

Christine Evans

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Education

Master of Science in Earth System Science, 2021

University of Alabama Huntsville, Huntsville, Alabama (UAH)

Concentration: GIS and Remote Sensing

GPA: 3.7

Bachelor of Science in Earth System Science, 2019

University of Alabama Huntsville, Huntsville, Alabama (UAH)

Concentration: Atmospheric Science; Minor: Mathematics

GPA: 3.8

Associate of Science in General Studies, 2017

Calhoun Community College, Decatur Alabama

Concentration: Pre-Engineering

GPA: 3.9

Research Experience

NASA SERVIR,

University of Alabama in Huntsville, Huntsville, Alabama

SERVIR Research Associate IV, S2 (July 2023 - present)

SERVIR Carbon Pilot (S-CAP) (June 2021 - July 2023)

- Serve as the project scientist for SERVIR's carbon accounting effort
- Assist with documenting existing national and regional datasets related to biomass, data generated from remotely sensed and field data collection
- Assist SERVIR's Geospatial Information Technology (GIT) team with developing technical specifications and beta testing the platform that will be developed under this effort
- Support estimation of carbon budgets and carbon emission estimates for eleven pilot countries using methods consistent with guidance from the Intergovernmental Panel on Climate Change (IPCC)
- Lead technical workshops across 5 SERVIR hub regions (Amazonia, Central America (upcoming), West Africa, Southeast Asia, Hindu Kush Himalaya) with topics around change-detection algorithms and resulting carbon emissions.

Global Change Detection Inter-comparison Project (June 2021 - Present)

- Test multiple time series algorithms to map deforestation & degradation in tropical regions
- Understand trade-offs between given change detection algorithm to map deforestation and forest degradation
- Generate practical material on how to calibrate and run different algorithms in various ecosystem

Monitoring and Evaluation of Mangroves in Guyana SERVIR Service (July 2022 - Present)

- Create a Google Earth Engine user application to display project results for selected regions in Guyana
- Development of publication for the project (in progress)

NASA Space Archaeology (June 2021 - September 2021)

- Mentor undergraduate students and assist with technical approaches to examine the long term landscape and ecological effects of rapid urbanization and population growth as well as agricultural intensification in the Maya lowlands
- Utilize Norway's International Climate and Forest Initiative (NICFI) Planet Basemap and Sentinel-2 to determine appropriate data sources for seeing vegetation changes in the region

University of Alabama in Huntsville, Huntsville, Alabama

Graduate Research Thesis (January 2020 - May 2021)

- Evaluated effects of land use and climate change on water quality in Belize utilizing the Nonpoint Source Pollution and Erosion Comparison Tool (N-SPECT)
- Quantified historic runoff volume spatial patterns and change over time across major Belizean watersheds
- Projected future impacts of LULC and climate change on runoff volume based on different climate projections, LULC projections, as well as coupled effects of both of these changes through 2090

ORISE Higher Education Research Experience

Oak Ridge National Laboratory, Oak Ridge, Tennessee

Student Research Intern (June 2019 - August 2019)

- Worked to better understand atmospheric compensation processes such as MODTRAN, LibRadtran, and QUick Atmospheric Correction (QUAC)

NASA DEVELOP National Program, Huntsville, Alabama

Alaska Disasters Project (January 2019 - May 2019)

Assistant Center Lead

- Developed project ideas and proposals including: *Evaluating the Atmosphere-Land Exchange Inverse Evaporative Stress Index for the Alaska Environment*, *Utilizing ECOSTRESS to Assess Drought Induced Stress Across Iowa and Evaluate the Impact on Crop Production*, and *Utilizing Landsat to Assess Coastline Replenishment Initiatives and Shoreline Risk along Delaware's Coasts*
- Supported communication between team members, node leadership, and project partners, including NASA Short-term Prediction Research and Transition Center, Alaska Interagency Coordination Center, and Alaska Fire Science Consortium
- Utilized Aqua and Terra MODIS, Suomi NPP VIIRS, and JPSS-1/NOAA 20 VIIRS to evaluate and calibrate the Atmosphere-Land Exchange Inverse (ALEXI) Evaporative Stress Index (ESI) model
- Edited various DEVELOP deliverables, including technical reports and project videos
- Created project deliverables: summaries, technical reports, posters, presentations, videos and technical tutorials
- Promoted DEVELOP as a member of the Ambassador Corps

Ohio River Valley Transportation and Infrastructure Project (September-December 2019)

Assistant Center Lead

- Supported communication between team members and node leadership and project partners, including NOAA National Weather Service Ohio River Forecasting Center, and Federal Emergency Management Agency
- Utilized Landsat 8 OLI, Shuttle Radar Topography Mission (SRTM), Global Precipitation Measurement Mission, and ESA's Sentinel-1 C-Band SAR to analyze flood extents in the Ohio River Valley to assist emergency management

