

SARA ALIAN, PH.D.

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Department of Biosystems and Agricultural Engineering
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EDUCATION

Ph.D. Forest Science, Michigan Technological University (2013-2017).

Dissertation Title: Characterization of ecological water stress in the Great Lakes Region of the U.S.: A geospatial modeling approach

Master of Science in Forestry, School of Forest Resources and Environmental Science, Michigan Technological University (2011-2013).

Thesis: Assessment of aspen and northern hardwood availability in thirty three counties of Upper/Lower Michigan

Master of Science in Architecture, Architecture Department, Qazvin Islamic Azad University (QIAU), Iran (2007- 2009).

Thesis: Research center and museum of new energies: A sustainable architecture approach

Bachelor of Architectural Engineering, Architecture Department, Qazvin Islamic Azad University (QIAU), Iran (2001- 2007).

Thesis: Evan Recreation and Tourist Facility

RESEARCH INTERESTS

- Applications of geographic information systems (GIS), remote sensing, and spatial modeling in natural resources management
- Geospatial science and technology education
- Urban and landscape design

TEACHING INTERESTS

- Geographic Information Systems
- Remote Sensing
- Digital Image Processing
- GPS Field Techniques
- Natural Hazards
- Thematic Cartography and Map Design
- Spatial Analysis of Water Resources

PUBLICATIONS***Journal Articles (Peer-Reviewed)***

Alian, S., Mayer, A.S., Maclean, A.L., Watkins, D.W., Mirchi, A., 2019. Spatiotemporal Dimensions of Water Stress Accounting: Incorporating Groundwater-Surface Water Interactions and Ecological Thresholds. *Environmental Science & Technology*, 53(5). doi.org/10.1021/acs.est.8b04804

Killion, A.K., Sterle, K., Bondank, E., Drabik, J., Bera, A., **Alian, S.**, Goodrich, K., Hale, M., Myer, R.A., Phung, Q., Shew, A.M. and Thayer, A.W., 2018. Preparing the next generation of sustainability scientists. *Ecology and Society*, 23(4). doi.org/10.5751/ES-10395-230439

Alborzi, A., Mirchi, A., Mofstakhari, H., Mallakpour, I., **Alian, S.**, Nazemi, A., Hassanzadeh, E., Mazdiyasn, O., Ashraf, S., Madani, K. and Norouzi, H., 2018. Climate-informed environmental inflows to revive a drying lake facing meteorological and anthropogenic droughts. *Environmental Research Letters*, 13(8), p.084010. doi.org/10.1088/1748-9326/aad246

Alian, S. and Maclean, A., 2015. Assessing Site Availability of Aspen and Northern Hardwoods for Potential Feedstock Development in Michigan: A Case Study. *Land*, 4(2), pp.413-435. doi.org/10.3390/land4020413

Journals (In Revision/In Review/In Preparation)

Alian, S., Maclean, A.L., Mirchi, A. (In Preparation) Geodatabases: towards systematic use of geospatial information in water resources applications. To be submitted to *Journal of Water Resources Planning and Management*, 2019.

Alian, S., Pennington, D., Froese, R. (In Preparation) Climate change impacts on forest range shifts in North America: Insights from species distribution models. To be submitted to *Ecological Modelling*. 2019.

Non-Peer-Reviewed Publications

Alian, S., (2017) Characterization of ecological water stress in the Great Lakes Region of the U.S.: A geospatial modeling approach. Ph.D. Dissertation, School of Forest Resources and Environmental Science, Michigan Technological University.

Alian, S., (2013) Assessment of aspen and northern hardwood availability in thirty-three counties of Upper/Lower Michigan, Master's Thesis, School of Forest Resources and Environmental Science, Michigan Technological University.

Alian, S., Davis J.C., Mow J.M., (2011) Wetlands of the Pilgrim River Watershed – An assessment of the North-Central Region using the MiRAM protocol, Non-Refereed Paper, School of Forest Resources and Environmental Science, Michigan Technological University.

Alian, S., (2009) Research center and museum of new energies: An approach to sustainable architecture, Master's Thesis, School of Architecture and Urbanism, Qazvin Islamic Azad University (In Farsi).

Alian, S., (2007) Evan recreation and tourist facility, Bachelor's Thesis, School of Architecture and Urbanism, Qazvin Islamic Azad University (In Farsi).

