

Center for  
**Geospatial** Analytics

**Awards Ceremony**



Thursday, March 31, 2022

North Carolina State University  
Raleigh, North Carolina

# Welcome to the third awards ceremony for the Center for Geospatial Analytics!

Today, we honor the achievements by the exceptional students,  
faculty and staff at our Center in 2021.

Thank you and congratulations for all that you do as  
a member of our community!

## Our Community

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## **Geospatial Analytics Ph.D. Students**

Jenna Abrahamson\*

Luke Allen

Randi Butler\*

Elyssa Collins

Raja Das

Christopher Dunstan\*

Mollie Gaines

Xiaojie Gao

Louis Goodall\*

Nick Grokhowsky

Caitlin Haedrich

Izzi Hinks

Byron Ifediora

Katherine Jones

Kimia Karimi

Nicholas Kruskamp

Brit Laginhas

Margaret Lawrimore\*

Martine Mathieu

Rohith Matli

Shannon McAvoy\*

Ian McGregor

Katie McQuillan

Uchenna Osia

Annie Paulukonis\*

Vinicius Perin

Deja Perkins\*

John Polo

Stacie Reckling\*

Shannon Ricci

Ariel Saffer

Felipe Sanchez\*

Andrew Shannon\*

Owen Smith\*

Varun Tiwari\*

Laura Tomkins

Vishnu Vivek Nanda

Corey White

Thom Worm

Alexander Yoshizumi

\* 1st year student

## **CGA-Affiliated Students**

Elizabeth Beyer

Drew Bresingham

Jae In Oh

Elly Gay

Paul Schrum

Katie Simi

Laura Wendelberger

Asher Zhang

Biological Engineering; Spanish

Environmental Technology & Mngt

Parks, Rec, & Tourism Mngt (PhD)

Forestry (PhD)

Forestry (PhD)

Physics; Marine Science

Statistics (PhD)

Sociology

# Master of Geospatial Information Science & Technology (MGIST) Students

Eric Adams  
Deirdre An  
Jon Beauchaine  
Daniel Behnke  
Ashley Belwolff  
Bernadette Burton  
Justin Cain  
Blayne Compton  
Chandler Cowell  
Claire Daniels  
Jeremy Davis  
Purdeep Dhanoa  
Mike Doyle  
Scott Ellis  
Justin Erlick  
Summer Faircloth  
Roderick Flannery  
Andrew Freeland  
Cody Garcia  
Kim Garrett  
Amy Gelletich  
Jessica Hackman  
Ryan Held  
Bill Herzig  
Russell Hill  
Scott Hill  
Trey Hinton  
Anneliese Hitcho  
Lavery Hoard  
Dallas Hoffman  
Grayson Hughes

Sabrina Inthisarath  
Katie Ivins  
Randy Johnson Jr  
Aaron Jones  
Kat Kelly  
Joseph Kepler  
Yale  
Kodwo-Nyameazea  
Katie Kolcusky  
Hannah Kyung  
Scott Lawson  
Chad Leftwich  
Yajie Liu  
Natalie Luftman  
Jacob Makens  
Alex Mann  
Mark Massing  
Benjamin Masters  
Cameron McAllister  
Michael Mirolli  
Tara Mitchell  
Andrew Morrison  
Kyle Noel  
Rick O'Hara  
Michael O'Neill  
Jonathan Owens  
Joe Phillippe  
Rachel Porter  
Cameron Renfro  
Brandy Rivers  
Jill Robson

Elizabeth Rutkowski  
Andrea Sato  
Macy Sawtelle  
Katie Scheip  
Carolina Schnell  
Ryan Shaffer  
Mike Shaw  
Tyler Shepherd  
Brendan Simms  
Blake Smith  
Greyson Smith  
Derek Stanley  
Mike Strunin  
Hannah Swartz  
Lexi Thomas  
Colby Traynor  
Anya Tucker  
Zach Tunstall  
William Turner  
Hailey Tuttle  
Ben Van Wagener  
Brian Van Wyk  
Chrysanthi Violaris  
James Webber  
Devin Whitney  
Patrick Williams  
Reid Wilson  
Carolina Wood  
Paige Yelen

