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RESEARCH INTERESTS

My research interests are based on the study of human-environment interactions within the fields of Remote Sensing, Land Change Science, and Conservation. All of my research is undertaken with highly interdisciplinary research teams, which involve both physical and social scientists. Within such interdisciplinary teams, my particular strengths lie in the remote sensing of vegetation dynamics, land use and land cover change, and protected area management - including both parks and people. Specifically, my work focuses on novel classification/algorithm applications. My work currently focuses on southern African savannas and seagrass meadows in Florida, but my interests are global.

EDUCATION

PhD	2019	University of Florida	Geography with Digital Geography and GIS
MS	2015	University of Florida	Geography
BA	2013	University of Florida	Geography with Environmental Geosciences

APPOINTMENTS

February 2022-Present	AmericaView, TenneesseeView Chapter, Invited Member. This is a nationwide, university-based, and state-implemented network that advances Earth observation education through remote sensing science, applied research, workforce development, technology transfer, and community outreach.
November 2021-Present	Guest Editor, Invited (normally reserved for Associate Professors), *Frontiers in Remote Sensing*, Special Issue: Inaugural issue of "Women in Remote Sensing 2022"
September 2021-Present	Guest Editor, Invited, *Land*, Special Issue: Land Surface Monitoring of Vegetation Condition, a diversity issue
February 2021-Present	Co-founder and Director of Science, Lagoon Waterman Alliance. (Board of Directors, Invited Member) This is the Mosquito Lagoon chapter of Captains for Clean Water (a FL waterways conservation organization using science to inform policymakers) • My ongoing project on seagrass in ML has helped to quantify what the loss has been over the last decade and suggest potential drivers. My work has even been featured in the ML episode of the TV show they participate in "Guiding Flow TV".
February 2021-Present	Co-founder, #SixtySecondsOfScience weekly video series by *Sister Scientists* on Instagram, Twitter, and TikTok. "Promoting science and diversity in the 21st century. #WomenInSTEM"

December 2019-Present	Editorial Review Board, Invited Member, *Applied Sciences* (open access peer reviewed MDPI journal)
August 2019-Present	Assistant Professor, Department of Geography & Sustainablity, University of Tennessee, Knoxville
August 2019-Present	Courtesy Faculty, Department of Geography, University of Florida
December 2021-December 2022	**Inaugural United Nations Global Sustainable Development Faculty Fellow through the Center for Global Engagement at the University of Tennessee**
July 2019-November 2020	Guest Editor, Invited, *Applied Sciences*, Special Issue: Dynamics of the Global Savanna and Grasslands Biomes
May 2017 – Aug. 2019	PhD: Graduate Student Fellow, Researcher, Department of Geography, The Graduate School, University of Florida

- This research is supervised by Jane Southworth, Ph.D., Brian Child, Ph.D., Peter Waylen, Ph.D. and Greg Kiker, Ph.D.
- This research is the intersection of remote sensing, long-term vegetation monitoring, vegetation-herbivore interactions, climate, socio-economics, and management of savanna protected areas in southern Africa
  - The ultimate goal is to have meaningful research theoretically that is also useful to park managers
- Multiple field seasons have been conducted in South Africa, Zambia, Botswana, and Mozambique (2011-2018)
- Special emphasis is put on machine-learning algorithms and geospatial statistics, for implementation in advanced classification techniques and land cover change trajectories in protected area landscapes
- Other statistical metrics are also used for evaluating long-term vegetation health in and around protected areas

May – June 2018	Study Abroad Developer/Instructor: UF in South Africa, People, Parks, and Conservation in Africa, Department of Geography, International Center, University of Florida
May 2015 – May 2017	PhD: Graduate Student Fellow, Instructor, Department of Geography, The Graduate School, University of Florida

- Geography of Africa, Spring 2016, 2017
- Remote Sensing Lab, Fall 2015, 2016
- Physical Geography, Summer 2015

Dec. 2015 – Aug. 2016	Project Manager: Logistics and Researcher, Zambia, United Nations Development Program

- $150,000 grant received by Brian Child, Ph.D., University of Florida/University of Stellenbosch

- Responsible for all logistical coordination for the implementation of the United Nations grant
- Collected vegetation training samples
- Supported a field team of 22 people in and around South Luangwa National Park that conducted socio-economic surveys

May – Aug. 2014, 2015, 2016	Science Content Expert in the Teacher Transformation Series: Instructor and Researcher, College of Education, University of Florida, National Science Foundation

- NSF Grant received by Leela Kumaran, Ph.D. and Rose Pringle, Ph.D., University of Florida, College of Education
- Responsible for providing geographic content to middle school science teachers for their curriculums in North Florida
- Assisted in leading science education workshops for teachers

Aug. 2013 – May 2015	Master's Degree: Instructor and Researcher, Department of Geography, University of Florida

