

# GREGORY P. ASNER

*Updated: 4 Feb 2012*

Department of Global Ecology  
Carnegie Institution for Science  
260 Panama St., Stanford, CA 94305 USA  
Web: <http://asnerlab.stanford.edu>

Tel: 650.462.1047  
Fax: 650.462.5968  
Email: [gpa@stanford.edu](mailto:gpa@stanford.edu)

I work at the interface of ecosystems, land use and climate change, with ongoing research and capacity building efforts focused on tropical deforestation and forest degradation, functional diversity of tropical canopies, conservation of African savannas, invasive species and climate change, and the effects of land use on the global carbon cycle. I develop new technologies for science-based conservation assessments of tropical regions, including their carbon emissions, hydrologic function and biological diversity. I lead the CLASlite forest change mapping project, Spectranomics biodiversity project, and the Carnegie Airborne Observatory.

## I. Professional Academic Experience

2001 - Staff Scientist, Global Ecology, Carnegie Institution for Science  
2007 - Professor, Environmental Earth System Science, Stanford University (courtesy)  
2005 - 2007 Assoc Professor, Geological and Environmental Sciences, Stanford University (courtesy)  
2001 - 2005 Asst Professor, Geological and Environmental Sciences, Stanford University (courtesy)  
1999 - 2001 Asst Professor, Geological Sciences and Environmental Studies, University of Colorado  
1998 - 1999 Postdoctoral Fellow, Stanford University  
1996 - 1998 Visiting Scientist, National Center for Atmospheric Research

## II. Education

1991 B.Sc., University of Colorado at Boulder, Civil-Environmental Engineering  
1995 M.Sc., University of Colorado at Boulder, Biogeography  
1997 Ph.D., University of Colorado at Boulder, Environmental Biology

## III. Honors and Awards

- Popular Science Brilliant 10, 2007
- A Breakthrough of the Year, Science Magazine, 2006
- Presidential Early Career Award for Scientists and Engineers (PECASE), The White House, 2000
- 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, 1995-1996
- Mabel Duncan Conservation Biology Fellowship, 1994
- University of Colorado Academic Fellowship, 1993-1995
- United States Navy Academic Scholarship, 1986-1991

## IV. Grant Awards for Scientific Research and Capacity Building

### *Current*

- Ecosystem mapping to identify conservation opportunities and to assess outcomes of conservation actions. John D. and Catherine T. MacArthur Foundation. PI
- Large-area Assessment of Western Amazon Forests following the 2010 Drought. Gordon and Betty Moore Foundation. PI
- Deployment of the Carnegie Landsat Analysis System (CLASlite) to government and non-government organizations in Latin America. Gordon and Betty Moore Foundation. PI
- Airborne ecological studies in South Africa savannas. Andrew Mellon Foundation. PI
- Carnegie Airborne Observatory, Grantham Foundation for the Protection of the Environment. PI.
- Developing forest monitoring tools and building capacities for improved conservation, management and resource policy development. Google.org. PI

### *Past*

- Spectranomics: Linking spectroscopy, biochemistry and biodiversity in humid tropical forests. John D. and Catherine T. MacArthur Foundation. PI
- Disturbance, succession, and nutrient availability in tropical forests: Patterns, mechanisms, interactions. NSF. PI
- Restoration to break the grass-fire cycle in dry tropical forests in Hawaii. DoD SERDP. Co-PI
- Airborne Taxonomic Mapping System: In-flight mapping of tropical forest chemistry and diversity. Gordon and Betty Moore Foundation. PI
- Effects of invasive species on ecosystem structure and function in Hawai'i. NASA. PI
- Peruvian rainforest monitoring for conservation, management and policy development. Gordon and Betty Moore Foundation. PI
- Biomass energy: the climate-protective domain. Stanford Global Climate and Energy Program. Co-PI
- Integrating satellite, modeling and synthesis approaches to understand the role of selective logging on biogeochemical cycles throughout Amazonia. NASA LBA. PI
- Interactions of edaphic and land use factors on water budgets in the Cerrado of Brazil. NASA. Co-PI
- The Carnegie Airborne Observatory: Remote sensing of the structure and chemistry of our biosphere. W. M. Keck Foundation and William Hearst III, PI
- Effects of forest disturbance in tropical rainforests of Borneo. Santa Fe Institute. Co-PI
- Forest disturbance and deforestation throughout the Peruvian Amazon. The John D. and Katherine T. MacArthur Foundation, PI
- Regional carbon storage responses to woody encroachment in western pinyon-juniper systems. NASA NACP. PI
- Biosphere-atmosphere studies using a MODIS-GCM. NASA. Co-PI
- Effects of rainfall exclusion on an Amazon forest. NSF. Co-PI
- Top-down analysis of tropical forest canopy structure and function. NSF. PI
- Regional effects of selective logging on canopy damage and nutrient dynamics in Amazônia: Linking Landsat ETM+ and field biogeochemical studies. NASA. PI
- Remote sensing of canopy chemistry and selective logging in the Amazon using imaging spectroscopy. NASA. PI
- Regional NPP and carbon stocks in Southwestern U.S. rangelands: Land-use impacts on the grassland-woodland balance. NASA. Co-PI
- Land-use impacts on subtropical biogeochemical cycles: an integrated field-process modeling-remote sensing approach, NASA. PI

- Analysis of EO-1, Landsat 7, and AVIRIS for estimating vegetation structure and function in arid ecosystems, NASA. PI
- Agricultural development in the Yaqui Valley, Mexico. Packard Foundation. Co-PI.
- Evaluating fire fuel loads for non-native grasses in Hawaii from imaging spectroscopy. US Forest Service. PI
- Evaluation of EO-1 Hyperion and ALI for detection and biophysical characterization of forest logging in Amazônia, NASA New Millennium Program. PI
- Carbon, Climate and Society. NSF IGERT. Co-PI
- Linking top-down and bottom-up approaches to quantifying terrestrial sources and sinks of carbon using satellite, atmospheric, ecosystem, and historical data. NASA. Co-PI
- The use of satellite fire products and models to investigate the effects of fire on the global carbon cycle. NASA. Co-PI
- Biosphere-atmosphere interactions. NASA. Co-PI
- Quantifying grassland-to-woodland transitions and the implications for carbon and nitrogen dynamics in the Southwest United States. NASA. Co-PI
- Integrating microwave and hyperspectral remote sensing for estimating vegetation structure and biomass. NASA. Co-PI
- Multi-sensor investigations of controls over carbon fluxes from global arid and semi-arid ecosystems. NASA. Co-PI
- An integrated use of experimental, modeling and remote sensing techniques to study carbon isotope and nutrient dynamics in the humid tropics. NASA. Co-PI
- Satellite remote sensing of ecosystem structural and functional changes: integrating spectral mixture analysis and BRDF inversions. NASA. Co-PI
- Landscape structure and foliar chemistry in heterogeneous landscapes. NASA, Co-PI
- Determining vegetation structural parameters amenable to remote sensing and ecological modeling of complex 3-D surfaces. NASA. Co-PI
- Effects of an African grass invasion on Hawaiian shrubland nitrogen dynamics and community structure. The Nature Conservancy. PI