# Graduate Certificate in GIS Students

Adrian Al-Khalidi	Witt Graham	John McNulty	Sofie Schmidt
Julia Babuin	Molly Harrison	Sam McRee	Chris Schultz
Karen Biggert	Hallie Hartley	Steven Miller	Marietta Shattelroe
Rick Blinson	Jeff Harvey	Stephanie Moffitt	Aidan Smith
David Bolick	Shannon Henriquez	Brandon Morrissey	Jonathan Smith
Alex Bone	Inoa	Myleigh Neill	Julee Snyder
Micaela Bozic	Ben Herman	Alex Nemeth	Kyla Spain
Clayton Burleson	Reagan Hinton	Cassie Newman	Ashley Stone
Jessi Campbell	Emma Hirschy	John Nicholson	Peter Streilein
Isaac Carbajal	Jennifer Honeycutt	Chris Norcross	Chelly Sundermeyer
Olivia Caretti	Maddie Hook	Parks Nunnally	Jillian Tate
Elisa Carroll	Nancy Ingabire	Daniel Ostrowski	Nicole Taylor
Natalie Chazal	Abayo	Katerina Pascht	Amber Tripodi
Jim Chilton	Jon Ising	Aidan Paul	Anna Weigel
Swarna Chowdhury	Michael Johnson	Michelle	Joshua Wescott
Kristin Conner	Grant Jones	Pendergrass	Jennifer Wigger
Britt Davis	Melanie Kahn	Nick Perry	Rachel Williams
Mark Davis	John Kamanga	Julia Petit	Lisa Withers
Dominic Dixon	Angie Kealey	Rachel Porter	Annie Wong
Dylan Dodson	Nick Lefevre	Caci Powell	Amelia Woodall
Chris Draewell	John Lewis	Alyssa	Lisa Wrede
Austin Dunlow	Bobby Lloyd	Quackenbush	
Henry Edmisten	Cristina	Nick Rebman	
Jason Fennell	Lorenzo-Velazquez	Nick Reenan	
Hannah Ferguson	Ashley Lynn	Trever Reeves	
Johns	Liam Maher	Elissa Rennie	
Jackie Fisher	Jacob Makens	Rebekah Rhodes	
Christian Fleming	Ben Makhoul	Logan Richardson	
Allyson Freeman	Alex Martin	Taylor Richardson	
Cassie Gann	Cassidy Mason	Mikayla Roth	
Cody Garcia	Mark Massing	Steely Russell	
Aaron Goldstein	Shannon McGovern	Grayson Sanner	
Dallas Goodnight	Joseph McIver II	McKinley	
Katherine Gottsegen	Melissa McKay	Saunders	

# Center for Geospatial Analytics

## Faculty Fellows

Sankar Arumugam <sup>a</sup>

Jason Baker <sup>f</sup>

Perver Baran <sup>b,\*</sup>

Emily Berglund <sup>a</sup>

DelWayne Bohnenstiehl <sup>c,\*</sup>

Caren Cooper <sup>f</sup>

Bethany Cutts <sup>d,\*</sup>

Eric Edwards <sup>e</sup>

Ryan Emanuel <sup>f</sup>

Joshua Gray <sup>f,\*</sup>

David Hill <sup>g</sup>

Aaron Hipp <sup>d,\*</sup>

Anders Huseth <sup>c</sup>

Daniela Jones <sup>h</sup>

Yu-Fai Leung <sup>d</sup>

Gustavo Machado <sup>i,\*</sup>

Katherine Martin <sup>f,\*</sup>

Helena Mitasova <sup>c,\*</sup>

Natalie Nelson <sup>h,\*</sup>

Stacy Nelson <sup>f</sup>

Daniel Obenour <sup>a,\*</sup>

Peter Ojiambo <sup>n</sup>

Chris Osburn <sup>c</sup>

Krishna Pacifici <sup>f</sup>

Bill Rand <sup>j</sup>

Brian Reich <sup>k</sup>

Jennifer Richmond-Bryant <sup>f,\*</sup>

Robert Scheller <sup>f</sup>

Laura Tateosian <sup>b,\*</sup>

Adam Terando <sup>l,\*</sup>

Mirela Tulbure <sup>f,\*</sup>

Raju Vatsavai <sup>m,\*</sup>

Jelena Vukomanovic <sup>d,\*</sup>

Ben Watson <sup>m</sup>

Karl Wegmann <sup>c,\*</sup>

Sandra Yuter <sup>c,\*</sup>

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<sup>a</sup> Civil, Construction & Environmental Engineering

<sup>b</sup> Center for Geospatial Analytics

<sup>c</sup> Marine, Earth & Atmospheric Sciences

<sup>d</sup> Parks, Recreation & Tourism Management

<sup>e</sup> Agriculture & Resource Economics

<sup>f</sup> Forestry and Environmental Resources

<sup>g</sup> Landscape Architecture

<sup>h</sup> Biological & Agricultural Engineering

<sup>i</sup> Population Health & Pathobiology

<sup>j</sup> Business Management

<sup>k</sup> Statistics

<sup>l</sup> Applied Ecology

<sup>m</sup> Computer Science

<sup>n</sup> Entomology and Pathology

\* Currently advising a Geospatial Analytics Ph.D. student

# Center for Geospatial Analytics Personnel

Zachary Arcaro	Assistant Director of Operations
Aaron Hipp	Associate Director of Social & Behavioral Science Applications
Jing-Huei Huang	Postdoctoral Scholar
Justyna (Inia) Jeziorska	Research Associate
Chris Jones	Research Scholar
Shannon Jones	Research Associate
Rachel Kasten	Graduate Services Coordinator
Ross Meentemeyer	Center Director & Director of Graduate Programs (Ph.D.)
Helena Mitasova	Associate Director of Geovisualization
Eric Money	Associate Director of Professional Education & Director of Graduate Programs (MGIST)
Scott Ogletree	Postdoctoral Scholar
Okan Pala	Research Associate
Vaclav (Vashek) Petras	Research Software Engineer
Anna Petrasova	Research Software Engineer
Ryan Reddick	Business Services Coordinator
Georgina Sanchez	Research Associate
Benjamin Seliger	Postdoctoral Scholar
Makiko Shukunobe	Research Technologist
Kunwar (Krishna) Singh	Postdoctoral Scholar

