Joanne V. Hall

Assistant Research Professor

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A dedicated, capable researcher with over 10 years of research and teaching experience. Excellent communication skills with the ability to explain complex information to audiences at all levels.

I am passionate about improving the methods and techniques used for satellite mapping of land cover and land use change, particularly those related to cropland active fires and burned area.

Education

- 2011 2017 Ph.D. Geographical Science, University of Maryland, U.S.A.
- 2009 2011 M.Sc. Atmospheric and Oceanic Science, University of Maryland, U.S.A.
- 2005 2009 M.Sc. Environmental Geoscience, University of Bristol, U.K.

Professional Appointments

- 2020 pres. Assistant Research Professor, Dept. of Geographical Sciences, University of Maryland.
 - Member of several highly interdisciplinary, international teams covering multiple projects across a wide range of disciplines.
 - Developed methods to support the integration and data-fusion of multi-sensor Earth Observation (EO) data streams into observational monitoring systems.
 - Responsibilities include the preparation of peer-reviewed publications and datasets, and ensuring timely completion of deliverables.
- 2019 Pres. Instructor, Office of International and Executive Program (OIEP), University of Maryland.
- 2019 2024 Special Member of Graduate Faculty, Dept. of Geographical Sciences, University of Maryland.
- 2017 2020 Post-Doctoral Research Associate, Dept. of Geographical Sciences, University of Maryland.
 - Development of a Harmonized Multi-Sensor Global Active Fire Data Set (NASA).
 - Agricultural Land Use Change in Central and Northeast Thailand: Effects on Biomass Emissions, Soil Quality, and Rural Livelihoods (NASA LCLUC).
 - Optimizing the Global Fire Emissions Dataset (NASA CMS).
 - MODIS Collection 6 Active Fire Maintenance and Validation (NASA).
 - Long-term multi-sensor record of fire disturbances in High Northern Latitudes (NASA ABoVE).
 - Understanding the role of land cover/ land use nexus in malaria transmission under changing socio-economic climate in Myanmar (NASA LCLUC).
- 2015 2017 Graduate Research Analyst, Global Agricultural Monitoring (GEOGLAM) Initiative.
 Acquisition and implementation of multiple EO datasets into an operational machine-learning algorithm for the Agricultural Market Information System (AMIS) Crop Monitor.

2014 – 2014 Research Consultant, U.S. Forest Service, International Programs.

- Consolidation of research from multiple groups (USDA Foreign Agricultural Service, USDA Agricultural Research Service, U.S. Forest Service AirFire Research Team, the Missoula Fire Science Laboratory Team, and the University of Maryland.
- Delivered a final report to the Department of State.
- This position required travel to a number of locations.

- 2012 2015 **Graduate Research Analyst**, USDA Agricultural Research Service (ARS), Hydrology and Remote Sensing Laboratory.
 - Creation of a customized MODIS-based burned area algorithm for Russian cropland based off training samples extracted from very high resolution satellite imagery.
 - Production of quarterly report updates for the Department of State.
 - Attended workshops and monthly teleconferences between the U.S. Forest Service, USDA International Program, and USDA ARS.
 - Trained and supervised several image analysts at the University of Maryland and USDA ARS.
- 2012 2012 Graduate Research Analyst, NASA Goddard Space Flight Center, Sigma Space, Biospheric Sciences Laboratory.
 - Provided remote sensing and geographic information system (GIS) support for research on dynamics of Arctic lakes.
- 2010 2011 Graduate Research Analyst, Dept. of Atmospheric and Oceanic Sciences, University of Maryland.
 - Analyzed observational and modelled climate data for use in larger detection and attribution study.

Teaching Experience

Instructor, Office of International and Executive Program (OIEP), University of Maryland.

- Spr. 2021 Academic Writing: UMD-CNU Training Workshop (100 students).
- Sum. 2019 Academic Writing: UMD-NWU Training Workshop (30 students).

Instructor, Dept. of Geographical Sciences, University of Maryland.