## V. Refereed Publications

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.
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. *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* 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(2):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(D20):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 <sup>13</sup>C imply a sizable terrestrial CO<sub>2</sub> sink in tropical latitudes. *Geophysical Research Letters* 29(10): 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(1):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.
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. Chiariello, 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(4):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(6):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(6): 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. Hurr, 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(6):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(6):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(5):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(5): 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(5):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(2-3):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(5):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(10):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(4):280-298.
83. 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(16):6039-6044.

84. 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(7):1-31.
85. 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.
86. 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.
87. 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.
88. 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(21):1-21.
89. 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.
90. 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.
91. 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.
92. Foley, J., R. DeFries, G.P. Asner, et al. 2005. Global consequences of land use. *Science* 309:570-574.
93. 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.
94. 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(4):1-19.
95. 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(23):1-28.
96. 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.
97. Asner, G.P. and P.M. Vitousek. 2005. Remote analysis of biological invasion and biogeochemical change. *Proceedings of the National Academy of Sciences* 102(12):4,383-4,386.
98. 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* 102:10,909-10,912.
99. 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.
100. 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.
101. Hughes, R.F., S. Archer, G.P. Asner, C.A. Wessman, and J. Nelson. 2006. Effects of woody encroachment on C and N pools of a Texas savanna. *Global Change Biology* 12:1733-1747.
102. 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.
103. 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(34):12947-12950.
104. 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.

105. Defries, R., G.P. Asner, and J. Foley. 2006. A glimpse out the window: Landscapes, livelihoods, and the environment. *Environment* 48:22-36.
106. 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.
107. 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.
108. 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.
109. 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 Environment* 5:213-216.
110. 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.
111. 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.
112. 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.
113. 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.
114. 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.
115. Hall, S. and G.P. Asner. 2007. Biological invasion alters regional N-oxide emissions from tropical rainforests. *Global Change Biology* 13:2143-2160.
116. 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.
117. 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(12):2739-2752.
118. 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(8):414-423.
119. 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
120. 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
121. 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.

122. 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.
123. Varga, T.A., and G.P. Asner. 2008. Hyperspectral and LiDAR remote sensing of fire fuels in Hawaii Volcanoes National Park. *Ecological Applications* 18(3):613-623.
124. 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.
125. Feret, 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.
126. 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.
127. 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.
128. 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.
129. 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(11):4519-4523.
130. Townsend, A.R., G.P. Asner, and C.C. Cleveland. 2008. Biogeochemical heterogeneity of tropical forests. *Trends in Ecology and Evolution* 23:424-431.
131. 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
132. 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* 113, G00B03, doi:10.1029/2007JG000622.
133. 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.
134. 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.
135. 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.
136. 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.
137. 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.
138. 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.
139. 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.
140. 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.

141. 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.
142. Martin, R.E., and G.P. Asner. 2009. Leaf biochemical and optical properties of *Metrosideros polymorpha* across environmental gradients in Hawai'i. *Biotropica* 41(3):292-301.
143. 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.
144. Asner, G.P. and S.W. Ollinger. 2009. Remote sensing for terrestrial biogeochemical modeling. Handbook of Remote Sensing. G. Foody, T. Warner (eds.).
145. Huang, C. and G.P. Asner. 2009. Applications of remote sensing to alien invasive plant studies. *Sensors* 9:4869-4889.
146. 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.
147. 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.
148. 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.
149. 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.
150. 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.
151. Kellner, J.R. and G.P. Asner. 2009. Convergent structural responses of tropical forests to diverse disturbance regimes. *Ecology Letters* 12:887-897.
152. 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.
153. Loarie, S., G.P. Asner, and C.B. Field. 2009. Boosted carbon emissions from deforestation in the Brazilian Amazon. *Geophysical Research Letters* 36:L14810.
154. Asner, G.P. 2009. Tropical forest carbon assessment: integrating satellite and airborne mapping approaches. *Environmental Research Letters* 4:034009 (11 pp.)
155. 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
156. 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.
157. 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.
158. 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.
159. 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.
160. 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.

161. 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.
162. 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.
163. 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.
164. 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.
165. 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.
166. 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.
167. 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.
168. 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.
169. 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.
170. Asner, G.P. and A. Alencar. 2010. Drought impacts on the Amazon forest: the remote sensing perspective. *New Phytologist* 187:569-578.
171. 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.
172. 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.
173. 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
174. 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* 107:16,738-16,742.
175. 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
176. 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.
177. 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.
178. 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.
179. 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.

180. 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.
181. 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: *Earth observation and environmental change in South Africa* (eds J Pauw, AS van Jaarsveld & K Wessels). Sun Press, Johannesburg.
182. Erasmus, B.F.N., K. Coetzer, J. Mambo, E. Archer, J.T. Fisher, and G.P. Asner. 2010. Environmental change in Bushbuck Ridge. In: *Earth observation and environmental change in South Africa* (eds J Pauw, AS van Jaarsveld & K Wessels). Sun Press, Johannesburg.
183. 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.
184. 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.
185. Doughty, C.E., G.P. Asner, and R.E. Martin. 2011. Predicting tropical plant physiology from leaf and canopy spectroscopy. *Oecologia* 165:289-299.
186. 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.
187. 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.
188. 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.
189. 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).
190. Asner, G.P., R.E. Martin. 2011. Canopy phylogenetic, chemical and spectral assembly in a lowland Amazon forest. *New Phytologist* 189:999-1012.
191. Vitousek, P.M., C. D'Antonio, and G.P. Asner. 2011. Invasions and ecosystems: vulnerabilities and the contribution of new technologies. Ch. 21 in *Fifty Years of Invasion Ecology: The Legacy of Charles Elton* (Ed: D. Richardson), Wiley-Blackwell, New York.
192. 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.
193. 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.
194. 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.
195. 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.
196. 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.
197. 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.

