SHAN YE

Department of Geoscience
University of Wisconsin-Madison
1215 W. Dayton Street, Madison, WI 53706

Email: shan.ye@wisc.edu
Phone: 734-548-0205
Website: https://yeshancqcq.github.io/

EDUCATION

University of Wisconsin-Madison Aug. 2018 – May 2022 (exp)
Ph.D. in Geoscience
Advisors: Shaun Marcott & Shanan Peters
Focus: The EarthCube Project and Paleoclimate

University of Tulsa Aug. 2016 – May 2018
M.S. in Geosciences
Advisor: Bryan Tapp
Focus: Geomechanics and numerical simulation

University of Michigan, Ann Arbor Aug. 2013 – Aug. 2015
B.S. in Earth and Environmental Sciences
Advisor: Kyger Lohmann
Focus: General geoscience

The Pennsylvania State University Aug. 2011 – May 2013
Geography
Advisor: Cynthia Brewer
Focus: GIS/Cartography

SKILLS

Specialties

GIS, Cartography, Spatial Analysis, Paleoclimate, Oceanography, Climate Modelling, Geomechanics, Structural Geology, Tectonics, Data Science, Geostatistics, Numerical Modelling, Finite Element Method

Programming

C++, Java, Python, R, HTML, CSS, JavaScript

Software

ArcGIS, QGIS, GeoDa, Illustrator, CorelDraw, Photoshop, MS Office, MATLAB, Mathematica, ABAQUS, COMSOL, Petra, Petrel

Others

Outreach Writing and Talking, Field Mapping, Field Work, Geospatial Data Visualization, Interactive Web Mapping (Mapbox/Leaflet/jQuery/D3), Web Design, Numerical Algorithm, Historical Geography, Human Geography, Petroleum Geology, Glaciology, Geochronology, Video and Audio Editing

WORKING AND INTERNSHIP EXPERIENCE

University of Wisconsin-Madison
Madison, WI, USA
Research Assistant, The EarthCube Project (Aug. 2018 – Present)
Supervisors: Shaun Marcott, Shanan Peters, Steve Meyers, Brad Singer and Jack Williams

- The GeoDeepDive and Ice-Rafted Debris project: Used natural language process methods to construct R scripts to extract spatio-temporal information regarding ice-rafted debris from journal literature and ocean drilling records, and analyzed writing styles of related journal articles to locate common areas where authors would report the coordinate, depths and age information. Prepared information for further machine learning in order to pair up coordinates and ages (on-going).
- The Macrostrat project: Conducted the validating of age models (mainly the late Cretaceous) of the Macrostrat database, a geospatial database containing stratigraphic data in North America. Prepared the How-To file regarding the Macrostrat API for potential users in the department.
- The Cosmogenic Lab database: Constructed the isotope database (MySQL) for the Cosmogenic Lab, and developed a web interface to upload data for internal use.
- Paleoclimate data: Retrieved global temperature anomaly data in the past 22,000 years from more than 140 sites across the world. Assigned them to spatial grids and conducted zonal statistics. Conducted spatial analysis and prepared the analytical result for further analysis and comparison to some numerical modelling results (on-going). Built an interactive web map (Leaflet) to showcase the data and spatial analysis results.

Institute of Geology and Geophysics, Chinese Academy of Sciences
Beijing, China
Summer Research Internship (May – Aug. 2014)
Research Internship (Sept. 2015 – May 2016)
Supervisor: Fu Li-Yun

- Collected and reviewed literatures regarding shale gas reservoir modelling and evaluation
- Tested software for shale gas reservoir analysis developed by the institute
- Reported on seismic data analysis and visualization methods that could be applied to shale gas reservoir research and modelling

University of Michigan, Ann Arbor
Ann Arbor, MI, USA
GIS Analyst and Cartographer (Oct. 2013 – May 2014)
Supervisor: Kyger Lohmann

- Retrieved sedimentology and stratigraphic data from well logs in Michigan and located depths of the target formation at different places.
- Conducted spatial interpolation and generated a 3D model of the target formation within Michigan Basin (with R, ArcMap and ArcScene).
- Based on the 3D model and the DEM data of Lake Michigan, located the intersection between the formation and the bottom of Lake Michigan, which is a potential source of water pollution.
- Prepared maps to illustrate the potential water pollution scenario in Lake Michigan.