- Fall 2022 GEOG 201: Geography of Environmental Systems (240 students).
- Win. 2021 GEOG 306: Introduction to Quantitative Methods (20 students).
- Spr. 2019 GEOG 301: Advanced Environmental Systems (50 students).
- Sum. 2018 GEOG 306: Introduction to Quantitative Methods (20 students).
- Win. 2018 GEOG 306: Introduction to Quantitative Methods (20 students).
- Sum. 2012 GEOG 211: Geography of Environmental Systems Laboratory (15 students).

Guest Lecturer, Dept. of Geographical Sciences, University of Maryland.

- Fall 2017 GEOG 671: Remote Sensing Instruments and Observations.
- Fall 2014 GEOG 472: Remote Sensing: Digital Image Processing & Analysis.

Teaching Assistant, Dept. of Geographical Sciences, University of Maryland.

- Spr. 2015 GEOG 372: Introduction to Remote Sensing (50 students).
- Spr. 2012 GEOG 306: Introduction to Quantitative Methods (50 students.
- Fall 2011 GEOG 201/211: Geography of Environmental Systems & Laboratory (240 students).

Teaching Assistant, Dept. of Atmospheric and Oceanic Sciences, University of Maryland.

Spr. 2010 AOSC 200/201: Weather and Climate Course and Laboratory: Marquee Course in Science and & Fall 2009 Technology for Non-Science Majors (200 students).

Mentoring & Advising Experience

Internship Professor, Dept. of Geographical Sciences, University of Maryland.

- Spr. 2022 GEOG 498: Independent Learning (1 student).
- 2020 2022 GEOG 384: Internship in Geography (12 students).

2019 - Dissertation Committee Member, Dept. of Geographical Sciences, University of Maryland. present

Successful Grants

- 2021–2024 **Co-Investigator**, NASA grant Support and Maintenance of S-NPP and JPSS VIIRS Global Active Fire and Burned Area Earth System Data Records, (\$268,000).
- 2021–2024 **Co-Investigator**, NASA grant MODIS Global Active Fire and Burned Area Product Maintenance, (\$396,000).
- 2021–2024 **Co-Investigator**, NASA grant High-Impact Hot Spots of Land Cover Land Use Change: Ukraine and Neighboring Countries, (\$747,000).
- 2020–2023 **Co-Investigator**, NOAA grant Development of a Next-Generation Science-Quality Geostationary Satellite Active Fire Product, (\$673,000).
- 2018–2021 **Co-Investigator**, NASA grant Development of a harmonized multi-sensor global active fire data set, (\$585,000).
- 2017–2020 **Co-Investigator**, NASA CMS grant Optimizing the Global Fire Emissions Database for carbon monitoring, (\$969,000).

Theses & Dissertation

- Hall, J.V. Quantifying variability of black carbon transport from cropland burning in Russia to the Arctic driven by atmospheric blocking events. Ph.D. Dissertation, March 2017, Dept. of Geographical Sciences, University of Maryland. Advisor: Dr. T. Loboda.
- Hall, J.V. An Intercomparison Study between the GFDL CM2.1 20th Century Climate Simulation and the CRU TS3.0 Surface Air Temperature Observations. M.Sc. Thesis, May 2011, Dept. of Atmospheric and Oceanic Sciences, University of Maryland. Advisor: Dr. S. Nigam.
- Hall, J.V. Neotropical Amphibian Extinctions. M.Sc. Thesis, May 2009, Dept. of Earth Sciences, University of Bristol, United Kingdom. Advisor: Dr. P. Foster.