198. Asner, G.P. 2011. Painting the world REDD: Addressing scientific barriers to monitoring emissions from tropical forests. *Environmental Research Letters* 6:021002.
199. 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.
200. Feret, 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.
201. 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.
202. 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.
203. Feret, J.-B. and G.P. Asner. 2011. Spectroscopic classification of tropical forest species using radiative transfer modeling. *Remote Sensing of Environment* 115:2415-2422.
204. 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.
205. 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.
206. 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<sub>2</sub> efflux increase with temperature in Hawaiian tropical montane wet forest. *Soil Biology and Biochemistry* 43:2315-2323.
207. 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.
208. Kellner, J.R., G.P. Asner, P.M. Vitousek, M.A. Tweiten, S. Hotchkiss, and O.A. Chadwick. 2011. Dependence of forest canopy structure and dynamics on substrate age and ecosystem development. *Ecosystems* doi:10.1007/s0021-011-9472-4.
209. 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.
210. 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.
211. 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.
212. Asner, G.P., J. Mascaro, H.C. Muller-Landau, G. Vieilledent, R. Vaudry, M. Rasamoelina, J. Hall, and M. van Breugel. 2011. A universal airborne LiDAR approach for tropical forest carbon mapping. *Oecologia* doi:10.1007/s00442-011-2165-z.
213. Fisher, J.T., E.T.F. Witkowski, B.F.N. Erasmus, J. van Aardt, G.P. Asner, K. Wessels, and R. Mathieu. 2011. Human-modified landscapes: patterns of fine-scale woody vegetation structure in communal savanna rangelands. *Environmental Conservation* 39:72-82.
214. 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.
215. 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(2) doi:10.1186/1750-0680-7-2

216. Colgan, M.S., G.P. Asner, S.R. Levick, and R.E. Martin. 2012. Topo-edaphic controls over woody biomass in South African savannas using airborne LiDAR. *Biogeosciences Discussions*
217. 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. In press. Potential and limitations of historical aerial photography to quantify vegetation dynamics in a dry tropical forest in Hawaii. *Pacific Science*.
218. Wu, W., J.A.N. van Aardt, J. McGlinchy, and G.P. Asner. In press. A robust signal processing chain for small-footprint waveform LiDAR. *IEEE Transactions on Geoscience and Remote Sensing*.
219. 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.
220. 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.
221. 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*.
222. Somers, B., M. Zortea, A. Plaza, and G.P. Asner. In press. Automated extraction of image-based endmember bundles for improved spectral unmixing. *IEEE Transactions on Geoscience and Remote Sensing*.
223. Loarie, S.R., C.J. Tambling, and G.P. Asner. In press. Male lions use vegetation structure to facilitate their hunting behavior. *Animal Behavior*.
224. Cho, M.A., R. Mathieu, A. Ramoelo, R. Main, G.P. Asner, and C. Atzberger. Quantifying shifts in the spectral red edge using spectral angle measure (SAM) for canopy chlorophyll estimation. Submitted to *Remote Sensing of Environment*.
225. Palminteri, S., G.V.N. Powell, G.P. Asner, and C.A. Peres. Remotely-sensed canopy structure as a determinant of habitat quality for arboreal mammals in tropical forests. Submitted to *Remote Sensing of Environment*.
226. Naidoo, L., M.A. Cho, R. Mathieu and G.P. Asner. 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. Submitted to *ISPRS Journal of Photogrammetry and Remote Sensing*.
227. Asner, G.P. and G.V.N. Powell. Monitoring effects of selective logging on forest carbon stocks in the Amazon. Submitted to *Environmental Research Letters*.
228. Asner, G.P., M. Huang, T.W. Giambelluca, R.E. Martin, M. Nullet, R. Mudd, and J. DeLay. Climate and carbon fluxes in native Hawaiian montane rainforests. Submitted to *Global Change Biology*.
229. Cho M.A., R. Mathieu, G. Asner, L. Naidoo, A. Ramoelo, P. Debba, K. Wessel, R. Main, J.A.N. van Aardt, B. Erasmus, R. Scholes, and I. Smit. New remote sensing tools for mapping tree species diversity in South African savannas: An integrated airborne hyperspectral and LiDAR system (in review).
230. McGlinchy, J., J. Van Aardt, H. Rhody, J. Kerekes, E. Ientiluci, B.F.N. Erasmus, G.P. Asner, R. Mathieu, K. Wessels, D. Knapp, T. Kennedy-Bowdoin, J. Wu, D. Sarrazin, Extracting Structural Vegetation Components from Small-Footprint Waveform LiDAR for Biomass Estimation in Savanna Ecosystems. Submitted to *Remote Sensing of Environment*.
231. Naidoo, L., M. Cho, R. Mathieu, and G. Asner. Classification of savanna trees species, in the Greater Kruger National Park region, by integrating hyperspectral and LiDAR data in a random forest data mining environment. *ISPRS Photogrammetric Engineering and Remote Sensing* (in review).
232. Fisher, J.T., B.F.N. Erasmus, E.T.F. Witkowski, J.A.N. van Aardt, G.P. Asner, K. Wessels, and R. Mathieu. Vegetation structural responses to different land use succession timelines and management practices in adjacent private and national reserves. Submitted to *Biological Conservation*.
233. Sarrazin, M.J.D., J. van Aardt, G.P. Asner, J. McGlinchy, D.W. Messinger, and J. Wu. In press. 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*.
234. Asner, G.P. A chemical-evolutionary basis for remote sensing of tropical forest diversity. Submitted to *Proceedings of the British Ecological Society*.
235. Asner, G.P. Organismic remote sensing for tropical forest ecology. Submitted to *Annals of the Missouri Botanical Garden*.
236. Loarie, S.R., E. Le Roux, S.R. Levick, N. Owen-Smith, and G.P. Asner. Sable antelope (*Hippotragus niger*) habitat use: the role of vegetation structure and fire frequency. Submitted to *Biological Conservation*.
237. Schimel, D.S., G.P. Asner, and P.R. Moorcroft. Observing changing ecological diversity in the Anthropocene. Submitted to *Frontiers in Ecology and the Environment*.
238. Levick, S.R., G.P. Asner, and I.P.J. Smit. Spatial variability in the effects of fire on savanna vegetation three-dimensional structure. Submitted to *Ecological Applications*.
239. Asner, G.P., S.R. Levick, and S.R. Loarie. Effects of elephant on treefalls in African savannas: a large-scale experimental analysis. Submitted to *Ecology Letters*.
240. Mascaro, J., G.P. Asner, D.H. Dent, S.J. DeWalt, and J.S. Denslow. Scale-dependence of aboveground carbon accumulation in secondary forests of Panama: a test of the intermediate peak hypothesis. Submitted to *Forest Ecology and Management*.
241. Asner, G.P. and R.E. Martin. Contrasting chemical traits in tropical lianas and trees: implications for future forest composition. Submitted to *Ecology Letters*.
242. Asner, G.P., J.K. Clark, J. Mascaro, et al. High-resolution mapping of forest carbon stocks in the Colombian Amazon. Submitted to *Biogeosciences*.
243. Somers, B. and G.P. Asner. Invasive species mapping in rainforests using multi-temporal spaceborne imaging spectroscopy. Submitted to *IEEE Transactions on Geoscience and Remote Sensing*.
244. 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. Carnegie Airborne Observatory-2: Increasing science data dimensionality via high-fidelity multi-sensor fusion. Submitted to *Remote Sensing of Environment*.
245. Papeş, M., R. Tupayachi, P. Martínez, A.T. Peterson, G. Asner, and G.V.N. Powell. Seasonal variation in spectral signatures of fire genera of rainforest trees. Submitted to *IEEE Transactions on Geoscience and Remote Sensing*.
246. Asner, G.P., R. Tupayachi, D.E. Knapp, T. Kennedy-Bowdoin, A. Balaji, and J.K. Clark. Multi-scale analysis of the impacts of gold mining in the Peruvian Amazon. In preparation.
247. Allnut, T.F., G.P. Asner, C.D. Golden, and G.V.N. Powell. Mapping recent deforestation and forest disturbance in northeastern Madagascar with CLASlite. Submitted to *Biological Conservation*.
248. Asner, G.P., R.E. Martin, R. Tupayachi, C. Anderson, L. Carranza, P. Sinca, and P. Martinez. Climate-fertility effects on tropical forest canopy chemistry in Amazonia. Submitted to *Proceedings of the National Academy of Sciences*.
249. Dahlin, K.M., G.P. Asner, and C.B. Field. Community assembly and the importance of dispersal agents in the recovery of an island ecosystem. In preparation.

