

# Travis M. Williams

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Research-oriented geographer with a focus on climate risk management in agriculture. Focused and detailed-oriented with an enthusiasm for graphics, presentation, and the development of interactive user interfaces. Experienced in a variety of GIS- and programming-oriented applications, adept at spatial and tabular data manipulation.

## Education

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- Master of the Arts in Geography** - University of Colorado Boulder Aug 2018  
*Thesis:* “Drought index-based insurance for the US cattle ranching industry”  
*Focus:* Climate risk management, drought, weather-based index insurance, geospatial analysis  
*Cumulative GPA:* 3.90
- Bachelor of Science in Geography** - Florida State University Dec 2009  
*Focus:* GIS, Ecology, Habitat Conservation, French  
*Cumulative GPA:* 3.39  
*Minors:* French, Biology

## Skills

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*GIS Interfaces:* ArcGIS, QGIS, GRASS, & DIVA GIS  
*Coding Languages:* Python, R, Geospatial Data Abstraction Library (GDAL), STATA, Octave, & HTML  
*Applications:* Spatial and tabular data manipulation, online application development, econometrics, cloud-based data transfer and storage, & imagery analysis

## Research and Technical Experience

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- Graduate Research Assistant** – *Earth Lab of the University of Colorado Boulder* Jan 2017 - Present
- Build automated web-scraping routines or corresponded with various organizations to acquire large climate, market, and policy data.
  - Use GDAL binding and bash scripts to transform large raster datasets for analysis.
  - Optimize memory utilization to automate dataset building, manipulation and statistical analysis.
  - Redesign existing rainfall index-based insurance system to accommodate drought indices for research into the efficacy of such a design for drought hazard mitigation.
  - Develop and deploy interactive, online risk management and decision-making models through various web server applications and cloud-based virtual machines.
  - Apply spatial and panel econometric methods to discover climate signals in a large agricultural market data set.
  - Performed extensive literature review on the history of the Federal Crop Insurance program, cattle ranching in the US, and drought index development.

- Generate descriptive charts, maps, and other graphical representations of research results for publications.
- Update and maintain website content.

**Research Assistant** - *Agriculture Dept. of Southern Illinois University Carbondale*

Apr 2014 -  
May 2016

- Used ArcGIS and SAS to perform spatial analysis into the performance of no-till and cover crop treatment on yield improvements concurrent with extensive research into the practices.
- Used soil survey data, soil content interpolations, and digital elevation model development along with topographical positioning algorithms to test for the effects of the interaction between soil and topography effects on grain yields.
- Collected, geocoded, and/or interpolated climate, yield, and research site information for a large meta-analysis of high-yield fertilizer studies using various GIS programs.
- Collected plant tissue and soil samples with truck mounted soil probe, SPAD and other devices.
- Performed KCL extractions and other laboratory tests for agricultural chemicals content.

## Teaching Experience

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**Graduate Teaching Assistant** – *Geography Dept. of the University of Colorado Boulder*  
*GEOG 1972 - Geography of the Environment and Society*

Fall 2016,  
2017

- Taught three recitations per term, 25-30 students per recitation
- Content involved human-Earth system interactions, theories of resource management, and natural hazard mitigation.
- Combination of content review, group activity, one on one counseling, and grading.
- Focused on connecting course content with current events and engaging students in discussion.

*GEOG 1982 - World Regional Geography*

Summer  
2017

- Taught one recitation, 21 students
- Content involved features of five major world regions with a particular focus on culture and social injustice.

## Publications

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- Shrum, T., W.R. Travis, **T. Williams**, E. Lih. "Managing climate risks on the ranch with limited drought information". *Climate Risk Management*, vol. 20, pp. 11-26, 2018.  
<https://doi.org/10.1016/j.crm.2018.01.002>
- (in review) **Williams, T.** and W. Travis: "Evaluating alternative drought indicators in a weather index insurance instrument." *Weather, Climate and Society*.
- Williams, T.M.** "Drought Index-Based Insurance for the US Cattle Ranching Industry". *Geography Graduate Theses & Dissertations*. 123, 2018.