Refereed Journal Articles

- Hall, J.V., Rishmawi, K., Schroeder, W., Huang, C., Wooster, M., Schmidt C.C, & Giglio, L. (in preperation). Validation for a Prototype Harmonized Multi-Sensor Geostationary Global Active Fire Product. International Journal of Applied Earth Observation and Geoinformation.
- Nakalembe, C., Zubkova, M., Hall, J.V., Argueta, F., & Giglio, L. (in review). Land cover and Land use dynamics in relation to Fire Activity in Bidi Bidi Refugee Settlement, Uganda. Environmental Research Letters.
- Hall, J.V., Argueta, F., and Giglio, L., (2021). Validation of MCD64A1 and FireCCI51 cropland burned area mapping in Ukraine. International Journal of Applied Earth Observations and Geoinformation, 102, 102443.
- Zubkova, M., Giglio, L., Humber, M., Hall, J.V., & Ellicott, E., (2021). Conflict and Climate: Drivers of fire activity in Syria in the 21st century. Earth Interactions, 1-48.
- Hall, J.V., Zibstev, S., Giglio, L., Skakun, S., Myroniuk, V., Zhuravel, O., Goldammer, J., & Kussul, N. (2021). Environmental and Political Implications of Underestimated Cropland Burning in Ukraine. Environmental Research Letters.
- Chen, D., Fu, C., Hall, J.V., Hoy, E., & Loboda, T.V. (2021). Spatio-temporal patterns of optimal Landsat data for burn severity index calculations: Implications for high northern latitudes wildfire research. Remote Sensing of Environment, 258, 112393.
- Chen, D., Loboda, T.V., & Hall, J.V. (2020). A systematic evaluation of influence of image selection process on remote sensing-based burn severity indices in North American boreal forest and tundra ecosystems. ISPRS Journal of Photogrammetry and Remote Sensing, 159.
- Hall, J.V., Zhang, R., Schroeder, W., Huang, C., & Giglio, L. (2019). Validation of GOES-16 ABI and MSG SEVIRI Active Fire Products. International Journal of Applied Earth Observation and Geoinformation, 83, 101928.
- Hoffman-Hall, A., Loboda, T.V., Hall, J.V., Carroll, M., & Chen, D. (2019). Mapping Remote Rural Populations at 30m Spatial Resolution Using Geospatial Data-Fusion. Remote Sensing of Environment.

- Hall, J.V., & Loboda, T.V. (2018). Quantifying the variability of potential black carbon transport from cropland burning in Russia driven by atmospheric blocking events. Environmental Research Letters, 13, 5.
- Hall, J.V., & Loboda, T.V. (2017). Quantifying the potential for low-level transport of black carbon emissions from cropland burning in Russia to the snow-covered Arctic. Frontiers in Earth Science, 5, 109.
- Hall, J.V., Loboda, T.V., Giglio, L., & McCarty, G.W. (2016). A MODIS-based burned area assessment for Russian croplands: Mapping requirements and challenges. Remote Sensing of Environment, 184, 506-521.

Book Chapters

Loboda, T., Krankina, O., Savin, I., Kurbanov, E., & Hall, J.V. (2017). Land Management and the Impact of the 2010 Extreme Drought Event on the Agricultural and Ecological Systems of European Russia. In G. Gutman & V. Radeloff (Eds.), Land-Cover and Land-Use Changes in Eastern Europe after the Collapse of the Soviet Union in 1991 (pp. 173-192). Cham: Springer International Publishing.

Published Datasets

- Loboda, T.V., Chen, D., Hall, J.V., & He, J. (2018). ABoVE: Landsat-derived Burn Scar dNBR across Alaska and Canada, 1985-2015. ORNL DAAC, Oak Ridge, Tennessee, USA. https://doi.org/10.3334/ORNLDAAC/1564.
- Pu, R., Li, Z., Gong, P., Csiszar, I., Fraser, R., Hao, W.M., Kondragunta, S., Loboda, T.V., Hall, J.V., & Shevade, V.S. (2018). ABoVE: AVHRR-Derived Forest Fire Burned Area-Hot Spots, Alaska and Canada, 1989-2000. ORNL DAAC, Oak Ridge, Tennessee, USA. https://doi.org/10.3334/ORNLDAAC/1545.
- Loboda, T.V., Hall, J.V., Hoffman-Hall, A.H., & Shevade, V.S. (2017). ABoVE: Cumulative Annual Burned Area, Circumpolar High Northern Latitudes, 2001-2015. ORNL DAAC, Oak Ridge, Tennessee, USA. https://doi.org/10.3334/ORNLDAAC/1526.
- Loboda, T.V., & Hall, J.V., Baer, A. (2017). ABoVE: Wildfire Date of Burning within Fire Scars across Alaska and Canada, 2001-2019. ORNL DAAC, Oak Ridge, Tennessee, USA. https://doi.org/10.3334/ORNLDAAC/1559.

