology and Conservation, Honolulu HI, 13-16 July 2015.
845. Asner, G.P. and R.E. Martin. 2015. Changes in forest canopy chemical traits on a global matrix of elevation gradients. Association for Tropical Biology and Conservation, Honolulu HI, 13-16 July 2015.
846. Martin, R.E. and G.P. Asner. 2015. Phenotypic and genetic variation in Metrosideros polymorpha across environmental gradients in Hawaii. Association for Tropical Biology and Conservation, Honolulu HI, 13-16 July 2015.
847. Selmants, P. C. Giardina, C. Litton, and G. Asner. 2015. Sensitivity of forest carbon stocks and fluxes to altered rainfall in the Hawaiian Islands. Association for Tropical Biology and Conservation, Honolulu HI, 13-16 July 2015.
848. Marvin, D.C. and G.P. Asner. 2015. Massive carbon source found in tree dynamics of lowland Amazonian forests. Association for Tropical Biology and Conservation, Honolulu HI, 13-16 July 2015.
849. Questad, E., K. Kellner, S. Cordell, G. Asner, et al. 2015. Mapping habitat suitability for restoration and at-risk plant reintroduction in dryland landscapes of Hawaii. Association for Tropical Biology and Conservation, Honolulu HI, 13-16 July 2015.
850. Barbosa, J., G. Asner, F. Hughes, and T. Johnson. 2015. Remote sensing of forest productivity and aboveground carbon along spatial gradients of plant invasion and environmental conditions. Association for Tropical Biology and Conservation, Honolulu HI, 13-16 July 2015.
851. Fine, P., D. Salazar, J. Lokvam, M. Metz, G. Asner, and R. Martin. 2015. Protium leaf chemistry variation across phylogenetic, geographic, and environmental dimensions. Association for Tropical Biology and Conservation, Honolulu HI, 13-16 July 2015.
852. Féret, J.B., J.P. Gastellu-Etchegorry, M.J. Lefevre-Fonollosa, C. Proisy, and G.P. Asner. 2015. Hypertropik project for HYPXIM mission: Mapping tropical biodiversity using spectroscopic imagery. 9th EARSeL SIG Imaging Spectroscopy Workshop, Paris, France.
853. Shenkin, A. C. Doughty, C. Girardin, G. Asner, and Y. Malhi. 2016. Detecting carbon cycle processes from above: first steps towards scaling to landscapes and beyond. European Conf. of Tropical Ecology. Goettingen, Germany, Feb 23-26, 2016.
854. Wu, M.S., S.J. Feakins, C. Ponton, T. Peters, A.J. West, V. Galy, L.P. Bentley, N. Salinas, A. Shenkin, R.E. Martin, G.P. Asner, and Y. Malhi. 2015. Leaf wax d13C varies with elevation in the Peruvian Andes and western Amazonia. American Geophysical Union, San Francisco, CA.
855. Ordway, E.M., G.P. Asner, and E.F. Lambin. 2015. Forest conversion, agricultural transitions and the influence of multi-scale market factors in Southwest Cameroon. American Geophysical Union, San Francisco, CA.
856. Asner, G.P., P. Brodrick, C.B. Anderson, N. Vaughn, D.E. Knapp, and R.E. Martin. 2015. Assessment of forest vulnerability to climate change from imaging spectroscopy. American Geophysical Union, San Francisco, CA.

