

Joanne V. Hall
Post-Doctoral Research Associate
Department of Geographical Sciences
University of Maryland
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EDUCATION

- Ph.D. Geographical Science, University of Maryland** May 2017
Dissertation Title: Quantifying variability of black carbon transport from cropland burning in Russia to the Arctic driven by atmospheric blocking events.
Dissertation Advisor: Dr. T. Loboda
- MSC. Atmospheric and Oceanic Science, University of Maryland** May 2011
Thesis Title: An Intercomparison Study between the GFDL CM2.1 20th Century Climate Simulation and the CRU TS3.0 Surface Air Temperature Observations.
Thesis Advisor: Dr. S. Nigam
- MSC. Environmental Geoscience, University of Bristol, U.K.** May 2009
Thesis Title: Neotropical Amphibian Extinctions.
Thesis Advisor: Dr. P. Foster

RESEARCH INTERESTS

Impacts of weather and climate patterns on agricultural crop management and food security.

Methods and techniques for satellite mapping of land cover and land use change.

Impact of climate change on Arctic ecosystems.

PROFESSIONAL EXPERIENCE

Post-Doctoral Research Associate

- Department of Geographical Sciences** May 2017
– Present
- Projects
 - NASA Arctic-Boreal Vulnerability Experiment: Long-term multi-sensor record of fire disturbances in High Northern Latitudes
 - NASA LCLUC: Understanding the role of land cover/ land use nexus in malaria transmission under changing socio-economic climate in Myanmar.
 - Responsibilities
 - Processing voluminous datasets of satellite observations
 - Development of methods to support integration of multi-sensor data streams into a monitoring system, that would use data fusion from coarse (MODIS, VIIRS), moderate (Landsat and Sentinel 2), and very high (e.g. WorldView and GeoEye systems) optical and thermal and microwave (Sentinel 1) data.
 - Preparation of peer-reviewed publications
 - Member of a highly interdisciplinary team of medical and geospatial researchers
 - Manage deliverables and ensuring their timely completion.

Graduate Research Analyst

Global Agricultural Monitoring (GEOGLAM) Initiative

Mar 2015
– May 2017

- Project
 - LCLUC, Food Price and Conflict: Earth Observations-based Agricultural Production forecasting and GEOGLAM Crop Monitor projects
- Responsibilities
 - Acquisition and implementation of multiple EO datasets into an operational machine-learning algorithm for AMIS Crop Monitor.

Department of Geographical Sciences

Aug 2014
– Mar 2015

- Project
 - NASA Arctic-Boreal Vulnerability Experiment: Long-term multi-sensor record of fire disturbances in High Northern Latitudes
- Responsibilities
 - Acquisition and post-processing of MODIS satellite imagery
 - Spatial and temporal analysis of cloud climatology.

USDA Agricultural Research Service, Hydrology and Remote Sensing Laboratory

Aug 2012
– Aug 2014

- Project
 - Assessing Agricultural Burning and Black Carbon Emissions in Russia Using Remote Sensing Approaches
- Responsibilities
 - 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 USDA Forest Service, USDA International Program and USDA ARS.
 - Trained and supervised several image analysts at the University of Maryland and USDA ARS Hydrology and Remote Sensing Laboratory.

NASA Goddard Space Flight Center, Sigma Space, Biospheric Sciences Laboratory

Jun 2012
– Aug 2012

- Informal summer internship
- Project
 - Quantifying the importance of representing small lakes in coarse resolution processes
- Responsibilities
 - Provided remote sensing and geographic information system (GIS) support for research on dynamics of Arctic lakes.

Department of Geographical Sciences

Aug 2011
– Jun 2012

- Project
 - Quantifying the contribution of open water to surface emissivity in High Northern Latitudes
- Responsibilities
 - Acquisition and post-processing of Soil Moisture Active Passive (SMAP) imagery.

Consultant

U.S. Forest Service, International Programs

Jul 2014
– Nov 2014

- Arctic Black Carbon Writer (METI consultant SOW 1623)
 - Consolidation of research from multiple groups (USDA Foreign Agricultural Service, USDA Agricultural Research Service, U.S. Forest Service AirFire Research Team, and the Missoula Fire Science Laboratory team)
 - Delivered a final report to the Department of State.
 - This position required travel to a number of locations.

PUBLICATIONS

Refereed Journal Articles

Hall, J.V., & Loboda, T.V. (in review). 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*.

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.** (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., **J.V. Hall**, A.H. Hall, and V.S. Shevade. (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., **J.V. Hall**. (in review). ABoVE: Estimated Date of Burning Product, 2001 – 2015. Submitted to ORNL DAAC, Oak Ridge, Tennessee, USA.

Other Publications

Loboda, T.V., **J.V. Hall**, and V.S. Shevade. (in review). ABoVE: AVHRR Annual Burned Area Product User Guide. Submitted to ORNL DAAC, Oak Ridge, Tennessee, USA.

United States Department of Agriculture. (2014). The Black Carbon Initiative Final Report: Quantifying and mitigating the impact of forest fires and open burning. Unpublished report, 41 pp.

CONFERENCE ACTIVITY

Oral Presentations

Hall, J.V., and Loboda, T. (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., McCarty, G. (2013) Mapping and monitoring cropland burning in European Russia: a multi-sensor approach. American Geophysical Union (AGU) Fall meeting, San Francisco CA.

Poster Presentations

Hall, J.V., Loboda, T., McCarty, G. Mapping and monitoring cropland burning in European Russia: a multi-sensor approach.

