Zhan Li

Helmholtz Centre for Environmental Research – UFZ, Leipzig, 04318, Germany

Tel: +49-15236287657; *E-mail:* zhanli1986@gmail.com

ORCID: 0000-0001-6307-5200

Scopus Author ID (*citation: 1383; h-index: 16* as of Oct. 2021): 36193003800

Google Scholar: https://scholar.google.com/citations?user=JGNL9BoAAAAJ

Website: https://zhanlilz.github.io/

EDUCATION

Boston University	Boston, MA, USA
Ph.D., Geography	2015
Chinese Academy of Sciences	Beijing, China
M. S., Cartography & Geographic Information System	2011
Nanjing University	Nanjing, China
B. S. in Geographic Information System	2008

RESEARCH APPOINTMENTS

Helmholtz Centre for Environmental Research – UFZ, Leipzig, Germany	
Project Scientist	01/2021 to present
GFZ German Research Centre for Geosciences, Potsdam, Germany	
Postdoctoral Scientist	01/2020 to 06/2021
Canadian Forest Service, Natural Resources Canada, Victoria	
Postdoctoral Fellow	05/2018 to 01/2020
School for the Environment, University of Massachusetts, Boston	
Research Fellow	10/2015 to 04/2018

FUNDING & AWARDS

- PI, Helmholtz Centre Potsdam - GFZ German Research Centre for Geosciences, internal call in the Corona context, € 4783, Very-high-resolution satellite images to ensure data continuity for the interpretation of tundra greenhouse gas fluxes. — 2021

- PI, European Space Agency, Third-Party Mission Open Opportunities for Researchers, 22403 km2 of commercial Planet Lab images (equivalent — 2020

$ ~26,884), Spatial-temporally resolved estimates of gaseous carbon flux from very-high-resolution images and eddy covariance measurements for better carbon accounting in rewetted peatlands.

- Key Personnel, U.S. Geological Survey, Landsat Science Team, $ 997,968, Global 30m Snow and Snow-free Land Surface Albedo from Landsat and MODIS/VIIRS.   2017

- Key Personnel, U.S. NASA, Land-Cover/Land-Use Change (LCLUC) Program, $ 901,340, Circumpolar Albedo of Northern Lands from Landsat-8 and Sentinel-2.   2017

- Key Personnel, U.S. NASA, The Science of Terra, Aqua, and Suomi NPP, $ 574,802, Science Quality Suomi-NPP VIIRS BRDF, Albedo, and NBAR Global Data Analysis Products.   2017

- Excellent Student of Chinese Academy of Sciences   2010

- Excellent Graduate of Nanjing University   2007

- Excellent Student Leader of Nanjing University   2007

- Social Work Award of Nanjing University   2006

ACADEMIC SERVICES

Proposal Reviewer / Panelist	2016, NASA Research Opportunities in Space and Earth Sciences, Remote Sensing of Water Quality Program. 2020, United States-Israel Binational Agricultural Research and Development Fund.
Journal Reviewer	**A**gricultural and Forest Meteorology; **C**limate Dynamics; **C**omputers and Electronics in Agriculture; **E**arth System Dynamics; **E**arth System Science Data; **F**orest Science; **I**EEE Transactions on Geoscience and Remote Sensing; **I**EEE Geoscience and Remote Sensing Letters; **I**nterface Focus by the Royal Society; **I**nternational Journal of Digital Earth; **I**nternational Journal of Remote Sensing; **I**SPRS Journal of Photogrammetry and Remote Sensing; **J**ournal of Applied Remote Sensing; **J**ournal of Geophysical Research – Atmospheres; **J**ournal of Selected Topics in Applied Earth Observations and Remote Sensing; **P**LOS One; **R**emote Sensing; **R**emote Sensing of Environment;

- ▪ **R**emote Sensing Letters;
- ▪ **S**ensors.

PEER-REVIEWED PUBLICATIONS

[1] **Li, Z.**, Scheffler, D., Coops, N.C., Leach, N., Sachs, T., 2021. Towards analysis ready data of optical CubeSat images: Demonstrating a hierarchical normalization framework at a wetland site. International Journal of Applied Earth Observation and Geoinformation 103, 102502.

[2] **Li, Z.**, White, J.C., Wulder, M.A., Hermosilla, T., Davidson, A.M., Comber, A.J., 2020. Land cover harmonization using Latent Dirichlet Allocation. International Journal of Geographical Information Science 35(2), 348–374.

[3] **Li, Z.**, Chen, H., White, J.C., Wulder, M.A., Hermosilla, T., 2020. Discriminating treed and non-treed wetlands in boreal ecosystems using time series Sentinel-1 data. International Journal of Applied Earth Observation and Geoinformation 85, 102007.