857. Balzotti, C., G. Asner, P. Taylor, R. Cole, B. Osborne, C. Cleveland, S. Porder, and A. Townsend. 2015. Topographic distributions of emergent trees in tropical forests of the Osa Peninsula, Costa Rica. American Geophysical Union, San Francisco, CA.
858. Davies, A.B., and G.P. Asner. 2015. Advances in animal ecology from 3D ecosystem mapping with LiDAR. American Geophysical Union, San Francisco, CA.
859. Clark, K., R. Hilton, A.J. West, A. Robles Caceres, D. Grocke, T. Marthews, G.P. Asner, M. New, and Y. Mahli. 2016. Erosion of particulate organic material from an Andean river and its delivery to the Amazon basin. Geophysical Research Abstracts, EGU General Assembly 2016, vol. 18, EGU2016-15210.
860. Davies, A.B., D. Marneweck, D.J. Druce, and G.P. Asner. 2016. Density and fitness-based indicators of den site quality for endangered African wild dogs. 14th Annual Savanna Science Network Meeting, Skukuza, South Africa.
861. Mograbi, P.J., G.P. Asner, N. Vaughn, E.T.F. Witkowski, et al. 2016. Patterns of human and elephant mediated treefall in African savannas. 14th Annual Savanna Science Network Meeting, Skukuza, South Africa.
862. Chavana-Bryant, C., Y. Malhi, J. Wu, G.P. Asner, A. Anastasiou, B.J. Enquist, E.G. Cosio Caravasi, C.E. Doughty, S.R. Saleska, R.E. Martin, and F.F. Gerard. 2016. Leaf aging of Amazonian canopy trees as revealed by spectral and physiochemical measurements. European Geosciences Union General Assembly, Vienna, Austria.
863. Clark, K., R. Hilton, A.J. West, A. Robles Caceres, D. Grocke, T. Marthews, G. Asner, M. New, and Y. Mahli. 2016. Erosion of particulate organic material from an Andean river and its delivery to the Amazon Basin. European Geosciences Union General Assembly, Vienna, Austria.
864. Thompson, D.R., E. Hochberg, G.P. Asner, H. Dierssen, B.-C. Gao, R. Garcia, M. Gierach, R.O. Green, D. Knapp, Z. Lee, S. Maritorena, P. Mouroulis, and I. McCubbin. 2016. Remote spectroscopic retrieval of apparent optical properties and bottom reflectance in shallow coral ecosystems. International Coral Reef Symposium, Honolulu, Hawaii.
865. Asner, G.P. 2016. Measuring and visualizing Earth with the Carnegie Airborne Observatory. Society for Environmental Journalism, Sacramento, CA.
866. Asner, G.P. 2016. Keynote Address: Enabling and empowering conservation through the science-policy interface. Int'l Conference on Heart of Borneo, Kota Kinabalu, Sabah, Malaysia.
867. Selmants, P.C., B.M. Sleeter, C.P. Giardina, Z. Zhu, and G.P. Asner. 2016. Baseline and projected future carbon stocks and fluxes in the Hawaiian Islands. American Geophysical Union, San Francisco, CA.
868. Feakins, S.J., A.J. West, V. Galy, Y. Malhi, C. Girardin, G.P. Asner, C. Ponton, and M.S. Wu. 2016. How does forest productivity influence river export of plant wax? American Geophysical Union, San Francisco, CA.
869. Giambelluca, T.W., R.G. Mudd, M. Huang, M. Nullet, G.P. Asner, R.E. Martin, R. Ostertag, Y. Miyazawa. And C.M. Litton. 2016. Light availability controls ecosystem fluxes in native and non-native tropical montane wet forests in Hawaii. American Geophysical Union, San Francisco, CA.
870. Osborne, B.B., M. Nasto, G.P. Asner, C. Balzotti, C.C. Cleveland, P. Taylor, A.R. Townsend, and S. Porder. 2016. Canopy tree species drive local heterogeneity in soil nitrogen availability in a lowland tropical forest. American Geophysical Union, San Francisco, CA.
871. Dahlin, K., G.P. Asner, J. Mascaro, and P. Taylor. 2016. Varying influence of environmental gradients on vegetation patterns across biomes. American Geophysical Union, San Francisco, CA.
872. Skowronek, S., G.P. Asner, and H. Feilhauer. 2016. Performance of one-class classifiers for invasive species mapping using hyperspectral remote sensing. American Geophysical Union, San Francisco, CA.
873. Chen, M., K. Guan, P.G. Brodrick, J.A. Berry, and G.P. Asner. 2016. Recent drought effects on ecosystem carbon uptake in California ecosystems. American Geophysical Union, San Francisco, CA.
874. Asner, G.P. 2016. Environmental filtering of forest canopy functional traits determined from imaging spectroscopy. American Geophysical Union, San Francisco, CA.

875. Kane, V.R., R.J. McGaughey, G.P. Asner, J.T. Kane, D. Churchill, and N. Vaughn. 2016. Mapping forest structure from tree clump and opening patterns across landscapes with airborne LiDAR to study response to disturbances and map habitat. American Geophysical Union, San Francisco, CA.
876. Draper F.C., C. Baraloto, and G.P. Asner. 2017. Imaging spectroscopy reveals variable distance decay in west Amazonian tree communities. 54th Annual meeting of the Association of Tropical Biology and Conservation. Merida, Mexico. July 9-4th 2017.
877. Bentley, L.P., I. Oliveras, N. Fyllas, R.E. Martin, A. Gvozdevaite, A. Shenkin, N. Salinas, T. Peprah, B. Marimon, B.H. Marimon-Junior, S. Adu-Bredu, G.P. Asner, S. Díaz, B.J. Enquist, and Y. Malhi. 2017. Deconstructing leaf trait variation along tropical environmental gradients. 102nd Annual Meeting of the Ecological Society of America, 6-11 August 2017, Portland, Oregon.
878. Blonder, B.W., N. Salinas, L.P. Bentley, A.Shenkin, P. Chambi Porroa, Y. Valdez Tejeira, T.B. Espinoza, G.R. Goldsmith, L. Enrico, R. Martin, G.P. Asner, S. Díaz, B.J. Enquist, Y. Malhi. 2017. Why do leaf venation networks have loops? Testing hypotheses with an Andes-Amazon elevation gradient. 102nd Annual Meeting of the Ecological Society of America, 6-11 August 2017, Portland, Oregon.
879. Brodrick, P., and G.P. Asner. 2017. Remotely sensed advance indicators of mortality in conifers throughout the Sierra Nevada. 102nd Annual Meeting of the Ecological Society of America, 6-11 August 2017, Portland, Oregon.
880. Chadwick, K.D., L.P. Bentley, R. Park, B.J. Enquist, V.M. Savage, and G.P. Asner. 2017. Shifting nutrient availability along hillslopes across an elevational gradient in the Peruvian Andes. 102nd Annual Meeting of the Ecological Society of America, 6-11 August 2017, Portland, Oregon.
881. Davies, A.B., and G.P. Asner. 2017. Integrating field and remote sensing data for landscape-level perspectives of animal impacts on carbon cycling. 102nd Annual Meeting of the Ecological Society of America, 6-11 August 2017, Portland, Oregon.
882. Durán, S.M., G.P. Asner, R. E. Martin, L.P. Bentley, K.D. Chadwick, S. Díaz, B.S. Maitner, Y. Malhi, N. Salinas, V.M. Savage, A. Shenkin, M. Silman, D.J. Wieczynski, and B.J. Enquist. 2017. Spectroscopy of canopy foliar traits: Can airborne imaging quantify functional diversity of plant communities? 102nd Annual Meeting of the Ecological Society of America, 6-11 August 2017, Portland, Oregon.
883. Francis, E., and G.P. Asner. 2017. Effects of Fog Cover and Topography on Spatial Variability in Redwood Sensitivity to Regional Drought. 102nd Annual Meeting of the Ecological Society of America, 6-11 August 2017, Portland, Oregon.
884. Kane, V.R., M.P. North, J.T. Kane, D. Churchill, and G.P. Asner. 2017. California spotted owls select nesting and foraging sites based on tall tree densities. 102nd Annual Meeting of the Ecological Society of America, 6-11 August 2017, Portland, Oregon.
885. Ordway, E.M., G.P. Asner, and E.F. Lambin. 2017. Deforestation risk due to commodity crop expansion in sub-Saharan Africa. 102nd Annual Meeting of the Ecological Society of America, 6-11 August 2017, Portland, Oregon.
886. Osborne, B.B., M.K. Nasto, G.P. Asner, C.S. Balzotti, C.C. Cleveland, P.G. Taylor, A. Townsend, and S. Porder. 2017. Canopy nitrogen is correlated with litter and soil nitrogen in a lowland tropical forest. 102nd Annual Meeting of the Ecological Society of America, 6-11 August 2017, Portland, Oregon.
887. Francis, E.J., and G.P. Asner. 2017. Roles of fog and topography in redwood forest hydrology. American Geophysical Union, 11-15 December 2017, New Orleans, LA.
888. Pavlick, R.P., D.S. Schimel, F.W. Davis, G.P. Asner, G. Burgess, K.C. Cavanaugh, J. Cavender-Bares, S.J. Davies, R. Dubayah, L. Guild, D. Jensen, W. Jetz, P. Moorcroft, H.C. Muller-Landau, P.A. Townsend, and Z. Wang. 2017. Moving towards a Global Biodiversity Observatory. 102nd Annual Meeting of the Ecological Society of America, 6-11 August 2017, Portland, Oregon.
889. Wieczynski, D. J., S.M. Duran, G.P. Asner, L.P. Bentley, B. Boyle, V.R. Buzzard, S. Díaz, B.J. Enquist, A. Henderson, C. Hulshof, A.J. Kerkhoff, Y. Malhi, R. Martin, S. Michaletz, N. Salinas, A. Shenkin, M. Silman, N. Swenson, and V.M. Savage. 2017. A trait-based perspective on

