Exponent®
Engineering & Scientific Consulting

Qiuyan Yu, Ph.D.

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Professional Profile

Dr. Qiuyan Yu specializes in monitoring ecosystem services and natural resources by harnessing remote sensing, spatial, and data analysis. Remote sensing provides the ability to gather contemporary and historic site-specific and large-scale environmental data using spaceborne, airborne, and unmanned aerial platforms to provide clients with previously unavailable data-based insights.

Dr. Yu has extensive experience in processing and handling datasets from various earth observation systems (e.g. Landsat, MODIS, Sentinel, ICESat-2, GEDI, Worldview, NAIP, airborne LiDAR, and unmanned aerial vehicle) acquired by different technologies (passive and active imaging).

Her experience includes significant ecosystems such as forest, savanna, agriculture, wetland, and aquaculture. Dr. Yu leverages the combination of remote sensing and geospatial analysis in monitoring and assessing natural hazards and risks, for example monitoring the spatial extent and temporal pattern of drought, flooding, fire, and hurricane and their impacts on human society (e.g. houses and infrastructure) and natural resources (e.g. forest).

Integrating her knowledge and expertise in data science and modeling, Qiuyan also promotes public health by conducting statistical analysis and using machine learning models to untangle the environmental and socioeconomical determinants of diseases and under-five mortality rate.

Academic Credentials & Professional Honors

Ph.D., Geography & Enviro Sci & Poli, University of South Florida, 2018

M.S., Cartography & Geographic Information System, Beijing Normal University, 2013

B.S., Geographic Information System, Lanzhou University, 2010

Panel Reviewer for NASA and NSF, 2021-2022

First place in Student Paper Competition, American Association of Geographers, 2017

Outstanding Graduate of Lanzhou University (the highest honor), 2010

Academic Appointments

Research Assistant Professor, New Mexico State University, 2021 – Present

Prior Experience

Research Assistant Professor, New Mexico State University, 2021 – Present

Postdoc Associate, New Mexico State University, 2019 – 2021

Professional Affiliations

American Geophysical Union

American Associations of Geographers

Ecological Society of America

Sino-Ecologists Association Overseas

Publications

Li, H., Wang, C., Yu, Q., & Smith, E. (2022). Spatiotemporal assessment of potential drivers of salt marsh dieback in the North Inlet-Winyah Bay estuary, South Carolina (1990–2019). Journal of Environmental Management, 313, 114907. https://doi.org/10.1016/j.jenvman.2022.114907

Stovall, M., Ganguli, A., Faist, A., Schallner, J., Yu, Q., & Pietrasiak, N. (2022). Can biological soil crusts still be prominent landscape components in rangelands? A case study from New Mexico, USA. Geoderma. https://doi.org/10.1016/j.geoderma.2021.115658.

Hanan, N. P., Milne, E., Aynekulu, E., Yu, Q., & Anchang J. A role for drylands in a carbon neutral world? Frontiers in Environmental Science, 539. https://doi.org/10.3389/fenvs.2021.786087.

Zhao, A., Yu, Q., Cheng, D., & Zhang, A. (2021). Spatial heterogeneity of changes in cropland ecosystem water use efficiency and responses to drought in China. Environmental Science and Pollution Research. https://doi.org/10.1007/s11356-021-16829-4.

Zhao, A., Yu, Q., Wang, D., & Zhang, A. (2021). Spatiotemporal dynamics of ecosystem water use efficiency over the Chinese Loess Plateau base on long-time satellite data. Environmental Science and Pollution Research, 1-13. https://doi.org/10.1007/s11356-021-15801-6.

Yu, Q., Ji, W., Prihodko, L., Ross, C. W., Anchang, J. Y., & Hanan, N. P. (2021). Study becomes insight: Ecological learning from machine learning. Methods in Ecology and Evolution, 12(11), 2117-2128. https://doi.org/10.1111/2041-210X.13686.

Ross, C. W., Hanan, N. P., Prihodko, L., Anchang, J., Ji, W., & Yu, Q. (2021). Woody-biomass projections and drivers of change in sub-Saharan Africa. Nature Climate Change, 1-7. https://doi.org/10.1038/s41558-021-01034-5.