Collaborative Group Facilitator (Aug. 2014 – May 2015)
Supervisor: Global Scholars Program at University of Michigan

- Worked as a group leader and an instructor for a social science research group with 15 students with various academic backgrounds and social identities
- Led weekly discussion sessions on global social justice issues, mainly on MDGs
- Gave instructions (mainly on spatial thinking on social issues, map design for visualizing those issues, and ArcGIS software) to the group and led the group in a research project on human trafficking issues in developing countries of Southeast Asia
- Promoted the community engagement by assisting the group to hold workshops, exhibitions, music events and talks open to the university and general public

Photographer, Web Developer and Cartographer (Sept. – Oct. 2014)

- Took photos during a mineralogy field trip to the Upper Peninsula of Michigan
- Developed a website to showcase mineral photos, geological information, and photos of students during the field work
- Created static maps with ArcGIS and Illustrator to demonstrate our routes, sites, local geology, and mineral distributions
- Created an interactive version of those maps with Mapbox that allowed others to navigate

Yimin Open-Pit Coal Mine
Inner Mongolia, China
Field GIS Technician Internship (Aug. 2012)
Supervisor: Huaneng Hulun Buir Company

- Conducted basic operations on the GIS system built for the coal mine
- Basic real-time mapping and monitoring of heavy vehicles in the open coal cave to improve the traffic conditions and safety of drivers and miners

OTHER SELECTED PROJECTS

Volcano-glacier interactions in Southern Andes, Chile
University of Wisconsin-Madison (on-going)

- Archived and processed volcanic eruption dating data and temperature data at Andes, New Zealand, Kamchatka and Antarctica from various sources
- Conducted statistics with R on whether the Andes volcanoes are sensitive to the retreating of ice sheets since the last glacial maximum
- Reported initial results, and further analysis with deeper spatial perspective is planned

Finite Element Method simulation on the final geometry of buckling folds embedded by heterogeneous matrices
University of Tulsa (Dec. 2016 – March 2018)
Master's thesis

- Built numerical models (FEM) with ABAQUS and conducted simulation runs with different combinations of initial condition and boundary conditions
- Found out that the Biot-Ramberg equation, which was restricted to buckling layers embedded by homogeneous matrices, could also be used for approximately describing the final geometry of buckling layers within heterogeneous matrices by using the averaged competence ratio at upper and lower contacts of the buckling layer

Induced earthquakes in north-central Oklahoma: a spatial analysis
University of Tulsa (Nov. 2016 – May 2018)

- Archived seismic data from OGS and OU databases and conducting spatial analysis to locate hot spots of earthquakes in Oklahoma since 2008
- Based on well log data provided by oil companies (processed with colleagues in Petra), conducted zonal analysis and hot spot analysis in ArcGIS, and located hot spots of porosity, pressure zones and faults in target formations
- Identified potential unmapped faults based on spatial analysis and providing reports on the over-saturation of target formations for wastewater injection

Oil prospects in Taranaki Basin, New Zealand
University of Tulsa (Jan. – March 2017)
Imperial Barrel Award Competition, Mid-Continent Division
Roles in the team: Reporter, Structural Geologist, GIS Analyst, and Cartographer

- Analyzed geochemical data to locate potential source rocks
- Assisted the geophysicist team member to analyze seismic images in Petrel to identify potential structural traps for oil prospects
- Correlated well log data in Petra and did intensive literature reviews to reconstruct the geological history of the basin, and drew figures in CorelDraw and Illustrator to represent the paleo-temperature model and tectonic cross-section
- Conducted spatial analysis in R to locate hot spots on key signals based on well log data
- Located 3 potential oil prospects within the area of interests
- Prepared maps in Petrel and ArcGIS for the final report

A spatial meta-data analysis on the groundwater crisis of High Plains Aquifer in Nebraska
University of Tulsa (Oct. – Dec. 2016)

- Retrieved water well data within the Nebraskan section of High Plains Aquifer from various sources, including University of Nebraska and agricultural and environmental departments of Nebraska, and conducted spatial analysis on the seasonal change and general trends of the water level with ArcGIS and R.
- Georeferenced satellite images on land use and land cover of Nebraska in ArcGIS, and studied the spatial correlation between the water level change and the land use/cover types. Conducted geostatistics and found out the significance of spatial correlations.
- Prepared maps with ArcGIS and Illustrator to visualize the challenge and crisis that Nebraska faces regarding the dropping trend of the water level of High Plains Aquifer.

Paleoenvironment of Green River Basin, Wyoming
University of Michigan (Aug. 2015)

- Reconstructed a general history of Cenozoic paleoenvironment of Green River Basin from a spatial perspective, based on intensive field works including fossil collecting, rock formation identifying, and field mapping.
- Created a detailed map and stratigraphic unit (in ArcGIS, CorelDraw and Illustrator) to illustrate changes of precipitation and routes of Hoback River in Cenozoic

Auto-generator of geo-referenced travel logs
University of Michigan (Jan. – April 2015)

- Developed Python scripts to train the computer with travel logs on Twitter
- Developed an auto-generator that can write travel logs based on provided key words and geographic locations
- Constructed an interactive map with Leaflet that could display generated travel logs
- Developed a web page to showcase the auto-generator on a project exhibition

Economic and environmental impacts of Mackinac Bridge, Michigan
University of Michigan (Jan. – April 2015)

- Collected data from historical account and published journals regarding the economic, population, transportation, manufacture and mining activities in Upper Peninsula, Michigan, as well as in the Midwest states in general, both before and after the construction of Mackinac Bridge
- Georeferenced and digitized old maps before and after the construction of Mackinac Bridge in ArcMap
- Analyzed how this bridge reshaped the industrial manufacturing of Michigan and Midwest in a combined perspective of economic and space
- Collected current and historical land cover images of Upper Peninsula, especially areas with copper and iron mines, and processed them in ArcGIS and Envi, and analyzed how the bridge potentially had influenced the logging activities in that region

