

# Using Elevation and the Floodplain to Analyze the Settlement and Abandonment of Archaeological and Modern Sites in the Lower Illinois River Valley

Danielle Duguid, University At Albany SUNY



## Research Question

Throughout time, the floodplain in the Lower Illinois River Valley has been simultaneously a plentiful resource for food, transportation, and subsistence, while also existing as a potential threat to those who build their homes in the floodplain. Inspired by recent mass flooding events, this poster looks to examine how group's settlement patterns change across time in relation to the floodplain.

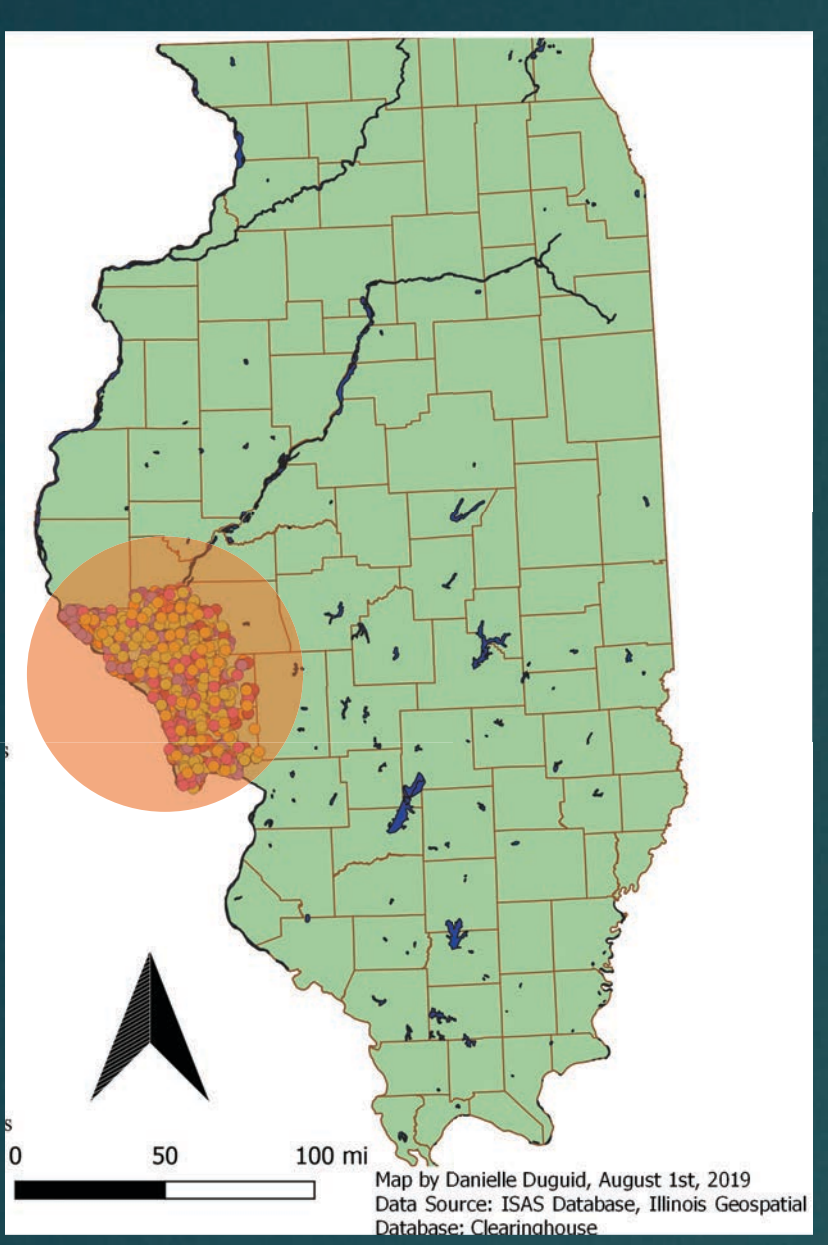


Figure 1: Map of Illinois highlighting the Lower Illinois River Valley.