Sun, Z., Luo, J., Yang, J., Yu, Q., Zhang, L., Xue, K., & Lu, L. (2020). Nation-scale mapping of coastal aquaculture ponds with Sentinel-1 SAR data using Google Earth Engine. Remote Sensing, 12(18), 3086. https://doi.org/10.3390/rs12183086.

Yu, Q., Ji, W., Pu, R., Landry, S. M., Acheampong, M., O' Neil-Dunne, J., Ren, Z., & Tanim, S. H. (2020) A preliminary exploration of the cooling effect of tree shade in urban landscapes. International Journal of Applied Earth Observation and Geoinformation. 92, 10. https://doi.org/10.1016/j.jag.2020.102161.

Zhao, A., Yu, Q., Feng, L., Zhang, A., & Pei, T. (2020). Evaluating the cumulative and time-lag effects of drought on grassland vegetation: A case study in the Chinese Loess Plateau. Journal of Environmental Management, 261, 110214. https://doi.org/10.1016/j.jenvman.2020.110214.

Dong, Y., Ren, Z., Wang, Z., Yu, Q., Zhu, L., & Yu, H. (2020) Spatiotemporal patterns of forest changes in Korean Peninsula using Landsat images during 1990-2015: implications for sustainable development with a comparative study of two neighboring countries. IEEE Access, 8(1), 73623-73633. DOI: 10.1109/ACCESS.2020.2988122.

Anchang, J. Y., Prihodko, L., Ji, W., Kumar, S. S., Ross, C. W., Yu, Q., Lind, B., Sarr, M. A., Diouf. A. A., & Hanan, N. P. (2020). Towards Operational Mapping of Woody Canopy Cover in Tropical Savannas using Google Earth Engine. Frontiers in Environmental Science, 8, 4. https://doi.org/10.3389/fenvs.2020.00004.

Fu, Y., Ren, Z., Yu, Q., He, X., Xiao, L., Wang, Q., & Liu, C. (2019). Long-term dynamics of urban thermal comfort in China's four major capital cities across different climate zones. Peer J, 7: e8026. https://doi.org/10.7717/peerj.8026.

Acheampong, M., Yu, Q., Cansu Ertem, F., Deba Enomah Ebude, L., Tanim, S., Eduful, M., Vaziri, M., & Ananga, E. (2019). Is Ghana Ready to Attain Sustainable Development Goal (SDG) Number 7? —A Comprehensive Assessment of Its Renewable Energy Potential and Pitfalls. Energies, 12(3), 408. https://doi.org/10.3390/en12030408.

Acheampong, M., Ejiofor, C., Salinas-Miranda, A., Wall, B., & Yu, Q. (2019). Priority setting towards achieving under-five mortality target in Africa in context of sustainable development goals: an ordinary least squares (OLS) analysis. Global Health Research and Policy, 4(1), 3. https://doi.org/10.1186/s41256-019-0108-0.

Yu, Q., Acheampong, M., Pu, R., Landry, S. M., Ji, W., & Dahigamuwa, T. (2018). Assessing effects of urban vegetation height on land surface temperature in the City of Tampa, Florida, USA. International Journal of Applied Earth Observation and Geoinformation, 73, 712-720. https://doi.org/10.1016/j.jag.2018.08.016.

Pu, R., Landry, S. M., & Yu, Q. (2018). Assessing the potential of multi-seasonal high resolution Pleiades satellite imagery for mapping urban tree species. International Journal of Applied Earth Observation and Geoinformation, 71, 144-158. https://doi.org/10.1016/j.jag.2018.05.005.

Acheampong, M., Yu, Q., Enomah, L. D., Anchang, J., & Eduful, M. (2018). Land use/cover change in Ghana's oil city: Assessing the impact of neoliberal economic policies and implications for sustainable development goal number one–A remote sensing and GIS approach. Land Use Policy, 73, 373-384. https://doi.org/10.1016/j.landusepol.2018.02.019.

Acheampong, M., Ejiofor, C., Salinas-Miranda, A., Jaward, F. M., Eduful, M., & Yu, Q. (2018). Bridging the Under-Five Mortality Gap for Africa in the Era of Sustainable Development Goals: An Ordinary Least Squares (OLS) Analysis. Global Health, 84(1), 110-120. DOI: 10.29024/aogh.9.