ecosystem responses to environmental variation along elevational and latitudinal gradients using Trait Driver Theory. 102nd Annual Meeting of the Ecological Society of America, 6-11 August 2017, Portland, Oregon.

890. Kane, V.R., North, M., Kane, J.T., Churchill, D., Asner, G. 2017. Airborne LiDAR reveals key characteristics of habitat used by California spotted owls across four large study areas. Silvilaser 2017 Conference, Blackburg, Virginia, USA.
891. Green, R.O., G.P. Asner, D.R. Thompson, P. Mouroulis, M.L. Eastwood, and S. Chien. 2017. A smallsat approach for global imaging spectroscopy of the Earth system enabled by advanced technology. American Geophysical Union, 11-15 December 2017, New Orleans, LA.
892. Ordway, E., G.P. Asner, R.L. Naylor, R. Nkongho, and E. Lambin. Multiscale analysis of deforestation risk due to commodity crop expansion in sub-Saharan Africa and the role of non-industrial producers. American Geophysical Union, 11-15 December 2017, New Orleans, LA.
893. Fisher, J.B., F.M. Schwandner, G.P. Asner, et al. 2017. A window into the future of the Earth, hidden in the jungles of Costa Rica's volcanoes. American Geophysical Union, 11-15 December 2017, New Orleans, LA.
894. Davies, A.B. and G.P. Asner. 2018. Applying advanced remote sensing tools for animal conservation in an increasingly human-dominated world. Ecological Society of America Meeting 2018, New Orleans, LA.
895. Chadwick, K.D., and G.P. Asner. 2018. Understanding foliar trait distributions across a tropical substrate-elevation matrix using integrated imaging spectrometer and LiDAR datasets. Ecological Society of America Meeting 2018, New Orleans, LA.
896. Draper, F.C., C. Baraloto, G.P. Asner, F.R.C. Costa, O. Phillips, G. Arellano, M.J. Macia, A.J. Duque, and J. Scheitti. 2018. De-coupled hyperdominance in understory and canopy Amazon tree communities. Ecological Society of America Meeting 2018, New Orleans, LA.
897. Osborne, B.B., G.P. Asner, C.C. Cleveland, F. Soper, A. Townsend, and S. Porder. 2018. Remote sensing canopy N predicts differences in soil microbial community composition and activity at the sub-hectare scale in a lowland tropical forest. Ecological Society of America Meeting 2018, New Orleans, LA.
898. Brodrick, P., and G.P. Asner. 2018. Inertia of the California drought. Ecological Society of America Meeting 2018, New Orleans, LA.
899. Gaitan, M., S.M. Duran, et al. 2018. Using trait-based ecology to understand shifts in community assembly in a long-term tropical forest plot. Ecological Society of America Meeting 2018, New Orleans, LA.
900. Michaletz, S., G.P. Asner, et al. 2018. On the kinetics of plant growth from leaves to ecosystems. Ecological Society of America Meeting 2018, New Orleans, LA.
901. Francis, E.J, and G.P. Asner. 2018. Interactions of marine fog and hydrology define the realized niche of redwoods. International Biogeography Society Meeting, 19-24 March 2018, Lisbon, Portugal.
902. Townsend, P.A., et al. 2018. The impending flood of imaging spectroscopy data: is ecosystem science ready? American Geophysical Union, 2018, San Francisco, CA.
903. Duran, S.M., et al. 2018. Using remotely-sensed functional diveristy to inform trait-based ecology. American Geophysical Union, 2018, San Francisco, CA.
904. Li, J., G.P. Asner, and S. Schill. 2018. Adaptive bathymetry estimation algorithm for coastal waters based on Planet Dove satellite sensors. American Geophysical Union, 2018, San Francisco, CA.
905. Anderson, C., E. Lambin, and G.P. Asner. 2018. Drivers of deforestation in Peru: impacts of public and private governance. American Geophysical Union, 2018, San Francisco, CA.
906. Ordway, E., and G.P. Asner. 2018. Oil palm plantations degrade aboveground carbon stocks and associated ecosystem characteristics in remaining forests. American Geophysical Union, 2018, San Francisco, CA.
907. Francis, E.J., C.B. Field, G.P. Asner, and K.J. Mach. 2018. Landscape-scale variation in redwood response to climate variability. American Geophysical Union, 2018, San Francisco, CA.