- Instructor: Geography of Africa, Fall 2013, 2014 and Spring 2014, 2015
- Research: supervised by Jane Southworth, Ph.D., Brian Child, Ph.D., and Michael Binford, Ph.D.
- A biological investigation in Chobe National Park, Botswana examining land cover change and vegetation degradation, including drivers, over time using remote sensing and GIS for geospatial quantitative analysis
- A separate project was a biological investigation in Ordway-Swisher Biological Station, Melrose, FL as a part of a NSF-funded macrosystems biology project using remote sensing and GIS to examine land-use legacies, specifically the involvement of natural resources and the consequences of that on biodiversity today

Aug. 2010 – May 2013	Undergraduate Researcher: Geomorphology Lab, Department of Geography, University of Florida

- The Geomorphology Lab at UF is managed by Joann Mossa, Ph.D.
- Processed soil by running tests such as sediment size analysis and loss on ignition, as well as preforming data analysis in Microsoft Excel for the Kissimmee River Restoration Project
- Mapped and analyzed river features using GIS

Aug. – Dec. 2012	Intern: Discovery Room, Education Programs, Florida Museum of Natural History, University of Florida

- Developed and supervised the interactive Discovery Room through education programs for non-scientific audiences
- Developed an exhibit on evolutionary biogeography using the genetics of Bellflowers in the Mediterranean for non-scientific audiences

May – Aug. 2012	Researcher: Department of Science, Gorongosa National Park, Moz.

- This research was supervised by Marc Stalmans, Ph.D., Brian Child, Ph.D., and Michael Binford, Ph.D.
- Independent fieldwork for my undergraduate honors thesis in biogeography: a repeat photography project evaluating vegetation change

over time through replicating fixed point photography from historic photographs

- Managed a cost estimate plan and obtained an independent grant to carry out this field study (Carr Foundation 2012) to understand vegetation change over time in this park

Jan. – May 2012

Intern: Department of Education, The National Geographic Society

- This work was supervised by Elizabeth Wolzak, M.S.
- Wrote educational content for their website in the education department for non-scientific audiences
  - Project areas included the Turkana Basin in Kenya, the Mayan Civilization in Mexico, and the Mustang region of Nepal
- Attended lectures and took minutes for our department on various topics across the sciences and humanities
- Completed photo research to be used on their website
  Assisted with "National Geographic Live!" events

May – June 2011

Study Abroad: Costa Rica, Geomorphology, University of Georgia

- This study was lead by David Leigh, Ph.D.
  Field studies courses through the University of Georgia in physical geography and geomorphology

AWARDS, HONORS, & TRAINING

2020-Present   National Aeronautics & Space Administration (NASA) Land Cover Land Use Change (LCLUC) Webinar Series (Topics Variable)

2023   Minds Behind Maps Webinar: Estimating flood extent using cloud computing and open-source GIS (Microsoft Planetary Computer/Google Earth Engine/QGIS)

2022   Florida Department of Environmental Protection, Innovative Technology Grant: *Communicating the Bloom Series* - Demonstrating a Statewide Collaboration Tool and Dashboard [GeoCollaborate] for HAB's in Florida (presented by the Indian River Lagoon National Estuary Program & Storm Center Communications)

2022   Faculty Environmental Leadership Award, Office of Sustainability, University of Tennessee

2020   NASA Applied Remote Sensing Training Program (ARSET): Using the UN Biodiversity Lab to Support National Conservation and Sustainable Development Goals

2019   Planet Labs: Introducing Planet Basemaps

2019   Wetland Mapping Consortium Webinar: Mapping Wetland Inundation Dynamics and Wetland Change using Google Earth Engine

2019	American Society for Photogrammetry & Remote Sensing (ASPRS) GeoByte Webinar: Utilizing the 30+ Year Landsat Record to Detect and Characterize Historical Land Change
2019	Remote Sensing Specialty Group of the American Association of Geographers Student Honors Paper Competition Finalist
2018	Top Published Student Research Article in "Earth System Science" (Herrero et al., 2017), $500, Department of Geography, University of Florida
2018	Little Family Student Fellowship Award, $1500, Department of Geography, University of Florida
2018	John and Fawn Dunkle Award for Graduate Student Travel, $1000, Department of Geography, University of Florida
2018	Best Graduate Student Paper Presentation, $150, Florida Society of Geographers Annual Meeting
2017	The Ryan Poehling Fellowship, $1500, Department of Geography, University of Florida (Ph.D.)
2017	University Women's Club Graduate Scholarship, $1000, University of Florida
2015	Best Graduate Student Paper Presentation, $150, Florida Society of Geographers Annual Meeting
2014	The Ryan Poehling Fellowship, $1500, Department of Geography, University of Florida (Master's)
2013	The John Dunkle Award, $1,000, Department of Geography, University of Florida
2013	Anderson Scholar-Highest Distinction, University of Florida
2010 - 2013	Dean's List, University of Florida
2012	Phi Kappa Phi Honor Society
2012	Gamma Theta Upsilon Honor Society
2012	Golden Key International Honor Society
2012	Delta Epsilon Iota Academic Honor Society

