Amanda M. Markert

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Education

M.S. Earth System Science May 2017
Thesis, *A Spatial Pattern Analysis of Land Surface Heterogeneity and Its Relationship to Tornadogenesis*.
Advisor, Dr. Robert E. Griffin.
University of Alabama in Huntsville, Huntsville, AL, Cumulative GPA 3.71

B.S. Meteorology, Geospatial and Environmental Analysis, Minor Geoscience May 2013
Virginia Polytechnic Institute and State University, Blacksburg, VA, Magna Cum Laude

Experience

Research Scientist I, ESSC, University of Alabama in Huntsville, Huntsville, AL 2018-Present
NASA SERVIR Regional Science Coordination Lead and Weather and Climate Scientist. Manages NASA-related activities at the SERVIR Southeast Asia hub and provides expertise in data science informatics, weather, climate, and disasters to aid in service development and capacity building efforts.

Lecturer, Affiliate Member Graduate Faculty, University of Alabama in Huntsville, Huntsville, AL 2017-2022
Lecturer for the Atmospheric and Earth Science Department: AES 402/502 Scientific and Societal Aspects of Natural Disasters course.

Research Associate I, ITSC, University of Alabama in Huntsville, Huntsville, AL 2016-2018
Project lead for the NASA/MSFC IMPACT Data Curation for Discovery project supporting NASA's role in Obama's Climate Action Plan. Lead coordinator for the NASA GHRC DAAC Outreach and User Services team developing data resources and tools, web content, and outreach materials.

Graduate Research Assistant, University of Alabama in Huntsville, Huntsville, AL Fall 2015
Designed knowledge graphs linking key instruments, parameters, publications, and algorithms to improve the search and discovery of resources using NASA Earth Science data.

Student Specialist IV, ITSC, University of Alabama in Huntsville, Huntsville, AL Summer 2015
Collaborated with the USGCRP Global Change Information System team developing data models and a faceted classification scheme for the Climate Data Initiative Human Health theme.

Graduate Research Assistant/ Data Services Intern, Baron Inc., Huntsville, AL 2014-2015
Developed and validated an automated near real-time GIS storm surge product for the Gulf of Mexico. Product required extensive Python geo-programming and data management.

Team Lead, NASA DEVELOP National Program, MSFC, Huntsville, AL 2013-2014
Lead and completed applied science projects partnered with government organizations. Projects: Andes Mountain Disasters I, Cumberland Plateau Ecological Forecasting I, II.

Research Intern, University of Alabama in Huntsville, Huntsville, AL 2013-2014
Analyzed hurricane risk for ancient Maya archaeological sites on the Yucatán Peninsula through applying novel GIS hurricane hazard mapping methods to under-modeled areas.

Student Intern/ Undergraduate Research, National Weather Service, Blacksburg, VA 2011-2012
Rotational training program with NWS forecasters centered on forecasting and issuing weather notifications. Analyzed the high wind climatology of the Blacksburg Weather Forecasting Area.

Publications

Bhandari, B., Markert, K., Mishra, V., **Markert, A.**, & Griffin, R. (2023). Investigation of Data-Driven Rating Curve (DDRC) Approach. *Water*, 15(3), 604. https://doi.org/10.3390/w15030604

Gupta, P., Zhan, S., Mishra, V., Aekakkararungroj, A., **Markert, A.,** Paibong, Sarawut, P., Chishtie, F. (2021). Machine Learning Algorithm for Estimating Surface PM2.5 in Thailand. *Aerosol and Air Quality Research*. https://doi.org/10.4209/aaqr.210105

Mayer, T., Poortinga, A., Bhandari, B., Nicolau, A., Markert, K., Soe Thwal, N., **Markert, A.**, Haag, A., Kilbride, J., Chishhie, F., Wadhwa, A., Clinton, N., Saah, D. (2021). Surface Water Mapping using Deep Learning approach with Sentinel-1 leveraging Google Earth Engine. *ISPRS Open Journal of Photogrammetry and Remote Sensing*. *https://doi.org/10.1016/j.ophoto.2021.100005*