Dahigamuwa, T., Yu, Q., & Gunaratne, M. (2016). Feasibility study of land cover classification based on normalized difference vegetation index for landslide risk assessment. Geosciences, 6(4), 45. https://doi.org/10.3390/geosciences6040045.

Cao, S., Yu, Q., Sanchez-Azofeifa, A., Feng, J., Rivard, B., & Gu, Z. (2015). Mapping tropical dry forest succession using multiple criteria spectral mixture analysis. ISPRS Journal of Photogrammetry and Remote Sensing, 109, 17-29. https://doi.org/10.1016/j.isprsjprs.2015.08.009.

Cao, S., Zhu, X., Pan, Y., & Yu, Q. (2014). A stable land cover patches method for automatic registration of multitemporal remote sensing images. IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 7(8), 3502-3512. DOI: 10.1109/JSTARS.2013.2264312.

Presentations

Yu, Q., Ji, W., Hanan, N. P., Ryan, M. G., St. Hilaire. R., Prihodko, Lara., Anchang, J. (2021). The determinants of ecosystem structure – a case study in Oregon, U.S. American Geophysical Union, 12/2021.

Yu, Q., Ji, W., Hanan, N. P., Ryan, M. G., St. Hilaire. R., Prihodko, Lara., Anchang, J. (2021). Global climatological determinants of canopy height. Ecological Society of America, online, 8/2021.

Yu, Q., Ji, W., Hanan, N. P., Prihodko, Lara., Anchang, J. (2020). Framework for comparing plant height measurements from spaceborne LiDAR systems. American Geophysical Union, online, 12/2020.

Anchang, J., Kahiu, N. J., Ouko, E., Ndungu, L, W., Ji, W., Yu, Q., Hanan, N. P., Prihodko, Lara. (2020). Year-round Monitoring of Vegetation Conditions in an East African Rangeland: Implications for Livestock Forage Production in Response to Climate Variability and Local System Shocks. American Geophysical Union, online, 12/2020.

Yu, Q., Ji, W., Hanan, N. P., Prihodko, Lara., Ross, W., & Anchang, J. (2019). Bifurcation and feedback mechanisms in tropical savannas. Ecological Society of America, online, 8/2019.

Yu, Q., Ji, W., Hanan, N. P., Prihodko, L., Ross, C. W., & Anchang, J. (2019). Rage against the machine: ecological learning from machine learning. American Geophysical Union, San Francisco, CA, 12/2019.

Hanan, N., Yu, Q., Ross, W., Anchang, J. (2019). Machine learning: friend and foe of geospatial and ecological science. SCINet Workshop, Las Cruces, NM, 9/11/2019.

Yu, Q., Ji, W., Hanan, N. P., Prihodko, L., Ross, C. W., & Anchang, J. (2019). Alternative states and feedback mechanisms in tropical savannas diagnosed via length-scales of canopy aggregation. Poster, NASA Terrestrial Ecology Science Team Meeting, College Park, MD, 9/2019.

Ross, C. W., Hanan, N. P., Prihodko, L., Yu, Q., Ji, W., & Anchang, J. (2019). The distribution of woody biomass in sub-Saharan Africa: An analysis of climate change and anthropogenic drivers. NASA Terrestrial Ecology Science Team Meeting, College Park, MD, 9/2019.

Prihodko, L., Hanan, N. P., Ross, C. W., Yu, Q., Bucini, C., & Tredennick, A. (2019). Shrub and tree canopy cover and above-ground woody biomass patterns in Sub-Saharan Africa. Ecological Society of America, Louisville, Kentucky, 8/2019.

Ji, W., Hanan, N. P., Prihodko, L., Yu, Q., Ross, C. W., & Anchang, J. (2019). Do we need to rethink how we think about woody plant encroachment? International Savanna Science Network Meeting, Skukuza, South Africa, 3/2019.

Ross, C. W., Hanan, N. P., Prihodko, L., Anchang, J., Ji, W., Yu, Q., & Lind, B. (2019). Drivers of woody vegetation across sub-Saharan Africa, International Savanna Science Network Meeting, Skukuza, South Africa, 3/2019.