#### **Edited Books**

250. Defries, R., G.P. Asner, and R.A. Houghton. 2004. *Ecosystems and Land Use Change*. American Geophysical Union, Washington, DC. 344 pp.

#### **Published Proceedings**

251. Asner, G.P., J.L. Privette, C.A. Wessman, and C.A. Bateson. 1996. Extracting sub-pixel endmember bidirectional reflectance for canopy model inversions using NOAA AVHRR satellite imagery. *Proceedings of the International Geoscience and Remote Sensing Symposium* 3:1663-1665.

252. Bateson, C.A., G.P. Asner, and C.A. Wessman. 1998. Incorporating endmember variability in spectral mixture analysis through endmember bundles. *Proceedings of the 7th Annual Airborne Earth Science Workshop* 1:43-52.
253. Asner, G.P., C.A. Wessman, and C.A. Bateson. 1998. Sources of variability in plant canopy hyperspectral reflectance data in a savanna ecosystem. *Proceedings of the 7th Annual Airborne Earth Science Workshop* 1:23-32.
254. Wessman, C.A., E.M. Nel, C.A. Bateson, and G.P. Asner. 1998. A method to access absolute fIPAR of vegetation in spatially complex ecosystems. *Proceedings of the 7th Annual Airborne Earth Science Workshop* 1:409-418.
255. Villeneuve, P.V., S.A. Gerstl, and G.P. Asner. 1998. Estimating nonlinear mixing effects for arid vegetation scenes with MISR channels and observation directions. *Proceedings of the International Geoscience and Remote Sensing Symposium* 3:31-35.
256. Asner, G.P., R. Conant, and D.S. Schimel. 1998. Global biogeochemical cycles and process-based ecosystem models. *Terrestrial Ecosystems and the Atmosphere*, National Center for Atmospheric Research Technical Notes, pp. 135-144.
257. Privette, J.L. and G.P. Asner. 1999. The Prototype Validation Exercise (PROVE) for EOS land and atmosphere products. *Proceedings of the International Geoscience and Remote Sensing Symposium* 1:586-588.
258. Asner, G.P., C.A. Bateson, A.R. Townsend, and C.A. Wessman. 1999. Resolving vegetation condition and biogeochemical processes using hyperspectral BRDF inverse modeling. *Proceedings of the 8th Annual Airborne Earth Science Workshop*, 37-46.
259. Treuhaft, R.N., B.E. Law, and G.P. Asner. 1999. The vertical structure of vegetated surfaces from interferometric and polarimetric radar data. *Remote Sensing and the Kyoto Protocol: A Review of Available and Future Technology for Monitoring Treaty Compliance*, Ann Arbor, MI.
260. Treuhaft, R.N., B.E. Law, G.P. Asner, and P.R. Siqueira. 1999. Estimating forest vertical structure from multialtitude, fixed-baseline radar interferometric and polarimetric data. *Proceedings of the International Geoscience and Remote Sensing Symposium*, Hamburg.
261. Asner, G.P. 2000. A hyperspectral photon transport system for simulating imaging spectrometer observations of terrestrial ecosystems. *Proceedings of the 9th Annual Airborne Earth Science Workshop*, Pasadena, CA.
262. 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 9th Annual Airborne Earth Science Workshop*, Pasadena, CA.
263. 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 9th Annual Airborne Earth Science Workshop*, Pasadena, CA.
264. Treuhaft, R.N., G.P. Asner, and B.E. Law 2000. Structural approaches to biomass monitoring with multibaseline, multifrequency, polarimetric interferometry. *EUSAR2000*, Munich.
265. 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.
266. 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.
267. 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.
268. Asner, G.P. and P.M. Vitousek. 2001. Canopy structure and chemistry of Hawaiian tropical forests using imaging spectroscopy. *Proceedings of the 10th Annual Airborne Earth Science Workshop*. Pasadena, CA.