*Continued on p.8*

## **Center for Geospatial Analytics Personnel (cont.)**

Megan Skrip

Bill Slocumb

Lindsey Smart

Stacy Supak

Laura Tateosian

Vaishnavi Thakar

Lois Utt

Raju Vatsavai

John Vogler

Chelsey Walden-Schreiner

Science Communicator

Research Associate

Research Associate

Associate Teaching Professor

Associate Teaching Professor

Assistant Teaching Professor

Administrative Assistant

Associate Director of Computing &  
Technology

Research Scholar

Research Scholar



# Student Honors

## Fellowships

### **National Science Foundation Graduate Research Fellowship**

Uchenna Osia

### **NASA FINESST**

Xiaojie Gao

Vinicus Perin

### **Joint Fire Science Program Graduate Research Innovation Grant**

Kate Jones

### **Nature Conservancy NatureNet Fellowship**

Katie McQuillan

### **Global Change Fellowship**

Andrew Shannon

### **Diversity Enhancement Fellowship**

Randi Butler

Felipe Sanchez

### **University Graduate Fellowship**

Christopher Dunstan

Margaret Lawrimore

### **Ward Fellowship**

Christopher Dunstan

## Travel Awards & Grants

### **CGA Travel Award**

Spring 2021

Raja Das

Izzi Hinks

Kate Jones

### **Conference Travel Awards & Scholarships**

Summer Institute in Statistics and Modeling in Infectious Diseases at  
Washington State University, June 2021

Felipe Sanchez

NC State College of Veterinary Medicine Travel Award

Felipe Sanchez

## Awards & Honors

### **NC State 2021 Esri Development Center Student of the Year**

Alex Reinwald

### **MGIST Capstone Project People's Choice Award**

Spring 2021

Justin Oakley

Fall 2021

Aidan Thurling

### **PackPics Infographic Contest**

Best Content

Nick Grokhowsky, 2nd place

Caitlin Haedrich, 3rd place

Best Impact

Nikki Inglis, 1st place

John Polo, 3rd place

Best Design

Ariel Saffer, 3rd place

Honorable Mention

Raja Das

Izzi Hinks

Best Outreach

Muyiwa Adeyeye, 1st place

Zach Tunstall, 2nd place

Martine Mathieu, 3rd place

# Student Leadership & Service

## Geospatial Graduate Student Organization

	2020-2021	2021-2022
<i>President</i>	Mollie Gaines Alexander Yoshizumi	Mollie Gaines Alexander Yoshizumi
<i>Secretary</i>	Ian McGregor	Ian McGregor
<i>Treasurer</i>	Kate Jones	Kate Jones
<i>Distance Education Rep.</i>	Peter Erlenbach	Zach Tunstall
<i>Social Chair</i>	Elyssa Collins	Caitlin Haedrich
<i>Forum Chair</i>	Katie McQuillan	Katie McQuillan
<i>Development Chair</i>	Zach Tunstall	Zach Tunstall
<i>First Year Representatives</i>		Natalie Chazal Roderick Flannery Christian Fleming Alex Mann

## CGA Development Committee

Izzi Hinks  
Alex Yoshizumi

## CGA Diversity Committee

Mollie Gaines  
Kate Jones  
Martine Mathieu  
Ian McGregor

## CGA Education Committee

Kate Jones  
Nick Kruskamp

## CGA TA Assignments

### Spring 2021

Sahand Azarby - *GIS 510*  
Austin Conklin - *GIS 515/660*  
Mike Donlon - *GIS 280*  
Christopher Franz - *GIS 510*  
Kim Garrett - *GIS 510*  
Katie Kolcuský - *GIS 510*  
Ben Maxson - *GIS 520*  
Heather Paxson - *GIS 532*  
Gardner Pierson - *GIS 520, GIS 540*  
William Reckling - *GIS 582*  
Michael Spear - *GIS 530*  
Aidan Thurling - *GIS 280*  
Brian Van Wyck - *GIS 540, GIS 550*  
Patrick Williams - *GIS 280*

### Fall 2021

Sahand Azarby - *GIS 510*  
Ashley Belwolff - *GIS 512*  
Bernadette Burton - *GIS 280*  
Michael Caslin - *GIS 280*  
Summer Faircloth - *GIS 520*  
Christian Fleming - *GIS 280*  
Christopher Franz - *GIS 510*  
Kim Garrett - *GIS 510*  
Katie Kolcuský - *GIS 510*  
Caitlin Haedrich - *GIS 710*  
William Meyers - *GIS 590*  
Rachel Porter - *GIS 512*  
Caroline Schnell - *GIS 540*  
Hannah Swartz - *GIS 515/660*  
Lexi Thomas - *GIS 530*  
Aidan Thurling - *GIS 280*  
Brian Van Wyck - *GIS 540*  
Coty Welch - *GIS 550*  
Brittany Yoder - *GIS 535*

# **Geospatial Analytics Degree Milestones**

## **Preliminary Exams Completed, Reached Candidacy**

Elyssa Collins - *April 2021*

Mollie Gaines - *December 2021*

Xiaojie Gao - *August 2021*

Kimia Karimi - *May 2021*

Ian McGregor - *August 2021*

Katie McQuillan - *June 2021*

Thom Worm - *October 2021*

Alexander Yoshizumi - *September 2021*

## **Dissertation Successfully Defended**

Megan Coffey - *March 2021*

Nikki Inglis - *August 2021*

Nicholas Kruskamp - *December 2021*

Kellyn Montgomery - *August 2021*

# Student Presentations

## Conference Presentations

American Meteorological Society (AMS) Annual Meeting | Virtual  
January 2021

Xia, Y., Wei, H., Meng, J., Gayno, G., Lei, H., Yang, R., Wu, Y., Yang, F., Barlage, M., Klesit, D.T., Tallapragada, V.S., **Gaines, M.D.** Preliminary comparison and evaluation of soil moisture simulated in GFSv15 and GFSv16