Other Publications

- Giglio, L., Schroeder, W., Hall, J.V., & Justice, C. (2018). MODIS Collection 6 Active Fire Product User's Guide Revision B. Product User's Guide. Department of Geographical Sciences, University of Maryland.
- Giglio, L., Boschetti, L., Roy, D., Hoffman, A., Humber, M, & Hall, J.V. (2018). Collection 6 MODIS Burned Area Product User's Guide Version 1.2. Product User's Guide. Department of Geographical Sciences, University of Maryland.
- United States Department of Agriculture. (2014). The Black Carbon Initiative Final Report: Quantifying and mitigating the impact of forest fires and open burning. Report submitted to the U.S. Department of State's Office of Global Change, the Special Envoy for Climate Change, and the Arctic Council. Submitted by: USDA Forest Service, USDA Foreign Agricultural Service, USDA Agricultural Research Service, University of Maryland, Dept. of Geographical Science, Sonoma Technology Inc, Scion Research, and Mazama Science.

Invited Talks

- Hall, J.V., & Giglio, L., (24 October 2019). GFED Fire Monitoring: Improvements to Crop Residue Emissions. Open Agricultural Burning: Where Air Quality, Crop Yields, and Climate Combine. United Nations Economic Commission for Europe Convention on Long Range Transboundary Air Pollution Task Force on Techno-Economic Issues Annual Meeting, Canada. Invited talk by International Cryosphere Climate Initiative (ICCI).
- Hall, J.V., Giglio, L., Schroeder, W., Skakun, S., & Humber, M. (5 March 2019). Monitoring and Mapping Open Burning in Ukraine. Potential and Methods of No-burn Agricultural Practices Workshop, Sokolovsky Institute for Soil Science and Agrochemistry, Kharkiv, Ukraine. Invited talk by International Cryosphere Climate Initiative (ICCI).
- Hall, J.V., Giglio, L., Schroeder, W., Skakun, S., Humber, M., & McCarty, J. (7 March 2019). Patterns of Open Burning in Ukraine: Monitoring Emissions. Reducing Open Agricultural Burning for Policymakers: Soil, Air Quality, and Public Health Paths for European Integration Workshop, Kiev, Ukraine. Invited talk by International Cryosphere Climate Initiative (ICCI).

Conference Activity

Oral Presentations

- Hall, J.V., Schroeder, W., Huang, C., & Giglio, L. (2019). Harmonized Global Active Fire Data Set. GWIS Special Session, 7th International Wildland Fire Conference, Campogrande Brazil.
- Hall, J.V., Schroeder, W., Huang, C., & Giglio, L. (2019). Development of a Harmonized Multi-Sensor Global Active Fire Data Set: Current Status and Multi-Product Validation. 12th EARSeL Forest Fires SIG Workshop, Rome Italy.
- Hall, J.V., & Loboda, T.V. (2017). Quantifying the variability of potential black carbon transport from cropland burning in Russia driven by atmospheric blocking events. American Geophysical Union (AGU) Fall meeting, New Orleans LA.
- Hall, J.V., Loboda, T.V., & McCarty, G. (2013). Mapping and monitoring cropland burning in European Russia: a multi-sensor approach. American Geophysical Union (AGU) Fall meeting, San Francisco CA.
- Loboda, T.V., Hall, J.V., McCarty, G., McConnell, L., & Woldemarian, T. (2013). Development of burn area detection products. Annual USDA Russia Arctic Black Carbon Coordination Meeting. Washington D.C.