269. Asner, G.P. and K.B. Heidebrecht. 2001. Green canopy cover and dry carbon content in arid regions using imaging spectroscopy. *Proceedings of the 10th Annual Airborne Earth Science Workshop*. Pasadena, CA.
270. 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 10th Annual Airborne Earth Science Workshop*. Pasadena, CA.
271. 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 10th Annual Airborne Earth Science Workshop*. Pasadena, CA.
272. 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. *Proceedings of the International Geoscience and Remote Sensing Symposium*.
273. Treuhaft, R.N., G.P. Asner, B.E. Law, and P.R. Siqueira. 2001. Vegetation structure and biomass from PALSAR, AVNIR-2, and PRISM. *ALOS Workshop*, Tokyo.
274. Lobell, D.B., G.P. Asner, and J.I. Ortiz-Monasterio. 2001. Regional wheat yield prediction using Landsat 7 satellite imagery. *Proceedings of the Third International Conference on Geospatial Information in Agriculture and Forestry*, Denver, CO.
275. 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 11th Annual Airborne Earth Science Workshop*. Pasadena, CA.
276. 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 Annual Airborne Synthetic Aperture Radar Workshop*. Pasadena, CA.
277. Treuhaft, R.N., G.P. Asner, and B.V. Law. 2002. Biomass from forest density profiles from multialtitude radar interferometry and imaging spectroscopy. *Proceedings of PIERS2002*. Cambridge, MA.
278. Martin, R.E., and G.P. Asner. 2003. Ecosystem impacts of woody encroachment in Texas: A spatial analysis using AVIRIS. *Proceedings of the 12th Annual JPL Airborne Earth Science Workshop*. Pasadena, CA.
279. Lobell, D.B., and G.P. Asner. 2003. Hyperion studies of crop stress in Mexico. *Proceedings of the 12th Annual JPL Airborne Earth Science Workshop*. Pasadena, CA.
280. Asner, G.P. and D. Nepstad. 2003. EO-1 Hyperion measures of canopy drought stress in Amazônia. *Proceedings of the 12th Annual JPL Airborne Earth Science Workshop*. Pasadena, CA.
281. Asner, G.P. 2005. Airborne imaging spectroscopy across diverse ecosystems: The Carnegie program in Hawaii. *Proceedings of the 14th Annual JPL Airborne Earth Science Workshop*. Pasadena, CA.
282. Asner, G.P. and P.M. Vitousek 2005. Remote analysis of biological invasion and biogeochemical change. *Proceedings of the 14th Annual JPL Airborne Earth Science Workshop*. Pasadena, CA.
283. Asner, G.P., S. Ungar, R. Green, and R. Knox. 2005. FLORA: Leaping from AVIRIS to high-fidelity spaceborne imaging spectroscopy. *Proceedings of the 14th Annual JPL Airborne Earth Science Workshop*. Pasadena, CA.
284. Carlson, K.M. and G.P. Asner. 2005. Spaceborne imaging spectroscopy of tropical forest properties in Hawaii. *Proceedings of the 14th Annual JPL Airborne Earth Science Workshop*. Pasadena, CA.
285. Martin, R.E. and G.P. Asner. 2005. New insight to carbon and nutrient cycles from airborne imaging spectroscopy. *Proceedings of the 14th Annual JPL Airborne Earth Science Workshop*. Pasadena, CA.
286. Jacquemoud S., Verhoef W., Baret F., Zarco-Tejada P.J., Asner G.P., François C., Ustin S.L. 2006. PROSPECT+SAIL: 15 years of use for land surface characterization. *Proceedings of the IEEE International Geoscience & Remote Sensing Symposium*, Denver, CO.
287. Feret, 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.

288. Poff, B., D.G. Neary, and G.P. Asner. 2008. Using LiDAR to establish a stream gauging network in a tropical experimental forest: What works and what doesn't. In David Maidment (Editor) GIS and Water Resources V. *AWRA 2008 Spring Conference Proceedings*, American Water Resources Association, Middleburg, VA.
289. Dahlin, K.M, Asner, G.P, Field, C.B. and M.R. Shaw. 2008. Using airborne remote sensing to map sweet fennel on Santa Cruz Island. *California Invasive Plant Council Symposium Proceedings* 12:10-12.
290. Cho, M.A., P. Debba, R. Mathieu, J. van Aardt, G. Asner, L. Naidoo, R. Main, A. Ramoelo, and B. Majeke. 2009. Spectral variability within species and its effects on savanna tree species discrimination. *Proceedings of the International Geoscience and Remote Sensing Symposium*, Cape Town.
291. Fisher, J., B.F.N. Erasmus, E. Witkowski, J. van Aardt, G. Asner, T. Kennedy-Bowdoin, D. Knapp, R. Mathieu, and K. Wessels. 2009. Three-dimensional woody vegetation structure across different land-use types and land-use intensities in a semi-arid savanna. *Proceedings of the International Geoscience and Remote Sensing Symposium*, Cape Town.
292. Wu, J., J.A.N. van Aardt, G.P. Asner, T. Kennedy-Bowdoin, D. Knapp, B.F.N. Erasmus, R. Mathieu, K. Wessels, and I.P.J. Smit. 2009. LiDAR waveform-based woody and foliar biomass estimation in savanna environments. *Silvilaser 2009*, College Station, Texas USA.
293. Kirton, A., B. Scholes, M. Verstraete, S. Archibald, K. Mennell, and G. Asner. 2009. Detailed structural characterization of the savanna flux site at Skukuza, South Africa. *Proceedings of the International Geoscience and Remote Sensing Symposium*, Cape Town.
294. Wu, J., J. van Aardt, G.P. Asner, R. Mathieu, T. Kennedy-Bowdoin, D. Knapp, K. Wessels, B.F. Erasmus, and I. Smit. 2009. Connecting the dots between laser waveforms and herbaceous biomass for assessment of land degradation using small-footprint waveform lidar data. *Proceedings of the International Geoscience and Remote Sensing Symposium*, Cape Town.
295. Mathieu, R., K. Wessels, G. Asner, D. Knapp, J van Aardt, R. Main, M. Cho, B. Erasmus, and I. Smit. 2009. Tree cover, tree height and bare soil cover differences along a land use degradation gradient in semi-arid savannas, South Africa. *Proceedings of the International Geoscience and Remote Sensing Symposium*, Cape Town.
296. Smit, I., G. Asner, N. Govender, S. Levick, T. Kennedy-Bowdoin, D. Knapp, R. Emerson, J. Jacobson, R. Mathieu, K. Wessels, B. Erasmus, and J. van Aardt. 2009. Fire as a browser: using lidar to visualize and quantify woody structure on a long-term experiment in an African savanna. *Proceedings of the International Geoscience and Remote Sensing Symposium*, Cape Town.
297. Ferreira, L., G. Asner, D. Knapp, E. Davidson, and M. Bustamante. 2009. Scaling up equivalent water thickness in savanna environments: from local to biome scale via ground, Hyperion and MODIS data. *Proceedings of the International Geoscience and Remote Sensing Symposium*, Cape Town.
298. McGlinchy, J., J. van Aardt, H. Rhody, J. Kerekes, E. Ientilucci, G.P. Asner, D. Knapp, R. Mathieu, T. Kennedy-Bowdoin, B. Erasmus, I. Smit, J. Wu, and D. Sarrazin. 2010. Extracting structural land cover components using small-footprint waveform LiDAR data. *Proceedings of the International Geoscience and Remote Sensing Symposium*, Honolulu.
299. Wessels, K.J., R. Mathieu, B.F.N. Erasmus, G.P. Asner, I.P.J. Smit, J.A.N. van Aardt, R. Main, and J. Fisher. 2011. Impact of communal land use and conservation on woody vegetation structure in the Lowveld savannas of South Africa – LiDAR results. *Proceedings of the 34th International Symposium on Remote Sensing of the Environment*, Sydney.
300. Van Aardt, J., J. Wu, J. McGlinchy, D. Sarrazin, D. Kelbe, B. Erasmus, R. Mathieu, K. Wessels, and G. Asner. 2011. Towards a species-specific description of detailed savanna woody structure at various scales using imaging spectroscopy and waveform LiDAR sensing. *Proceedings of the 34th International Symposium on Remote Sensing of the Environment*, Sydney.