[4] Boucher, P.B., Hancock, S., Orwig, D.A., Duncanson, L., Armston, J., Tang, H., Krause, K., Cook, B., Paynter, I., **Li, Z.**, Elmes, A., Schaaf, C., 2020. Detecting Change in Forest Structure with Simulated GEDI Lidar Waveforms: A Case Study of the Hemlock Woolly Adelgid (HWA; Adelges tsugae) Infestation. Remote Sensing 12.

[5] Wulder, M.A., Loveland, T.R., Roy, D.P., Crawford, C.J., Masek, J.G., Woodcock, C.E., Allen, R.G., Anderson, M.C., Belward, A.S., Cohen, W.B., Dwyer, J., Erb, A., Gao, F., Griffiths, P., Helder, D., Hermosilla, T., Hipple, J.D., Hostert, P., Hughes, M.J., Huntington, J., Johnson, D.M., Kennedy, R., Kilic, A., **Li, Z.**, Lymburner, L., McCorkel, J., Pahlevan, N., Scambos, T.A., Schaaf, C., Schott, J.R., Sheng, Y., Storey, J., Vermote, E., Vogelmann, J., White, J.C., Wynne, R.H., Zhu, Z., 2019. Current status of Landsat program, science, and applications. *Remote Sensing of Environment* 225, 127–147.

[6] **Li, Z.**, Erb, A., Sun, Q., Liu, Y., Shuai, Y., Wang, Z., Boucher, P., Schaaf, C., 2018. Preliminary assessment of 20-m surface albedo retrievals from sentinel-2A surface reflectance and MODIS/VIIRS surface anisotropy measures. *Remote Sensing of Environment*. 217, 352–365.

[7] **Li, Z.**, Strahler, A., Schaaf, C., Jupp, D., Schaefer, M., Olofsson, P., 2018. Seasonal change of leaf and woody area profiles in a midlatitude deciduous forest canopy from classified dual-wavelength terrestrial lidar point clouds. *Agricultural and Forest Meteorology*. 262, 279–297.

[8] **Li, Z.**, Schaefer, M., Strahler, A., Schaaf, C., Jupp, D., 2018. On the utilization of novel spectral laser scanning for three-dimensional classification of vegetation elements. *Interface Focus* 8.

[9] Wulder, M.A., **Li, Z.**, Campbell, E., White, J.C., Hobart, G., Hermosilla, T., Coops, N., 2018. A National Assessment of Wetland Status and Trends for Canada's Forested Ecosystems Using 33 Years of Earth Observation Satellite Data. *Remote Sensing*. 10, 1623.

[10] Guan, K., **Li, Z.**, Rao, L.N., Gao, F., Xie, D., Hien, N.T., Zeng, Z., 2018. Mapping Paddy Rice Area and Yields Over Thai Binh Province in Viet Nam from MODIS, Landsat, and ALOS-2/PALSAR-2. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*. 11, 2238–2252.

[11] Paynter, I., Genest, D., Saenz, E., Peri, F., **Li, Z.**, Strahler, A., Schaaf, C., 2018. Quality Assessment of Terrestrial Laser Scanner Ecosystem Observations Using Pulse Trajectories. *IEEE Transaction on Geoscience and Remote Sensing*. 1–10.

[12] Orwig, D.A., Boucher, P., Paynter, I., Saenz, E., **Li, Z.**, Schaaf, C., 2018. The potential to characterize ecological data with terrestrial laser scanning in Harvard Forest, MA. *Interface Focus* 8.

[13] Cai, Y., Guan, K., Peng, J., Wang, S., Seifert, C., Wardlow, B., **Li, Z.**, 2018. A high-performance and in-season classification system of field-level crop types using time-series Landsat data and a machine learning approach. *Remote Sensing of Environment*. 210, 35–47.

[14] Sun, Q., Wang, Z., **Li, Z.**, Erb, A., & Schaaf, C. B. (2017). Evaluation of the Global MODIS 30 Arc-Second Spatially and Temporally Complete Snow-Free Land Surface Albedo and Reflectance Anisotropy Dataset. *International Journal of Applied Earth Observation and Geoinformation*, *58*, 36–49.

[15] Liu, Y., Wang, Z., Sun, Q., Erb, A. M., **Li, Z.**, Schaaf, C. B., Zhang, X., Román, M. O., Scott, R. L., Zhang, Q., Novick, K. A., Syndonia Bret-Harte, M., Petroy, S., & SanClements, M. (2017). Evaluation of the VIIRS BRDF, Albedo and NBAR Products Suite and an Assessment of Continuity with the Long Term MODIS Record. *Remote Sensing of Environment*, *201*, 256–274.