PRESENTATIONS AND PROFESSIONAL MEETINGS

Conference (Poster)

- Samimi, M., Mirchi, A., Moriasi, D., Sheng, Z., Ahn, S., Tahneen Jahan, N., **Alian, S.** Challenges of Calibrating SWAT for Arid/Semi-arid Agricultural Regions. American Geophysical Union Fall Meeting 2018, Washington D.C.
- Powley, C., **Alian, S.**, Mayer, A. (2017). Using ESRI online mapping tools to support STEM learning through analysis of the impact of land use/land cover change on water quality. American Geophysical Union Fall Meeting 2017, New Orleans, Louisiana.
- **Alian, S.**, Mayer, A.S., Maclean, A.L., Watkins, D.W., Gyawali, R., Mirchi, A. Estimating ecological water stress caused by anthropogenic uses in the US Great Lakes Region. American Geophysical Union Fall Meeting 2016, San Francisco, California.
- **Alian, S.**, Maclean, A.L., Assessment of aspen and northern hardwood availability in 33 counties of Upper/ Lower Michigan. Graduate Research Colloquium (GRC), Michigan Technological University (2014).
- **Alian, S.**, Maclean, A.L., GIS-based model for assessing woody biomass availability in the Upper Midwest, The Ecosystem Science Center (ESC), Michigan Technological University (2013).

Conference (Oral)

- Mayer A., Jones K., **Alian S.**, Asbjornsen H., Berry C., Lopez S., Manson R., Salcone J., Von Thaden J. (Accepted) Coupled human-natural systems modeling for assessing and optimizing payment for watershed services programs in Veracruz, México. American Association of Geographers Annual Meeting 2019, Washington, D.C.

Seminar

- A geospatial approach for surface water stress characterization. Earth Tech seminar series, University of Texas at El Paso, El Paso, Texas. 2018.
- Mapping ecological water stress in the U.S. Great Lakes Region. Institute of Hydropower and Hydroinformatics, Dalian University of Technology, Dalian, China, August 2017.
- Water footprint of biofuel production from irrigated energy crops in California, Michigan Technological University (Spring 2013).
- A spatial assessment of woody biomass availability for the frontier Kinross cellulosic ethanol plant, Michigan Technological University (Spring 2013).

Conference and Workshop

- American Geophysical Union (AGU), Washington, D.C. (2018).
- American Association of Geographers (AAG), New Orleans, Louisiana (2018).
- American Geophysical Union (AGU), New Orleans, Louisiana (2017).
- American Geophysical Union (AGU), San Francisco, California (2016).
- Arc Hydro, GIS for Water Resources, Redlands, California, ESRI (2016).
- Graduate Research Colloquium (GRC), Michigan Technological University, Houghton, Michigan (2014).
- American Geophysical Union (AGU) Fall Meeting 2013, San Francisco, California.
- The Ecosystem Science Center (ESC), Michigan Technological University, Houghton, Michigan (2013).

TEACHING EXPERIENCE

Classes Taught

- Geospatial Technologies for Natural Resources (NREM 3083), Oklahoma State University, Stillwater, Oklahoma (Spring 2019)
- Advanced GIS: Resource Management Applications (GEOG 5343), Oklahoma State University, Stillwater, Oklahoma (Spring 2019)
- Principles of Landscape Analysis for Site Design (LA 4453), Oklahoma State University, Stillwater, Oklahoma (Fall 2018)
- Geographic Information Systems: Resource Management Applications (GEOG 4343/5323), Oklahoma State University, Stillwater, Oklahoma (Fall 2018)

Guest Lectures

- Introduction to GIS data acquisition and mapping. Design Hydrology and Hydrology I (BAE 4314), Oklahoma State University, Stillwater, Oklahoma (Fall 2018).
- Applications of GIS in Water Resources. Surface Water Hydrology (5340). The University of Texas at El Paso, El Paso, Texas (Spring 2017).
- Applications of GIS in Water Resources. Surface Water Hydrology (5340). The University of Texas at El Paso, El Paso, Texas (Spring 2017).
- Introduction to Geographic Information Systems for Natural Resource Management (FW3540), Michigan Technological University, Houghton, Michigan (Spring 2012, 2013, 2014, and 2015).
- Geographic Information Science and Spatial Analysis (FW5550), Michigan Technological University, Houghton, Michigan (Fall 2013 and 2014).