301. Cho, M., L. Naidoo, R. Mathieu, and G.P. Asner. 2011. Mapping savanna tree species using new visible-near infrared multispectral configuration. *Proceedings of the 34th International Symposium on Remote Sensing of the Environment*, Sydney.
302. Mathieu, R., R. Main, B. Leblon, K. Wessels, J. Buckley, M. Cho, J. Van Aardt, G.P. Asner, and B. Erasmus. 2011. Polarimetric RADARSAT-2 C-band SAR imagery to map woody vegetation structure in African savannas. *Proceedings of the 34th International Symposium on Remote Sensing of the Environment*, Sydney.
303. Feret, J.-B., G.P. Asner, and S. Jacquemoud. 2011. Regularization of discriminant analysis for the study of biodiversity in humid tropical forests. *3<sup>rd</sup> Workshop on Hyperspectral Imaging and Signal Processing: Evolution in Remote Sensing*. Lisbon, Portugal doi:10.1109/WHISPERS.2011.6080945
304. Naidoo, L., M.A. Cho, R. Mathieu and G.P. Asner. 2011. Spectral classification of savanna tree species, in the Greater Kruger National Park Region using Carnegie Airborne Observatory (CAO) integrated hyperspectral and LiDAR data. *1st AfricaGEO Conference*, Cape Town.
305. Myburgh, H.C., J.C. Olivier, R. Mathieu, K. Wessels, B. Leblon, G. Asner, and J. Buckley. 2011. SAR-to-LiDAR mapping for tree volume prediction in the Kruger National Park. *Proceedings of the International Geoscience and Remote Sensing Symposium*, Vancouver.
306. Barnard, E., M.A. Cho, P. Debba, R. Mathieu, K. Wessels, C. van Heerden, C. van der Walt, and G.P. Asner. 2011. Optimizing tree-species classification in hyperspectral images. *Proceedings of the 21st Annual Symposium of the Pattern Recognition Association of South Africa*, November 22-23 2010, Stellenbosch, South Africa.
307. Tits, L., B. Somers, W. De Keersmaecker, G. Asner, J. Farifteh, and P. Coppin. 2012. Shape-based unmixing for vegetation mapping. *4th Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing*, June 4-7, 2012, Shanghai, China.

#### **Published Book Reviews**

308. Asner, G.P. 2000. Plato's Plant: On the Mathematical Structure of Plants and Canopies, by Feike Schieving, Backhuys Publishers, Leiden. *The Quarterly Review of Biology*.
309. 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*.

## VI. Published Abstracts

- Asner, G.P. 1994. Tree biomechanics and Hurricane Iniki: predicting forest response. *Association of American Geographers*, San Francisco, CA.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.

- Townsend, A.R. and G.P. Asner. 1998. Effects of tropical land use change on atmospheric  $^{13}\text{CO}_2$ -based estimates of sources and sinks in the global carbon cycle. *American Geophysical Union*, San Francisco, CA.
- 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.
- Neff, J.C. and G.P. Asner. 1999. Dissolved organic carbon: processes, models and implications for global carbon cycling. *American Geophysical Union*, Boston, MA.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- Treuhaft, R.N., G.P. Asner, and B.E. Law 2000. Structural approaches to biomass monitoring with multibaseline, multifrequency, polarimetric interferometry, *EUSAR2000*, Munich.
- 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.
- 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.

- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.

- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- Asner, G.P., K.B. Heidebrecht, R. Ojeda, and C. Borghi. 2002. Desertification analysis in Central Argentina using imaging spectroscopy: II. Comparing AVIRIS and EO-1 Hyperion. *Proceedings of the Airborne Earth Science Workshop*. Pasadena, CA.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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 CO<sub>2</sub> at high northern latitudes. *American Geophysical Union*, San Francisco, CA.

- Palace, M., M. Keller, G.P. Asner, S. Hagen, and B. Braswell. 2002. Automated crown detection algorithm: An analysis of two tropical Amazonian forests. *American Geophysical Union*, San Francisco, CA.
- 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.
- Lobell, D.B., and G.P. Asner. 2003. Hyperion studies of crop stress in Mexico. *Proceedings of the Airborne Earth Science Workshop*. Pasadena, CA.
- 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.
- Asner, G.P. 2003. EO-1 Hyperion studies of tropical forest dynamics in the Brazilian Amazon and Hawaii (invited). *ASPRS Annual Conference*, Anchorage, Alaska.
- 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.
- 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.
- Asner, G.P., M.M.C. Bustamante, A.R. Townsend, G.B. Nardoto, L. Olander. 2003. Pasture degradation and biogeochemistry in the Central Amazon (invited). *LBA Agro-ecosystems Conference*, Brasilia, Brazil.
- 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.
- Asner, G.P. 2003. Spatial data analysis in the LBA-ECO program. *LBA Science Conference*, Fortaleza, Brazil.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- Palace, M., M. Keller, G.P. Asner, J.N. Silva. 2004. Necromass density estimates from two Brazilian Amazon forests. *LBA Science Conference*, Brasilia, Brazil.
- 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.