908. Ordway, E.M., P.R, Moorcroft, and G.P. Asner. 2019. Linking pattern and process in the tropics: integrating airborne remote sensing data with ecosystem modeling. American Geophysical Union, 2019, San Francisco, CA.
909. Bilodeau, S.M., A.W.H. Schwartz, G.P. Asner, and M.R. Silman. 2019. Ecological process in pattern generation in tropical coral-seagrass reefscapes: is grazing sufficient to form grazing halos? American Geophysical Union, 2019, San Francisco, CA.
910. Chadwick, K.D., and G.P. Asner. 2019 Hillslope controls on tree canopy characteristics are moderated by transient landscape evolution across a humid tropical elevation gradient. American Geophysical Union, 2019, San Francisco, CA.
911. Osborne, B.B., et al. 2019. Litterfall inputs drive patterns of soil nitrogen heterogeneity in a diverse tropical forest. American Geophysical Union, 2019, San Francisco, CA.
912. Ordway, E., G.P. Asner, P.R. Moorcroft. 2019. Using remotely sensed foliar traits to capture spaital variation in tropical forest productivity across edaphic gradients with a dynamic global vegetation model. American Geophysical Union, 2019, San Francisco, CA.
913. Ordway, E., G.P. Asner, S.J. Davies, S.L. Lewis, R. Nilus, L. Qie, O.L. Phillips, D. Burslem, S. Russo, M.J. O'Brien, M.B. Mohamad, X. Xu, M. Longo, and P.R. Moorcroft. 2020. Parameterizing tropical forest diversity: integrating a terrestrial biosphere model with remotely sensed trait measurements. American Geophysical Union, 2020, San Francisco, CA.
914. Whitney, J., et al. 2020. Biophysical interactions between fish larvae and surface slicks enhance a tropical island ecosystem. Ocean Sciences Meeting 2020, American Geophysical Union.
915. Asner, G.P. et al. 2020. Real-time multi-scale monitoring and analysis of a mass coral bleaching event. Ocean Sciences Meeting 2020, American Geophysical Union.
916. Li, J., et al. 2020. Global observation of coastal shallow water optical properties based on the Planet Dove satellites. Ocean Sciences Meeting 2020, American Geophysical Union.
917. Asner, G.P., et al. 2020. Regional to global monitoring of coral reef ecosystems. Ocean Sciences Meeting 2020, American Geophysical Union.
918. Duren, R., et al. 2020. Carbon Mapper: global tracking of methane and CO_2 point-sources. American Geophysical Union Meeting 2020, San Francisco, CA.
919. Duren, R., et al. 2020. Methane point-source emissions from oil, gas, and coal operations. American Geophysical Union Meeting 2020, San Francisco, CA.
920. Cusworth, D., R. Duren, A. Thorpe, P. Dennison, N. Downey, R. Green, W. Olson-Duvall, J. Chapman, M. Eastwood, G. Asner, J. Heckler, and C. Miller. 2021. Transient methane emissions in the Permian Basin. EGU General Assembly 2021 19-30 April 2021.
921. Shivers, S., J. Guido, R. Duren, G. Asner, R.O. Green, D.R. Ardila, A. Ayasse, M. de Belloy, D. Cusworth, J. Lai-Norling, R. Lawrence, J. Mason, S. Rao, D. Gordon, K. Seaman, and A.K. Thorpe. 2021. Carbon Mapper: A new public-private hyperspectral constellation. American Geophysical Union, 2021, San Francisco, CA.
922. Wessels, K., X. Li, A. Bouvet, R. Mathieu, R. Main, L. Naidoo, B. Erasmus, G.P. Asner, and R.J. Scholes. 2021. Quantifying a decade of savanna vegetation structure change with L-band SAR. American Geophysical Union, 2021, San Francisco, CA.
923. Ayasse, A., R. Duren, A.K. Thorpe, D. Cusworth, E.A. Kort, A.M. Gorchov Negron, J. Heckler, and G.P. Asner. 2021. Methane plume mapping over offshore oil and gas platforms using sun glint. American Geophysical Union, 2021, San Francisco, CA.
924. Cusworth, D., R. Duren, A.K. Thorpe, A. Ayasse, J.C. Lin, P.E. Dennison, J. Heckler, G.P. Asner, M.L. Eastwood, R.O. Green, and C.E. Miller. 2021. Tiered methane observing systems across multiple basins to quantify regional budgets, strong point sources, and differentiate sector contributions. American Geophysical Union, 2021, San Francisco, CA.
925. Duren, R., D. Cusworth, A. Ayasse, J. Herner, A.K. Thorpe, M. Falk, J. Heckler, J. Guido, P. Giuliano, J. Chapman, R.O. Green, and G.P. Asner. 2021. Carbon Mapper: on-orbit performance predictions and airborne prototyping. American Geophysical Union, 2021, San Francisco, CA.