[16] Paynter, I., Genest, D., Saenz, E., Peri, F., Boucher, P., **Li, Z.**, Strahler, A. H., & Schaaf, C. (2017). Classifying Ecosystems with Metaproperties from Terrestrial Laser Scanner Data. *Methods in Ecology and Evolution*, (June), 1–13.

[17] **Li, Z.**, Jupp, D. L. B., Strahler, A. H., Schaaf, C. B., Howe, G., Hewawasam, K., Douglas, E., Chakrabarti, S., Cook, T., Paynter, I., Saenz, E., & Schaefer, M. (2016). Radiometric Calibration of a Dual-Wavelength, Full-Waveform Terrestrial Lidar. *Sensors*, 16(3), 313.

[18] Paynter, I., Saenz, E., Genest, D., Peri, F., Erb, A., **Li, Z.**, Wiggin, K., Muir, J., Raumonen, P., Schaaf, E. S., Strahler, A. H., & Schaaf, C. (2016). Observing Ecosystems with Lightweight, Rapid-Scanning Terrestrial Lidar Scanners. *Remote Sensing in Ecology and Conservation*, 1–16.

[19] Hui, F., Kang, J., Liu, Y., Cheng, X., Gong, P., Wang, F., **Li, Z.**, Ye, Y., & Guo, Z. (2016). AntarcticaLC2000: The New Antarctic Land Cover Database for the Year 2000. *Science China Earth Sciences*.

[20] Hancock, S., Armston, J., **Li, Z.**, Gaulton, R., Lewis, P., Disney, M., Mark Danson, F., Strahler, A., Schaaf, C., Anderson, K., & Gaston, K. J. (2015). Waveform Lidar over Vegetation: An Evaluation of Inversion Methods for Estimating Return Energy. *Remote Sensing of Environment*, 164(0), 208–224.

[21] Douglas, E. S., Martel, J., **Li, Z.**, Howe, G., Hewawasam, K., Marshall, R. A., Schaaf, C. L., Cook, T. A., Newnham, G. J., Strahler, A., & Chakrabarti, S. (2015). Finding Leaves in the Forest: The Dual-Wavelength Echidna Lidar. *Geoscience and Remote Sensing Letters*, *IEEE*, 12(4), 776–780.

[22] Liu, C., Huang, H., Gong, P., Wang, X., Wang, J., Li, W., Li, C., & **Li, Z.** (2015). Joint Use of ICESat/GLAS and Landsat Data in Land Cover Classification: A Case Study in Henan Province, China. *Selected Topics in Applied Earth Observations and Remote Sensing, IEEE Journal*, 8(2), 511-522.

[23] Howe, G. A., Hewawasam, K., Douglas, E. S., Martel, J., **Li, Z.**, Strahler, A., Schaaf, C., Cook, T. A., & Chakrabarti, S. (2015). Capabilities and Performance of Dual-Wavelength Echidna® Lidar. *Journal of Applied Remote Sensing*, 9(1), 95979.

[24] **Li, Z.**, Strahler, A., Schaaf, C., Howe, G., Martel, J., Hewawasam, K., Douglas, E., Chakrabarti, S., Cook, T., Paynter, I., Saenz, E., Wang, Z., Yang, X., Woodcock, C., Jupp, D., Schaefer, M., Culvenor, D., Newnham, G., & Lovell, J. (2014). Effective Area Indexes and Angle Distributions of Leafy and Woody Components of Forests from Dual-Wavelength Terrestrial Lidar Scanning Data. In *Geoscience and Remote Sensing Symposium (IGARSS), 2014 IEEE International*. Quebec City, Canada.

[25] Hui, F., Cheng, X., Liu, Y., Zhang, Y., Ye, Y., Wang, X., **Li, Z.**, Wang, K., Zhan, Z., Guo, J., Huang, H., Li, X., Guo, Z., & Gong, P. (2013). An Improved Landsat Image Mosaic of Antarctica. *Science China Earth Sciences*, *56*(1), 1–12.

[26] **Li, Z.**, Douglas, E., Strahler, A., Schaaf, C., Yang, X., Wang, Z., Yao, T., Zhao, F., Saenz, E. J., Paynter, I., Woodcock, C. E., Chakrabarti, S., Cook, T., Martel, J., Howe, G., Jupp, D. L. B., Culvenor, D. S., Newnham, G. J., & Lovell, J. L. (2013). Separating Leaves from Trunks and Branches with Dual-Wavelength Terrestrial Lidar Scanning. *Geoscience and Remote Sensing Symposium (IGARSS), 2013 IEEE International* (pp. 3383–3386). Melbourne, Australia.