Poster Presentations

- Hall, J.V., Zibtsev, S., Myroniuk, V., Skakun, S., Zhuravel, O., & Giglio, L., (2019). Improved Cropland Burning Emissions Inventory in Ukraine: A Regional Case Study. American Geophysical Union (AGU) Fall Meeting, San Francisco.
- Hall, J.V., Zhang, R., Schroeder, W., Huang, C., & Giglio, L. (2018). Global Validation of Geostationary Satellite Active Fire Products: GOES-16, HIMAWARI, and Meteosat Second Generation series. American Geophysical Union (AGU) Fall Meeting, Washington DC.
- Hall, J.V., Loboda, T.V., & McCarty, G. (2015). Mapping and monitoring cropland burning in European Russia: a multi-sensor approach. NASA Carbon Cycle and Ecosystems Joint Science Workshop, College Park MD.

Other Conference Contributions

- Chen, Y., van Wees, D., van der Werf, G., **Hall, J.V.**, Hantson, S., Giglio, L., Andela, N., Morton, D, & Randerson, J. (2022). *Improving global burned area estimates by merging high and moderate resolution satellite fire products*. American Geophysical Union (AGU) Fall Meeting, San Francisco.
- Chen, D., Hall, J.V., & Loboda, T. V. (2019). A more consistent alternative to the difference Normalized Burn Ration (dNBR) as a proxy for burn severity in North American boreal forests. American Geophysical Union (AGU) Fall Meeting, San Francisco.
- Shevade, V., Hall, J.V., & Loboda, T.V. (2019). Future Forest Loss and its Impacts on Connectivity in Peninsular Malaysia's Tiger Landscape. American Association of Geographers (AAG) Annual Meeting, Washington DC.
- Chen, D., Loboda, T.V., & Hall, J.V. (2018). Quantitative evaluation of the influences of multiple factors on the differenced Normalized Burned Ratio in North American ecosystems. American Geophysical Union (AGU) Fall Meeting, Washington DC.
- Csiszar, I., Schmidt, C., Schroeder, W., & Hall, J.V. (2018). Status of the Active Fire Products from NOAA's GOES-R Series. EUMETSAT Meteorological Satellite Conference, Estonia.
- Hoffman-Hall, A., Loboda, T.V., Hall, J.V., & Carroll, M. (2018). Rural Population Mapping at Moderate Spatial Resolutions Using Geospatial Data Fusion. American Geophysical Union (AGU) Fall Meeting, Washington DC.
- Pouliot, G., Hall, J.V., Giglio, L., & Beidler, J. (2018). Improving the National Emissions Inventory for Fires: The Impact of Industrial Sources in the MODIS Active Fire Product. American Geophysical Union (AGU) Fall Meeting, Washington DC.
- Randerson, J.T., Chen, Y., Wiggins, E.B., Hantson, S., Andela, N., Morton, D.C., Hall, J.V., Giglio, L. & van der Werf, G. (2018). Development of the Global Fire Emissions Database (GFED): Toward reconciliation of top-down and bottom-up constraints on fire contributions to variability and trends in carbonaceous aerosol. American Geophysical Union (AGU) Fall Meeting, Washington DC.

- Sahajpal, R., Becker-Reshef, I., Barker, B., Hall, J.V., Santamaría-Artigas, A.E., Zhang, J., Puricelli, E., & Humber, M.L. (2018). Global Scale Crop Yield and Condition Forecasting System Using Multiple Earth Observation Datasets. American Geophysical Union (AGU) Fall Meeting, Washington DC.
- Kinder, B., Hao, W., Larkin, S., McCarty, G., Gonzalez, O., Luxenberg, J., Hall, J.V., Loboda, T.V., McConnell, L., & O'Neal, K. (2013). Black Carbon in the Arctic: Assessment of and Efforts to Reduce Black Carbon Emissions from Wildfires and Agricultural Burning in Russia. International Association of Wildland Fire, St. Petersburg, Russia.
- Loboda, T.V., & Hall, J.V. (2013). Cloud climatology and challenges for optical remote sensing over High Northern Latitudes of the globe. American Geophysical Union (AGU) Fall meeting, San Francisco CA.
- Carroll, M., DiMiceli, C., Townshend, J.R., Loboda, T.V., Sohlberg, R.A., Hall, J.V., & Chen, D. (2012). Quantifying the importance of representing small lakes in coarse resolution processes. American Geophysical Union (AGU) Fall meeting, San Francisco CA.