National Council for Science & the Environment (NCSE) Drawdown Conference | Virtual  
January 2021

**Collins, E.**, Sanchez, G.M., Meentemeyer, R.K. Urban areas at great risk from flood damage

International Society of Tropical Foresters Annual Conference | Virtual  
February 2021

**McGregor, I.R.** Addressing deforestation in Myanmar by improving near real-time satellite monitoring

North Carolina GIS Conference | Virtual  
February 2021

**Mathieu, M.** Exposure to diesel particulate matter and COVID-19 mortality in the continental United States

**Vivek Nanda, V.M.** Modeling trees with deep learning using aerial LiDAR and photos

North Carolina Space Grant Symposium | Virtual  
April 2021

**McGregor, I.R.** & Gray, J. Leveraging multi-source data to improve near real-time disturbance monitoring

**Ricci, S.W.**, Bohnenstiehl, D.R. Assessment of visitation trends at North Carolina artificial reefs using high-resolution satellite imagery

University Consortium for Geographic Information Science (UCGIS)  
Symposium | Virtual  
June 2021

**Ricci, S.W.**, Bohnenstiehl, D.R. Assessment of visitation trends at North Carolina artificial reefs using high-resolution satellite imagery **2nd place, UCGIS Student Lightning Talk Award**

American Ornithological Society | Virtual  
August 2021

**Perkins, D.J.**, Cooper, C.B., Katti, M. Bias in birdwatchers: Does neighborhood incomes affect estimates of bird richness?

Coastal & Estuarine Research Federation Biennial Conference |  
Virtual  
November 2021

**Ricci, S.W.**, Bohnenstiehl, D.R. Assessment of visitation trends at North Carolina artificial reefs using high-resolution satellite imagery

American Geophysical Union (AGU) Annual Meeting | New Orleans,  
LA  
December 2021

**Allen, L.**, Miller, M.A., Yuter, S.E., **Tomkins, L.** Analysis of 1 Hz, high precision pressure sensor data to identify gravity waves

**Das, R.**, Wegmann, K.W. Machine learning-based landslide detection using different satellite sensors: A case study in Chimanimani District, Zimbabwe

**Gao, X., McGregor, I.**, Gray J. Satellite observations underestimate the effect of growing season length on global vegetation productivity

**Gaines, M.**, Tulbure, M.G., **Perin, V.** Projecting surface water in the Southeastern U.S. under three climate and development scenarios

Gray, J., **Gao, X.** Observing long-term annual land surface phenology at medium spatial resolution

**Hinks, I.**, Gray, J. Monitoring crop development in smallholder farms using remotely sensed time series data augmentation

**McGregor, I.**, Gray, J. We can't have it both ways: Accepting the trade-off of detection time and accuracy in multi-source, near real-time deforestation monitoring

**Perin, V.**, Tulbure, M.G., **Gaines, M.**, Reba, M.K., Yaeger, M.A. A multi-sensory satellite imagery approach to monitor on-farm reservoirs

Terando, A.J., Sanchez, G., Petrasova, A., **Collins, E.**, Vogler, J., Vukomanovic, J., Mitasova, H., Meentemeyer, R.K. Forecasting land change in response to sea-level rise and frequent flooding

**Tomkins, L.**, Yuter, S.E., Miller, M.A., Peters, M., **Allen, L.**, Aponte-Torres, A. Image muting of mixed precipitation to improve identification of regions of heavy snow from radar data

Tulbure, M.G., Brioch, M., **Gaines, M.**, Stehman, S.V., Pavelsky, T., **Perin, V.** Towards global flood mapping with machine learning based on the harmonized Landsat-Sentinel 2 data

Vinod, N., Slot, M., **McGregor, I.**, et al. Thermal sensitivity across forest vertical profiles: Patterns, mechanisms, and ecological implications.



## NC State Symposia

### College of Natural Resources Graduate Research Symposium April 2021

Coffer, M. Eyes in the sky support seagrass mapping in coastal environments. **1st place, Land, Wildlife, Water and Forest Management System Management**

Mathieu, M. Exposure to diesel particulate matter and COVID-19 mortality in the Continental United States

Perin, V. A multi-sensor satellite imagery approach to monitor on-farm reservoirs. **1st place, Human Dimensions and Community Health**

### MEAS-FER-CGA Research Symposium September 2021

Allen, L. Contextualizing observations of snowstorms using aircraft-mounted radar

Dunstan, C. Spatiotemporal models of the evolution of dance trends

Saffer, A., Tateosian, L.G., Walden-Schreiner, C. Pest tracking with GDELT, Google News, and Twitter

Vlvek Nanda, V.M. Realistic modeling of trees using aerial LiDAR and deep learning

## Faculty & Staff Awards

Eric Money and the MGIST program received the [Excellence in Assessment Award](#).

Natalie Nelson was named a [University Faculty Scholar](#).

John Vogler won 3rd Place in the [NC GIS Conference poster competition](#).

Justyna Jeziorska was a finalist in the Education category of the [Women to Watch in UAS Global Awards](#) through Women and Drones.

Megan Skrip won 2nd place in the Institution division of the [SCONC Science Communication Contest](#) through the Science Communicators of North Carolina.