GRANTS

Submitted 2022	The National Geographic Society Level I: "Evaluating ecosystem degradation and stakeholder livelihood in a marine protected area: a case study in Mosquito Lagoon"

Not Funded 2021	UTK Summer Graduate Research Assistantship Fund-FY22 Application: "*Crassostrea virginica* (Eastern Oyster) Reef Extent in Mosquito Lagoon, FL and Quantifying the Impact of *Aureoumbra lagunensis* (Brown Tide)"
Not Funded 2021	NSF Ecology and Evoluation of Infectious Diseases (EEID): "Complexities of a Transmissible Spongiform Encephalopathy in a Wild Animal."
Not Funded 2020	ORAU: Ralph E. Powe Junior Faculty Enhancement Awards: "Where have all the grasses gone? Understanding critical seagrass loss in a marine protected area and the multiscalar ecosystem and socioeconomic consequences."
Not Funded 2020	NSF Ecology and Evoluation of Infectious Diseases (EEID): "Complexities of Chronic Wasting Disease and Deer."
Not Funded 2020	NSF Dynamics of Integrated Socio-Environmental Systems (DISES): "Institutional economic drivers of wildlife versus domesticated landscapes in Sub-Saharan Africa."
Not Funded 2020	NASA New (Early Career) Investigator Program (NIP) in Earth Science: "Where have all the grasses gone? Understanding critical seagrass loss in a marine protected area and the multiscalar ecosystem and socioeconomic consequences."
Not Funded 2020	NASA Land-Cover/Land-Use Change for Early Career Scientists: "Do oil and water mix? Understanding the role of affluence in water stress related landscape change in the Middle East."
2015-2019	Graduate School Fellowship, $160,000, The Graduate School, University of Florida
2019	Travel Grant, $350, Graduate Student Council, University of Florida for attendance of the American Association of Geographers Annual Meeting
2018	Travel Grant, $350, Graduate Student Council, University of Florida for attendance of the Southeastern Division of the American Association of Geographers Annual Meeting
2018	Travel Grant, $300, College of Liberal Arts and Sciences, University of Florida for attendance of the Southeastern Division of the American Association of Geographers Annual Meeting
2018	Travel Grant, $300, College of Liberal Arts and Sciences, University of Florida for attendance of the American Association of Geographers Annual Meeting
2018	Travel Grant, $300, Department of Geography, University of Florida for attendance of the American Association of Geographers Annual Meeting
2017	Travel Grant, $300, College of Liberal Arts and Sciences, University of Florida for attendance of the American Association of Geographers Annual Meeting
2017	Travel Grant, $300, Department of Geography, University of Florida for attendance of the American Association of Geographers Annual Meeting

2013	Graduate Research Fellowship Program, Honorable Mention, National Science Foundation, no attached monetary amount
2012	Field Research Grant, Undergraduate Honors Thesis, Gorongosa National Park, Mozambique, $4,000, Carr Foundation

PUBLICATIONS

Research Papers

2023	**Herrero, Hannah V.**, Southworth, Jane, Khatami, Reza, and Muir, Carly. (2022). Examining the relationship between vegetation decline and precipitation in the National Parks of the Greater Limpopo Transfrontier Conservation Area in the 21st Century. *Frontiers in Environmental Science*. Special Issue: Conservation Grassland Agriculture and Ecology Research with Multisource Remote Sensing. doi: 10.3389/fenvs.2023.1106849
2023	Jane Southworth, Sadie Jane Ryan, **Hannah Victoria Herrero**, Reza Khatami, Erin L Bunting, Mehedy Hassan, Carly S Muir and Peter Waylen. (2023). Latitudes and Land Use: Global Biome Shifts in Vegetation Persistence Across Three Decades. *Frontiers in Remote Sensing*. Special Issue: Women in Remote Sensing.
2023	**The National Geographic Society Magazine.** My research team is included in the feature story "We rallied to save manatees once. Can we do it again?" by Gena Steffens, Jason Gulley, and Erika Larsen. (January 2023).
2022	Millie, Kerr. Wilder: How Rewilding is Transforming Conservation and Changing the World. Comments by Dr. Jane Goodall. "Chapter One: A Park for the People". (2022). *Bloomsbury Publishing*. ISBN: 9781472990402, 1472990404.
2022	**Herrero, Hannah V.** & McGowan, Jamie. Engaging the UN Sustainable Development Goals in Higher Education. (2022). *The IEEE Networker Magazine*. Special Issue: UN Sustainable Development Goals.
2022	Gene Bailey, Yingkui Li , Nathan McKinney, Daniel Yoder, Wesley Wright, **Hannah Herrero**. (2022). Comparison of Ground Point Filtering Algorithms for High Density Point Clouds Collected by Terrestrial LiDAR. *Remote Sensing,* 14(19), 4776. Section: Environmental Remote Sensing. https://doi.org/10.3390/rs14194776
2022	Rivarola, M. D., Dein, J., Simberloff, D., & **Herrero, H. V.** (2022). Assessing Protected Area Zoning Effectiveness With Remote Sensing Data: The Case of Nahuel Huapi National Park, Argentina. *Frontiers in Remote Sensing*, 52. Special Issue: Women in Remote Sensing, 2022. https://doi.org/10.3389/frsen.2022.901463
2021	Muir, Carly, Southworth, Jane, Khatami, Reza, **Herrero, Hannah**, and Akyapi, Berkay. (2021). Vegetation Dynamics and Climatological Drivers in Ethiopia at the Turn of the Century. *Remote Sensing*, 13(16), 3267. Special Issue: Remote Sensing