Phanikumar, M., Abhishek, A., Das, N., Ines, A., Andreadis, K., Jayasinghe, S., Granger, S., Ellenburg, W., Dutta, R., Quyen, N., **Markert, A**., Mishra, V. (2021). Evaluating the Impacts of Drought on Rice Productivity over Cambodia in the Lower Mekong Basin. *Journal of Hydrology.* https://doi.org/10.1016/j.jhydrol.2021.126291

Nauman, C., Anderson, A., Coughlan de Perez, E., Kruczkiewicz, A, McClain, S., **Markert, A.**, Griffin, R., Suarez, P. (2021). Perspectives on flood forecast-based early action and opportunities for Earth observations. *Journal of Appl. Remote Sensing.* https://doi.org/10.1117/1.JRS.15.032002

Laverde-Barajas, M., Corzo, G.A., Poortinga, A., Chishtie, F., Meechaiya, C., Jayasinghe, S., Towashiraporn, P., **Markert, A.**, Saah, D., Son, L.H., Khem, S., Boonya-Aroonnet, S., Chaowiwat, W., Uijlenhoet, R., Solomatine, D.P. (2020). ST-CORAbico: A Spatiotemporal Object-Based Bias Correction Method for Storm Prediction Detected by Satellite. *Remote Sens.*, 12, 3538. https://doi.org/10.3390/rs12213538

Markert, K. N., **Markert, A.**, Mayer, T., Nauman, C., Haag, A., Poortinga, A., ... & Kwant, M. (2020). Comparing Sentinel-1 Surface Water Mapping Algorithms and Radiometric Terrain Correction Processing in Southeast Asia Utilizing Google Earth Engine. *Remote Sensing*, 12(15), 2469. https://doi.org/10.3390/rs12152469

Phongsapan, K., Chishtie, F., Poortinga, A., Bhandari, B., Meechaiya, C., Kunlamai, T., Khun San Aung, Saah, A., Anderson, E., Markert, K., **Markert, A.**, Towashiraporn, P. (2019). Operational flood risk index mapping for disaster risk reduction using Earth Observations and cloud computing technologies: a case study on Myanmar. *Frontiers.* https://doi.org/10.3389/fenvs.2019.00191

David Saah, Tenneson, K., Matin, M., Uddin, K., Cutter, P., Poortinga, A., Nguyen, Q., Patterson, M., Johnson, G., Markert, K., Flores, A., Anderson, E., **Weigel, A.**, Ellenberg, W., Bhargava, R., Aekakkararungroj, A., Khanal, N., Bhandari, B., Housman, I., Potapov, P., Tyukavina, A., Ganz, D., Maus, P., Clinton, N. (2019). Land cover mapping in the 21st century: challenges and opportunities. *Frontiers.* https://doi.org/10.3389/fenvs.2019.00150

McDonald, S., Mohammed, I., Bolten, J., Pulla, S., Meechaiya, C., **Markert, A.**, Nelson, J., Lakshmi, V., Srinivasan, R. (2019). SWAT online - A web-based decision support system for the Soil and Water Assessment Tool for Environmental Modelling and Software. *Environmental Modelling and Software*. https://doi.org/10.1016/j.envsoft.2019.104499

Markert, A., Griffin, R., Molthan, A., Knupp, K., & Coleman, T. (2019). A Spatial Pattern Analysis of Land Surface Roughness Heterogeneity and its Relationship to the Initiation of Weak Tornadoes. *Earth Interactions*. https://doi.org/10.1175/EI-D-18-0010.1

Markert, K., Pulla, S., Lee, H., **Markert, A.**, Anderson, E., Okeowo, M., Limaye, A. (2019). AltEx: An open source web application for accessing and exploring altimetry datasets. *Environmental Modelling and Software.* https://doi.org/10.1016/j.envsoft.2019.03.021

Zhang, J., Pourreza, M., Ramachandran, R., Lee, T., Gatlin, P., Maskey, M., & **Weigel, A.** (2018). Facilitating Data-Centric Recommendation in Knowledge Graph. In 2018 IEEE 4th International Conference on Collaboration and Internet Computing (CIC) (pp. 207-216). *IEEE*. https://doi.org/10.1109/CIC.2018.00037