Yu, Q., Pu, R., & Landry, S. M. (2018), “Quantifying 3-D shade provision in urban landscape: multi-city comparison and relationship to land surface temperature.” Association of American Geographers 2018 Annual Meeting. 4/2018 in New Orleans, LA.

Landry, S. M., Yu, Q., Pu, R., Acheampong, M., & O’Neil-Dunne, J. (2018). “Mitigating effects for vertical and horizontal vegetation structure on urban heat islands in five USA cities.” Association of American Geographers 2018 Annual Meeting. 4/ 2018 in New Orleans, LA.

Yu, Q., Pu, R., Landry, S. M., & Acheampong, M. (2017). “Understanding the relationship between land surface temperature and vegetation structure for urban heat island studies using multisource remote sensing data”, Association of American Geographers 2017 Annual Meeting, Boston (1st place of Remote

Sensing Specialty Group Student Illustrated Paper Competition).

Landry, S. M., & Yu, Q. (2017). “Land Use Matters When Estimating Urban Forest Structure and Benefits: Sensitivity to the Number and Configuration of Land Use Categories.” Association of American Geographers 2017 Annual Meeting. 4/2017 in Boston, MA.

Landry, S. M., & Yu, Q. (2017). 30 Years of Tree Canopy Cover Change in Unincorporated and Incorporated Areas of Orange County, 1986-2016. Report to Orange County, June 2017. Orlando, FL.

Yu, Q., & Landry, S. M. (2017). “Assessing effects of horizontal and vertical urban vegetation structures on land surface temperature using multisensor remote sensing data.” American Society for Photogrammetry and Remote Sensing (ASPRS), FL-ASPRS/UF Fall 2017 LiDAR Workshop, 11/2017 in Apopka, Florida

Yu, Q., & Landry, S. M. (2016). “Integrating LiDAR with Ground measurements to estimate urban aboveground biomass”, American Society for Photogrammetry and Remote Sensing (ASPRS), FL-ASPRS/UF Fall 2016 LiDAR Workshop, 11/2017 in Apopka, Florida.

Cao, S., Yu, Q., & Zhang, J. (2012). An automatic registration method for multitemporal remote sensing images using land cover patches in rural regions. In Agro-Geoinformatics (Agro-Geoinformatics), 2012 First International Conference on (pp. 1-4). IEEE.

Cao, S., Yu, Q., & Zhang, J. (2012). Automatic division for pure/mixed pixels based on probabilities entropy and spatial heterogeneity. In Agro-Geoinformatics (Agro-Geoinformatics), 2012 First International Conference on (pp. 1-4). IEEE.

Project Experience

Improved tree height estimation using newly launched LiDAR systems GEDI and ICESat-2 and Landsat and Sentinel; and untangled the determinants of tree and biomass at global scale.

Leveraged ICESat-2 and Sentinel to improve biomass estimation for global drylands and savannas.

Examined the bifurcation of woody cover and its underlying mechanisms at different scale with Worldview and Quickbird.

Mapped the spatial and temporal pattern of heat stress using Landsat and examined the cooling effects of urban vegetation in U.S. cities.

Evaluated the damage of Hurricane Irma on urban forest in Florida with field measurements, remote sensing images, and sociodemographic census data.

Implemented bathymetry mapping to monitor submerged aquatic vegetation in lakes.

Mapped tree canopy cover change, carbon storage and carbon sequestration using airborne LiDAR, high-resolution airborne images for Tampa, Gainesville, Orange County, Florida.

Research Grants

NASA ROSES GLOBAL Ecosystem Dynamics Investigation (GEDI), 2020 – 2023

NASA ROSES NASA Research Announcement Studies with ICESat-2, 2020 – 2023

Peer Reviews

Conservation Biology

Frontiers in Ecology and the Management

Methods in Ecology and Evolution

Scientific Reports

Ecosphere

International Society for Photogrammetry and Remote Sensing (ISPRS)

International Journal of Applied Earth Observation and Geoinformation

Journal of Applied Remote Sensing

Remote Sensing

Frontiers of Earth Science

Frontiers in Environmental Science

Atmosphere

Sustainable Cities and Society