Meicheng Shen

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Education

2019-Present	Ph.D. student in Geography
	Department of Geography, Michigan State University
2017-2019	M.S. in Environmental Science Graduate Program
	Department of Geography, the Ohio State University
2012-2016	B.S. in Geographical Information Sciences (GIS)
	Department of Geography, South China Normal University (SCNU)

Research Interest

Combine model and various types of data to study the vegetation-climate interaction. Specifically, I want to answer following questions: How does vegetation change in response to global change in terms of physiology, phenology, canopy structure and plant community composition? How do these vegetation changes influence land-atmosphere carbon flux exchange?

Research Experience

2018 Participant, *NSF project "Hydrologic and Permafrost Changes Due to Tree Expansion into Tundra", advisor: Desheng Liu*

- Analysis the direction and magnitude of vegetation productivity changes for various vegetation groups at regional scale based on Long-Term Arctic Growing Season NDVI Trends from GIMMS 3g dataset (1982-2012) published by Oak Ridge National Laboratory
- Analyze long-term greening trend for three study sites based on Landsat annual peak NDVI time series (1985~2018)

2018 Class Project: *Warming-induced Change of Vegetation Productivity in Alaska*

- Estimate long-term trend temperature and MODIS EVI time series
- Derive interannual variation of temperature and EVI
- Analyze correlation between temperature and EVI at regional and pixel scale while controlling precipitation and cloud cover via partial correlation.

2018 Class Project: *Develop power outage prediction tool for FirstEnergy Ohio Edison*

- Preprocess data related to vegetation such as canopy height
- Aggregate explanatory variables to district level
- Predict warm season storm outage using Random Forest and Gradient Boosting

2017 Research Intern, Guangzhou Institute of Geography, Instructor: Shuisen Chen

- Measure and resample ground spectrum of winter Chili using ASD spectrometer
- Map winter fallow area in *Leizhou Peninsula* by mapping cropland area and winter cropland area separately based on Landsat-derived NDVI time series

2016 Thesis Research, "*Discussion of the performance of vegetation indices in Leaf Area Index (LAI) prediction based on PROSPERCT+SAIL Model***", advisor: Wenfei Luo**

- Simulate canopy reflectance spectrum of different LAI level based on PROSAIL
- Search for the best LAI-response spectra (combination of central wavelength and band width) based on wavelet transform, correlation and sensitivity analysis.
- Study the prediction power of different vegetation indices for LAI based on the most predictive regression model between each vegetation indices and LAI

2015 The 14th SCNU Mathematic Contest in Modeling: *Wetland Ecosystem Health Assessment for Futian Mangrove Nature Reserve*

- Built up health assessment system based on Pressure-Stress-Response (PSR) Model
- Calculated the indices of ecology landscape and biophysics in PSR model with GIS
- Combined the PSR Model and Grey Relation Analysis to assess the comprehensive health index for Futian Mangrove Nature Reserve

Related Courses

- **Graduate:** Applied Mathematical Ecosystem, Land Surface Hydrology, Applied Climatology, Forest Ecosystem Management, Soil Landscapes, Data Analysis in Environmental Engineering, Introduction to Spatial Statistics, Machine Learning
- **Undergraduate:** Physical Geography, Hyperspectral Technology Application, Environmental Remote Sensing, Digital Photogrammetry, Spatial Analysis and Application, Advanced Mathematics, Linear Algebra, Object-Oriented Programming, Data Structure

Conference Presentation

04/2018 American Association of Geographers *Analysis of vegetation indices performance for estimating Leaf Area Index based on PROSAIL model*

Peer Reviewed Publications

Wei Tao, Hengyu Gu, Liang Zhang, **Meicheng Shen**, and Mengzhen Huang. Study on the Prediction of Urban Road Traffic from the Perspective of Syntax: A Case study on Renmin Viaduct Demolition in Guangzhou. *Journal of South China Normal University (Natural Science Edition),* 2017, 49(1): 80-86.

Honors & Awards

- 2015 Successful Participant, The 14th SCNU Mathematic Contest in Modeling
- 2015 Second Prize, The 5th SCNU Geographical Science Contest
- 2014 First Prize, The 4th SCNU Geographical Science Contest

Professional Affiliations

- American Association of Geographers
- American Geophysical Union