Professional Skills

Earth Observation/ Remote Sensing

- Advanced experience with multiple passive and active geostationary and polar orbiting earth observation satellites.
- Experience with a variety of climate datasets and modeled outputs.
- Advanced experience in multispectral analysis and digital imaging processing.
- Fully proficient in ENVI software.

Geographic Information Systems

- Advanced experience in multi-scale geospatial analysis.
- Fully proficient in ESRI ArcGIS software (ArcGIS 10.X) and QGIS.

Programming and Computing

- Knowledgeable in TensorFlow and Skikit-Learn (Machine Leaning)
- Proficient in IDL programming, Python (both open-source and ArcPy), and R (statistics program).
- Knowledgeable in Linux servers and UNIX coding.
- Experience with maintaining multiple global EO products for operational analysis with monthly deliverables for multi-partner global teleconference meetings.
- Algorithm development and satellite product maintenance.

Management and Communication

- Project consultant responsible for managing several large research groups and creating a joint report at the end of the research grant.
- Creation and oversight of project workflows.
- Experience supervising and training multiple interns and full time employees.
- Ability to collect and synthesize large amounts of scientific research for scientific and general audiences in both written and oral formats.
- Experience writing research proposals (NASA NESSF, NASA NIP), reports, peer reviewed papers and editing these documents for others.
- Experience planning, implementing, and leading geoscience-based collaborative projects.

Service and Outreach

Service to Profession

- 2013 pres. **Peer Reviewed Journal Referee**, Remote Sensing of Environment; Remote Sensing; International Journal for Wildland Fire; Atmospheric Chemistry and Physics Discussions; and International Journal of Remote Sensing.
- 2017 pres. Outstanding Student Paper Award (OSPA) Judge, American Geophysical Union (AGU) Fall Meetings.

University Service

- 2019 2020 Research Faculty representative on Undergraduate Committee, Dept. of Geographical Sciences, University of Maryland.
- 2019 2019 Research Faculty representative at Faculty Retreat, Dept. of Geographical Sciences, University of Maryland.
- 2018 2018 Graduate Research Appreciation Day Judge, University of Maryland.
- 2017 2018 Research Faculty representative on Graduate Committee, Dept. of Geographical Sciences, University of Maryland.
- 2015 pres. Undergraduate/ Graduate Mentor, College of Behavioral and Social Sciences (BSOS), University of Maryland.
- 2015 2016 GEOG representative on the College of BSOS Dean's Graduate Student Advisory Council, University of Maryland.
- 2015 2015 Attended GEOG roundtable discussion: Visions for Coupled Natural and Human Graduate Education, Dept. of Geographical Sciences, University of Maryland.
- 2013 2013 GEOG Orientation Committee, Dept. of Geographical Sciences, University of Maryland.
- 2010 2011 AOSC representative on Graduate Student Government (GSG), University of Maryland.

Community Service

- 2019 pres. Volunteer, Patuxent Animal Welfare Society.
- 2019 pres. Volunteer, Bowie Citizens for Local Animal Welfare.

Awards and Honors

Research Awards

- 2017 2017 **Postdoctoral Conference Support Award**, Dept. of Geographical Science, University of Maryland.
- 2017 2017 Excellence in Graduate Research Award, Dept. of Geographical Science, University of Maryland.
- 2014 2014 Graduate Research Interaction Day: First Place Winner, University of Maryland.

Teaching Awards

- 2015 2015 **Outstanding Graduate Teaching Award**, Dept. of Geographical Science, University of Maryland.
- 2010 & 2011 Excellence and Innovation in Undergraduate Teaching in the Marquee Courses in Science and Technology, Dept. of Atmospheric & Oceanic Science, University of Maryland.