

Arif Masrur

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Education:

- Fall 2016-Present: PhD candidate, Department of Geography, Pennsylvania State University
- 2014-2016: Masters in Geography (Specializing in GIScience and Spatial Analysis) Department of Geography, University of Northern Iowa
- 2014: M.S. in Physical Geography, University of Dhaka, Bangladesh
- 2012: B.S. in Geography and Environment, University of Dhaka, Bangladesh

Papers:

Peer-reviewed

- **Masrur, A.**, Petrov, A., & DeGroot, J. (2017). Circumpolar Spatio-Temporal Patterns and Contributing Climatic Factors of Wildfire Activity in the Arctic Tundra from 2001 to 2015. *Environ. Res. Lett.* in press <https://doi.org/10.1088/1748-9326/aa9a76>
- Wallgrün, J. O., Huang, J., Zhao, J., **Masrur, A.**, Oprean, D., and Klippel, A. (2017). A framework for low-cost multi-platform VR and AR site experiences. *Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci.*, XLII-2-W8, 263-270, <https://doi.org/10.5194/isprs-archives-XLII-2-W8-263-2017>
- **Masrur, A.**, Zhao, J., Wallgrün, J. O., LaFemina, P., & Klippel, A. (2017). Immersive applications for informal and interactive learning for earth sciences. In B. Bach, M. Cordeil, T. Dwyer, B. Lee, B. Saket, A. Endert, . . . S. Carpendale (Eds.), *Workshop on Immersive Analytics. Exploring Future Interaction and Visualization Technologies for Data Analytics*. In conjunction with IEEE VIS, Phoenix, Arizona, USA, October 1st, 2017
- Mahmud, M.S., **Masrur, A.**, Ishtiaque A., Haider, F., Habiba, U. (2011b) "Remote Sensing & GIS Based Spatio-Temporal Change Analysis of Wetland in Dhaka City, Bangladesh", *Journal of Water Resource and Protection*, vol. 3, no. 11, pp.781-787

Master's Theses:

- Masrur, A., Petrov, A. (2016). Analysis of Space-Time Dynamics of the Arctic Tundra Wildfire Using NASA MODIS Data (2001-2015).
- Masrur, A. (2014). Agricultural Pattern Change Analysis in the Ganges Dependent Districts of Bangladesh. Master's thesis, University of Dhaka, Bangladesh.

Bachelor's Thesis:

- Masrur, A. (2012). A Review of Climate Change Impacts, Vulnerability and Adaptation: A Case Study of Dhaka City. Undergraduate project, University of Dhaka, Bangladesh.

Professional Skills:

- GIS: ArcGIS 10.n, ArcInfo, ArcScene, GeoDa, MaxEnt, OpenWind, ArcGIS Online, QGIS
- Remote Sensing: ERDAS, ENVI, eCognition, Landsat, MODIS, aisaEAGLE, LiDAR

- Database: MySQL/SQL
- Programming: Python, R, and JavaScript

Research Experience:

Fall 2018

- WebVR application development: <https://ishiwildfire.geog.psu.edu/>

Summer 2017

- Virtual reality and augmented reality application development for earth sciences application, featured at Penn State News (Feb 23, 2018)

Summer 2015

- Solar potential map and web mapping application for Iowa. Graduate Research Assistant It is an ongoing project at GeoTREE Center at the Department of Geography, University of northern Iowa. Its main objective is solar radiation modeling for all developed areas in the state of Iowa using detailed topographic data (LiDAR) and Geographic Information Systems (GIS)-based tools. Methods includes processing of LiDAR las files in GIS environment, creation of digital surface model (DSM) from las multipoint, calculating area under solar radiation using model builders and python scripting, and finally development of web mapping application for the visualization of the solar potential map on website.
- Study of wildfire activity and climate change in the Arctic – Arctic Social and Environmental Systems (ARCSES) Research Laboratory, Department of Geography, University of Northern Iowa. This lab is partially funded by NSF and NASA and focuses on research and educational activities pertaining to the Arctic, as well as other remote and cold regions. Lab’s researchers are involved in multiple projects dealing with social and environmental systems in the Arctic, including Arctic Social Indicators, Arctic Human Development Report, Creative Arctic, Resources and Sustainable Development in the Arctic, Taimyr Reindeer and Climate Change, Arctic Wildfires project etc. I primarily work on arctic wildfire as a part of my thesis. As a graduate assistant I occasionally help in data accusation and analysis.
- Spatial database development, web mapping application design, and ArcSLAMM-WinSLAMM urban storm water, GeoTREE Center at the Department of Geography, University of Northern Iowa. Graduate Research Assistant The main goals of the project were to characterize the land use or source areas of all urban areas in the Dry Run Creek (DRC) Watershed using the customized ArcSLAMM geodatabase and ArcGIS, to delineate all drainage areas or sub-watersheds in the watershed and to delineate for existing Best Management Practices (BMPs), carry out urban stormwater modeling in the watershed for all subwatersheds using WinSLAMM, to develop a report (this document) and database detailing these efforts, and finally to develop a web mapping application for visualizing the BMPs in the watershed. I worked on the spatial database development portion of this project.