Maskey,. M., Ramachandran, R., Li, X., **Weigel, A**., Bugbee, K., Gatlin, P., & Miller, J.J. (2017). A Relevancy Algorithm for Curating Earth Science Data around Phenomenon. *Computers & Geosciences*. https://doi.org/10.1016/j.cageo.2017.06.007

Weigel, A., & Griffin, R. (2015) 14B. 3 Yucatán Hurricane Hazard Assessment: A GIS Methodology for Modeling Hurricane Hazards. *American Meteorological Society Annual Meeting.* https://ams.confex.com/ams/95Annual/webprogram/Paper264619.html

Book Chapters

Uddin, K., Matin, M. A., Khanal, N., Maharjan, S., Bajracharya, B., Tenneson, K., ... & **Markert, A.** (2021). Regional land cover monitoring system for Hindu Kush Himalaya. In Earth observation science and applications for risk reduction and enhanced resilience in Hindu Kush Himalaya region (pp. 103-125). Springer, Cham. https://doi.org/10.1007/978-3-030-73569-2_6

Cherrington, E. et al., (2019). Chapter 8, The SAR Handbook: Comprehensive Methodologies for Forest Monitoring and Biomass Estimation, SERVIR Science Coordination Office, https://doi.org/10.25966/nr2c-s697

Awards and Honors

SAR Handbook Group Award, SERVIR Annual Global Exchange, Siem Reap, Cambodia	2020
NASA Group Achievement Award to MSFC Hurricane Harvey Disaster Response Team, NASA	2018
2016 Raskin Scholar, Earth Science Information Partners Federation	2016
Graduate Student Researcher Award, Department of Atmospheric Science, Univ. of Alabama-Huntsville	2016
American Meteorological Society Travel Scholarship, University of Alabama-Huntsville	2014, 2016
Student Travel Grant Award, Societal Impacts and Policy Sciences Focus Group, AGU	2015

Industry/University Cooperative Graduate Research Program, University of Alabama-Huntsville	2014
Master Competitive Internship Program, University of Alabama-Huntsville	2013
Xi Sigma Pi Honor Society, College of Natural Resources and the Environment, Virginia Tech	2011
James F. Powell Scholarship, Virginia Tech	2009