- Produced optimal road maps to assist emergency management with flood disaster response, using ArcMap's Network Analyst Tool

Hindu-Kush Himalayan Disasters Project (June - August 2018)

Project Lead

- Facilitated communication between team members and partners, including NASA SERVIR, NASA Global Hydrology Resource Center, Bangladesh Meteorological Department, International Center for Integrated Mountain Development, and Department of Hydrology and Meteorology in Nepal
- Utilized Tropical Rainfall Measuring Mission (TRMM) Lightning Imaging Sensor (LIS), TRMM Microwave Imager, International Space Station LIS and SRTM to identify lightning strikes, heavy precipitation, and elevation
- Produced risk analysis maps based on environmental threats and social vulnerability, using Fuzzy Logic
- Created lightning density maps to locate areas of increased lightning activity, using Kernel Density

Puget Sound Water Resources Project (January - March 2018)

Project Team Member

- Partnered with the Pacific States Marine Fisheries Commission Habitat Program
- Analyzed Landsat 8 OLI and Aqua MODIS imagery to identify different factors of eutrophication in Puget Sound, WA, using ArcGIS 10.4

Work Experience

NASA SERVIR Science Coordination Office

University of Alabama in Huntsville, Huntsville, Alabama

SEVIR Research Associate (June 2021 - Present)

- Serve as the project scientist for SERVIR's carbon accounting effort, in support of the project's Principal Investigator
- Maintain cognizance of carbon accounting work occurring across the SERVIR network, including related land cover monitoring activities
- Support estimation of carbon budgets and carbon emission estimates for eleven pilot countries using methods consistent with guidance from the Intergovernmental Panel on Climate Change (IPCC)
- Maintain knowledge of, engagement with, and leverage NASA's interactions with the Committee on Earth Observing Satellites (CEOS), the Group on Earth Observations (GEO), the Global Forest Observation Initiative (GFOI), SilvaCarbon, and related initiatives on forest carbon monitoring
- Assist with reporting back to NASA Earth Science Division Applied Sciences and Research and Analysis Programs on the status of the carbon accounting work
- Prepare materials and lead technical workshops across 5 SERVIR hub regions (Amazonia, Central America (upcoming), West Africa, Southeast Asia, Hindu Kush Himalaya) with topics around change-detection algorithms and resulting carbon emissions.
- Backstopping of the project PI with coordination support, where necessary

University of Alabama in Huntsville, Huntsville, AL

Sally Ride EarthKAM Graduate Research Assistant

Mission Lead (December 2019 - May 2021)

- Supported the Sally Ride EarthKAM program during mission weeks in which the team managed a payload on the International Space Station to promote STEM research in K-12 students

- Coordinated with NASA MSFC Payload Developers for camera mission setups, lens swaps, and takedowns on the International Space Station
- Propagated ISS orbits using STK and submit requests for images along those orbits
- Uploaded, generated properties for, and organize EarthKAM images
- Supervised and aided undergraduate students in maintaining the EarthKAM website and the creation of teaching materials for teachers around the globe
- Managed the Sally Ride EarthKAM website by accepting applications, managing school contacts, and collecting statistics
- Requested images during mission weeks to add to photo gallery
- Created Annotated Images and Investigating Images: teaching materials used by instructors around the globe to teach K-12 children about topics such as geography, climate & weather, mathematics, and physics using Sally Ride EarthKAM imagery.
- Utilized customer service skills by communicating with program participants about their questions through the help desk email

University of Alabama in Huntsville, Huntsville, AL

Sally Ride EarthKAM

Undergraduate Student Specialist (September 2019 – December 2019)

- Requested images during Sally Ride EarthKAM mission weeks to add to photo gallery
- Created Annotated Images and Investigating Images: teaching materials used by instructors around the globe to teach K-12 children about topics such as geography, climate & weather, mathematics, and physics using Sally Ride EarthKAM imagery.
- Utilized customer service skills by communicating with program participants about their questions through the help desk email

Oak Ridge National Laboratory, Oak Ridge, Tennessee

ORISE Higher Education Research Experience Internship (June 2019 – August 2019)

- Summer Research Project: Understanding Atmospheric Compensation Processes and the Difference Between Them
- Worked to better understand atmospheric compensation processes such as MODTRAN, LibRadtran, and QUick Atmospheric Correction (QUAC)
- Conducted 3 different case studies, utilizing Worldview 2 imagery, and compared spectral profile outputs from LibRadtran and QUAC to USGS ground-truth measurements

NASA DEVELOP National Program, Huntsville, Alabama

Research Consultant (January 2018 – May 2019)