Applications for Earth Observations and Global Change Detection.
https://doi.org/10.3390/rs13163267

2020   **Herrero, Hannah Victoria** and Southworth, Jane. Special Issue on Dynamics of the
        Global Savanna and Grasslands Biomes. (2020). *Applied Sciences. 10*(22), 8043.
        Editorial. Special Issue: Special Issue: Dynamics of the Global Savanna and
        Grasslands Biomes. https://doi.org/10.3390/app10228043

2020   Blentlinger, Luke, and **Herrero, Hannah V.** (2020). A tale of grass and trees:
        Characterizing Vegetation Change in Payne's Creek National Park, Belize from 1975
        to 2019. *Applied Sciences, 10(12), 4356.* Special Issue: Dynamics of the Global Savanna
        and Grasslands Biomes. Featured Paper. https://doi.org/10.3390/app10124356

2020   Burow, Daniel, **Herrero, Hannah,** and Ellis, Kelsey. (2020). Damage analysis of three
        long-track tornadoes using high-resolution satellite imagery. *Atmosphere, 11*(6), 613.
        https://doi.org/10.3390/atmos11060613

2020   **Herrero, H. V.,** Southworth, J., Muir, C., Khatami, R., Bunting, E., and Child, B.
        (2020). An evaluation of vegetation persistence in and around southern African
        national parks during the 21st century. *Applied Sciences, 10*(7), 2366. Special Issue:
        Dynamics of the Global Savanna and Grasslands Biomes.
        https://doi.org/10.3390/app10072366

2020   **Herrero, H.,** Waylen, P., Southworth, J., Khatami, R., Yang, D., & Child, B. (2020). A
        Healthy Park Needs Healthy Vegetation: The Story of Gorongosa National Park in
        the 21st Century. *Remote Sensing*, *12*(3), 476. Special Issue: Remote Sensing of
        Savannas and Woodlands. https://doi.org/10.3390/rs12030476

2019   **Herrero, H. V.,** Southworth, J., Bunting, E., Kohlhaas, R., and Child, B. (2019).
        Integrating Surface-Based Temperature and Vegetation Abundance Estimates into
        Land Cover Classifications for Conservation Efforts in Savanna Landscapes.
        Sensors, 19(16), 3456. https://doi.org/10.3390/s19163456

2019   Yang, D., Yang, A., Qiu, H., Zhou, Y., **Herrero, H.,** Fu, C. S., ... & Tang, J. (2019). A
        Citizen-Contributed GIS Approach for Evaluating the Impacts of Land Use on
        Hurricane-Harvey-Induced Flooding in Houston Area. *Land*, *8*(2), 25. Special Issue:
        Yes: Geospatial Social Data and Participatory Mapping for Landscape Change and
        Socio-Environmental Systems. https://doi.org/10.3390/land8020025

2018   Southworth J., Bunting, E., Zhu, L., Ryan, S., **Herrero, H.V.,** Waylen, P., Munoz-
        Carpena, R., Campo-Bescos, M, and Kaplan, D. (2018). Using a Coupled Dynamic
        Factor-Random Forest Analysis (DFRFA) to Reveal Drivers of Spatiotemporal
        Heterogeneity in the Semi-Arid Regions of Southern Africa. *PloS one 13.12 (2018):
        e0208400.* https://doi.org/10.1371/journal.pone.0208400