- Carvalho, A.P.F., M.M.C. Bustamante, G.P. Asner, B. Orthen. 2004. Relação entre Parâmetros Bioquímicos Foliaves e a Reflectância Espectral de Espécies Lenhosas em dois sítios de Cerrado no Parque Nacional de Brasília, DF. *LBA Science Conference*, Brasília, Brazil.
- Asner, G.P. The central role of land use complexes in the greenhouse gas problem. *International Climate-Energy Conference*, Washington, DC.
- 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.
- Lobell, D.B and G.P. Asner. 2004. Testing hyperspectral indices for crop identification and stress detection. *American Geophysical Union*. San Francisco, CA.
- 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.
- 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.
- Asner, G.P. 2005. New cutting-edge remote sensing approaches for monitoring forest disturbance, selective logging and invasive species in tropical forests (invited). *Rural Days Conference*. The World Bank, Washington, DC.
- Asner, G.P. 2005. 21<sup>st</sup> century approaches to the global land degradation monitoring problem (invited). *Israel Society for Ecology and Environmental Quality Services*, Tel Aviv, Israel.
- Asner, G.P. 2005. Frontiers in remote sensing of ecosystem chemistry and physiology (invited). *Gordon Research Conference on CO<sub>2</sub> Assimilation in Plants: Genome to Biome*. Aussois, France.
- 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.
- 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.
- 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.
- Asner, G.P. 2006. Remote sensing for canopy chemistry, biogeochemistry, and diversity in Hawaiian ecosystems. *Hawai'i Conservation Conference*, Honolulu, HI.
- 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.
- Asner, G.P. 2006. Bringing cost-effective and efficient hyperspectral and LiDAR technologies to Hawai'i (invited). *Hawai'i Conservation Conference*, Honolulu, HI.
- 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.
- 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 about plant pigment systems from high resolution spectroscopy. *International Geoscience and Remote Sensing Symposium*, Denver, CO.
- 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. *International Geoscience and Remote Sensing Symposium*, Denver, CO.
- 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.

- 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.
- Asner, G.P. 2006. Trends in remote sensing of ecosystem function, structure and biodiversity (invited). *Australasian Remote Sensing and Photogrammetry Conference*, Canberra, Australia.
- 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.
- 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.
- 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.
- Feret, 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- Martin, R.E., G.P. Asner, D. Knapp, and M. Jones. Remote sensing of plant pigments at leaf and canopy scales in Hawaiian forest ecosystems. *Proceedings of the Airborne Earth Science Workshop*. Pasadena, CA.
- Ustin, S.L., J.-B. Feret, 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.
- Asner, G.P. 2007. Remote sensing of ecosystem function and physiology (invited). *Ecological Society of America*, San Jose, CA.
- 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.
- 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.
- 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.
- 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.

- 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.
- 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.
- Asner, G.P. 2008. Contributions of remote sensing to biodiversity research and applications (invited). *NASA Carbon Cycle and Ecosystems Workshop*, University of Maryland, MD.
- 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.
- Asner, G.P. 2008. Disturbance and diversity in tropical forests from remote sensing (invited). *Association for Tropical Biology and Conservation*, Paramaribo, Suriname.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- Feret, 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.
- 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.
- 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.
- 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.
- Huang, M., and G.P. Asner. 2009. Long-term loss and recovery following selective logging in Amazon forests. *American Geophysical Union*. San Francisco, CA.
- 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.

- 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.
- 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.
- 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.
- Asner, G.P. Ready for REDD: High resolution carbon stocks and emissions in the Amazon. (invited) 2010. *Association for Tropical Biology and Conservation*, Bali, Indonesia.
- 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.
- 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.
- 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.
- 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.
- 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.
- Kellner, J.R. and G.P. Asner. 2010. Transient dynamics and the future of tropical forests. *Ecological Society of America*, Pittsburg, PA.
- 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.
- 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.
- 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.
- 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.
- 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.
- Asner, G.P. 2011. Mapping forest carbon and canopy diversity in humid tropical forests (invited). *Annual Symposium of the British Ecological Society*, Cambridge.
- Asner, G.P. 2011. Advancing research on biosphere-atmosphere interactions in the tropics (invited). *XV Brazilian Remote Sensing Symposium*, Curitiba, Brazil.
- 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
- 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.

- 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.
- 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.
- Colgan, M. and G.P. Asner. 2011. Topo-edaphic controls over woody biomass in South African savannas. *Ecological Society of America*, Austin, TX.
- 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.

## VII. Academic Advising

### *Undergraduate advisees:*

Stanford University	Andrea Christenson, John Clark, Anna Hare, Melissa Kunz, Kimberly Lo, Allison Moore, Rebecca Raybin, Sarah Robinson
Univ of Colorado	Eloise Bonde, Timothy Covino, Kevin Cody, Seth Zunker, Zack Vincent, Valerie Morris, Ken Takagi, Kirill Caldeira
Univ of California	Joe Buckley, April Villagomez

### *Graduate student committees:*

Stanford University	Toby Ahrens, Angelica Almeyda, Michael Beman, Kate Brauman, Eben Broadbent*, Dana Chadwick*, John Clark*, Matthew Colgan*, Kyla Dahlin*, David Lobell*, Claire Lunch, Kelly McManus, Stephen Porder, Timothy Varga*, Charles Wheeler*
Univ of Colorado	Laura Belanger, Jon Carrasco, Kathleen Farley, Cory Cleveland, Thomas Harris*, David Lobell*, Nancy Golubiewski, Roberta Martin*, Amanda Warner, Khatib Nader, David Kinner, David Mixon, Jennifer Mengan
Univ of Arizona	Dawn Browning
Colorado State Univ	Lara Prihodko
Univ of Brasilia	Ana Paulo Ferreira de Carvalho, Zayra do Prado
Univ of Florida	Ane Alencar
Yale University	Kim Carlson
Univ of Paris	Jean-Baptiste Feret, Lena Maatoug

\* indicates service as primary advisor or co-advisor

### *Post-doctoral advisees:*

Sharon Hall, University of Colorado (1999-2001)  
Katherine Boese, University of Colorado (1999-2000)  
Jeffrey Hicke, Colorado/Carnegie Institution (2000-2003)  
Lydia Olander, Carnegie Institution (2003-2004)  
Everaldo Telles, University of Brasilia (2003)  
Andrew Elmore, Carnegie Institution (2003-2004)  
Roberta Martin, Carnegie Institution (2004-2006)  
Natalie Boelman, Carnegie Institution (2005-2006)  
Maoyi Huang, Carnegie Institution (2005-2008)  
Cho-ying Huang, Carnegie Institution (2006-2008)  
Chris Doughty, Carnegie Institution (2008-2010)  
Shaun Levick, Carnegie Institution (2008-2010)  
Jim Kellner, Carnegie Institution (2008-2011)  
Scott Loarie, Carnegie Institution (2008-2010)  
Jean-Baptiste Feret, Carnegie Institution (2010-)  
Joseph Mascaro, Carnegie Institution (2010-)  
Mark Higgins, Carnegie Institution (2011-)  
Claire Baldeck, Carnegie Institution (2012-)