Research Consultant / Assistant Center Lead / Project Lead

- Addressed environmental and public policy issues through interdisciplinary research projects that apply the lens of NASA Earth observations to community concerns around the globe
- Developed project ideas and produce project proposals including: Evaluating the Atmosphere-Land Exchange Inverse Evaporative Stress Index for the Alaska Environment and Employing NASA Earth Observations to Map Coastal Inundation in Guatemala and El Salvador
- Supported communication between team members, node leadership, and project partners
- Utilized NASA Earth observations, including Aqua and Terra MODIS, Suomi NPP VIIRS, and JPSS-1/NOAA 20 VIIRS, Landsat 8 OLI, ESA's Sentinel-1 C-Band SAR, Tropical Rainfall Measuring Mission (TRMM) Lightning Imaging Sensor (LIS), TRMM Microwave Imager, International Space Station LIS and SRTM
- Delegated tasks to team members

- Edited various DEVELOP deliverables, including technical reports and project videos
- Promoted DEVELOP work through the Ambassador Corps

Calhoun Community College, Decatur, Alabama

Student Enrollment Assistant (January 2016 - May 2018)

- Assisted in advising students and operated under FERPA regulations
 - Processed and secured confidential information
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Volunteer Experience

UAH, Huntsville, Alabama

UPSTORM (January 2018 - December 2019) - Secretary

- Recorded and distributed weekly meeting minutes
- Launched weather balloons in the field
- Processed iMet and Windsonde data
- Led training sessions

UAH, Huntsville, Alabama

Science Olympiad (Spring 2018/2019)

- Developed and proctored middle school and high school science tests focused on meteorology and earth science

UAH, Huntsville, Alabama

Rocket City Weather Fest (Spring 2018)

- Led experiment sessions on pressure changes with temperature

UAH, Huntsville, Alabama

Girls in Science and Engineering Day (Fall 2017/2018)

- Led multiple session experiments explaining cloud types, temperature advection and atmospheric pressure changes

Calhoun Community College, Decatur, Alabama

Warhawk Student Ambassador (August 2015 - May 2017) - Communications Officer

- Recorded and distributed weekly meeting minutes
 - Organized tasks for campus events, community events and fundraisers
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Publications

Cherrington, E., Evans C., Flores-Anderson, A. Limaye, A., (In Progress) Utilizing ensembles of forest cover and biomass datasets to determine carbon budgets of the world's forest ecosystems

Chan-Bagot, K., Herndon, K., Nicolau A., Evans C., Martin-Arias, V., Moseley, K., Narine, Z., Zutta, B., & Parache, H., (In Progress) Comparing SAR, optical and data fusion using a machine learning method for coastal mangrove monitoring in Guyana

Martín-Arias, V., Evans, C., Griffin, R., Cherrington, E. A., Lee, C. M., Mishra, D. R., ... & Rosado, S. (2022). Modeled impacts of LULC and climate change predictions on the hydrologic regime in Belize. *Frontiers in Environmental Science*, 243.

Evans, C. (Spring 2020) Statistical Comparison Between Methods and the LibRadtran Various Atmospheric Correction Package. *Perpetua: University of Alabama Undergraduate Research Journal* 4

Evans, C., Kinkle, E., and Han, Y. (Spring 2019) Puget Sound Water Resources: Evaluating Methods for Identification and Monitoring of Factors in the Puget Sound that Indicate Eutrophication and Hypoxia. *Perpetua: University of Alabama Undergraduate Research Journal* 3

Presentations

Poster

- American Geophysical Union Annual Conference - Evaluation of the Potential for Integrating Dynamic World and Other Recent Land Cover Datasets into Belize's National Forest Monitoring System **December 2023**
- University of Alabama in Huntsville: 7th Annual Research Horizons Day - Evaluating Effects of Land Use and Climate Change on Water Quality in Belize **March 2021**
- American Geophysical Union Annual Conference - Modeling Future Land Cover and Climate Changes to Analyze their Effects on Runoff and Nutrient Accumulation in Belize **January 2021**
- American Meteorological Society Student Conference - Ohio River Valley Transportation and Infrastructure **January 2020**
- A Comparison Between the MODTRAN Model, LibRadtran Package and ENVI QUick Atmospheric Correction **August 2019**
- National Conference on Undergraduate Research (NCUR) - Ohio River Valley Transportation and Infrastructure **April 2019**
- University of Alabama in Huntsville: 5th Annual Research Horizons Day - Ohio River Valley Transportation and Infrastructure **March 2019**
- American Meteorological Society Student Conference - Hindu-Kush Himalayan Disasters **January 2019**
- 11th Annual Wernher von Braun Memorial Symposium - Puget Sound Water Resources **October 2018**
- Applied Earth Science Annual Showcase - Hindu-Kush Himalayan Disasters **August 2018**

