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PROFESSIONAL EXPERIENCE

For the past several years, my research has focused on using proximal, airborne, and spaceborne hyperspectral data at the interface between remote sensing and ecology. My most recent research focuses on developing methods to link optical remote sensing to plant diversity.

PROFESSIONAL PREPARATION

University of Isfahan	Isfahan, Iran	Civil Engineering	B.S.	2009
K.N. Toosi University of Technology	Tehran, Iran	Remote Sensing	M.S.	2012
Indiana University	Bloomington, IN	Geography	Ph.D.	2016
University of Nebraska	Lincoln, NE	Remote Sensing	Postdoc	2016-2019

APPOINTMENTS

2019 – *present* Assistant Professor, Department of Geography, Oklahoma State University, Stillwater, OK
2019 – *present* Co-Director, Center for Applications of Remote Sensing, Oklahoma State University, Stillwater, OK

PEER-REVIEWED PUBLICATIONS

Published

Cause-Nicholson, K., Townsend, P., Schimel, D., Assiri, A., Blake, P., Fabrizia Buongiorno M., Campbell, P., Carmon, N., Casey, K., Correa-Pabón, R.E., Dahlin, K., Dashti, H., Dennison, P., Dierssen, H., Erickson, A., Fisher, J., Frouin, R., Gatebe, C., **Gholizadeh, H.**, Gierach, M., Glenn, N., Goodman, J., Griffith, D., Guild, L., Hakkenberg, C., and the Algorithms Working Group Community, (2021) “NASA’s Surface Biology and Geology Designated Observable: A Perspective on Surface Imaging Algorithms”, *Remote Sensing of Environment*, 257.

Gholizadeh, H., Gamon, J., Helzer, C., and Cavender-Bares, J. (2020), Multi-temporal assessment of grassland α - and β -diversity using hyperspectral imaging, *Ecological Applications*, 30, e02145.

Franz, T., Pokal, S., Gibson, J, Zhou, Y., **Gholizadeh, H.**, Tenorio, F., Rudnick, D., Heeren, D., McCabe, M., Ziliani, M., Jin, Z., Guan, K., Pan, M., Gates, J., and Wardlow, B. (2020), The role of topography, soil, and remotely sensed vegetation condition towards predicting subfield-scale crop yield, *Field Crops Research*, 252, 107788.

Zhou, Y., **Gholizadeh, H.**, LaVanchy, G.T., Hasan, E. (2020), Inspecting the Food–Water Nexus in the Ogallala Aquifer Region Using Satellite Remote Sensing Time Series, *Remote Sensing*, 12, 2257.

Gholizadeh, H., Gamon, J., Townsend, P., Zygielbaum, A., Helzer, C., Hmimina, G., Yu, R., Moore, R., Schweiger, A., and Cavender-Bares, J. (2019), Detecting prairie biodiversity with airborne remote sensing, *Remote Sensing of Environment*, 221, 38-49.

Gholizadeh, H., Gamon, J., Zygielbaum, A., Wang R., Schweiger A. and Cavender-Bares J. (2018), Remote sensing of biodiversity: soil correction and data dimension reduction methods to improve assessment of α -diversity (species richness) in prairie ecosystems, *Remote Sensing of Environment*, 206, 240-253.

- Hwang, T., **Gholizadeh, H. (co-first author)**, Sims, D., Novick, K., Brzostek, E., Phillips, R., Roman, T., Robeson, S. and Rahman, F. (2017), Capturing species-level drought responses in a temperate deciduous forest using ratios of photochemical reflectance indices between sunlit and shaded canopies, *Remote Sensing of Environment*, 199, 350-359.
- Gholizadeh, H.** and Robeson, S. (2016). Revisiting empirical ocean-colour algorithms for remote estimation of chlorophyll-*a* content on a global scale, *International Journal of Remote Sensing*, 37 (11), 2682–2705.
- Gholizadeh, H.**, Robeson, S., and Rahman, F. (2015). Comparing the performance of multispectral vegetation indices and machine-learning algorithms for remote estimation of chlorophyll content: a case study in the Sundarbans mangrove forest. *International Journal of Remote Sensing*, 36(12), 3114-3133.
- Gholizadeh, H.**, Mojaradi, B., and Zoj, M. (2015). Local prototype space-based band selection for hyperspectral subpixel analysis. *Journal of Photogrammetry, Remote Sensing and Geoinformation Science*, 2015(5), 0373–0380.
- Ficklin, D., Letsinger, S., **Gholizadeh, H.**, and Maxwell, J. (2015). Incorporation of the Penman–Monteith potential evapotranspiration method into a Palmer Drought Severity Index Tool. *Computers and Geosciences*, 85, 136-141.
- Ficklin, D., Maxwell, J., Letsinger, S., and **Gholizadeh, H.** (2015). A climatic deconstruction of recent drought trends in the United States. *Environmental Research Letters*, 10(4), 044009.
- Gholizadeh, H.**, Zoj, M., and Mojaradi, B. (2012). A decision fusion framework for hyperspectral subpixel target detection. *Journal of Photogrammetry, Remote Sensing and Geoinformation Science*, 2012(3), 267-280.