926. Keremedjiev, M., J. Haag, S. Shivers, J. Guido, K. Roth, R. Nallapu, S. Dockstader, L. McGill, P. Giuliano, R. Duren, and G.P. Asner. 2022. Carbon Mapper phase 1: two upcoming VNIR-SWIR hyperspectral imaging satellites. Proc. SPIE 1209409 (31May2022) doi:10.1117/12.2632547.
927. Asner, G.P., J. Dai, K. Hondula, E. Jamalinia, M. Konig, P. Martin, N. Vaughn, J. Guido, S Shivers, R. Duren, and J. Lai-Norling. 2022. Land and ocean applications and approaches for the Carbon Mapper satellite mission. American Geophysical Union, 2022, Chicago, IL.
928. Rocchini, D., M.J. Santos, S. Ustin, J.-B. Feret, G. Asner, et al. 2022. The spectral species concept: lights and shadows of a challenging idea. American Geophysical Union, 2022, Chicago, IL.
929. Ayasse, A., A.K. Thorpe, D. Cusworth, E.A. Kort, A.M. Gorchov Negron, J. Heckler, G. Asner, and R. Duren. 2022. Methane plume mapping over shallow water offshore oil and natural gas platforms in the Gulf of Mexico. American Geophysical Union, 2022, Chicago, IL.
930. Asner, G.P., J. Dai, K. Hondula, E. Jamalinia, M. Konig, P. Martin, N. Vaughn, J. Guido, S. Shivers, R. Duren, and J. Lai-Norling. 2022. Land and ocean applications and approaches for the Carbon Mapper satellite mission. American Geophysical Union, 2022, Chicago, IL.
931. Rocchini, D., M.J. Santos, S. Ustin, J.-B. Feret, G. Asner, et al. 2022. The spectral species concept: lights and shadows of a challenging idea. American Geophysical Union, 2022, Chicago, IL.
932. Jamalinia, E., J. Dai, N. Vaughn, K. Hondula, M. Konig, J. Heckler, and G. Asner. 2023. Application of imaging spectroscopy to quantify fractional cover over agricultural lands. IEEE International Geoscience and Remote Sensing Symposium, Pasadena, CA.
933. Whitney, J., J. Gove, J. Burns, G. Asner, et al. 2024. Molecules to ecosystems: Exploring whole-reef biodiversity and fish ecology with integrated eDNA, visual and remote sensing surveys in Hawai‘i. AGU Ocean Sciences, New Orleans, LA.
934. Asner, G.P. 2024. Balancing community needs, cultural heritage, and novel scientific methods in restoring reefs on Hawai‘i Island. Reef Futures, Cancun, MX.

VIII. Open Access Peer-reviewed Data (examples)

935. Davies, A.B., S.R. Levick, M.P. Robertson, B.J. van Rensburg, G.P. Asner, and C.L. Parr. 2015. Termite mounds differ in their importance for herbivores across savanna types, seasons and spatial scales [Data set]. https://doi.org/10.5061/dryad.b0b1c
936. Levick, S.R., C.A. Baldeck, and G.P. Asner. 2015. Demographic legacies of fire history in an African savanna [Data set]. https://doi.org/10.5061/dryad.3v0p8
937. Barbosa, J.M. G.P. Asner. 2016. Prioritizing landscapes for restoration based on spatial patterns of ecosystem controls and plant-plant interactions [Data set] https://doi.org/10.5061/dryad.n0cf5
938. Balzotti, C.S., G.P. Asner, P.G. Taylor, C.C. Cleveland, R. Cole, R.E. Martin, M. Nasto, B. Osborne, S. Porder, and A.R. Townsend. 2016. Environmental controls on canopy foliar N distributions in a neotropical lowland forest [Data set]. https://doi.org/10.5061/dryad.ck585
939. Davies, A.B., D.G. Marneweck, D.J. Druce, and G.P. Asner. 2016. Den site selection, pack composition, and reproductive success in endangered African wild dogs [Data set]. https://doi.org/10.5061/dryad.d27vt
940. Caughlin, T.T., S.J. Graves, G.P. Asner, M. van Breugel, J.S. Hall, R.E. Martin, M.S. Ashton, and S.A. Bohlman. 2016. A hyperspectral image can predict tropical tree growth rates in single-species stands [Data set]. https://doi.org/10.5061/dryad.t6md2
941. Blonder, B., N. Salinas, L. Patrick Bentley, A. Shenkin, Alexander, P. Chambi Porroa, T.Valdez, B.E. Yolvi, T.E. Boza Espinoza, G.R. Goldsmith, L. Enrico, R. Martin, Roberta, G.P. Asner, S. Díaz, B.J. Enquist, and Y. Malhi. 2019. Structural and defensive roles of angiosperm leaf venation network reticulation across an Andes-Amazon elevation gradient [Data set]. https://doi.org/10.5061/dryad.33bf108
942. Asner, G.P., N. Vaughn, and J. Heckler. 2020. Global Airborne Observatory: Hawaiian Islands Live Coral Cover in 2019 (Version 3.0) [Data set]. Zenodo doi:10.5281/zenodo.4292660