Jennifer Richmond-Bryant was appointed to the [World Health Organization's Global Air Pollution & Health Technical Advisory Group](#).

Adam Terando was named Federal Coordinating Lead of the [Earth System Processes Chapter of the Fifth National Climate Assessment](#).

Vaishnavi Thakar received a [DELTA Course Design Grant](#).

Anders Huseth and Natalie Nelson were selected as [Goodnight Early Career Innovators](#).

## Center-Affiliated Grants Started 2021

**Robert Scheller** — Spatial Patterning & Carbon Vulnerability: Does the Spatial Arrangement of Forest Management Increase Susceptability to Climate Change & Ecosystem Disturbances?

Sponsor: University of Colorado Denver - National Science Foundation (NSF)

Award Amount (Period): \$32,376 (1-1-2021 to 6-30-2024)

**Ross Meentemeyer, Christopher Jones, Yu Takeuchi** — A tangible landscape framework to support spotted laternfly program

Sponsor: US Dept. of Agriculture - Animal and Plant Health Inspection Services (USDA APHIS)

Award Amount (Period): \$80,000 (4-1-2021 to 3-31-2022)

**Jelena Vukomanovic** — Communicating Prescribed Fire Management through Virtual Public Engagement Strategies Post-COVID  
Sponsor: US National Park Service  
Award Amount (Period): \$80,000 (4-1-2021 to 3-31-2022)

**Jelena Vukomanovic, Bethany Cutts** — Interdisciplinary Energy Data Analytics Ph.D. Fellows Program Phase II: Training the Next Generation of Energy Data Scholars  
Sponsor: Duke University - Alfred P. Sloan Foundation  
Award Amount (Period): \$112, 212 (5-1-2021 to 8-31-2022)

**Rada Chrikova** — IARPA Space-Based Machine Automated Recognition Technique (SMART)  
Sponsor: Applied Research Associates, Inc. (ARA) - Intelligence Advanced Research Projects Activity (IARPA)  
Award Amount (Period): \$229, 912 (5-10-2021 to 6-21-2022)

**Chelsey Walden-Schreiner** — Environmental Outcomes by AmeriCorps Members: PLSC Evaluation Plan 2021-2024  
Sponsor: Western Kentucky University - Corporation for National and Community Service  
Award Amount (Period): \$64,447 (6-1-2021 to 3-16-2022)

**Erin Seekamp, William Slocumb** — Supporting the Development of an Archeology Climate Adaptation Prioritization Framework  
Sponsor: US National Park Service - US Department of Interior (DOI)  
Award Amount (Period): \$89,585 (6-1-2021 to 9-30-2024)

**Christopher Jones, Ross Meentemeyer** — Develop Algorithms for Determining Optimal Pest Management Solutions  
Sponsor: US Dept. of Agriculture - Animal and Plant Health Inspection Services (USDA APHIS)  
Award Amount (Period): \$131,989 (8-1-2021 to 7-31-2022)

**Natalie Nelson** — SECOORA-Integrated Decision Support and Management Tools for Adaptive Public Health Practices: An Early Advisement & Reporting System for Recreational & Shellfish Harvesting Waters of the Southeast  
Sponsor: University of South Carolina - Southeast Coastal Ocean Observing Regional Association (SECOORA)  
Award Amount (Period): \$44,875 (7-1-2021 to 6-30-2022)

**Jean Ristiano, Qingshan Wei, Christopher Jones** — 3.0823.01 - Sensor Integrated Platform for Monitoring Phytophthora Diseases

Sponsor: US Dept. of Agriculture - Animal and Plant Health Inspection Services (USDA APHIS)

Award Amount (Period): \$44,875 (7-1-2021 to 6-30-2022)

**Aaron Hipp, Kyle Bunds** — KABOOM!

Sponsor: The Colorado Health Foundation

Award Amount (Period): \$70,050 (7-1-2021 to 12-31-2022)

**Christopher Jones, Ross Meentemeyer, Yu Takeuchi** — Eradication Analysis & Decision Support (eRADS)

Sponsor: Animal and Plant Health Inspection Services (USDA APHIS)

Award Amount (Period): \$109,025 (8-1-2021 to 7-31-2022)

**Christopher Jones, Ross Meentemeyer** — Developing Integrated Geospatial Architectures to Support Enterprise Deployment of Geographic Information Systems Products at USDA

Sponsor: US Dept. of Agriculture - Agricultural Research Service (USDA ARS)

Award Amount (Period): \$200,000 (8-1-2021 to 7-31-2022)

**Natalie Nelson** — CAREER: Characterizing the Unseen Water Quality Consequences of Sunny-Day Floods in Nearshore Waters

Sponsor: National Science Foundation (NSF)

Award Amount (Period): \$429,240 (8-1-2021 to 7-31-2026)

**Robert Scheller** — Forecasting Prescribed Fire Smoke within Vulnerable Communities in Southern Appalachia

Sponsor: Bureau of Land Management - US Department of Interior (DOI)

Award Amount (Period): \$25,000 (8-3-2021 to 6-30-2023)

**Mirela Tulbure** — Towards Global Flooding Dynamics in Near Real-time: A Multi-

sensor Fusion Approach Based on Public Domain Time-series of Optical and Radar Data

Sponsor: National Aeronautics & Space Administration (NASA)

Award Amount (Period): \$230,180 (8-15-2021 to 8-14-2024)