Select Professional Presentations

*Panelist, Climate Talks	Equal Space: addressing gender gaps with GIS, Asian Disaster Preparedness Center*	*2022*
Addressing Fiery Needs: How SERVIR-Mekong Brings NASA Air Quality Data Down to Earth, AMS, Annual Meeting Online	*2022*
Panelist, Satellite Data as Decision-making Tools for Infrastructure Planning through Climate-sensitive Challenges. Side Event: Applying New Integrated Resources Planning and Data Visualization into Sustainable Power Planning, Asia Clean Energy Forum 2021	*2021*
Panelist, Learning Session: Harnessing Earth Observations for Making Programmatic Decisions and Responding to Flooding Events Around the World, InterAction Forum, Virtual	*2021*
SERVIR Service Planning Toolkit, Lunch-an Learn Webinar Series, Earth Science Division, NASA	*2020*
Automated Multi-Sensor Near-Real Time Flood Monitoring in the Lower Mekong, 22nd EGU General Assembly, Virtual	*2020*
Air Quality from Space, Smog-a-thon Thailand 2020, Chiang Mai, Thailand	*2020*
Raining Data from the Cloud: Using Google Earth Engine for Flood Monitoring, Google Booth, AGU Fall Meeting, San Francisco, CA	*2019*
Raining Data from the Cloud: Leveraging Cloud-based Technology for Multi-sensor Flood Monitoring in Southeast Asia, AGU Fall Meeting, San Francisco, CA	*2019*
Water we going to do with all these data? Service development using interdisciplinary data for flood applications, AGU Fall Meeting, Washington D.C.	2018
"Risky Business": Risk Financing for Drought Resilience Applications, South and Southeast Asia Regional Drought Forum, Kathmandu, Nepal	2018
Using GIS to Investigate Land-Atmosphere Interactions Involved in Tornadogenisis, AMS Annual Meeting, Austin, TX	2018
Enabling Visualization and Geospatial Analysis of Atmospheric Science Data through Python, AMS Annual Meeting, Austin, TX	2018
Drowning in Data: Going Beyond Traditional Data Archival to Educate Data Users, AGU Fall Meeting, New Orleans, LA	2017
Developing a Knowledge Base for NASA Earth Science and Hydrologic Applications, CUAHSI Hydroinformatics Conference, Tuscaloosa, AL	2017
Visualize, Discover and Analyze: A Data Center's Innovative Services for Addressing Observing System Challenges, Poster 1037, AMS Annual Meeting, Seattle, WA	2017
Stimulating Remote Sensing Education through Knowledge Augmentation Services, Poster 191, AMS Annual Meeting, Seattle, WA	2017
A New Way to Explore Field Campaign Data, NASA Booth Flash Talk, AGU Fall Meeting, San Francisco, CA	2016
Earth Science Data Education through Cooking-up Recipes, AGU Fall Meeting, San Francisco, CA	2016
Field Campaign Explorer: Simultaneous Data Exploration, Discovery and Visualization, Paper IN53E, AGU Fall Meeting, San Francisco CA	2016
Plenary Speaker, *2016 Raskin Scholar Presentation,* ESIP Federation Summer Meeting, Durham, N.C.	2016
Providing Application-Driven GIS Education for Earth System Science, AMS Annual Meeting, New Orleans, LA	2016
Using GIS for Automated Near Real-time Storm Surge Inundation Mapping and Visualization for the Gulf of Mexico, AMS, Annual Meeting, New Orleans, LA	2016
Providing Geospatial Education and Real World Applications of Data across the Climate Data Initiative Themes, Paper PA13B-08, AGU Fall Meeting, San Francisco, CA	2016
Capturing Data Connections within the Climate Data Initiative to Support Resiliency, AGU Fall Meeting, San Francisco, CA	2016
Automated Flood Hazard Mapping Methods for Near Real-time Storm Surge Inundation and Vulnerability Assessment, AGU Fall Meeting, San Francisco, CA	2015
Yucatán Hurricane Hazard Assessment: A GIS Methodology for Modeling Hurricane Hazards, Paper 14B.3, AMS Annual Meeting, Phoenix, AZ	2015
Enhancing Disaster Planning Techniques and Assessing Potential Loss through an Automated GIS-based Storm Surge Product, Geo-Energy Summit, Geo-Huntsville, Huntsville, AL	2015

Enhancing Hurricane Hazard Methods Using a Geographic Information System, Wernher von Braun Symposium Student Poster Competition, Huntsville, AL 2015

Utilizing NASA Earth Observations to Model Volcanic Hazard Risk Levels in Areas Surrounding the Copahue Volcano in the Andes Mountains, NASA Applied Science Showcase, Global Earth Observing System of Systems Meeting, NASA Headquarters, Washington D.C. 2014

Support Awarded

Title: Evaluation of ICEYE SAR products for flood extent mapping in the Lower Mekong region
Supporting Organization: ESA Third Party Missions scheme
Awarded: Access to ESA 8 ICEYE / SAR (X-band) Stripmap products, 4 ICEYE / SAR (X-band) Spotlight products
PI: Arjen Haag
Role: Co-Investigator

Title: Robert Raskin Scholarship
Supporting Organization: Earth Science Information Partners Federation
Period: July 2016 – July 2017
Awarded Budget: $3,000 and Travel support to the 2016 ESIP Summer Meeting
PI: Amanda Weigel
Role: Principal Investigator

Title: Societal Impacts and Policy Sciences Focus Group Student Travel Grant
Supporting Organization: American Geophysical Union Student Programs Department
Period: December 5-18, 2016
Awarded Budget: $500
PI: Amanda Weigel
Role: Principal Investigator

Title: University Cooperative Graduate Student Research Program
Supporting Organization: University of Alabama in Huntsville, Office of Vice President for Research 2014
Period: August 21, 2014 - December 21, 2014
Awarded Budget: $13,036
PI: Robert Griffin
Role: Co-Investigator, Graduate Research Assistant

Teaching and Mentorship

Instructor, AES 402/502 Scientific and Societal Impacts of Natural Disasters, Dept. of Atmospheric and Earth Science, Univ. of Alabama-Huntsville Fall 2017-2022

Masters Committee, Biplov Bhandari: NASA SERVIR-Mekong GRA, Dept. of Atmospheric and Earth Science, Univ. of Alabama-Huntsville 2020-2022