[27] Yang, X., Schaaf, C., Strahler, A., **Li, Z.**, Wang, Z., Yao, T., Zhao, F., Saenz, E., Paynter, I., Douglas, E., Chakrabarti, S., Cook, T., Martel, J., Howe, G., Woodcock, C., Jupp, D., Culvenor, D., Newnham, G., & Lovell, J. (2013). Studying Canopy Structure through 3-D Reconstruction of Point Clouds from Full-Waveform Terrestrial Lidar. *Geoscience and Remote Sensing Symposium (IGARSS), 2013 IEEE International* (pp. 3375–3378). Melbourne, Australia.

[28] Wang, X., Cheng, X., Huang, H., **Li, Z.** (2013). DEM production for Dome-A combining GPS and GLAS data. *Journal of Remote Sensing* 17, 439–451.

[29] Wang, X., Cheng, X., **Li, Z.**, Huang, H., Niu, Z., Li, X., & Gong, P. (2012). Lake Water Footprint Identification from Time-Series ICESat/GLAS Data. *Geoscience and Remote Sensing Letters, IEEE*, *9*(3), 333–337.

[30] Douglas, E. S., Strahler, A., Martel, J., Cook, T., Mendillo, C., Marshall, R., Chakrabarti, S., Schaaf, C., Woodcock, C., **Li, Z.**, Yang, X., Culvenor, D., Jupp, D., Newnham, G., & Lovell, J. (2012). DWEL: A Dual-Wavelength Echidna Lidar for Ground-Based Forest Scanning. *Geoscience and Remote Sensing Symposium (IGARSS), 2012 IEEE International* (pp. 4998–5001). Munich, Germany.

[31] Gong, P., **Li, Z.**, Huang, H., Sun, G., & Wang, L. (2011). ICESat GLAS Data for Urban Environment Monitoring. *Geoscience and Remote Sensing, IEEE Transactions on*, *49*(3), 1158–1172.

[32] Huang, H., **Li, Z.**, Gong, P., Cheng, X., Clinton, N., Cao, C., Ni, W., & Wang, L. (2011). Automated Methods for Measuring DBH and Tree Heights with a Commercial Scanning Lidar. *Photogrammetric Engineering & Remote Sensing*, *77*(3), 219–227.

[33] Wang, X., Cheng, X., Gong, P., Huang, H., **Li, Z.**, & Li, X. (2011). Earth Science Applications of ICESat/GLAS: A Review. *International Journal of Remote Sensing*, *32*(23), 8837–8864.

[34] Gong, P., Niu, Z., Cheng, X., Zhao, K., Zhou, D., Guo, J., Liang, L., Wang, X., Li, D., Huang, H., Wang, Y., Wang, K., Li, W., Wang, X., Ying, Q., Yang, Z., Ye, Y., **Li, Z.**, Zhuang, D., Chi, Y., Zhou, H., & Yan, J. (2010). China's Wetland Change (1990–2000) Determined by Remote Sensing. *Science China Earth Sciences*, *53*(7), 1036–1042.

INVITED TALKS

[1] **Li, Z.**, Scheffler, D., Coops, N.C., Leach, N., Weituschat, M., Sachs, T., 2021. Demonstrating the Generation and Application of Analysis Ready Data of Optical CubeSat Images at a Rewetted Peatland Site. Presented at *the ARD21 Satellite Data Interoperability Workshop*, Online.

[2] Schaaf, C., **Li, Z.**, Elmes, A., Erb, A., Sun, Q., Shuai, Y., Liu, Y., Wang, Z., 2019. Global 30m snow and snow free land surface albedo from Landsat and MODIS/VIIRS. Presented at *the 2019 Landsat Science Summer Meeting*, Sioux Falls, South Dakota, USA.

[3] **Li, Z.**, 2018. Some Latest Advances in Terrestrial Laser Scanning for Forest Applications and Prospects for the Near Future. Presented at *the Seminar at Canadian Forest Service (Pacific Forestry Centre), Natural Resources Canada*, Victoria, Canada.

[4] **Li, Z.**, Schaefer, M., 2017. Full-waveform terrestrial laser scanning. Presented at *the Theo Murphy Scientific meeting of the Royal Society: The terrestrial laser scanning revolution in forest ecology*, Kavli Royal Society Centre, Chicheley Hall, Newport Pagnell, Buckinghamshire, UK.