Mar 2013 – Apr 2014

- Mobile Communication and Migration Practices – Bangla-Sino-German priority research program “Megacities-Megachallenge. Informal Dynamics of Global Change”, funded by the German Research Foundation (DFG). Research Assistant Responsibilities: Advising on the formulation and local adaptation of both quantitative and qualitative field work tools (questionnaire, interview guidelines and questions), carrying out of a questionnaire survey in two villages in Rangpur District in March 2013 (random sampling of interview partners and conducting interviews, advice on possible partners for qualitative interviews), advising on the design of a multi-site-fieldwork strategy (family members of the village households living in Dhaka), carrying out of the questionnaire survey in Dhaka during the time of Jan to April 2014.

Professional Experience:

Dec 2012-Jan 2013: Beautiful Bangladesh Eco-health Initiative. Position: Field Investigator & GIS Analyst Employer: National Institute of Cholera & Enteric Diseases, Dhaka. Responsibilities: Baseline, Knowledge Aptitude and Practice (KAP) and GPS survey, GIS Mapping.

Oct 2012-Dec 2012:

- Impact Evaluation of Cholera Vaccine and Behavior Change Interventions in Urban Dhaka, Bangladesh. Position: Data and GIS Analyst Employer: icddr'b and Concept & Ideas Pvt. Ltd., Dhaka. Responsibilities: Database management, field works, preparing and updating maps using GIS software.

Mar 2012-May 2012:

- Urban Health: Applied Research and Lesson Learning. Position: Data and GIS Analyst Employer: icddr'b and Concept & Ideas Pvt. Ltd., Dhaka. Responsibilities: Database management, field works, preparing and updating maps using GIS software.

Teaching Experience:

- GEOG 6N: Maps and the Geospatial Revolution **Fall 2018**, Teaching Assistant and Lab Instructor (Penn State)
- GEOG 160: Mapping our Changing World **Spring 2018**, Teaching Assistant and Lab Instructor (Penn State)
- GEOG 10H: Introduction to Physical Geography **Spring 2017**, Teaching Assistant (Penn State)
- GEOG 160: Mapping our Changing World **Fall 2016**, Teaching Assistant and Lab Instructor (Penn State)
- GEOG 2011: Physical Geography Lab **Fall 2014 – Spring 2016** Teaching Assistant (University of Northern Iowa) Lab covers topics such as location and distance on earth, rocks and the rock cycle, stream measurements in backbone state park, aerial photographs, satellite images and topo maps, stream processes and landscapes, map and compass, geologic time, plate tectonics, oceanography, earthsun relationships, global climates, glaciers, and soils of black hawk county.

- GEOG 1210: Physical Geography **Fall 2014 – Spring 2016** Teaching Assistant (University of Northern Iowa) Class covers topics such as earth’s structure and the scientific method, earth’s materials (minerals and rocks), sedimentary rocks, geologic time, plate tectonics (movement of plates, earthquakes and volcanoes), deformation of earth’s crust, weathering, river systems, history of landscape development, river valleys and terraces and human impacts.

Workshops:

- Geospatial Data Science (GDS2017) Workshop, “Data Wrangling with R”, University Park, Pennsylvania, February 5, 2017. – I gave a tutorial that covered R basics and data wrangling processes using different R packages (e.g., tidy, dplyr). The workshop was attended by students and professionals from multiple disciplines at Penn State.
- Iowa County Information Technology (ICIT 2016) Workshop, “Python for automating ArcGIS workflows”, Des Moines, Iowa, June 14, 2016. – I co-organized the workshop with John DeGroot at the University of Northern Iowa. The topics were beginning and intermediate GIS Programming focusing on the use of Python for automating ArcGIS workflows. The workshop was attended by approximately 20 local and state government and private industry personnel from throughout the state.

Conference Presentations:

- AAG 2018 Annual Meeting, New Orleans, LA – Active Learning-based Geovisual Analytics System for Discovering Interesting Knowledge from Space-Time Big Data
- **AAG 2017** Annual Meeting, Boston, MA – Developing a Geovisual Analytics System for Evaluating the Significance of Patterns Discovered in Event-based Data
- **AAG 2016** Annual Meeting, West Lake Division, Eau Claire, WI – Analysis of Spatiotemporal Dynamics of Arctic Tundra Wildfire Using MODIS Data (2001-2015)
- **AAG 2016** Annual Conference, San Francisco, CA – Analysis of Spatiotemporal Dynamics of Arctic Tundra Wildfire Using MODIS Data (2001-2015)
- **AOS and ASSW 2016**, Fairbanks, AK – Analysis of Spatiotemporal Dynamics of Arctic Tundra Wildfire Using MODIS Data (2001-2015)
- **AAG 2015** Annual Conference, Chicago – Analysis of Spatiotemporal Dynamics of Arctic Tundra Wildfire Using MODIS Data (2001-2014)
- **2015 Annual Graduate Student Symposium**, University of Northern Iowa – Analysis of Spatiotemporal Dynamics of Arctic Tundra Wildfire Using MODIS Data (2001-2014)

Scholarships and Awards:

- AAG WLDAAG Student Research Award Winner (Eau Claire, 2015)

Affiliations:

- Association of American Geographers (AAG)
- American Society for Photogrammetry and Remote Sensing (ASPRS)
- Polar Geography Specialty Group