943. Francis, E.J., G.P. Asner, K.J. Mach, and C.B. Field. 2020. Landscape scale variation in the hydrologic niche of California coast redwood [Data set]. https://doi.org/10.5061/dryad.fbg79cns5
944. Asner, G.P., N.R. Vaughn, and J. Heckler. 2020. Global Airborne Observatory: Hawaiian Islands Reef Rugosity 2019+2020 (Version 1.0) [Data set]. Zenodo http://doi.org/10.5281/zenodo.4294332
945. Balzotti, C., G. Asner, E. Adkins, and E. Parsons. 2020. Spatial drivers of composition and connectivity across endangered tropical dry forests [Data set]. https://doi.org/10.5061/dryad.bk3j9kd7n
946. Asner, G.P., N.R. Vaughn, and J. Heckler. 2020. Global Airborne Observatory: Hawaiian Islands Bathymetry 2019+2020 (Version 1.0) [Data set]. Zenodo http://doi.org/10.5281/zenodo.4294324
947. Freund, C., K. Clark, J. Curran, G.P. Asner, and M. Silman. 2021. Landslide age, elevation and residual vegetation determine tropical montane forest canopy recovery and biomass accumulation after landslide disturbances in the Peruvian Andes [Data set]. https://doi.org/10.5061/dryad.z34tmpgdx
948. Asner, G.P., P. Brodrick, and J. Heckler. 2021. Global Airborne Observatory: Forest Canopy Height and Carbon Stocks for Sabah, Borneo Malaysia (Version 1.0) [Data set]. Zenodo. http://doi.org/10.5281/zenodo.4549461
949. Asner, G.P., S. Sousan, D.E. Knapp, P.C. Selmants, R.E. Martin, R.F. Hughes, and C.P. Giardina. 2021. Global Airborne Observatory: Forest Carbon Stocks of the Hawaiian Islands (Version 1.0) [Data set]. Zenodo. http://doi.org/10.5281/zenodo.4584214
950. Asner, G.P., J. Mascaro, C. Anderson, D.E. Knapp, and R.E. Martin. 2021. Global Airborne Observatory: Forest canopy height and carbon stocks of Panama (Version 1.0) [Data set]. Zenodo http://doi.org/10.5281/zenodo.4624240
951. Asner, G.P., R.E. Martin, D.E. Knapp, R. Tupayachi, C.B. Anderson, F. Sinca, Felipe, … W. Llactayo. 2021. Global Airborne Observatory: Forest Functional Diversity of Peru (Version 1.0) [Data set]. Zenodo. http://doi.org/10.5281/zenodo.4602641
952. Asner, G.P., D.E. Knapp, R.E. Martin, R. Tupayachi, C.B. Anderson, J. Mascaro, ..., M.R. Silman. 2021. Global Airborne Observatory: Forest Carbon Stocks of Peru (Version 1.0) [Data set]. Zenodo. http://doi.org/10.5281/zenodo.4626309
953. Asner, G.P. 2021. Global Airborne Observatory: Forest Canopy Height of Peruvian Amazon and Andes (Version 1.0) [Data set]. Zenodo. https://doi.org/10.5281/zenodo.5722548
954. Cusworth, D., R. Duren, A. Ayasse, A. Thorpe, G. Asner, and R. Green. 2021. Methane plumes from airborne surveys 2020-2021 (1.0) [Data set]. Zenodo. https://doi.org/10.5281/zenodo.5606120
955. Davies, A., J. Cromsigt, C. Tambling, E. le Roux, N. Vaughn, D. Marneweck, and G. Asner. 2022. Environmental controls on African herbivore responses to landscapes of fear. Dryad, Dataset, https://doi.org/10.5061/dryad.kprr4xh3g
956. Wieczynski, D., S. Diaz, S. Duran, N. Fyllas, N. Salinas, R. Martin, A. Shenkin, M. Silman, G. Asner, L. Bentley, Y. Malhi, B. Enquist, and V. Savage. 2022. Improving landscape-scale productivity estimates by integrating trait-based models and remotely-sensed foliar-trait and canopy-structural data [Data set]. https://doi.org/10.5061/dryad.s7h44j18n
957. Asner, G.P., N.R. Vaughn, and J.W. Heckler. 2022. Global Airborne Observatory: Hawaiian Islands Live Coral Cover 2020 (1.0) [Data set]. Zenodo. https://doi.org/10.5281/zenodo.4777345
958. Barber, C., S. Graves, J. Hall, P. Zuidema, J. Brandt, S. Bohlman, Stephanie, G. Asner, M. Bailón, and T. Caughlin. 2022. Species-level tree crown maps improve predictions of tree recruit abundance in a tropical landscape [Data set]. https://doi.org/10.5061/dryad.dr7sqvb0d
959. Asner, G.P., E. Ordway, J. Heckler, and N. Vaughn. 2022. Global Airborne Observatory: Plot-level Forest Canopy Properties in Sabah, Malaysia (1.0) [Data set]. Zenodo. https://doi.org/10.5281/zenodo.7051897
960. Asner, G.P., C. Drury, N.R. Vaughn, J. R. Hancock, and R.E. Martin. 2024. Variability in Symbiont Chlorophyll of Hawaiian Corals from Field and Airborne Spectroscopy (Dataset) (1.0) [Data set]. Zenodo. https://doi.org/10.5281/zenodo.10677026

IX. Books

961. DeFries, R., G.P. Asner, and R.A. Houghton. 2004. Ecosystems and Land Use Change. American Geophysical Union, Washington, DC. 344 pp.
962. Asner, G.P., D.E. Knapp, R.E. Martin, R. Tupayachi, C.B. Anderson, J. Mascaro, F. Sinca, K.D. Chadwick, S. Sousan, M. Higgins, W. Farfan, M.R. Silman, W.A. Llactayo, and A.F. Neyra. 2014. The Carbon Geography of Perú. Minuteman Press, Berkeley, CA. ISBN: 978-0-9913870-7-6 (English edition) and ISBN: 978-0-9913870-6-9 (Spanish edition).