Masters Committee, Claire Nauman: NASA SERVIR-Mekong GRA, Dept. of Atmospheric and Earth Science, Univ. of Alabama-Huntsville 2018-2020

Adviser, Nicole Dougherty: Earth System Science Undergraduate Research Capstone, Dept. of Atmospheric Science, Univ. of Alabama-Huntsville Spring 2019

Intern, Helen Eifert: Improving Landslide Inventories with a focus on Myanmar, NASA Internship Program, MSFC Summer 2018

Intern, Katharine Egan: Mapping Rain-induced Landslide Susceptibility in Myanmar, NASA Internship Program, MSFC Summer 2018

Instructor, Introduction to Earth Data Science, NASA SERVIR Science Friday September 2018

Instructor, Big Data and Hydrology Workshop, University of Alabama April 2018

Speaker, Atmospheric Event-based Research Using NASA GHRC Tools and Services, NASA Earthdata Webinar 2017

Guest Lecturer, Introduction to ArcGIS Model Builder, Python for Interdisciplinary Earth System Science Applications, Dept. of Atmospheric Science, University of Alabama-Huntsville 2017

Instructor, NASA Global Hydrology Resource Center DAAC GIS Workshop 2015

Student Instructor, Virginia Tech Storm Chase, Virginia Tech 2011, 2012

Relevant Professional Service

Convener, Climate and Natural Disaster Risk Management for Human-Natural Systems, AGU Fall Meeting, Chicago, IL   2022
Session Chair, Climate Risk Management for Human-Natural Systems, AGU Fall Meeting, New Orleans, LA   2021
Convener, Implementing Earth Observations in South and Southeast Asia To Address Environmental Challenges, Global Environmental Change, AGU Fall Meeting, New Orleans, LA   2021
Member, NASA TROPICS Mission Applications Working Group, NASA   2017-Present
Reviewer, ISPRS International Journal of Geo-Information   2021
Convener, Implementing Earth Observations in South and Southeast Asia To Address Environmental Challenges, Global Environmental Change, AGU Fall Meeting, Virtual   2020
Convener, User Interface/User eXperiences (UI/UX) opportunities, SERVIR Annual Global Exchange, Siem Reap, Cambodia   2020
Convener, Numerical Weather Prediction in applications across themes, SERVIR Annual Global Exchange, Siem Reap, Cambodia   2020
Convener, Deeping Impact Across the Network: Weather and Climate, SERVIR Annual Global Exchange, Siem Reap, Cambodia   2020
Moderator, Session 6: Social components of EWSs, communicating risks, and community-based forecasting, Regional Knowledge Forum on Early Warning for Flood and High Impact Weather Events, Kathmandu, Nepal   2019
Convener, Free and Open-Source Technologies for Advancing Earth and Space Sciences, Earth and Space Science Informatics, AGU Fall Meeting, Washington, D.C.   2018
Convener, Weather and Climate Service Sustainability, SERVIR Annual Global Exchange, Lisbon, Portugal   2018
Convener, Numerical Weather Modeling, Technical Mini-Exchange, SERVIR Annual Global Exchange Lisbon, Portugal   2018
Convener, Disaster Strategy, Technical Mini-Exchange, SERVIR Annual Global Exchange, Lisbon, Portugal   2018
Convener, Drought Impacts and Climate Risk Financing, South and Southeast Asia Regional Drought Forum, Kathmandu, Nepal   2018
Session Chair, Analysis in Remote Sensing, Novel Data Streams, and Social Media for Natural Hazard Monitoring, Research, and Preparedness, Natural Hazards, AGU Fall Meeting, New Orleans, LA   2018
Convener, Developing Innovative Tools and Services to Enable Data Use Across Broad User Communities, Earth and Space Science Informatics, AGU Fall Meeting, New Orleans, LA   2017
Reviewer, Journal of Disaster Risk Reduction. Elsevier.   2017
Session Chair, Innovative Tools and Services to Enable Data Use across Broad User Communities, Earth and Space Science Informatics, AGU Fall Meeting, San Francisco, CA   2016
Member, Earth Science Data Systems Data Recipes Working Group, NASA   2016
President, American Meteorological Society (Blue Ridge Chapter), Blacksburg, VA   2012-2013