Book Chapters

- Gamon, J. A., R. Wang, **H. Gholizadeh**, B. Zutta, P. A. Townsend, and J. Cavender-Bares. 2020. Consideration of Scale in Remote Sensing of Biodiversity. Pages 425–447 in J. Cavender-Bares, J. A. Gamon, and P. A. Townsend, editors. *Remote Sensing of Biodiversity*. Springer Nature, Springer, New York.

Archived and published data set

- Gholizadeh, H.**, Gamon, J., Helzer, C., Cavender-Bares, J. (2020). Airborne Hyperspectral Reflectance Wood River Nebraska Multi-Day 1 m V001 [Data set]. NASA EOSDIS Land Processes DAAC. Accessed 2020-12-13 from <https://doi.org/10.5067/Community/Airborne/AEHYPWRNE1M.001>

Peer-reviewed Proceedings

- Gamon, J., Hminina, G., Miao, G., Guan, K., Springer, K., Wang, R., Yu, R., **Gholizadeh, H.**, Moore, R., Walter-Shea, E., Arkebauer, T., Sukyer, A., Franz, T., Wardlow, B, and Wedin, D., (2018). “Imaging spectrometry and fluorometry in support of flex: what can we learn from multi-scale experiments?” IGARSS 2018, Valencia, Spain.
- Gholizadeh, H.**, (2013). “Band selection for hyperspectral remote sensing data through correlation matrix to improve image clustering”, Proc. SPIE 8870, Imaging Spectrometry XVIII, 88700D; doi:10.1117/12.2027032, SPIE Optical Engineering+Applications, San Diego, California, USA.
- Gholizadeh, H.**, Zoj, M., and Mojaradi, B. (2012). “A decision fusion approach for clustering of hyperspectral data using spectral unmixing methods”, IEEE Aerospace Conference, 978-1-4577-0557-1/12, Big Sky, Montana, USA.
- Gholizadeh, H.**, Zoj, M., and Mojaradi, B. (2012). “A novel hyperspectral image clustering method based on spectral unmixing”, IEEE Aerospace Conference, 978-1-4577-0557-1/12, Big Sky, Montana, USA.

Gholizadeh, H., Zoej, M., and Mojaradi, B. (2011). “Impact of informative band selection on target detection performance”, Proc. SPIE 8180, 81801C (2011); doi:10.1117/12.898320, Prague, Czech Republic.

CONFERENCE PRESENTATIONS (* graduate student; ** undergraduate student)

Gholizadeh, H., McMillan, N.*, Hammond, W.*, Friedman, M., Hassani, K.*, Trowbridge, A., Fuhlendorf, S., and Adams, H., (2021) “Remote sensing of biodiversity in grasslands: opportunities and challenges”, Ecological Society of America Annual Meeting, Long Beach, California, USA (invited talk).

Sapes, G., Lapadat, C., Schweiger, A. K., Juzwik, J., Montgomery, R., Wang, Z., **Gholizadeh, H.**, Townsend, P., Gamon, J. A., and Cavender-Bares, J., (2021), “Spectral reflectance detects oak wilt decline in red oaks across the landscape” Ecological Society of America Annual Meeting, Long Beach, California, USA.

Gholizadeh, H., McMillan, N.*, Fuhlendorf, S., Gamon, J., Hammond, W.*, Hassani, K.*, Adams, H., Sams, A.**, Charles, M.**, Garrett, D.**, and Cavender-Bares, J. (2020) “Scale-dependence of remote sensing of biodiversity: A test in grasslands under different management practices” AGU Fall Meeting, San Francisco, California, USA (*virtual*).

Hassani, K.*, **Gholizadeh, H.**, Jacob, J., Natalie, V.*, Taghvaeian, S., Raun, W., and Carpenter, J. (2020) “Application of Unmanned Aircraft System (UAS)-based RGB and Multispectral Data to Monitor Winter Wheat During the Growing Season” AGU Fall Meeting, San Francisco, California, USA (*virtual*).

Pauley, N.*, Murray, B., **Gholizadeh, H.** (2020) “Assessment of functional diversity of a managed pine-oak forest in southeastern Oklahoma using remote sensing techniques”, Oklahoma Natural Resources Conference, Norman, Oklahoma, USA.

Gholizadeh, H., Gamon, J., and Cavender-Bares, J. (2019) “Multi-temporal assessment of grassland plant diversity using imaging spectroscopy” AGU Fall Meeting, San Francisco, California, USA.