2018	Bunting, E., Southworth, J., **Herrero, H. V.**, Ryan, S. J., Waylen, P. (2018). Understanding long-term savanna vegetation persistence across three drainage basins in southern Africa. *Remote Sensing,* 10(7), 1013. https://doi.org/10.3390/rs10071013
2017	**Herrero, H. V.**, Southworth, J., Bunting, E., & Child, B. (2017). Using Repeat Photography to Observe Vegetation Change Over Time in Gorongosa National Park. *African Studies Quarterly*, 17(2): 65-82. http://asq.africa.ufl.edu/files/Herrero.HD-ed_a4.pdf
2016	**Herrero, H. V.**, Southworth, J., & Bunting, E. (2016). Utilizing Multiple Lines of Evidence to Determine Landscape Degradation within Protected Area Landscapes: A Case Study of Chobe National Park, Botswana from 1982 to 2011. *Remote Sensing,* 8(8): 623. Special Issue: Remote Sensing of Land Degradation and Drivers of Change. https://doi.org/10.3390/rs8080623
2015	Southworth, J., Zhu, L., Bunting, E., Ryan, S. J., **Herrero, H.**, Waylen, P. R., & Hill, M. J. (2015). Changes in vegetation persistence across global savanna landscapes, 1982–2010. Journal of Land Use Science, 11(1): 7-32. https://doi.org/10.1080/1747423X.2015.1071439

Book Chapters

2016	Jane Southworth, Harini Nagendra, Sadie J. Ryan, Erin Bunting, Cerian Gibbes, **Hannah Herrero**, and Arun Agarwal. (2016). Protected Areas, Climate Change and Ecosystem Sustainability. INVITED (Southworth) Book Chapter Contribution for: Book #9 in "Remote Sensing Applications for Societal Benefits". Editor: Dr. Stephen Walsh, as part of the series on *Comprehensive Remote Sensing: Reference Module in Earth Systems and Environmental Sciences* edited by Shunlin Liang at the University of Maryland and published by Elsevier. https://doi.org/10.1016/B978-0-12-409548-9.10432-4

PRESENTATIONS

INTERNATIONAL MEETINGS

2022	Global Challenges University Alliance, Swedish University of Agricultural Sciences. Uppsala, Sweden. May 2022.
2022	Times Higher Education, Innovation and Impact Summit. Stockholm, Sweden. April 2022.

NATIONAL MEETINGS

2023	Co-organizer and Co-chair: Women in Remote Sensing Special Sessions I, II, & III. Women in Remote Sensing Panel. Women in Remote Sensing Mentoring Event. American Association of Geographers Annual Meeting. Denver, CO. March 2023.

2023	Evaluating Ecosystem Degradation and Stakeholder Livelihood in a Marine Protected Area: A Case Study in Mosquito Lagoon, Florida. Women in Remote Sensing Special Session. American Association of Geographers Annual Meeting. Denver, CO. March 2023.
2023	Latitudes and Land Use: Global Biome Shifts in Vegetation Persistence Across Three Decades. Co-presenter. Women in Remote Sensing Special Session. American Association of Geographers Annual Meeting. Denver, CO. March 2023.
Accepted, but postponed: COVID	On the road to recovery? Exploring vegetation trends in Gorongosa National Park, Mozambique. Conservation GIS Special Session. American Association of Geographers Annual Meeting. Denver, CO. April 2020.
2019	Evaluating savanna vegetation in national parks of southern Africa during the 21st Century. Remote Sensing Specialty Group Student Paper Honors Competition Special Session. American Association of Geographers Annual Meeting. Washington, D.C. April 2019.
2018	**Hannah Herrero** and Jane Southworth. Examining vegetation changes in Eastern Zambia savanna landscapes from 1984-2016: an integrated approach. Applications of Time Series Remote Sensing at the Global to Landscape Scale Session. American Association of Geographers Annual Meeting. New Orleans, LA. April 2018.
2017	**Hannah Victoria Herrero** and Jane Southworth. Temporal and spatial specificity of vegetation changes in Eastern Zambia savanna landscapes. Land Systems Science Symposium. American Association of Geographers Annual Meeting. Boston, MA. April 2017.
2017	Jane Southworth, Sadie Ryan, **Hannah Herrero**, Erin Bunting, Michael Hill, Peter Waylen, Likai Zhu Global biome shifts in greenness persistence across three decades: climate and anthropogenic drivers differ by hemisphere, and forests are in trouble. American Association of Geographers Annual Meeting. Boston, MA. April 2017.
2016	Southworth, J., Likai Zhu, Erin Bunting, Sadie Ryan, **Hannah Herrero**, Peter Waylen, Michael Hill. Changes in vegetation persistence across global savanna landscapes, 1982-2010. Association of Geographers Annual Meeting. San Francisco, CA. April 2016.