**Katherine Martin** — Investigating Whether Forest Management Can Improve Water Supply Resilience to Drought and Ensure Adequate Baseflow for Aquatic Species in the Southern Blue Ridge

Sponsor: The Nature Conservancy

Award Amount (Period): \$72,494 (8-16-2021 to 8-15-2023)

**Joshua Gray** — Long-Term Changes and Variability in Global Ecosystem Phenology from MODIS

Sponsor: Boston University - National Aeronautics & Space Administration (NASA)

Award Amount (Period): \$42,385 (9-1-2021 to 8-31-2024)

**Christopher Jones, Ross Meentemeyer, Yu Takeuchi** — Testing Inspection Strategies for the Cut Flower Release Program using PoPS Border Simulation

Sponsor: US Dept. of Agriculture - Animal and Plant Health Inspection Services (USDA APHIS)

Award Amount (Period): \$41,000 (9-1-2021 to 8-31-2022)

**Joshua Gray** — Does chilling explain the divergent response of spring phenology to urban heat islands? (Student: Xiaojie Gao)

Sponsor: National Aeronautics & Space Administration (NASA)

Award Amount (Period): \$45,000 (9-1-2021 to 8-31-2024)

**Mirela Tulbure** — Quantifying On-Farm Reservoirs Impacts on Surface Hydrology Using a Multi-Sensor Approach (Student: Vinicius Perin)

Sponsor: National Aeronautics & Space Administration (NASA)

Award Amount (Period): \$45,000 (9-1-2021 to 8-31-2024)

**Natalie Nelson** — Coupling Lake, Watershed, & Estuarine Models to Better Understand the Role of Engineered Freshwater Discharges in Driving the Severity, Location, and Timing of Harmful Algal Blooms

Sponsor: University of Florida - Engineer Research and Development Center (ERDC)

Award Amount (Period): \$234,609 (9-29-2021 to 9-28-2023)

## Center-Affiliated Publications (2021)

Agostini Ferrante, D., **Vukomanovic, J.**, & **Smart, L.S.** (2021). Uncovering trends and spatial biases of research in a U.S. National Park. *Sustainability*, 13, 11961

Alonso, A., **Nelson, N.**, et al. (2021). Estimating the influence of oyster reef chains on freshwater detention at the estuary scale using Landsat-8 imagery. *Estuaries and Coasts*, 45, 1-6.

Barnhart, T.B., **Vukomanovic, J.**, et al. (2021). Future land cover and climate may drive decreases in snow wind-scour and transpiration, increasing streamflow at a Colorado, USA headwater catchment. *Hydrological Processes*, 35(11), e14416.

Bruni, E.T., Ott, R.F., Picotti, V., Haghypour, N., **Wegmann, K.W.**, Gallen, S.F. (2021). Stochastic alluvial fan and terrace formation triggered by a high-magnitude Holocene landslide in the Klado Gorge, Crete. *Earth Surface Dynamics Discussions*

Cajjiao, D., Benayas, J., Tejedo, P., **Leung, Y.** (2021). Adaptive management of sustainable tourism in Antarctica: A rhetoric or working progress? *Sustainability*, 13(14): 7649.

**Coffer, M.M.**, et al. (2021). Assessing cyanobacterial frequency and abundance at surface waters near drinking water intakes across the United States. *Water Research*, 201, 117377.

**Coffer, M.**, et al. (2021). Satellite remote sensing to assess cyanobacterial bloom frequency across the United States at multiple spatial scales. *Ecological Indicators*, 128: 107822.

Del Giudice, D., Fang, S., Scavia, D., Davis, T.W., Evans, M.A., **Obenour, D.R.** (2021). Elucidating controls on cyanobacteria bloom timing and intensity via Bayesian mechanistic modeling. *Science of the Total Environment*, 755(1): 142487.

**Emanuel, R.E.**, et al. (2021). Natural gas gathering and transmission pipelines and social vulnerability in the United States. *GeoHealth*, e2021GH000442.

Galvis, J.A., Jones, C.M., Prada, J.M., Corzo, C.A., **Machado, G.** (2021). The between-farm transmission dynamics of porcine epidemic diarrhoea virus: A short-term forecast modelling comparison and the effectiveness of control strategies. *Transboundary and Emerging Diseases*.

**Gao, X., Gray, J.**, et al. (2021). Longer greenup periods associated with greater wood volume growth in managed pine stands. *Agricultural and Forest Meteorology*, 297, 108237.

---

Center-affiliated student; Center-affiliated faculty or researcher

**Gao, X., Gray, J.M., Reich, B.J.** (2021). Long-term, medium spatial resolution annual land surface phenology with a Bayesian hierarchical model. *Remote Sensing of Environment*, 261, 112484.

Gaydos, D.A., **Jones, C.M., Jones, S.K., Millar, G.C., Petras, V., Petrasova, A., Mitasova, H., & Meentemeyer, R.K.** (2021). Evaluating online and tangible interfaces for engaging stakeholders in forecasting and control of biological invasions. *Ecological Applications*, e02446.

He, Y., Chen, G., Cobb, R.C., Zhao, K., **Meentemeyer, R.K.** (2021). Forest landscape patterns shaped by interactions between wildfire and sudden oak death disease. *Forest Ecology and Management*, 486, 118987.

