

## Introduction and Background

Supplemental irrigated agriculture in Alabama is growing in both acreage and demand. Its essential to understand the impact on local water resources by estimating the demand needed to sustain adequate crop production during seasonal variability.

The purpose of this research was to combine center pivot acreage estimates with fifty year spatial crop model results in order to provide an historic and real-time demand tool for future irrigation expansion, and the withdrawal impacts from irrigated agriculture.

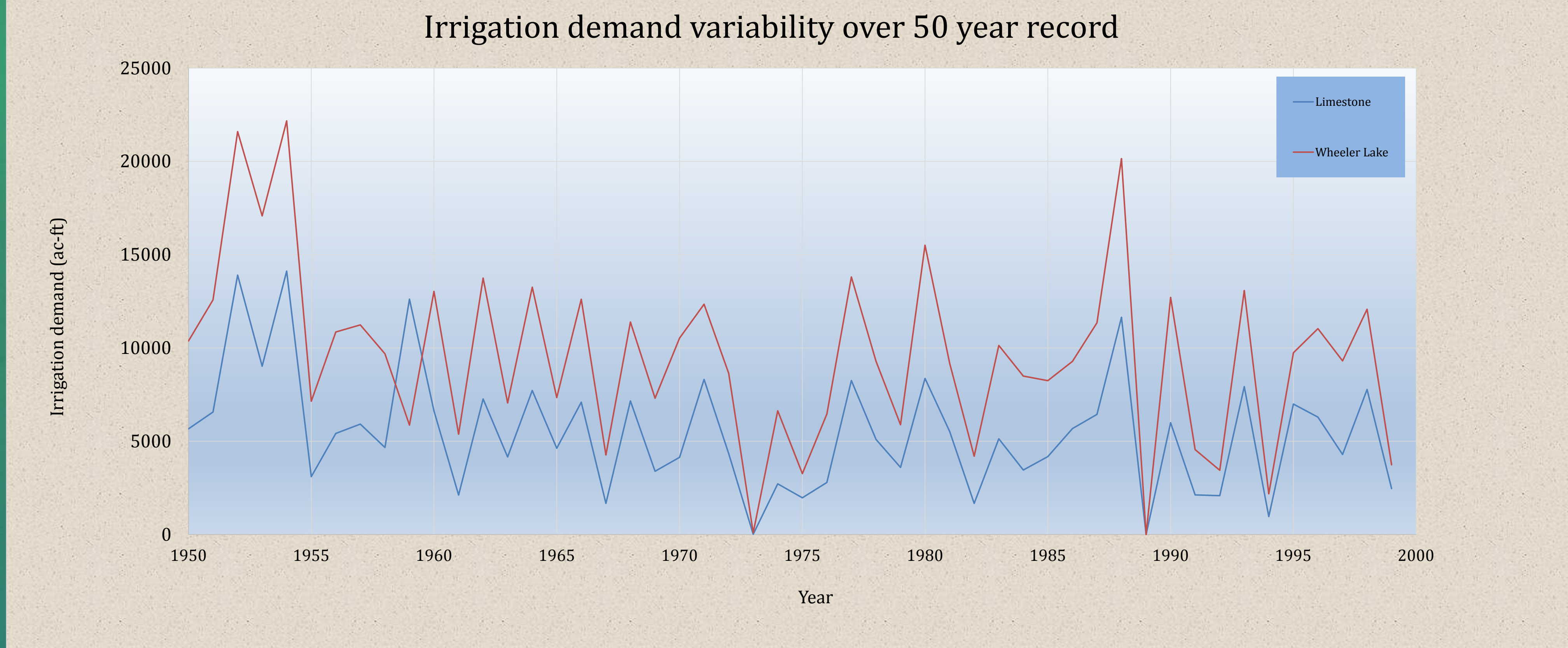
# Water demand on center-pivot irrigated crops in Alabama

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## Methodology

A survey using remote sensing was conducted to identify center-pivot irrigated farmland which was then joined with the GridSSAT spatial crop model on a ~4km grid across Alabama and spatially joined using Thiessen polygons. Center-pivot acreage was then mapped to each respective county and HUC-8 Watershed.



Comparison of water demand for the top HUC and county in Alabama.