REGIONAL MEETINGS

2023	Evaluating Ecosystem Degradation and Stakeholder Livelihood in a Marine Protected Area: A Case Study in Mosquito Lagoon, Florida. Indian River Lagoon Symposium 2023: IRL Seagrass. Fort Pierce, FL. February 2023.
2023	Geophysical Science Session Chair. Geosym 2023: Spatiality & Sustainability. Knoxville, TN. February 2023.
2021	On the road to recovery? Exploring vegetation trends in Gorongosa National Park, Mozambique. Southeastern Division of the American Association of Geographers Annual Meeting. Florence, AL. November 2021.
2021	Co-presenter (with Clancy Oliver and William B. Wolfson): Utilizing Random Forest Classification of Landsat imagery to map coastal landscape degradation: a case study of

seagrass loss in Mosquito Lagoon, Florida during the 21st Century. Southeastern Division of the American Association of Geographers Annual Meeting. Florence, AL. November 2021.

2021   Early Career Student Panel 2021 Member. Tennessee Geographic Information Council Annual Meeting. Virtual (Zoom). April 2021.

2021   Co-presenter (with Clancy Oliver): Utilizing Google Earth Engine to map coastal landscape degradation: a case study of seagrass in Mosquito Lagoon, Florida, from 2000 to 2020. Tennessee Geographic Information Council Annual Meeting. Virtual (Zoom). April 2021.

2021   Co-presenter (with Clancy Oliver): Utilizing Random Forest   classification of Landsat imagery to map coastal landscape degradation: a case study of seagrass in Mosquito Lagoon, United States, from 2000 to 2020. Geography Symposium (GeoSym) Annual Meeting. Virtual (Zoom). March 2021.

2019   A Healthy Park Needs Healthy Vegetation: The Story of Gorongosa National Park. Southeastern Division of the American Association of Geographers Annual Meeting. Wilmington, NC. November 2019.

2019   Evaluating savanna vegetation persistence in national parks of southern Africa during the 21st Century. Florida Society of Geographers Annual Meeting. Orlando, FL. February 2019.

2018   Evaluating savanna vegetation in national parks of southern Africa during the 21st Century. Southeastern Division of the American Association of Geographers Annual Meeting. Johnson City, TN. November 2018.

2018   Examining Multi-Scalar Vegetation Changes in an Eastern Zambia Savanna, South Luangwa National Park, from 1984-2016: An Integrated Approach. Florida Society of Geographers Annual Meeting. Melbourne, FL. February 2018.

2015   Utilizing Multiple Lines of Evidence to Determine Landscape Degradation within Protected Area Landscapes: A Case Study of Chobe National Park, Botswana from 1982 to 2011. Florida Society of Geographers Annual Meeting. Jacksonville, FL. February 2015.

2014   Utilizing Multiple Lines of Evidence to Determine Landscape Degradation within Protected Area Landscapes: A Case Study of Chobe National Park, Botswana from 1982 to 2011. Southeastern Division of the American Association of Geographers Annual Meeting. Athens, GA. November 2014.

2012   Using Repeat Photography to Observe Vegetation Change Over Time in Gorongosa National Park. Southeastern Division of the American Association of Geographers Annual Meeting. Asheville, NC. November 2012.

INVITED LECTURES

2023   Socioeconomic impact of ecosystem college in Mosquito Lagoon, FL. Center for the Study of Social Justice. University of Tennessee.

2019 & 2022   Remote Sensing Applications in Anthropology. Guest Lecture. Seminar in Zooarchaeology Course, University of Tennessee.

2020	"Sensors and Scales in Southern Africa: An Analysis of Vegetation Health, Protected, and Parks" Howard H. Baker Jr. Center for Public Policy at the University of Tennessee. Energy and Environment Lecture Series.
2020	"A Healthy Park Needs Healthy Vegetation: The Story of Gorongosa National Park" Oak Ridge National Laboratory at the University of Tennessee. The American Society for Photogrammetry and Remote Sensing: The Imaging and Geospatial Information Society, Guest Lecture.
2017	Trophy Hunting, Wildlife Economics, and Conservation in Africa. Guest Lecture. Physical Geography Course, University of Florida.
2016	Remote Sensing and Conservation in Africa. Guest Lecture. Conservation of Resources Course, University of Florida.
2016	Trophy Hunting, Wildlife Economics, and Conservation in Africa. Guest Lecture. Geography of a Changing World Course, University of Florida.
2016	Wildlife Economics and Conservation in Africa. Guest Lecture. Economic Geography Course, University of Florida.
2015	The Economics of Trophy Hunting and How This Plays into Conservation in Africa. Guest Lecture. Economic Geography Course, University of Florida.
2015	Graduate Student Panelist. Senior Seminar Course, University of Florida.