[5] Schaaf, C., **Li, Z.**, Shuai, Y., Sun, Q., Erb, A., Liu, Y., 2016. North American Surface Albedos from Landsat. Presented at *the 2016 Landsat Science Summer Meeting*, Brookings, USA.

[6] Schaaf, C., Liu, Y., Sun, Q., **Li, Z.**, Wang, Z., 2016. BRDF/Albedo/NBAR: Extending MODIS to VIIRS. Presented at *the 2016 MODIS/VIIRS Science Meeting*, Silver Spring, USA.

CONFERENCE PRESENTATIONS

[1] Erb, A.M., **Li, Z.**, Schaaf, C., Elmes, A., Tian, J., Boucher, P., Wang, Z., Rogers, B., 2019. Using Multi-source, Moderate Resolution Albedo from Landsat and Sentinel-2 to Identify Drivers in High Latitude Fire Disturbances, in: *The 2019 European Space Agency Living Planet Symposium*. Milan, Italy.

[2] Elmes, A., Erb, A., Wang, Z., Sun, Q., **Li, Z.**, Hall, D.K., Schaaf, C., 2019. Albedo-Driven Radiative Forcing Dynamics from Seasonal Melt of the Greenland Ice Sheet. Presented at *the AGU Fall Meeting*, pp. B23G-2484.

[3] Erb, A., Schaaf, C., **Li, Z.**, Elmes, A., Boucher, P., Rogers, B.M., 2019. Radiative Forcing implications of boreal forest disturbances characterized with multi-source, higher resolution albedo from Landsat and Sentinel-2. Presented at *the AGU Fall Meeting*, pp. B53H-2501.

[4] Schaaf, C., Wang, Z., Elmes, A., Sun, Q., Erb, A., Tian, J., Boucher, P., **Li, Z.**, Gao, F., Zhang, X., Lucht, W., Strahler, A.H., Rouhani, S., 2019. Two Decades of MODIS Daily Albedo, NBAR, and BRDF products. Presented at *the AGU Fall Meeting*, pp. GC11K-1120.

[5] Schaaf, C., Boucher, P.B., Strahler, A., Orwig, D., Paynter, I., **Li, Z.**, Elmes, A., Peri, F., Disney, M., 2019. Advances in terrestrial laser scanning of forest canopy structure. Presented at *the 2019 ESA Annual Meeting*, ESA.

[6] Boucher, P., Hancock, S., Orwig, D., Duncanson, L., Armston, J.D., Cook, B., Krause, K., Elmes, A., Peri, F., **Li, Z.**, Paynter, I.L., Schaaf, C., 2019. Potential for the Detection of the Hemlock Woolly Adelgid Infestation from Space. Presented at the *AGU Fall Meeting*, pp. B11E-2365.

[7] **Li, Z.**, Schaaf, C. B., Shuai, Y., Liu, Y., Sun, Q., Erb, A. M., & Wang, Z. (2017). Preliminary Evaluation of Surface Albedo at Fine Spatiotemporal Resolution from Landsat/Sentinle-2A Surface Reflectance and MODIS/VIIRS Surface Anisotropy. Poster. *2017 Joint Ameriflux and NACP Principal Investigators Meeting*. North Bethesda, MD, USA.

[8] Erb, A., Li, Z., Schaaf, C., Wang, Z., Rogers, B.M., 2017. Snow driven Radiative Forcing in High Latitude Areas of Disturbance Using Higher Resolution Albedo Products from Landsat and Sentinel-2. Presented at the *AGU Fall Meeting*, pp. A51P-08.

[9] **Li, Z.**, Schaaf, C. B., Shuai, Y., Liu, Y., Sun, Q., Erb, A. M., & Wang, Z. (2016). Potential Long-Term Records of Surface Albedo at Fine Spatiotemporal Resolution from Landsat/Sentinle-2A Surface Reflectance and MODIS/VIIRS BRDF. Oral Presentation. *2016 American Geophysical Union Fall Meeting*. San Francisco, USA.

[10] **Li, Z.**, Strahler, A.H., Schaaf, C., Jupp, D.L.B., Howe, G.A., Hewawasam, K., Chakrabarti, S., Cook, T., Paynter, I., Saenz, E.J., Yang, X., Yao, T., 2016. Vertical Structure Measurements of Leaves and Woody Materials with Dual-Wavelength Laser Scanning, in: *Harvard Forest Symposium 2016*. Petersham, USA.

[11] Schaaf, C., **Li, Z.**, Liu, Y., Shuai, Y., Sun, Q., Wang, Z., Erb, A.M., Paynter, I., 2016. Using Higher Resolution Albedo Product from Landsat and Sentinel 2A to assess Landscape Heterogeneity and Temporal Albedo Dynamics, in: *The 2016 European Space Agency Living Planet Symposium*. Prague, Czech Republic.