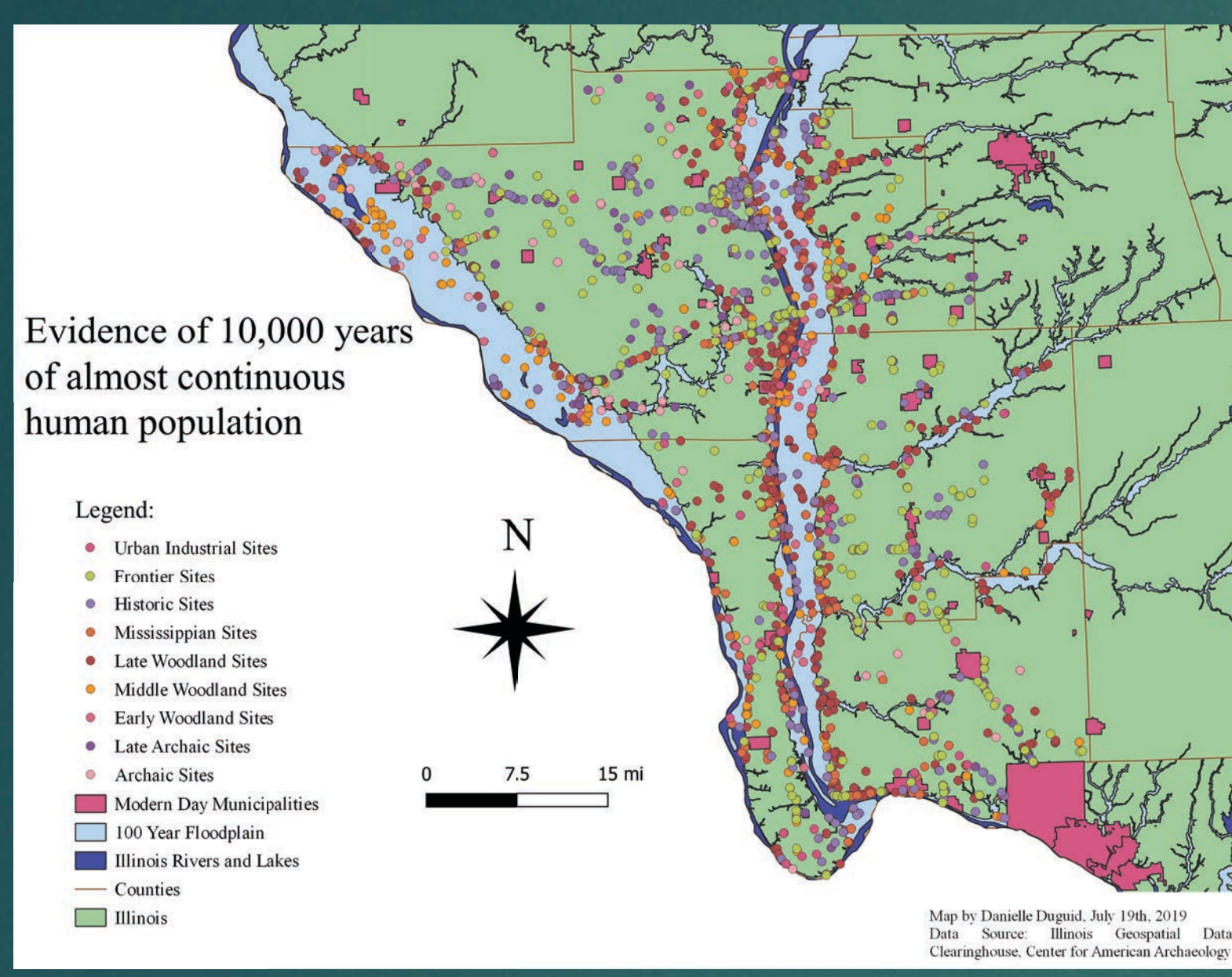


Figure 2: Map of the Lower Illinois River Valley. 3,773 sites studied are pinpointed in colored dots. Modern municipalities with populations greater than 250 appear in pink blobs. Sites shown in relation to the floodplain (light blue) and the Illinois and Mississippi Rivers (dark blue).

## Background

The Lower Illinois River Valley is defined by its rich archaeological record. The five counties examined in this study contain over 5,000 archaeological sites from the last 5,000 years. In addition, there have been record breaking flooding three times in the last ten years, causing many to abandon the area near the floodplain and relocate to higher elevation. Through looking at shifting patterns in site location (continued habitation or abandonment) measured by elevation and location in relation to the floodplain, one can begin to evaluate the changes between periods. Different site locations can indicate a number of things about a culture or period, such as their values and ideologies. These questions have been examined by experts for many decades, and this study is intended to contribute to the conversation by using a slightly different version of analysis.