COURSES TAUGHT

Graduate Level

Conservation in Africa, University of Tennessee

Advanced Remote Sensing, University of Tennessee

Remote Sensing of the Environment, University of Tennessee

Remote Sensing of the Environment Lab, University of Florida

- Introduces the theory and application of digital imagery data in geographical research with a hands-on, lab-based approach. This course provides an introduction to the use of remotely sensed data in environmental research. Remote sensing is the science of acquiring data using techniques that do not require actual contact with the object or area being observed. The different sensors used to collect this information, and the interpretation techniques vary quite widely, and are being developed at an astounding rate. In this course, we focused on the interpretation and applications of data from spaceborne imaging systems (eg: Landsat MSS, Landsat TM, Quickbird, MODIS, AVHRR and SPOT). The number of disciplines that utilize remotely sensed data

continues to increase. Geologists, geographers, climatologists, and ecologists have all adapted remote sensing techniques to their respective research. We discuss many different uses of remotely sensed data, but focus on natural resources management and ecological applications. In this course the student learns about the fundamentals of Remote Sensing theory and technologies through the use of problem solving and spatial thinking skills. The approach used in this course is problem- based learning applied to spatially explicit problems. These concepts are essential to the use of RS. The student develops their analytical skills by addressing real world problems within the spatial framework of RS. The Goal of GIS4037: Introduction to Digital Image Processing is for the student:

• To understand the fundamentals of remote sensing theory and technologies through the use of problem solving and spatial thinking skills.

• To improve the student's geographic problem solving abilities through the application of remote sensing (RS) technology and knowledge and via the application of spatial thinking skills

• To learn geographic concepts and skills and to determine their relevance to the student

• To sharpen their critical thinking skills about geographic information, specifically in the form of RS products – their reliability, accuracy and precision

• To acquire competence in basic knowledge and skills regarding RS

Undergraduate Level

Geography of Africa, University of Tennessee

Advanced Remote Sensing, University of Tennessee

People and Environment, University of Tennessee

Remote Sensing of the Environment, University of Tennessee

Digital Image Processing Lab, University of Florida
- Same course as "Remote Sensing of the Environment Lab" above, but the undergraduate section

Digital Image Processing, Lab Online, University of Florida
- Same course as "Remote Sensing of the Environment Lab" above, but the undergraduate online section

Geography of Africa, University of Florida
- This course presents Geography of Africa from an environmental and economic development perspective. We start by understanding how Africa formed, its landscape, its climates and how people evolved to interact with the environment. There is a particular focus on wildlife conservation. The course also discusses dynamic issues facing contemporary African societies and the challenges that people and nations of this vast continent are working to resolve, introducing ideas about economic development, politics and governance. Issues of health, demography, gender and culture are also covered. Through lectures, guest speakers, readings, and interactive exercises we study environmental and resource issues, the impact of historical events on development, education and culture, population distribution, social organization, rural and urban structures, industrialization, business and trade, and prospects for the future. In addition to the live section, I adapted this course to be completely online for future semesters.

Field Techniques for Conservation and Landscape Analysis, Study Abroad in South Africa, University of Florida

- The purpose of this course is to provide students with an opportunity for hands-on learning in one of the most diverse and complex ecosystems on the planet. Students will learn geographic field techniques – related to remote sensing, GPS and GIS, reserve design and modeling, geographic research techniques, elements of landscape analysis, and African conservation approaches. The major components of this course are as follows:
1. Geographic techniques will be introduced relating to remote sensing, GIS and GPS technologies. Basic field methods and navigational techniques.
2. Field skills for landscape analysis: students will learn to recognize different land cover types and relate them to different land management strategies.
3. Study design, analysis and interpretation: students will work in groups to develop, execute, and present the result of a research project conducted at the end of the course.

Economics and Governance of Wildlife and Parks in Africa, Study Abroad in South Africa, University of Florida
- The purpose of this course is to provide students with an opportunity for hands-on learning in one of the most diverse and complex ecosystems on the planet. Kruger National Park is one of the most successful parks in Africa, and South Africa is one of the few places on the planet where wildlife is increasing and generating jobs and economic growth. Through visits to and analysis of state, private and community conservation approaches, students will learn how conservation outcomes are as much or more an outcome of economic governance as of a more traditional understanding of conservation. Students will learn to interview a range of landholders and park managers, and to analyze and report on these field trips. They are required to think critically about a complexity of issues including rural poverty, trophy hunting, high-end tourism, park management and social ecology. The major components of this course are as follows:
1. Field visits and interviews on a wide range of conservation areas, and with local experts in protected area management.
2. Individual field reports summarizing observations and findings from each field visit relating to the economics and governance of a range of protected area approaches.
3. Study design, analysis and interpretation: students will work in groups to provide a critical analysis of conservation policy and outcomes in South Africa, and will provide group reports and presentations at the end of the course.

Physical Geography, University of Florida
- This course explores the patterns and processes in the natural environment that set the basis for all life. Through lectures, activities, readings, and outings, we will learn how the Earth's atmosphere, hydrosphere, lithosphere, and biosphere operate and interact with one another and how these interactions influence people.