Holland, I., DeVille, N. V., Browning, M. H. E. M., Buehler, R. M., Hart, J. E., **Hipp, J. A.**, et al. (2021). Measuring Nature Contact: A Narrative Review. *International Journal of Environmental Research and Public Health*, 18(8), 4092.

Hughey, S.M., Wende, M.E., Stowe, E.W., Kaczynski, A.T., Schipperijn, J., **Hipp, J.A.** (2021). Frequency of neighborhood park use associated with physical activity among adults in four US cities. *Journal of Physical Activity and Health*, 18(5): 603-609.

Johnson, M.C., **Reich, B.J., Gray, J.M.** (2021). Multisensor fusion of remotely sensed vegetation indices using space-time dynamic linear models. *Journal of the Royal Statistical Society Series C*, 70, 793-812.

Matallana-Ramirez, L.P., Whetten, R.W., **Sanchez, G.M.**, Payn K.G. (2021). Breeding for Climate Change Resilience: A Case Study of Loblolly Pine (*Pinus taeda* L.) in North America. *Frontiers in Plant Science*, 12, 606908.

McWilliams, S., Carter, W., Cooper-Mullin, C., DeMoranville, K., Frawley, A., Pierce, B., & **Skrip, M.** (2021). How birds during migration maintain (oxidative) balance. *Frontiers in Ecology and Evolution*, 9, 742642.

**Meentemeyer, R.K., Walden-Schreiner, C., Saffer, A., & Jones, C.** (2021). Invasive species. In D. Richardson, N. Castree, M.F. Goodchild, A. Kobayashi, W. Liu, & R.A. Marston (Eds.), *The International Encyclopedia of Geography*. John Wiley & Sons, Ltd.

**Millar, G.C., Mitas, O., Boode, W., Hoeke, L., de Kruijff, J., Petrasova, A., Mitasova, H.** (2021). Space-time analytics of human physiology for urban planning. *Computers, Environment and Urban Systems*, 85, 101554.

---

**Center-affiliated student; Center-affiliated faculty or researcher**

Miller, J.W., **Karimi, K.**, **Sankarasubramanian, A.**, **Obenour, D.R.** (2021). Assessing inter-annual variability in nitrogen sourcing and retention through hybrid Bayesian watershed modeling. *Hydrology and Earth System Sciences*, 25(5), 2789-2804.

**Petras, V.**, **Mitasova, H.**, and **Petrasova, A.** (2021). Open Source Software Development. *The Geographic Information Science & Technology Body of Knowledge* (2nd Quarter 2021 Edition), John P. Wilson (ed.).

Ott, R.F., **Wegmann, K.W.**, et al. (2021). Reassessing Eastern Mediterranean tectonics and earthquake hazard from the 365 CE earthquake. *AGU Advances*, 2(2), e2020AV000315.

**Perin, V.**, Roy, S., Kington, J., Harris, T., **Tulbure, M.G.**, et al. (2021). Monitoring small water bodies using high spatial and temporal resolution analysis ready datasets. *Remote Sensing*, 12(24), 5176.

**Reckling, W.**, **Mitasova, H.**, **Wegmann, K.**, et al. (2021). Efficient drone-based rare plant monitoring using a species distribution model and AI-based object detection. *Drones*, 5(4), 110.

Ristaino, J.B., Anderson, P.K., Bebbler, D.P., Brauman, K.A., Cunniffe, N.J., Fedoroff, N.V., Finegold, C., Garrett, K.A., Gilligan, C.A., Jones, C.M., Martin, M.D., MacDonald, G.K., Neenan, P., Records, A., Schmale, D.G., **Tateosian, L.**, & Wei, Q. (2021). The persistent threat of emerging plant disease pandemics to global food security. *PNAS*, 118(23), e2022239118.

Rogers, A.G., **Leung, Y.** (2021). "More Helpful than Hurtful"? Information, Technology, and Uncertainty in Outdoor Recreation. *Leisure Sciences*.

Rucker, C.A., Tull, N., Dietrich, J.C., Langan, T.E., **Mitasova, H.** (2021). Downscaling of real-time coastal flooding predictions for decision support. *Natural Hazards*. 107, 1341-1369.

Scheip, C.M., **Wegmann, K.W.** (2021). HazMapper: A global open-source natural hazard mapping application in Google Earth Engine. *Natural Hazards and Earth System Sciences*, 21: 1495-1511.

Simmons, K.R., Eggleston, D.B., **Bohnenstiehl, D.R.** (2021). Hurricane impacts on a coral reef soundscape. *PLoS ONE*, 16(2): e0244599.

**Smart, L.S.**, **Vukomanovic, J.**, Sills, E.O., **Sanchez, G.** (2021). Cultural ecosystem services caught in a 'coastal squeeze' between sea level rise and urban expansion. *Global Environmental Change*, 66, Article 102209.

---

**Center-affiliated student; Center-affiliated faculty or researcher**



**Smart, L.S., Vukomanovic, J.**, et al. (2021). Quantifying drivers of coastal forest carbon decline highlights opportunities for targeted human interventions. *Land*, 10(7), 752.

Smith, C.T., **Leung, Y.**, Seekamp, E.L. (2021). Assessing geospatial technology implementation capacity for natural resource management networks: A proposed framework. *The Journal of Park and Recreation Administration*, 39(2), 24-42.

Van Hoeck, R.V., Paxton, A.B., **Bohnenstiehl, D.R.**, et al. (2021). Passive acoustic monitoring complements traditional methods for assessing marine habitat enhancement outcomes. *Ecosphere*, 12(11), e03840.