X. Book Reviews

963. Asner, G.P. 2000. Plato's Plant: On the Mathematical Structure of Plants and Canopies, by F. Schieving, Backhuys Publishers, Leiden. The Quarterly Review of Biology.
964. Asner, G.P. 2002. The Cutting Edge: Conserving Wildlife in Logged Tropical Forests, by R.A. Fimbel et al., Columbia Press, New York. The Quarterly Review of Biology.

XI. Patents

Remote Sensing Analysis of Forest Disturbances; United States Patents 8189877, 20090214084, 20120288159-A1 and 20130216103; International Classification G06K9/62; Expiration: May 21, 2028. Patent applies to a general methodology for monitoring any forest disturbances with satellite imagery. The patents protect the Carnegie Landsat Analysis System (CLAS), Carnegie Landsat Analysis System-Lite (CLASlite), Automated Monte Carlo Unmixing (AutoMCU), and Multispectral and Hyperspectral Libraries. The invention can be used to monitor any type of forest disturbance or degradation including selective logging, agricultural expansion, cattle ranching, and natural hazards such as fire and windstorms.

XII. Professional Organizations

American Geophysical Union
Association for Tropical Biology and Conservation
Ecological Society of America
International Coral Reef Society
Organization for Tropical Studies
U.S. National Academy of Sciences

XIII. Film Appearances

Keeper of the Bay (2023)
The Letter with Pope Francis (2022)
Changing Ocean (2022)
Reef Rescue (2021)
A Perfect Planet (2021)
Saving Earth from the Sky (2020)
H_2O: The Molecule That Made Us (2020)
Judi Dench's Wild Borneo Adventure (2019)

Decoding the Weather Machine (2018)
River of Gold (2016)
The Rainforests are Under Threat (2015)
The Tipping Points (2013)
Strange Days on Planet Earth (2005)

XIV. Examples of Mass Media Coverage

Honolulu Civil Beat, "Hawaiian knowledge and western science: a recipe for reef recovery?", 31Dec24
Honolulu Civil Beat, "Hawaii's love affair with cesspools is ruining its reefs", 20Nov24
Yahoo News, "Researchers kick off monumental restoration project after witnessing devastating event", 14Jul24
KHON2, "Forecasting our Future | Empowered Hawai'i", 2Jul24
Reuters, "Brazil braces for worst coral bleaching ever", 17Apr24
Hawaii Business Magazine,"Cesspools are killing Hawaii's corals – but it doesn't have to be that way", 25Sep23
Wired, "The weird way that human waste is killing corals", 9Aug23
Forbes, "Tourists are loving Hawaii's coral reefs to death", 16Jan23
BBC News, "Oil pollution: Investigation reveals Egypt's 'super coral' at risk", 16Nov22
Nature, "The last stand in the Amazon", 5Oct22
Hana Hou Magazine, "Science of the People", 1Oct22
Variety, "Pope Francis YouTube Doc 'The Letter: A Message for Our Earth' launches from Vatican City", 4Oct22
Popular Science, "These Hawaiian corals could hold the secret to surviving warming waters", 3May22
New Scientist, "Corals further from pollution were more resistant to Hawaiian heatwave", 2May22
Mongabay, "Can we save coral reefs?", 4Mar22
Wired Magazine, "Missing forests are messing with climate targets",30Oct21
World Economic Forum, "First-ever high-resolution map of world's coral reefs is complete", 15Sep21
Smithsonian Magazine, "Scientists complete the first map of the world's coral reefs", 10Sep21
U.S. News and World Report, "Researchers complete first-ever detailed map of global coral", 8Sep21
Smithsonian Magazine, "Endangered wild dogs rely on diverse habitat to survive around lions", 30Aug21
Vatican News, "Laudato Si' - science offers faith tools amid climate crisis", 25Aug21
The Economist, "Mass extinction: What can stop it?", 2Jul21
The Chopra Well, "Reinventing humanity: The connection between ecological, personal, social and planetary wellbeing", 29Jun21
The Economist, "All kinds of new technology are being used to monitor the natural world", 19Jun21
Popular Science, "These tricked out planes could help save coral reefs from untimely deaths", 1Jun21
The Guardian, "Scientists launch tool to detect bleaching of coral reefs in near real time", 19May21
Science, "NASA's new fleet of satellites will offer insights into the wild cards of climate change", 5May21