SERVICE

University Service

2022-Present   Member, Sustainability Working Group

2021-Present   Member, Committee on the Campus Environment

2020-Present   Member, Conservation Science Group

| 2021-2022 | Provost's Junior Faculty Fellows Advisory Council (Dean Nominated) |
| 2021 | Haslam Scholars Program Faculty Interviewer, Haslam College of Business |

Departmental Service

2023-Present	Recruitment Chair, Graduate Program Committee Member
2022-Present	VolCore Designated Submission Faculty Member
2021-Present	Department of Geography Executive Committee, University of Tennessee
2020-2022	Associate Director of the Undergraduate Program, University of Tennessee
2020-2022	Director of the Bachelor of Science in Geographic Information Science and Technology Degree Program, University of Tennessee
2021	Early Career Student Panel
2020-2021	Undergraduate Geography Advisor, University of Tennessee
2020-2021	Advisor to the Geography Club, University of Tennessee
2020-2021	Curriculum Committee, University of Tennessee
2020-2021	Special Events Coordinating Committee, University of Tennessee
2020	Colloquium Coordinator, University of Tennessee
2020	Search committee, GIST Lecturer, University of Tennessee
2020	New B.S. Degree in GIST Proposal Writing Team, University of Tennessee
2019-2020	VolCore General Education Curriculum, Global Citizen International, Writing Team, University of Tennessee
2017 - 2019	Assisting with departmental renovations, University of Florida
2016 - 2019	Graduate Liaison and Social Chair. Geography Graduate Student Organization, University of Florida
2013	President of the Gamma Theta Upsilon Geography Honors Society, University of Florida
2011 - 2013	President of the Geography Student Organization, University of Florida

PROFESSIONAL MEMBERSHIPS

2022   Global Challenges University Alliance (GCUA)
2016-Present   American Association of Geographers (AAG)
2012-Present   Southeastern Division of the American Association of Geographers (SEDAAG)

GRADUATE STUDENTS

Master's Students

2019-Present	Panos, Brittany; **Committee Member**, *Department of Forestry, Wildlife, and Fisheries. UTIA.* The relationship between land cover in Knoxville and select bird populations over time
2020-2022	Bailey, Gene Nathan; **Committee Member**, *Department of Geography.* Using different statistical models combined with LiDAR data to determine hillslope erosion amounts with the lowest error
2020-Present	Hudson, MonTré Deshaun; **Advisor**, *Department of Geography*. Mapping Gatlinburg fires using remote sensing imagery
2021-Present	Makwerere, Livingstone; **Advisor**, *Department of Geography*. Understanding deforestation extent and drivers in Mutare, Zimbabwe
2021-Present	Oliver, Clancy; **Advisor**, *Department of Geography.* Using satellite imagery to quantify seagrass loss in Mosquito Lagoon, FL
2021-Present	Sapkota, Aakriti; **Committee Member,** *Department of Geography.* Fire modeling in the Southeastern United States.
2021-Present	Spining, Jack; **Advisor,** *Department of Geography.* Understanding vineyard health in South Africa using remote sensing
2021-Present	Steckler, Morgan; **Committee Member,** *Department of Geography.* Classifications to categorize severe weather producing storms.

Doctoral Students

2019-2021	Alumbaugh, Jamie L; **Comprehensive Exam Committee Member**, *Department of Geography*. Biogeography
2019-Present	Shen, Ming; **Committee Member**, *Department of Geography*. Using remote sensing data combined with Random Forest to differentiate vegetation types

2020-2022	Rivarola, Daniela; **Committee Member**, *Department of Ecology and Evolutionary Biology*. Protected area conservation and remote sensing in Argentina
2021-Present	Insalaco, Stephanie Ann; **Advisor**, *Department of Geography*. Socio-ecological implications of seagrass loss in Mosquito Lagoon, FL

MANUSCRIPT REVIEWS

1. *Atmosphere* — 2016
2. *Sustainability* — 2016
3. *Forests* — 2018
4. *International Journal of Geo-Information* — 2018
5. - 6. *Ecosphere* (2) — 2019 x2
7. *Land Degradation & Development* — 2019
8. - 15. *Remote Sensing* (8) — 2019 x3; 2020 x2; 2021 x3
16. *Remote Sensing of the Environment* — 2020
17. *Journal of Arid Environments* — 2020
18. *Springer Nature Applied Sciences* — 2020
19. *GeoHealth, American Geophysical Union* — 2021
20. *African Journal of Wildlife Research* — 2021
21. *South African Geographical Journal* — 2021
22. *Global Environmental Change* — 2021
23. *African Journal of Range & Forage Sciences* — 2022
24. *Environmental Earth Sciences* — 2022
25. *PLOS ONE* — 2022
26. *Ecosphere* — 2023

REFERENCES

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