**Vukomanovic, J., Randall, J.** (2021). Research trends in U.S. national parks, the world's "living laboratories." *Conservation Science and Practice*, e414.

**White, C.T., Mitasova, H.**, BenDor, T.K., Foy, K., **Pala, O., Vukomanovic, J., & Meentemeyer, R.K.** (2021). Spatially explicit fuzzy cognitive mapping for participatory modeling of stormwater management. *Land*, 10(11), 1114.

Wu, J., Hilborn, E.D., Schaeffer, B.A., Urquhart, E., **Coffer, M.M.**, et al. (2021). Acute health effects associated with satellite-determined cyanobacterial blooms in a drinking water source in Massachusetts. *Environmental Health*, 20, 83

**Vogler, J., Vukomanovic, J.** (2021). Trends in United States human footprint revealed by new spatial metrics of urbanization and per capita land change. *Sustainability*, 13(22), 12852.

Zhang, Z., **Martin, K.L.**, et al. (2021). Equally green? Understanding the distribution of urban green infrastructure across student demographics in four public school districts in North Carolina, USA. *Urban Forestry & Urban Greening*, 67, 127434.

Zhenzhen, Z., Stevenson, K.T., & **Martin, K.L.** (2021). Exploring geographical, curricular, and demographic factors of nature use by children in urban schoolyards in Raleigh, NC, USA. *Urban Forestry & Urban Greening*, 65, 127323.

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## Center Service

**Thank you to the following faculty and staff who served on Center committees in 2021:**

Zac Arcaro <sup>c\* d\* h</sup>

Perver Baran <sup>e</sup>

Laura Belica <sup>c</sup>

Caren Cooper <sup>e</sup>

Bethany Cutts <sup>h</sup>

Josh Gray <sup>a g</sup>

Stacy Supak <sup>a\* f</sup>

Daniela Jones <sup>e</sup>

Rachel Kasten <sup>a\* e\* f g h</sup>

Mirela Tulbure <sup>c g h</sup>

Helena Mitasova <sup>f g h</sup>

Eric Money <sup>b d f\* h</sup>

Natalie Nelson <sup>g</sup>

Chris Osburn <sup>g</sup>

Jennifer Richmond-Bryant <sup>e</sup>

Georgina Sanchez <sup>a h</sup>

Megan Skrip <sup>b\* d h</sup>

Bill Slocumb <sup>c</sup>

Aaron Hipp <sup>a h</sup>

Laura Tateosian <sup>g</sup>

Vaishanvi Thakar <sup>e f</sup>

Ross Meentemeyer <sup>g\* h\*</sup>

Raju Vatsavai <sup>c g h</sup>

John Vogler <sup>b</sup>

Chelsey Walden-Schreiner <sup>d\*</sup>

<sup>a</sup> Awards Committee

<sup>b</sup> Communications Committee

<sup>c</sup> Computing & Technology Committee

<sup>d</sup> Development Committee

\* Chair/Co-Chair

<sup>e</sup> Diversity Committee

<sup>f</sup> Education Committee

<sup>g</sup> PhD Admissions Committee

<sup>h</sup> Steering Committee

## **CGA Awards**

The CGA Awards were created to honor members of the Center for Geospatial Analytics community whose efforts exemplify center ideals of collaboration, inclusion, and excellence in research, teaching, and service.

### **Advocate Award**

Given to one student and one employee who demonstrates a commitment to equity and inclusion within CGA, on the NC State campus, and/or in the community.

### **Beacon Award**

Given to one student, one employee, and one alumnus who shines a light on CGA in the wider scientific community through their research, partnerships, and/or involvement in professional organizations.

### **Collaboration & Innovation Award**

Given to a research team who collaborates across disciplinary boundaries to address environmental and societal challenges.

### **Creativity in Teaching Award**

Given to one student and one faculty/staff member who creates an innovative learning environment (online and/or in a classroom) that engages a diverse learners in the study of geospatial data science.

### **Gladys West Award**

Given to a “hidden figure,” one student and one faculty/staff member who consistently serves as a role model, helps others, and exceeds expectations and who does not often receive recognition and/or does not hold a leadership position at the Center for Geospatial Analytics.

### **Interdisciplinary Advancement Award**

Given to one student not enrolled in a CGA degree program who applies principles of geospatial analysis to address grand challenges requiring an interdisciplinary approach.

## 2021 CGA Award Winners

Award	Student	Employee
Advocate	Josh Randall	Bethany Cutts
Beacon	Ian McGregor	Chris Jones
	<b>Alum:</b> Christen McNamara Watts	
Creativity in Teaching	Gardner Pierson	Laura Tateosian
Gladys West	Byron Ifediora	Megan Skrip
Interdisciplinary Advancement	Melinda Martinez	

### Collaboration & Innovation

GAPS (Geospatial Applications for Problem Solving)  
for High Tech Teens team:

Eric Money	Helena Mitsova
Perver Baran	Kellyn Montgomery
Kyle Bunds	Jaimie Nevins
Jamie Cajka	Soonyhe Park
Jack Cummings	Vashek Petras
Nikki Inglis	Anna Petrasova
Justyna Jeziorska	Matt Reynolds
Chad Kibbe	Justin Shedd
Laurel Krynock	Payam Tabrizian
Betsey McFarland	Laura Tateosian
Garrett Millar	Summer Thompson

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