Science, "California to hunt greenhouse gas leaks and super emitters with monitoring satellites", 15Apr21
Associated Press, "Global warming's extreme rains threaten Hawaii's coral reefs", 15Apr21
Mongabay, "On the sea's surface, a wealth of ocean life gets a start", 22Mar21
Now This, "Why its important to map coral health", 15Jan2021.
The Conversation, "Protecting half of the planet is the best way to fight climate change and biodiversity loss", 8Sep20
NPR, "California's ancient redwoods face new challenge from wildfires and warming climate", 8Dec20
World Economic Forum, "First-ever aerial map of Hawaii's coral creates groundbreaking conservation tool", 18Dec20
Honolulu Star Advertiser, "1st detailed map of Hawaii reefs shows coral decline", Dec 2020
Mongabay, "Hawaiian reefs lost almost half their fish to pollution and fishing", Sep 2020
The Explorer's Journal, "The Future of Coral", Mar 2020
History Channel, "Saving the Earth from the sky", Oct 2019
IMDB, "Judi Dench's Wild Borneo Adventure", June 2019
The Verge, "Satellites track real-time damage of ocean blob menacing Hawaii",1Nov19
New York Times, "The return of The Blob: Hawaii's reefs threatened by marine heatwave", 21Oct19
Nature, "Coral tracking satellites monitor reef bleaching in near real time", 4Oct19
USA Today, "Catastrophic season in store for Hawaiian coral thanks to marine heat wave", 24Sep19
New York Times, "To map a coral reef, peel back the seawater", 11Jun19
Popular Science, "What one ecologist's high-flying studies reveal about our forests", 21May19
Vox, "To solve climate change and biodiversity loss, we need a Global Deal for Nature", 22Apr19
CBS This Morning "Mini-satellites help map Great Barrier Reef", 18Mar19
New York Times "To Help Prevent the Next Big Wildfire, Let the Forest Burn", 29Nov18
National Geographic Mag. "Inside the Daring Plan to Map Every Coral Reef from Space", 29Oct18
PBS NOVA "Decoding the Weather Machine", 18April18
CBS This Morning "Hawaii considers banning certain sunscreens to protect reefs", 17Aug17
Nature "Biodiversity moves beyond counting species", 31May17
CNN "Underwater wonder of the Spratly Islands under threat", 30Mar17
CNN "Military bases and submarines: what it's like to dive in the South China Sea", 29Mar17
LA Times "Colorful Maps Reveal the Hidden Diversity of Life in Peru's Forests", 27 an17
The Atlantic "How a Scientist Mapping the Peruvian Amazon by Plane", 27Jan17
National Geographic "Tallest trees in the tropics discovered", 14Nov16
Fox News "World's tallest tropical tree is taller than the Statue of Liberty", 11Nov16
NPR Science Friday "California trees battle beetle assault amid drought", 30Sep16
San Francisco Chronicle "An eye-opening flight over California's dying forests", 6Aug16
The Borneo Post "3D mapping to decide on land use", 4Apr16
Outside Magazine "What is killing Hawaii's trees?", 10Mar16
CBS Evening News "Nearly 1 billion trees threatened by California drought", 30Dec15
LA Times "X-ray technology reveals California's forests in for a radical transformation", 25Oct15
National Geographic TV "To Take Earth's Pulse, You Have to Fly High", 15Oct15
PBS News Hour "California's water-starved sequoias show signs of stress", 14Oct15
Aljazeera America TV "Laser mapping the California forests", 20Sep15
The Guardian "Amid California's historic drought, ancient sequoias show signs of stress", 5Sep15
Nature "The Hunt for the World's Missing Carbon", 30Jul15
The Guardian "Gold Miners Invade Amazonian Indigenous Reserve", 17Jun15
NPR "Ecologist's Airborne Scanners See the Forest and the Trees", 23Jan15
Newsweek "Mapping Rainforests to Fight Climate Change", 6Dec14

The Guardian "Peru's Forests Store More CO_2 Than U.S. Emits in a Year", 12Nov14
Scientific American "New Amazon Carbon Maps Could Slow Deforestation", 12Nov14
The Economist "Minecraft: Illegal Mining in Latin America", 16Sep14
Good magazine "2014 GOOD 100", 3Apr14
Ensia "Sky High Race Against Time". 2Dec13
NBC World News "Gold rush sparked by global financial crisis devastates Amazon", 29Oct13
The Independent "Destruction of Peru's Rainforest by Illegal Gold Mining", 28Oct13
Nature "Counting Carbon from Above", 31Jul13
TED Talk "Nature Revealed: TED Global 2013", 11Jun13
National Geographic "Lion trackers get sight beyond sight with laser plane", 18Mar13
Scientific American "Amazon struggles to adapt to drought", 1Mar13
Nature "Landsat 8 to the rescue", 6Feb13
Scientific American "Is the Amazon rainforest drying out?", 24Dec12
Nature "Severe drought has lasting effects on Amazon", 24Dec12
BBC World Service radio "Maps and Mapping", 16Dec12
Science "Widespread devastation found in 2010 Amazon megadrought", 7Dec12
Nature "Carnegie scientists unveil initial data on Amazon drought", 7Dec12
Wired Magazine "High-tech Exploration, Applied Earth Science", 21Oct12
American Scientist "Biodiversity's Invisible Palette", Aug 2012
Portafolio "Infrastructure for Climate Change", 4July12
Wired Magazine "Logging the Amazon", Mar 2012
Natural Inquirer "Beam Me Down, Scotty", July 2012
Discover "Mapping the Rainforest", Dec 2012
New York Times "What on Earth?", 16Jun11
Nature "New Eye on Biodiversity", 2Jun11
NPR Science Friday "Paying for Tropical Forests", Dec 2011
New York Times "New Map Shows Measuring Carbon in Amazon is Feasible", 14Sep10
Science & Vie "The Forest as You Have Never Seen Before", April 2011
National Geographic "The Great Tree Survey", May 2011
Science "Cancun Delegates See the Trees through a Forest of Hot Air", 17Dec10
Nature "Counting Carbon in the Amazon", 22Oct09
Science "Improved Monitoring of Rainforests Helps Pierce Haze of Deforestation", 27Apr07