[12] Schaaf, C., Liu, Y., **Li, Z.**, Sun, Q., Erb, A., Shuai, Y., Wang, Z., 2016. Evaluation of MODIS/VIIRS/Landsat-8 Albedo Products over BSRN Sites, in: *The 2016 14th BSRN Scientific Review and Workshop*. Canberra, Australia.

[13] Schaaf, C.B., Erb, A.M., Shuai, Y., Sun, Q., Wang, Z., Liu, Y., **Li, Z.**, Paynter, I., 2016. Temporal Albedo Dynamics in Boreal Forest Fire Scars Using Higher Resolution Albedo Products from Landsat and Sentinel 2A. Presented at *the ForestSAT 2016*, Santiago, Chile.

[14] **Li, Z.**, Strahler, A.H., Schaaf, C., Jupp, D.L.B., Howe, G.A., Hewawasam, K., Chakrabarti, S., Cook, T., Paynter, I., Saenz, E.J., Yang, X., Yao, T., 2015. Improving Canopy Vertical Structure Measurements with Dual-Wavelength Laser Scanning, in: *The 2015 American Geophysical Union Fall Meeting*. San Francisco, USA.

[15] **Li, Z.**, Strahler, A., Schaaf, C., Jupp, D., Howe, G., Hewasasam, K., Chakrabarti, S., Cook, T.A., Paynter, I., Saenz, E., 2015. Seasonal Change of Leaf and Woody Area Profiles in a Temperate Deciduous Forest Canopy from a Dual-Wavelength Terrestrial Lidar, in: *Silvilaser 2015, 14th International Conference of Lidar Applications for Assessing and Managing Forest Eco*systems. La Grande Motte, France.

[16] **Li, Z.**, Strahler, A., Jupp, D., Schaaf, C., Howe, G., Hewasasam, K., Chakrabarti, S., Cook, T.A., Paynter, I., Saenz, E., 2015. Calibration of a full-waveform, dual-wavelength terrestrial laser scanner, in: *Silvilaser 2015, 14th International Conference of Lidar Applications for Assessing and Managing Forest Ecosystems*. La Grande Motte, France.

[17] Li, Z., Strahler, A., Schaaf, C., Jupp, D., Howe, G., Hewasasam, K., Chakrabarti, S., Cook, T.A., Paynter, I., Saenz, E., 2015. Seasonal Change of Leaf and Woody Area Profiles in a Temperate Deciduous Forest Canopy from a Dual-Wavelength Terrestrial Lidar, in: Silvilaser 2015, 14th International Conference of LiDAR Applications for Assessing Forest Ecosystems. La Grande Motte, France.

[18] Saenz, E.J., Paynter, I., Francesco, P., Schaaf, C., **Li, Z.**, Strahler, A.H., Erb, A., Muir, J., TLSIIG Collaborators, 2015. Using Terrestrial Laser Scanners to Establish Forest Structure at Harvard Forest. Presented at *the 2015 Harvard Forest Symposium*, Petersham, USA.

[19] **Li, Z.**, Strahler, A., Schaaf, C., Howe, G., Martel, J., Hewawasam, K., Douglas, E., Chakrabarti, S., Cook, T., Paynter, I., Saenz, E. J., Wang, Z., Woodcock, C. E., Jupp, D. L. B., Schaefer, M., & Newnham, G. J. (2014). Poster. Structure Measurements of Leaf and Woody Components of Forests with Dual-Wavelength Lidar Scanning Data. *2014 American Geophysical Union Fall Meeting*. San Francisco, USA.

[20] **Li, Z.**, Strahler, A., Schaaf, C., Howe, G., Martel, J., Hewawasam, K., Douglas, E., Chakrabarti, S., Cook, T., Paynter, I., Saenz, E. J., Wang, Z., Yang, X., Woodcock, C. E., Jupp, D. L. B., Schaefer, M., Culvenor, D. S., Newnham, G. J., & Lovell, J. L. (2014). Separating Structure Measurements of Leaves and Woody Materials of Forests with Dual-Wavelength Echidna Lidar. Oral Presentation. *ForestSAT 2014*. Riva del Garda, Italy.