WORK EXPERIENCE

Academic Appointments

- Teaching Assistant Professor, Department of Biosystems and Agricultural Engineering, Oklahoma State University, Stillwater, Oklahoma (Aug 2018-present).
- Research Assistant Professor, Department of Geological Sciences, The University of Texas at El Paso (May 2017-Aug 2018)
- Research Assistant, Michigan Technological University, Houghton, Michigan (Fall 2016-Spring 2017)
- Research Assistant, National Science Foundation Research Experiences for Teachers, Promoting Learning about Computational Tools and the Environment (PLACE) Teacher Professional Development Program (Summer 2016).
- Special Projects Coordinator, International Programs and Services, Michigan Technological University (Summer 2015).
- Teaching Assistant (Spring 2012, 2013, 2014, and 2015), FW3540 Introduction to Geographic Information Systems (GIS) for Natural Resource Management, Michigan Technological University, Houghton, Michigan.
- Teaching Assistant (Fall 2014), FW5550 Geographic Information Science and Spatial Analysis, Michigan Technological University, Houghton, Michigan.
- Research Assistant, Michigan Technological University, Houghton, Michigan (Fall 2013, 2015).

Research Projects

- Geospatial analyst responsible for land use change analysis for “Experimental Frameworks for Evaluating the Net Effects of Hydrological Service Payments on Coupled Social-Ecological Systems in Mexico.” Asbjornsen H. (PI), Jones K. (Co-PI), Mayer A. (Co-PI), Congalton R. (Co-PI), Selfa T. (Co-PI). National Science Foundation, \$1,475,000 (contribution 2017-present).

Industry

- Maab Consulting Engineers Co, Tehran, Iran (2007-2009).
- Arshico Interior design Co (2006).

HONORS AND AWARDS

- Travel Grant, Graduate Student Government, Michigan Technological University (2017).
- Exceptional Graduate Student Leader Award, Graduate Student Government, Michigan Technological University (2016).
- Travel Grant, Center for Water & Society, Michigan Technological University (2016).

- Travel Grant, The Ecosystem Science Center, Michigan Technological University (2016 and 2017).
- Exceptional Enthusiasm as a Student Leader, Student Affairs' annual leadership awards, Michigan Technological University (2014).
- Fellowship, Canterbury House International Tutoring Center, Houghton, MI (2011).
- Third rank in designing Safaiyeh Residential Complex, Yazd, Iran (2008).
- Second rank in Architecture section of Egg Protection Device (EPD) competition in the 8th annual conference of students at concrete international competition (ACI), Tehran, Iran (2005).

ACADEMIC AND PROFESSIONAL SERVICES

GIS analysis supervisor/mentor

Jessica Alger, Environmental Engineering Master's Student, Michigan Technological University, Houghton, Michigan. 2017-present

Emily Shaw, Civil Engineering Master's Student, Michigan Technological University, Houghton, Michigan. 2016

Hannah Weeks, Civil Engineering Undergraduate Student, Michigan Technological University, Houghton, Michigan. 2016

Huiling (Haylee) Piao, Environmental Engineering Undergraduate Student, Michigan Technological University, Houghton, Michigan. 2016

Reviewer

Applied Energy (Elsevier)

Natural Hazards and Earth System Sciences (EGU)

EXTRACURRICULAR AND PROFESSIONAL INVOLVEMENT

Extracurricular Services

- President and founder of the Iranian Community at Michigan Tech, Michigan Technological University (2013-Present).
- Executive board member (Public Relations Officer), NOSOTROS student organization, Michigan Technological University (2012- Present).
- Volunteer facilitator, the Graduate School, Michigan Technological University (2011-Present).
- Cooking consultant for Khana Khazana international cuisine at Memorial Union Building, Michigan Technological University (2011-present).
- Volunteer for International Programs and services (IPS), Michigan Technological University (2009-Present).
- Language tutor at the Canterbury House International Tutoring Center, Houghton, MI (2009- Present).
- Western Upper Peninsula Science Fair, Judge (2013).

- Michigan Technological University Undergraduate Expo, Judge (2013).
- Graduate Student Government Representative of the School of Forest Resources and Environmental Science, Michigan Technological University, Houghton, Michigan (2012-2013).
- Volunteer salsa instructor Hancock high school, Hancock, MI (2012).

Professional Memberships

- American Geophysical Union (AGU)
- American Society of Civil Engineers (ASCE)
- American Society for Photogrammetry and Remote Sensing (ASPRS)
- Member of Iranian Construction Engineers Organization

COMPUTER SKILLS

ESRI ArcMap, TerrSet, ERDAS Imagine, Environment for Visualizing Images (ENVI), R (programming language for statistical computing), AutoCAD, 3DMAX STUDIO