Technical Expertise

Agile Planning Software: Smartsheets, JIRA, TRELLO
Information Modeling Software: CMap, Neo4J
Programming Languages: R, Python, IDL (Processing and analysis of ground, airborne and satellite remote sensing data)
Geospatial & Remote Sensing Software: ArcGIS/ArcPro 9-10x (Spatial Analyst, 3D Analyst, Geostatistical Analyst, Network Analyst, ArcPy. ArcServer), ENVI Classic, 4-5x (Fx, Feature Extraction Module), ERDAS Imagine, QGIS, Google Earth Engine
Meteorological Software: Campbell Scientific Mesonet, Gibson Ridge (Level 3, Level 2 Analyst), RadarScope
Amateur Radio Operator: License KK4RDG

Web Resources and Articles Developed

Micro Articles
2019: Atmospheric Rivers, Micro Article, Global Hydrology Resource Center DAAC, NASA, https://ghrc.nsstc.nasa.gov/home/micro-articles/atmospheric-rivers
2018: Assessing Wind and Rain in Hurricane Ingrid during Hurricane and Severe Storm Sentinel (HS3) Field Campaign, Micro Article, Global Hydrology Resource Center DAAC, NASA, https://ghrc.nsstc.nasa.gov/home/micro-articles/assessing-wind-and-rain-hurricane-ingrid-during-hurricane-and-severe-storm-sentinel
2018: Earth Observations: Optical Transient Detector (OTD), Micro Article, Global Hydrology Resource Center DAAC, NASA, https://ghrc.nsstc.nasa.gov/home/micro-articles/earth-observations-optical-transient-detector-otd

2018: Instrument: 2DVD Disdrometer, Micro Article, Global Hydrology Resource Center DAAC, NASA, https://ghrc.nsstc.nasa.gov/home/micro-articles/instrument-2dvd-disdrometer

2018: Lightning, Micro Article, Global Hydrology Resource Center DAAC, NASA https://ghrc.nsstc.nasa.gov/home/micro-articles/lightning

2018: Lake Effect Snow, Micro Article, Global Hydrology Resource Center DAAC, NASA https://ghrc.nsstc.nasa.gov/home/micro-articles/lake-effect-snow

2018: Hurricane, Micro Article, Global Hydrology Resource Center DAAC, NASA https://ghrc.nsstc.nasa.gov/home/micro-articles/hurricane

Data Recipes and Code

2020: OTD Lightning Flash Location Quickview using Python 3.0 and GIS, Data Recipe, Global Hydrology Resource Center DAAC, NASA, https://ghrc.nsstc.nasa.gov/home/data-recipes/otd-lightning-flash-location-quickview-using-python-30-and-gis

2019: HS3 CPL Attenuated Total Backscatter Quickview, Data Recipe, Global Hydrology Resource Center DAAC, NASA, https://ghrc.nsstc.nasa.gov/home/data-recipes/hs3-cpl-attenuated-total-backscatter-quickview

2019: ISS LIS Lightning Flash Location Quickview using Python 2.7 and GIS, Data Recipe, Global Hydrology Resource Center DAAC, NASA, https://ghrc.nsstc.nasa.gov/home/data-recipes/iss-lis-lightning-flash-location-quickview-using-python-27-and-gis

2019: HS3 HIWRAP Radar Reflectivity Profile Quick View, Data Recipe, Global Hydrology Resource Center DAAC, NASA, https://ghrc.nsstc.nasa.gov/home/data-recipes/hs3-hiwrap-radar-reflectivity-profile-quick-view

2018: HS3 HAMSR Radar Reflectivity Profile Data Subset Quick View, Data Recipe, Global Hydrology Resource Center DAAC, NASA, https://ghrc.nsstc.nasa.gov/home/data-recipes/hs3-hamsr-radar-reflectivity-profile-data-subset-quick-view

2018: RSS DMSP SSM/I and SSMIS Gridded Ocean Product Quickview, Data Recipe, Global Hydrology Resource Center DAAC, NASA, https://ghrc.nsstc.nasa.gov/home/data-recipes/rss-dmsp-ssmi-and-ssmis-gridded-ocean-product-quickview