Identities of Chinese empires when nomadic culture was at the gate
University of Michigan (Nov. – Dec. 2014)

- Helped in archiving data from official historical accounts of China during late Southern and Northern Dynasties period, regarding when an emperor or highly ranked chancellor referred his empire as China.
- Helped in comparing these data spatially and temporally between three regimes: Northern Zhou (ruled by sinicized Xianbei people), Northern Qi (ruled by Xianbei-lized Han people) and Chen (ruled by purely Han people).
- Noticed the pattern of how identities of ruling class in these three rivalling empires changed through time and space, and generated a series of maps to demonstrate it

Primary and secondary education in Detroit area, Michigan
University of Michigan (Sept. 2013 – May 2014)
Global Scholars Program

- Retrieved data regarding enrollment, graduating rate, teacher-student ratio, tuition and community household income data of primary and secondary schools in Detroit area.
- Retrieved key words from Twitter regarding positive and negative comments on schools and education in Detroit area, as well as crime rates of each school districts
- Applied spatial analysis to learn challenges that Detroit schools were facing, and presented visualized results to program supervisors and representatives from Detroit

TEACHING

University of Tulsa
Temporary instructor
GEOL 4083: GIS for Geologists (Spring 2018)
Taught in lectures when the professor was not available

University of Michigan, Ann Arbor
Course assistant and grader
UC 270: Social Justice (Winter 2015)

The Pennsylvania State University
Teaching intern
GEOG 363: GIScience (Fall 2012)

GRANTS AND AWARDS

- Third-place award, Wonderful Geology outreach competition 2018, co-sponsored by China Geological Survey, China University of Geoscience, China Geology Library, and China Mining Newspaper. (April 2018)
- University Honors, University of Michigan, 2 Times (Winter 2014, Fall 2014)
- Recognition of Global Excellence, University of Michigan (2013 – 2014, top 1 student in each research group)
- Dean's List, The Pennsylvania State University, 3 Times (Spring 2012, Fall 2012, Spring 2013)
- Erickson Fund in Geography, The Pennsylvania State University (Spring 2013)
- Academic Award, Nanjing University (Summer School 2012, top 6 students)

PROFESSIONAL ORGANIZATIONS

- American Association of Geographers (AAG)
  Poster presentation on GIS application to open-pit coal mines at 2013 annual meeting
- Association of American Petroleum Geologists (AAPG)
  University of Tulsa Chapter President (2017 – 2018): *Organized field trips, community service activities, outreach talks, and school-industry connection events; secured the L. Austin Weeks Fund for the chapter for the next academic year.*
  AAPG Young Professional (2018 – 2019)
- Society for Sedimentary Geology (SEPM)
- North American Cartographic Information Society (NACIS)
- Tulsa Geological Society (TGS)

PUBLICATIONS

Journal articles in CNKI library

Shan YE. Generating heat map visualizations of soccer players with R scripts: a guideline. *Office Informatization*. 2014.

Shan YE. Review on the adhibition of Volunteered Geographic Information on the natural disaster emergency management. *Office Informatization*. 2014.

Outreach articles in CNKI library

Shan YE. Blue Ridge Mountains: the spine of Appalachia. *Human and Nature*. 2019

Shan YE. Chapter of Geoscience. Special Volume on Aesthetics of Sciences. *Open Class-Science Fans*. 2019

Shan YE. Is the Little Ice Age somehow caused by the European colonization of American continents? *Newton-Science World*. 2018

Shan YE. Congaree National Park: known for the height. *Human and Nature*. 2018

Shan YE. The Keweenaw Peninsula. *Human and Nature*. 2018

Shan YE. The White Sand: from the blue sea to the white sandy sea. *Human and Nature*. 2018

Shan YE. Absaroka and Beartooth: a song of ice and fire near the Yellowstone. *Human and Nature*. 2018

Other formally published outreach works

Shan YE. Fossil Hunters: A History of Dinosaur Research (eBook). 2016

Shan YE. The Chain of Great Lakes: tracing a history of deglaciation in North America. *Chinese National Geographic*. 2016

Translating

Reynolds et al., Exploring Geology (textbook). Chinese version translated by Shan YE. In prep. Physical book to be published in late 2019.

INVITED OUTREACH TALKS

Famous pieces of rocks in human history, *at* Tulsa Rock and Mineral Society. 2018

A hundred-year-long journey of National Park Service, *at* Zhihu platform. 2017

It all began with the continental drift: how scientists learned about our planet, *at* Zhihu platform. 2016

Workshops: Design a better map for your project with ArcGIS (2014) and R (2015). *at* Global Scholars Program and North Quad community, University of Michigan.

Workshop: How to use maps to visualize stories in your social science studies? *at* Global Scholars Program and North Quad community, University of Michigan. 2014