## VIII. Service

### *Current major activities*

- Program Lead, *Building Non-expert Capacity in Forest Monitoring*: Dissemination and support of free deforestation and forest degradation mapping software, currently to more than 170 government, non-government and academic organizations. See <http://claslite.ciw.edu>
- Senior Fellow, US Department of State, Energy and Climate Partnership for the Americas
- Member, State of California, Reduced Emissions from Deforestation and Degradation (REDD) Offset Working Group
- Steering Committee, Diversitas International, bioDISCOVERY Program
- Editorial Board for *Remote Sensing of Environment*

### *Other examples of national and international service*

1996-1997	Member; NASA Lewis & Clark Mission Science Team
1998	Panelist; NASA Triana Science Program
1998-2008	Member; NASA Large-scale Biosphere-Atmosphere Experiment in Amazônia Program
1998	International Forum on BRDF Remote Sensing; Co-chair
1998-2011	Reviewer; Natural Environment Research Council, United Kingdom
1999-2001	Member; NSF Long-term Ecological Research (LTER) Technology Committee
1999	Reviewer; University of California, Digital Media Innovation Program
1999	Co-organizer; NASA Large-scale Biosphere-Atmosphere Experiment in Amazônia
1999	Advisor; Fundação Floresta Tropical (Tropical Forest Foundation), Brazil
1999-2009	Reviewer; U.S. Strategic Environmental Research and Development Program
1998	Panel member; NASA Office of Earth Science,
2000	Panel member; NASA New Millennium Program
2000-2001	Member; Ecological Society of America, Land-use Committee
2000	Panel member; The Heinz Center, Indicators of Environmental Change
2001-	Panel member; NSF Ecosystem Studies
1999	Session chair; American Geophysical Union
2001	Panel member; NASA Visions Working Group for Decadal Strategic Plan
2001	Panel member; NASA Earth Science Enterprise Program
2000	Panel member; NOAA Climate and Global Change Program
2002	Panel member; NASA Terrestrial Ecology Program
2002	Panel member; NASA New Investigator Program
2002 -	Member; Stanford University Earth Systems Advisory Committee
2003	Co-organizer; American Geophysical Union, Chapman Conference “Ecosystem Interactions with Land-use Change”, Santa Fe, NM
2003	Member; Steering committee for the International Symposium on Remote Sensing of Environment, Honolulu, HI
2003	Panel co-chair; NASA Terrestrial Ecology-Carbon-Land Cover Program
2003	Panel co-chair; NASA Northern Eurasia Environmental Science Program Initiative (NEESPI), Yalta, Ukraine
2003	Session chair; NASA LBA Science Conference, Fortaleza, Brazil
2003	Session chair; American Geophysical Union, San Francisco
2003-2007	Member; NASA Large-scale Biosphere-Atmosphere Experiment in Amazônia Program, Scientific Steering Committee
2003-2006	Member; U.S. Carbon Cycle Science Program, Scientific Steering Group
2004	Panelist; NASA Focus Area Review of Carbon Cycle and Ecosystems
2004-2006	Member; Ecological Society of America, Habitat Change Rapid Response Team

2007 Lead author; National Academy Decadal Survey, FLORA satellite mission concept  
2005 Panelist; World Bank, Rural Days Conference  
2005 Speaker; NSF Committee for Environmental Research and Education  
2005-2009 Panel chair; NASA Senior Review Committee  
2005 Reviewer; AAAS Canon National Parks Fellowships  
2005 Co-convener; Environmental Defense Fund, Workshop on Global Deforestation and Forest Degradation Monitoring  
2005 Search committee; USDA Forest Service, Institute for Pacific Islands Forestry  
2005 Panel; NASA North American Carbon Program  
2005 Panel lead; UN Climate Change Conference (COP 11), Tropical Deforestation and Climate Change, Montreal  
2006 Panel chair; NASA North American Carbon Program  
2006 Panel lead; NASA Terrestrial Ecology Conference, College Park  
2006-2007 Lead-author; UN FAO Livestock in a Changing Landscape program  
2007 Lecturer; National Center for Atmospheric Research, ASP Colloquium  
2007 Co-author; NASA Plant Physiology and Functional Types (PPFT) Working Group  
2006-2007 Committee; State of Hawaii Department of Land and Natural Resources, Ecosystem Services  
2008 Panel chair; NASA Carbon Cycle and Ecosystems Joint Science Workshop  
2008- Co-author; NASA HypsIRI satellite mission  
2008-2010 Consultant; NEON (National Ecological Observatory Network) Airborne Program  
2009 Panelist; Tropical Extinction Symposium, Museum of Natural History; Smithsonian  
2009 Briefing; US Congress on satellite monitoring for the global carbon market  
2009 Member; NEON Pacific Domain Science and Education Coordination Committee  
2009- Co-author; GOFCC-GOLD SourceBook on deforestation and degradation  
2009 Briefing; US Congress on satellite monitoring of tropical deforestation  
2009 Delegate; UN Framework Convention on Climate Change, Conference of Parties-15, Copenhagen  
2010 Committee member; Smithsonian Institution, Center for Tropical Forest Science (CTFS)  
2010 Speaker; Harvard University, International Plant Biology Symposium  
2010 Keynote; NASA HypsIRI Science Team Meeting; Pasadena, CA  
2010 Co-Author; UN FAO Historical Forest Degradation  
2010 Delegate; UN Conference of Parties-10 Convention on Biological Diversity, Nagoya, Japan  
2010 Keynote; WWF Ambassadors for Forests, Nagoya, Japan  
2010 PI; NASA Global Terrestrial Ecosystem Observatory (GTEO)  
2010 Delegate; UN Framework Convention on Climate Change, Conference of Parties-16, Cancun  
2011 Advisor; World Bank; Carbon monitoring for the UNFCCC climate treaty  
2011 Guest Editor; *Frontiers in Ecology and the Environment*  
2011 Guest Editor; *Proceedings of the National Academy of Sciences*  
2012 Guest Editor; *Remote Sensing*; Special issue on biodiversity

## IX. Professional Organizations

Ecological Society of America  
Association for Tropical Biology and Conservation

American Geophysical Union  
Organization for Tropical Studies