Oral

- American Geophysical Union Annual Conference - Cross-Comparison of Carbon Emission Estimates Based on Variable Land Use Land Cover Changes within SERVIR Focus Regions **December 2022**
- Pecora 22 - Cross-Comparison of Carbon Emission Estimates Based on Variable Land Use Land Cover Changes within SERVIR Focus Regions **October 2022**
- American Geophysical Union Annual Conference - Cross-Comparison of Carbon Emission Estimates Based on Variable Land Use Land Cover Changes within SERVIR Focus Regions **December 2021**
- American Geophysical Union Annual Conference - Ohio River Valley Transportation and Infrastructure **December 2019**
- Pecora 21/ISRSE 38 - Ohio River Valley Transportation and Infrastructure **October 2019**
- American Geophysical Union Annual Conference - Hindu-Kush Himalayan Disasters **December 2018**
- Applied Earth Science Annual Showcase - Hindu-Kush Himalayan Disasters **August 2018**

Technical Workshops

- SERVIR WA General Assembly and Strategy Meetings (Accra, Ghana) **November 2023**
 - **Host Institution:** International Crops Research Institute for the Semi-Arid Tropics
- Detection of Deforestation & Degradation using Earth Observation Time Series Data in Belize (Belmopan, Belize) **October 2023**
 - **Host Institution:** Belize Forest Department, Ministry of Sustainable Development, Climate Change, and Disaster Risk Management
- Regional training on Remote Sensing Based for Biomass Mapping and Estimation to **August 2023**

- Support REDD+ in Southeast Asia (Bangkok, Thailand)
 - **Host Institution:** Asian Disaster Preparedness Center
- SERVIR Amazonia GIT Colaborathon (Cali, Colombia) **March 2023**
 - **Host Institution:** The Alliance of Bioversity International and CIAT
- Detection of Deforestation & Degradation using Earth Observation Time Series Data in Guatemala (Guatemala City, Guatemala) **February 2023**
 - **Host Institution:** Guatemala's Ministry of the Environment and Natural Resources
- Climate-influenced Nutrient Flows and Threats to the Biodiversity of the Belize Barrier Reef Reserve System (Belize City, Belize) **October 2022**
 - **Host Institution:** Belize Coastal Zone Management Authority and Institute
- Launch of the Monitoring and Evaluation of Mangroves Service in Guyana and SERVIR-Amazonia User Needs Assessment Workshop (Georgetown, Guyana) **July 2022**
 - **Host Institution:** National Agricultural Research and Extension institute
- SilvaCarbon: Forest Carbon Measurement and Monitoring Research, Tools, and Methods Workshop (Oregon State University) **April 2022**
- SilvaCarbon: Forest Carbon Measurement and Monitoring Research, Tools, and Methods Workshop (University of Maryland) **February 2022**
- Sustainable Development Goals Technical Exchange Virtual Workshop in Support of the Climate-influenced Nutrient Flows and Threats to the Biodiversity of the Belize Barrier Reef Reserve System (Virtual) **April 2021**

Skills

Technical

Microsoft Suite iMet
 Banner Windsong
 Python ENVI software
 C++ Systems Tool Kit
 JAVA Script Google Earth Engine
 ArcMap 10.X ArcPro 2.X
 LaTeX

Professional

Presenting
 Cartography using ArcGIS 10.X
 Technical writing
 Lead partner meetings

Honors and Achievements

Certifications

- SAR-401: Synthetic Aperture Radar: Hazards (January 9, 2023)
- SAR-402: Synthetic Aperture Radar: Ecosystems (July 23, 2023)

Awards

- 2022 Meritorious Service Award (The University of Alabama in Huntsville Earth System Science Center)
- Second Place Graduate Poster - University of Alabama in Huntsville: 7th Annual Research Horizons Day
- Second Place Undergraduate Poster - University of Alabama in Huntsville: 5th Annual Research Horizons Day
- Summa Cum Laude (University of Alabama in Huntsville - Bachelor's Degree)
- Magna Cum Laude (Calhoun Community College)
- Top Eleven Most Outstanding Students (Calhoun Community College)
- All-USA Community College Academic Team Nominee (Calhoun Community College)
- Most Outstanding Second Year Warhawk (Calhoun Community College)

Organizations

- American Meteorological Society
- National Weather Association

- UAH Profile Sounding Team for Operational and Research Meteorology
- Phi Kappa Phi Honor Society
- American Geophysical Union
- National Society of Leadership and Success
- Phi Theta Kappa Honor Society
- Sigma Kappa Delta Honor Society

Scholarships

- Super-Scholar Transfer Scholarship (University of Alabama in Huntsville)
- Presidential Scholar (Calhoun Community College)
- Warhawk Student Ambassador Scholarship (Calhoun Community College)