[21] **Li, Z.**, Strahler, A., Schaaf, C., Howe, G., Martel, J., Hewawasam, K., Douglas, E., Chakrabarti, S., Cook, T., Paynter, I., Saenz, E., Wang, Z., Yang, X., Woodcock, C., Jupp, D., Schaefer, M., Culvenor, D., Newnham, G., & Lovell, J. (2014). Oral Presentation. Effective Area Indexes and Angle Distributions of Leafy and Woody Components of Forests from Dual-Wavelength Terrestrial Lidar Scanning Data. In *Geoscience and Remote Sensing Symposium (IGARSS), 2014 IEEE International*. Quebec City, Canada.

[22] **Li, Z.**, Strahler, A., Douglas, E., Martel, J., Chakrabarti, S., Cook, T., Howe, G., Schaaf, C., Wang, Z., Saenz, E., Paynter, I., Yang, X., Kim, J., Rouhani, S., Pahlevan, N., Yang, Y., Liu, Y., Jupp, D., Culvenor, D., Kampe, T., 2013. Forest structure and separation of leafy and woody material using terrestrial full waveform lidar: Results from the 2012 NEON Harvard Forest campaign. Presented at *the 98th ESA Annual Convention*, Minneapolis, Minnesota, USA.

[23] Armston, J., Newnham, G., Strahler, A., Schaaf, C., Danson, M., Gaulton, R., Zhang, Z., Burt, A., Calders, K., Disney, M., Goodwin, N., Hancock, S., Hero, J.-M., Jupp, D., Herold, M., Howe, G., Johansen, K., **Li, Z.**, Muir, J., Paynter, I., Phinn, S., Saenz, E., Schaefer, M., & Walker, L. (2013). Terrestrial Laser Scanning International Interest Group (TLSIIG): Brisbane Instrument Intercomparison. *Silvilaser 2013*, 13th International Conference of LiDAR Applications for Assessing Forest Ecosystems. Beijing, China.

[24] **Li, Z**., Strahler, A., Schaaf, C., Howe, G., Martel, J., Hewawasam, K., Douglas, E., Chakrabarti, S., Cook, T., Paynter, I., Saenz, E. J., Wang, Z., Yang, X., Yao, T., Zhao, F., Woodcock, C. E., Jupp, D. L. B., Schaefer, M., Culvenor, D. S., Newnham, G. J., & Lovell, J. L. (2013). Poster. Separating Leaves from Trunks and Branches with Dual-Wavelength Terrestrial

Lidar Scanning: Improving Canopy Structure Characterization in 3-D Space. *2013 American Geophysical Union Fall Meeting*. San Francisco, USA.

[25] Schaaf, C., Strahler, A., van Aardt, J., Chakrabarti, S., **Li, Z.**, Wang, Z., Yang, X., Saenz, E., Paynter, I., Erb, A., Yang, Y., Liu, Y., Rouhani, S., Peri, F., Kim, J., Cawse-Nicholson, K., Romanczyk, P., Kelbe, D., Faulring, J., Nicholson, T., Douglas, E., Martel, J., Howe, G., Hewawasam, K., Cook, T., Culvenor, D., Newnham, G., Jupp, D., Lovell, J., Krause, K., Leisso, N., Kampe, T., & Meier, C. (2013). Terrestrial LiDAR Measures of Forest Structure. *Silvilaser 2013*, 13th International Conference of LiDAR Applications for Assessing Forest Ecosystems. Beijing, China.

[26] Yang, X., Schaaf, C., Strahler, A., **Li, Z.**, Wang, Z., Yao, T., Zhao, F., Saenz, E., Paynter, I., Douglas, E., Chakrabarti, S., Cook, T., Martel, J., Howe, G., Woodcock, C., Jupp, D., Culvenor, D., Newnham, G., & Lovell, J. (2013). Studying Canopy Structure in Three Dimensional Space Using Terrestrial Full-Waveform Lidar Scans. *Silvilaser 2013*, 13th International Conference of LiDAR Applications for Assessing Forest Ecosystems. Beijing, China.

[27] **Li, Z.**, Douglas, E., Strahler, A., Schaaf, C., Yang, X., Wang, Z., Yao, T., Zhao, F., Saenz, E. J., Paynter, I., Woodcock, C. E., Chakrabarti, S., Cook, T., Martel, J., Howe, G., Jupp, D. L. B., Culvenor, D. S., Newnham, G. J., & Lovell, J. L. (2013). Oral Presentation. Separating Leaves from Trunks and Branches with Dual-Wavelength Terrestrial Lidar Scanning. *Geoscience and Remote Sensing Symposium (IGARSS), 2013 IEEE International* (pp. 3383–3386). Melbourne, Australia.