- NASA Carbon Cycle and Ecosystems Joint Science Workshop, College Park MD. April 2015.
- University of Maryland Graduate Research Interaction Day, College Park MD. May 2014.
- University of Maryland, BSOS Research Interaction Day for Graduate and Early Career Scientists, College Park, MD. November 2013.

Poster Contributions

Loboda, T., **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.

Kinder, B., Hao, W., Larkin, S., McCarty, G., Gonzalez, O., Luxenberg, J., **Hall, J.V.**, Loboda, T., 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.

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.

TEACHING EXPERIENCE

Instructor

University of Maryland, Geographical Sciences

Introduction to Quantitative Methods (GEOG 306) Winter 2018

- Online course covering topics including: hypothesis testing, descriptive and inferential statistics, regression analysis, and probability. Labs will taught using R statistical programming. Primary responsibilities will include designing the syllabus, course and lab materials, and lecturing.

Geography of Environmental Systems Laboratory (GEOG 211) Summer 2012

- 10 students
- Computer based class covering geographic concepts with basic methodology for a hands-on learning experience. Topics included: Topographic Maps, GIS and Remote Sensing, Atmospheric and Oceanic Circulation, Plate Tectonics and Climate Change.

Guest Lecturer

University of Maryland, Geographical Sciences

Remote Sensing Instruments and Observations (GEOG 671) Fall 2017

- 24 students
- Lectured on Landsat-8/ Sentinel-2 integration

Remote Sensing: Digital Image Processing & Analysis (GEOG 472) Fall 2014

- 50 students
- Lectured on clustering analysis

Teaching Assistant

University of Maryland, Geographical Sciences

Introduction to Remote Sensing (GEOG 372)

Spring 2015

- 50 students
- Lecture and computer-based laboratory class
- Class covered topics including: data collection, band math, NDVI, NBR, analyzing thermal signatures, land cover classification, and a brief introduction of LiDAR data. Primary responsibilities included leading the lab sessions, lecturing classes during the instructor's absence, and grading labs and exams. Developed new lab exercise and a multiple choice exam. Re-wrote and edited several old lab exercises.

Introduction to Quantitative Methods (GEOG 306)

Spring 2012

- 50 students
- Lecture and computer-based laboratory class
- Class covered topics including: hypothesis testing, descriptive and inferential statistics, regression analysis, and probability. Labs were taught using R statistical programming. Primary responsibilities included leading the lab sessions, lecturing classes during the instructor's absence, and grading labs and exams.

Geography of Environmental Systems & Laboratory (GEOG 201/211)

Fall 2011

- 240 students (lecture) and 50 students (lab)
- Computer based class covering geographic concepts with basic methodology for a hands-on learning experience. Topics included: Topographic Maps, GIS and Remote Sensing, Atmospheric and Oceanic Circulation, Plate Tectonics and Climate Change. Primary responsibilities included leading the lab sessions, lecturing classes during the instructor's absence, and grading labs and exams. Also helped design a field trip to a local river.

University of Maryland, Atmospheric and Oceanic Sciences

Weather and Climate Course and Laboratory: Marquee Course in Science and Technology for Non-Science Majors (AOSC 200/201)

Fall 2009
Spring 2010

- 200 students (lecture) and 75 students (lab and discussions)
- Class covered topics including: Atmospheric Basics, Clouds, Weather, Climate, and General Circulation.
- Primary responsibilities included leading the lab and discussion sessions, grading labs and exams, and creating exam reviews.

SERVICE TO PROFESSION

Peer Reviewed Journal Referee

Remote Sensing of Environment
International Journal of Wildland Fire
Remote Sensing

UNIVERSITY SERVICE

University of Maryland, Geographical Sciences

- Research Faculty representative on Graduate Committee
- Dean's Graduate Student Advisory Council
- Part of a roundtable discussion: Visions for Coupled Natural and Human Graduate Education
- Orientation Committee
- Undergraduate/graduate mentoring program

University of Maryland, Atmospheric and Oceanic Sciences

- Graduate Student Government Representative

RELATED PROFESSIONAL SKILLS

Earth Observation/ Remote Sensing

- Experience with multiple passive and active earth observation satellites, including but not limited to: QuickBird and WorldView-2 (<5m spatial resolution); Landsat (~30m spatial resolution); MODIS (250 – 500m spatial resolution); SMAP (1 – 3km spatial resolution); ASCAT (~25 km spatial resolution).
- Experience with a variety of climate datasets and modeled outputs, including but not limited to: CMIP5, NCEP-NCAR Reanalysis, and ERA-Interim.
- Advanced experience in multispectral analysis and digital imaging processing.
- Fully proficient in use of ENVI software.

Geographic Information Systems

- Experience in multi-scale geospatial analysis, including, georegistration of very high resolution training samples with orthorectified Landsat imagery.
- Fully proficient in ESRI ArcGIS software (ArcGIS 10.X).

Programming and Computing

- 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 both a scientific and general audience in both written and spoken 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.

AWARDS AND HONORS

University of Maryland, Geographical Sciences

Postdoctoral Conference Support Award	October 2017
Excellence in Graduate Research Award	May 2017
Outstanding Graduate Teaching Award	May 2015
Graduate Research Interaction Day: First Place Winner	May 2014

University of Maryland, Atmospheric and Oceanic Sciences

Excellence and Innovation in Undergraduate Teaching in the Marquee Courses in Science and Technology Award	May 2011 May 2010
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