Cavender-Bares, J., Schweiger, A. K., Gamon, J. A., **Gholizadeh, H.**, Helzer, K., Madritch, M. D., Nguyen, C., Townsend, P. A., Wang, Z., Hobbie, S. E. (2019) “Remotely detected plant function in two midwestern prairie grassland experiments reveals belowground processes” AGU Fall Meeting, San Francisco, California, USA.

Qi, Y., Ustin, S., Glenn, N. F., Wang, R., **Gholizadeh, H.** (2019) “Remote sensing of biodiversity in shrubland ecosystems in Great Basin, USA” AGU Fall Meeting, San Francisco, California, USA.

Gholizadeh, H., Gamon, J., Zygielbaum, A., and Cavender-Bares J. (2018) “Detecting biodiversity with multiscale imaging spectrometry in prairie ecosystems”, AGU Fall Meeting, Washington D.C., USA.

Hwang, T., **Gholizadeh, H.**, Sims, D., Novick, K., Brzostek, Phillips, R., Roman, T., Robeson, S. and Rahman, F. (2018), “Capturing species-level drought responses in a temperate deciduous forest using ratios of photochemical reflectance indices between sunlit and shaded canopies”, AGU Fall Meeting, Washington D.C., USA.

Gamon, J., Sukyer, A., Walter-Shea, E., Arkebauer, T., Zygielbaum, A, Franz, T., Awada, T., Wardlow, B., Hminina, G., **Gholizadeh, H.**, Yu, R., Mazis, A., Wang, R., Guan, K., Miao, G., Avenson, T., Berry, B., Wedin, D., Kornfeld, A., Moore, R., (2018) “The Nebraska SIF Campaign - a Multi-Scale Field Experiment”, AGU Fall Meeting, Washington D.C., USA.

Schweiger, A., Nguyen, C., Montgomery, R., JuzwiK, J., Townsend, P., **Gholizadeh, H.**, Gamon, J., and Cavender-Bares, J., (2018) “Accurate detection of oak wilt (*Bretziella fagacearum*) using airborne imaging spectroscopy”, AGU Fall Meeting, Washington D.C., USA.

Gholizadeh, H., Gamon, J., Hmimina, G., Zygielbaum, A., and Cavender-Bares J. (2018) “Mapping biodiversity in manipulated and natural grasslands using spectral diversity”, ESA Annual Meeting, New Orleans, Louisiana, USA.

Gholizadeh H., Gamon, J., Zygielbaum, A., Schweiger, A., Cavender-Bares, J., Yang, Y., and Knops, J. (2017) “Evaluating productivity-biodiversity relationship and spectral diversity in prairie grasslands

under different fire management treatments using in-situ and remote sensing hyperspectral data”, AGU Fall Meeting, New Orleans, Louisiana, USA.

- Gholizadeh, H.**, Gamon, J., Zygielbaum, A., Wang R., Schweiger A. and Cavender-Bares J. (2017) “Remote sensing of biodiversity: dimension reduction and soil correction methods to improve assessment of α -diversity (species richness) in prairie ecosystems”, ESA Annual Meeting, Portland, Oregon, USA.
- Gholizadeh, H.**, and Robeson, S. (2015). “Improving global models of remotely sensed ocean chlorophyll content using partial least squares and geographically weighted regression”, AGU Fall Meeting, San Francisco, California, USA.
- Gholizadeh, H.**, and Robeson, S. (2015). “Improving chlorophyll-a content estimation in open oceans using geographically weighted regression”, AAG Conference, Chicago, Illinois, USA.
- Ficklin, D., Letsinger, S., **Gholizadeh, H.**, and Maxwell, J. (2014). “A tool to estimate the Palmer drought severity index using Penman-Monteith potential Evapotranspiration at any spatial scale”, AGU Fall Meeting, San Francisco, California, USA.
- Gholizadeh, H.**, Robeson, S., and Rahman, F. (2014). “Optimal term selection and weighting of vegetation-index spectral bands using genetic algorithms for chlorophyll content estimation”, AAG Conference, Tampa, Florida, USA.
- Chowdhury, R., Sharma, N., **Gholizadeh, H.**, and Rahman, F. (2013). “Trajectories and proximate sources of land use/cover change in the vicinity of the Sundarbans mangroves, Bangladesh”, AAG Conference, Los Angeles, California, USA.

TEACHING EXPERIENCE

Instructor: Remote Sensing (Fall 2019-2020, Geog 4333/5333, Oklahoma State University); Geospatial Applications for Unmanned Aerial Systems (Spring 2020, Geog 4263/5263, Oklahoma State University); Applications of the Global Positioning System in Field Research (Spring 2020, Geog 4303, Oklahoma State University); Geographic Information Science (Spring 2016, Geog 338/538, Indiana University); Environmental Remote Sensing (Fall 2014, Geog 336/535, Indiana University); Advanced Remote Sensing (Spring 2014, Geog 436/536, Indiana University).