[28] Yang, X., Schaaf, C., Strahler, A., **Li, Z.**, Wang, Z., Yao, T., Zhao, F., Saenz, E., Paynter, I., Douglas, E., Chakrabarti, S., Cook, T., Martel, J., Howe, G., Woodcock, C., Jupp, D., Culvenor, D., Newnham, G., & Lovell, J. (2013). Studying Canopy Structure through 3-D Reconstruction of Point Clouds from Full-Waveform Terrestrial Lidar. *Geoscience and Remote Sensing Symposium (IGARSS), 2013 IEEE International* (pp. 3375–3378). Melbourne, Australia.

[29] Douglas, E. S., Strahler, A., Martel, J., Cook, T., Mendillo, C., Marshall, R., Chakrabarti, S., Schaaf, C., Woodcock, C., **Li, Z.**, Yang, X., Culvenor, D., Jupp, D., Newnham, G., & Lovell, J. (2012). DWEL: A Dual-Wavelength Echidna Lidar for Ground-Based Forest Scanning. *Geoscience and Remote Sensing Symposium (IGARSS), 2012 IEEE International* (pp. 4998–5001). Munich, Germany.

[30] **Li, Z.**, Huang, H., & Gong, P. (2010). Oral Presentation. Automatic Registration of Multi-Scan Terrestrial Lidar Data of Forests with Stem Features. *Silvilaser 2010*, the 10th International Conference on Lidar Applications for Assessing Forest Ecosystems. Freiburg, Germany.

TEACHING & MENTORING

- **Instructor**, Introduction to Machine Learning, Helmholtz Center for Environmental Research – UFZ   2021-present

    - Design syllabus and course structure on the basics of machine learning algorithms for regression and classification problems.

    - Design lab tutorials in Jupyter Notebook for the hands-on practice.

- **Mentor**, Pauline Seubert, undergraduate student at Heidelberg University, research assistant at UFZ — 2021-present

  - Supervise the internship and the undergraduate thesis on application of very-high-resolution Planet Labs images to wetlands in Germany.

- **Co-Supervisor**, Mirjam Weituschat, M.Sc. student at University of Greifswald — 2020-present

  - Co-supervise the master thesis on the vegetation dynamics and its relation to carbon sequestration in a rewetted peatlands (fen) in northeast Germany.

- **Guest Lecturer**, Digital Image Processing and Analysis, University of North Texas — 2020

  - Designed and delivered a guest lecture on Digital Imagery and Common Remote Sensing Platforms with a focus on Sentinel-2.

  - Co-designed lab tutorials on searching, downloading, and analyzing Sentinel-2 images and comparing with Landsat-8 images.

- **Lab & Field Instructor**, Introduction to Remote Sensing, University of Massachusetts Boston — 2016

  - Delivered a lab lecture on measuring spectra of vegetative elements using ASD spectrometer and Planet Probe.

  - Coordinated and instructed a field practice on forest inventory, including using diameter tapes and laser rangefinders.

- **Lab Instructor**, Introduction to Geographic Information Systems, University of Massachusetts Boston — 2016

  - Co-designed lab tutorials on using ArcGIS on different operating systems to accommodate the students' backgrounds in computers.

  - Tutored and helped the students in and outside the lab to troubleshoot their problems with using ArcGIS.

- **Teaching Assistant**, Seminar on Lidar Remote Sensing, Boston University — 2014

  - Delivered several guest lectures on the principles of lidar remote sensing, radiometric calibration of lidar instruments and lidar data processing.

  - Guided seminar discussions on lidar applications to vegetative environments.

- **Field Instructor**, Field Measurements in Remote Sensing, Boston University — 2014

  - Designed the lab tutorial on practicing forest inventory and the lab assignment sheets.

- Led and instructed the students on a field trip to Harvard Forest to learn and practice forest inventory including setting up plots, using diameter tapes and laser rangefinders, and identifying tree species.

MEMBERSHIPS of SCIENTIFIC SOCIETIES

- Member of the American Geophysical Union
- Member of the IEEE Geoscience and Remote Sensing Society

REFERENCES

Alan Strahler	**Crystal Schaaf**
Professor (Emeritus)	**Professor**
Department of Earth and Environment	School for the Environment
Boston University	University of Massachusetts Boston
685 Commonwealth Avenue	100 William T Morrissey Blvd
Boston, MA 02215, USA	Boston, MA 02125, USA
Email: alan@bu.edu	Email: crystal.schaaf@umb.edu

Torsten Sachs

Professor

Remote Sensing and Geoinformatics

Helmholtz Centre Potsdam - GFZ German Research Centre for Geosciences

Telegrafenberg

Potsdam, 14473, Germany

Email: torsten.sachs@gfz-potsdam.de

Updated: October 16th, 2021

Zhan Li