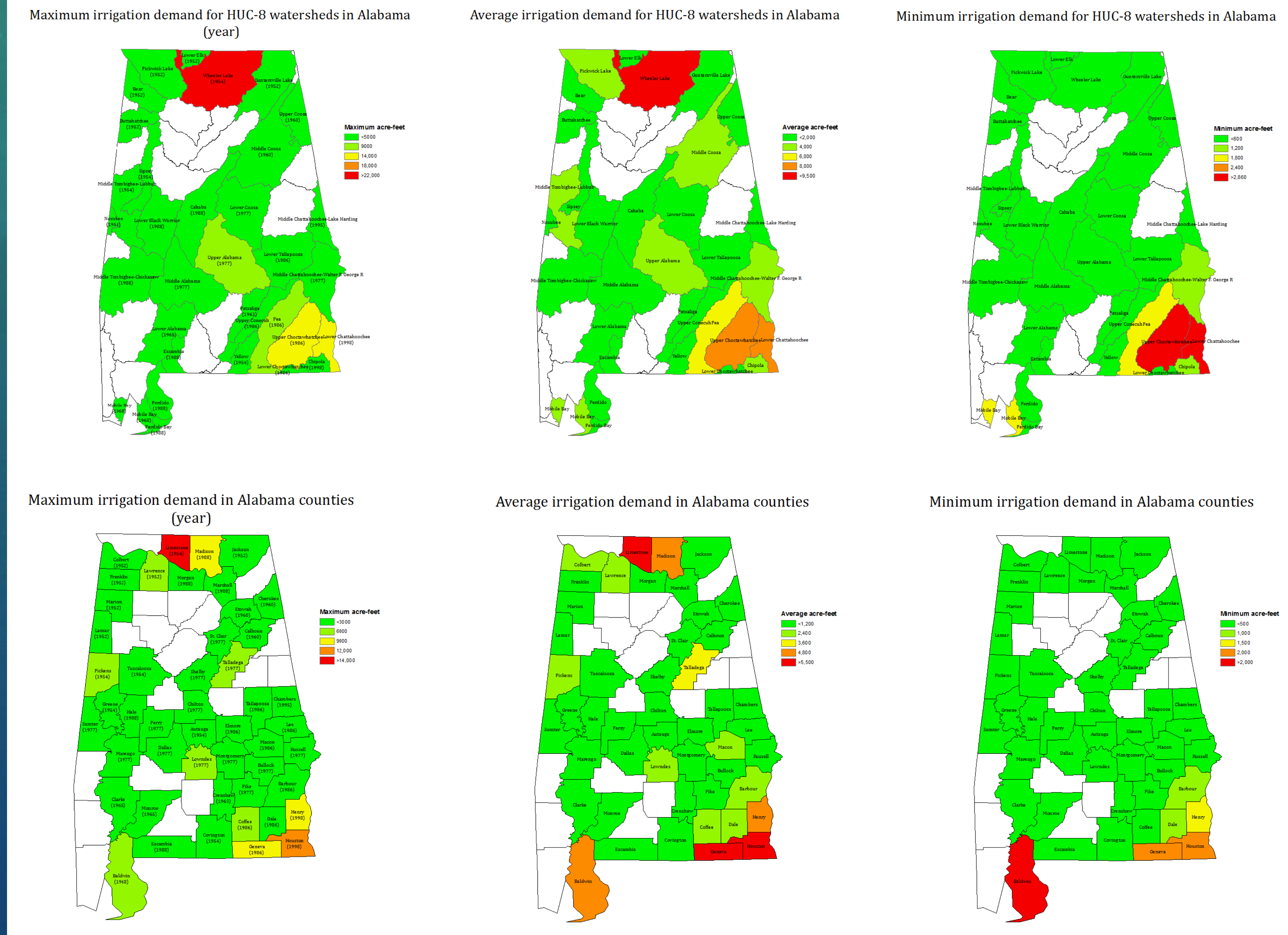
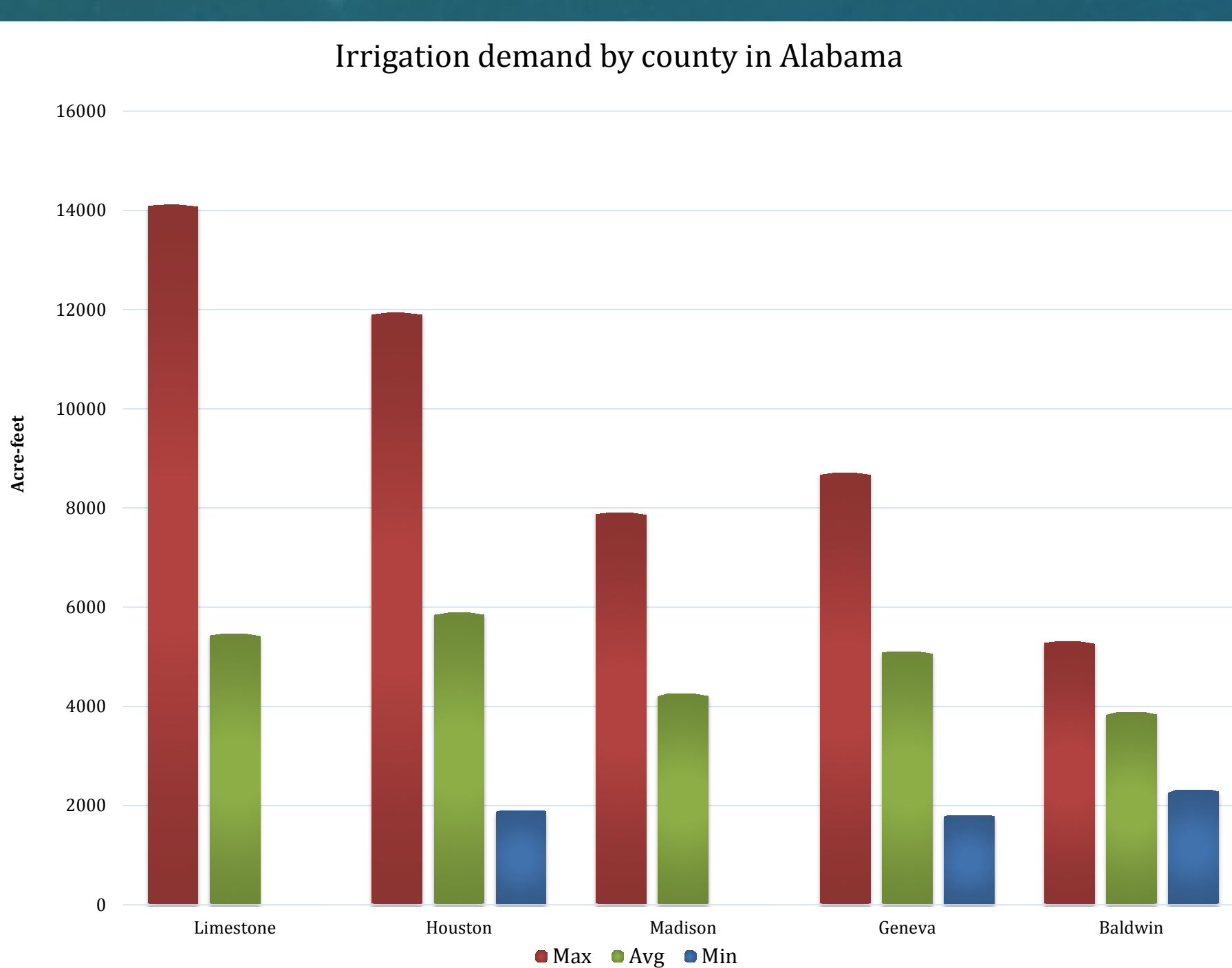
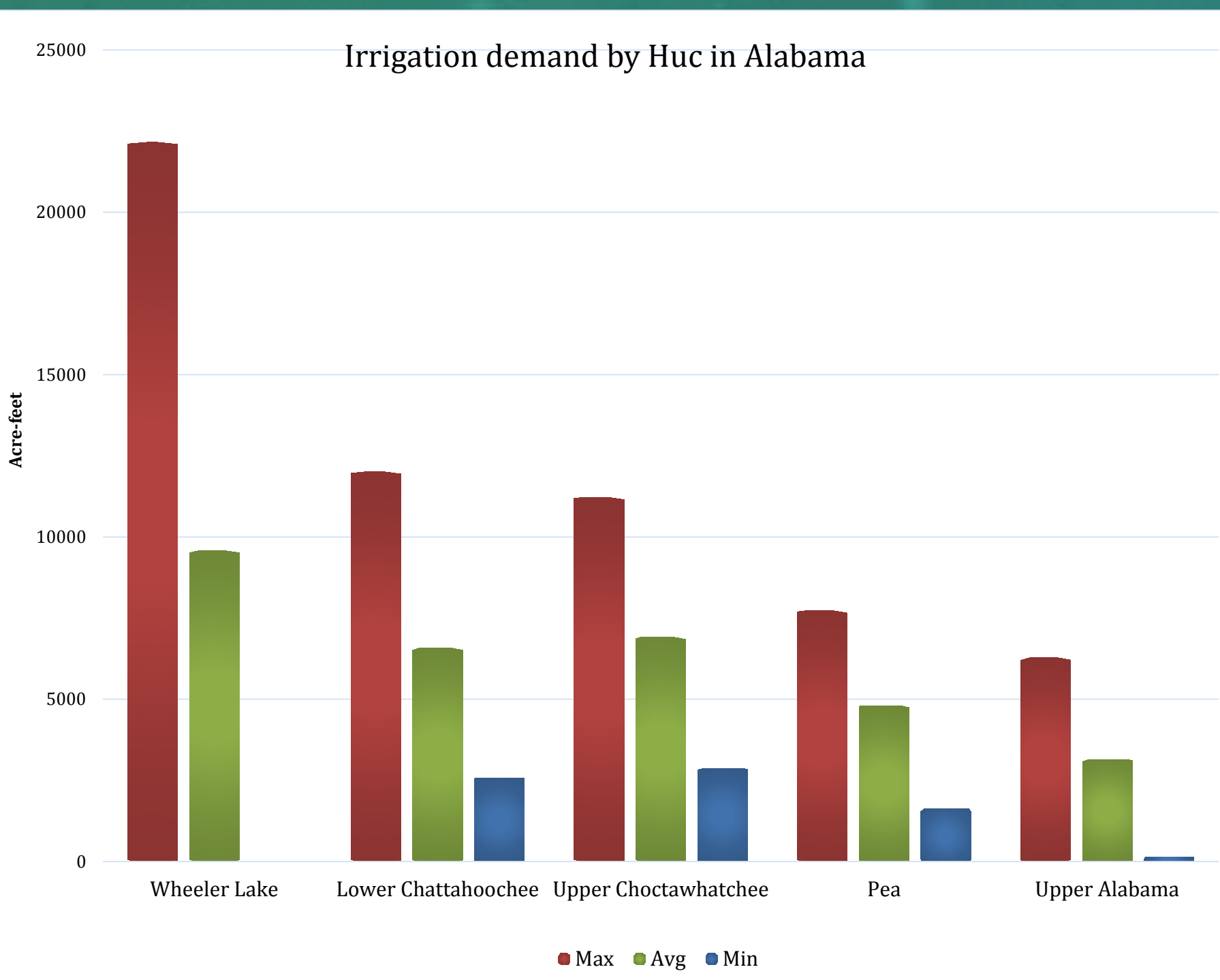
## Conclusion

Results indicate high temporal and spatial variability from year to year and throughout the state. In order to monitor and sustainably manage water resources in the state, tools are needed for decision makers and stakeholders to visualize water demand in time and space.

Future models are needed using real-time weather data with GridSSAT/WaSSI functionality in order to identify areas most impacted by fresh water deficits such as the drought experienced throughout the Southeast in 2012.

## Acknowledgements

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HUC-8 and county water demand for Alabama over 50 years.

Source: McNider, R. T., Christy, J. R., Moss, D., Doty, K., Handyside, C., Limaye, A., Garcia y Garcia, A., et al. (2011). A Real-Time Gridded Crop Model for Assessing Spatial Drought Stress on Crops in the Southeastern United States. *Journal of Applied Meteorology and Climatology*, 50(7), 1459–1475. doi:10.1175/2011JAMC2476.1. USDA-FSA Aerial Photography Field Office, Alabama NAIP 2013 Imagery