GRANTS

06/01/2021 – 05/31/2024: Leveraging multiscale airborne and spaceborne imaging spectroscopy to monitor grassland plant diversity under different management practices, NASA, Role: **PI** (Total: \$398,654).

07/01/2020 – 06/30/2022: Mapping invasive *Lespedeza cuneata* using airborne imaging to detect its spread and determine its ecological and economic impacts, Oklahoma Center for the Advancement of Science and Technology, Role: **PI** with co-PIs Henry Adams and Omkar Joshi (Total: \$99,980).

07/01/2020 – 06/30/2022: The effect of drought on wildfire in Oklahoma: an improved quantification of the role of vegetation for forecasting wildfire risk, Oklahoma Center for the Advancement of Science and Technology, Role: **co-PI** with PI Bryan Murray (Total: \$99,266).

AWARDS AND HONORS

- NASA New (Early Career) Investigator Award, 2021
- The Arts & Sciences Summer Research and Supplemental Travel (ASR and +1), College of Arts and Sciences, OSU, 2020, \$8,000
- Travel Award, Forest Structural Diversity Workshop, NEON (NSF), Boulder, Colorado, May 2020, \$1,000 (*due to the pandemic the workshop was virtual*)
- Post-doctoral travel award, School of Natural Resources, University of Nebraska-Lincoln, July 2018, \$1000

- Post-doctoral travel award, School of Natural Resources, University of Nebraska-Lincoln, December 2017, \$1000
- Post-doctoral travel award, School of Natural Resources, University of Nebraska-Lincoln, May 2017, \$1900
- Alumni AI Teaching Award, Indiana University, April 2016, \$1000
- Graduate Sustainability Research Development Grant, Indiana University Office of Sustainability, May 2015, \$2500
- IndianaView Student Scholarship Award (funded by USGS), March 2015, \$1000
- Chairman’s Graduate Student Recognition Award, Department of Geography, Indiana University, 2013-2015
- Departmental Graduate Student Award, Department of Geography, Indiana University, April 2014, \$1000
- College of Arts and Sciences Travel Award, Indiana University, October 2013, \$400
- Travel Award, Department of Geography, Indiana University, August 2013, \$650
- Lester Spicer Best Poster Award, Department of Geography, Indiana University, April 2013, \$150

IN-KIND AWARDS

- 06/01/2020 – 06/01/2021: German Aerospace Center (DLR) DESIS data collection award, DLR, Role: **PI**. Through this grant, German Aerospace Center (DLR) agreed to collect spaceborne hyperspectral data from the Tallgrass Prairie Preserve using their DESIS sensor (mounted on the International Space Station) for free.

SYNERGISTIC ACTIVITIES

Panelist for NASA (2020)

Regular reviewer of scientific journals (*Remote Sensing of Environment*, *Ecological Applications*, *International Journal of Remote Sensing*, *Global Ecology and Biogeography*, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, *Remote Sensing Letters*, *IEEE Access*, *Applied Vegetation Science*, and *Diversity*).

NASA’s SBG (Surface Biology and Geology) mission Algorithms and Applications Working Group (2019 – present): The aim of this group, which is made up of more than 100 scientists from academia, industry, and federal agencies, is supporting mission concept development for SBG mission.

CALMIT Airborne Data Processing Workshop (July 2019, Lincoln, NE): Presenter and co-organizer of a workshop on analyzing airborne hyperspectral data.

Finalist of the “Fall research fair: science slam – postdoc edition” (November 2018, Lincoln, NE): Presenting my research (*A Bird's-eye View of Biodiversity*) to the public with the goal of raising awareness about the importance of maintaining biological diversity.

2018 Nebraska Science Olympiad, Nebraska Academy of Science (April 2018, Lincoln, NE): This competition encourages young students to be involved in science and brings together top students from different regions of the state. My role in the Science Olympiad was designing questions for remote sensing topic and assessing students’ performance.

Graduate student adviser

Kianoosh Hassani (*in progress*)

Graduate student committee member

Abhiram Pamula, School of Civil and Environmental Engineering, Oklahoma State University (*in progress*).

Luelseged Emishaw, Boone Pickens School of Geology, Oklahoma State University (2019-2020; *completed*).

Abby McCrea, Environmental Science Graduate Program, Oklahoma State University (2019-2020; *completed*).

Thornton Raskevitz, Department of Geography, Oklahoma State University (2019-2020; *completed*).
Nicole Pauley, Department of Geography, Oklahoma State University (2019-2020; *completed*).