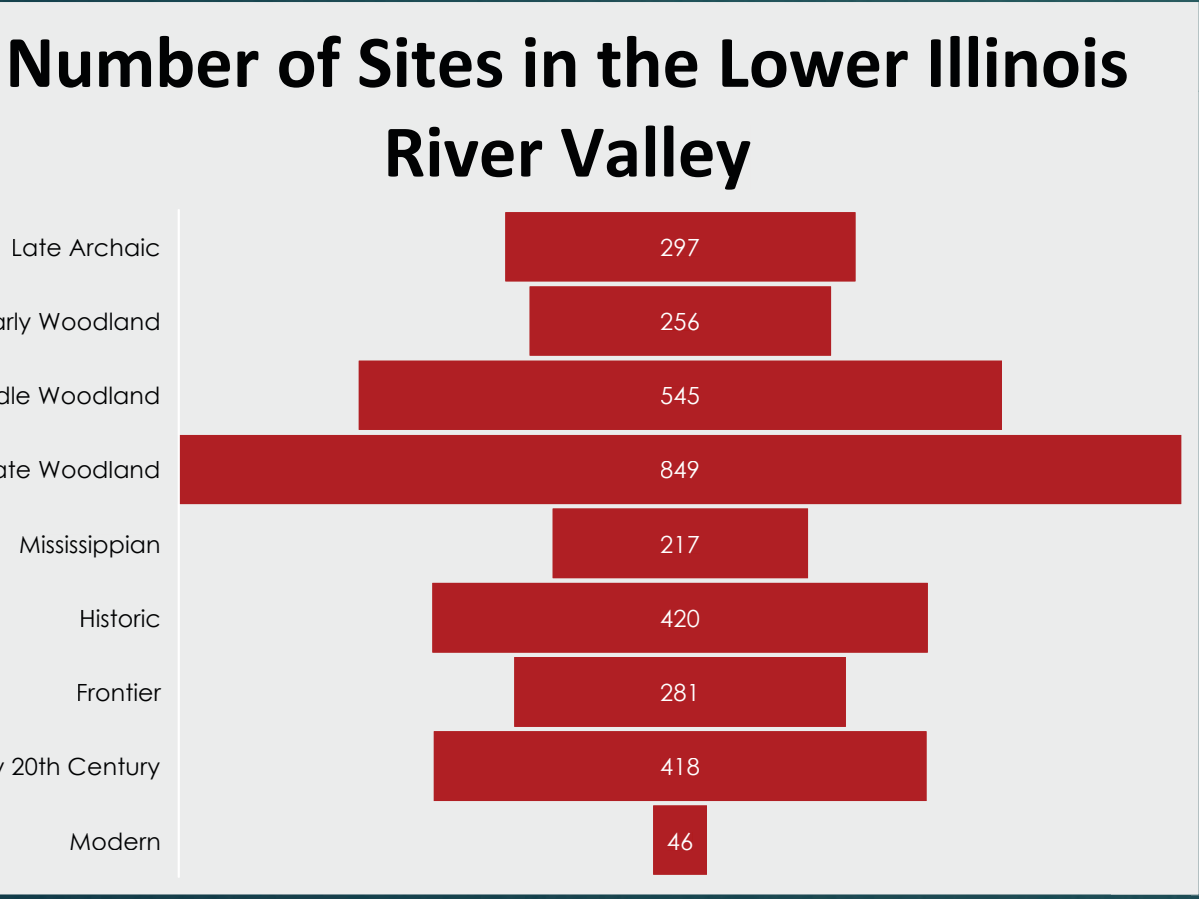


Figure 3: Depicts the number of both archaeological sites and modern day settlements in the Illinois River Valley

## Methodology

To accurately determine how occupation patterns varied in different periods, each period was divided into 2 different categories to determine their continuity in relation to the floodplain. The categories created were abandoned sites (classified as such if there was not an immediate occupation by the following group) and sites of continuous habitation from one period to the next.

3,773 sites were analyzed from the following groups; Late Archaic, Early Woodland, Middle Woodland, Late Woodland, Mississippian, Historic, Frontier, Early 20<sup>th</sup> Century, and Modern Municipalities. These periods were chosen for the number of sites to analyze, each group having over 200 sites, excepting the modern municipalities due to the current small population of the counties. They also represent a near-continuous timeline of the Lower Illinois Valley.

This information was obtained by the IAS State database. These sites were analyzed using QGIS and data from elevation, slope and location in comparison to the floodplain was gathered. All this information was collected for each category of each period, prompting the analysis

Figure 4: Table showing the percentage of sites located on the floodplain in each period.

Period	Number of Sites	Percentage of Sites in the Floodplain
Late Archaic	297	35.35%
Early Woodland	256	71.48%
Middle Woodland	545	55.96%
Late Woodland	849	35.81%
Mississippian	217	36.41%
Historic	420	24.76%
Frontier	281	11.74%
Early 20 <sup>th</sup> Century	418	2.87%
Modern	46	0.00%

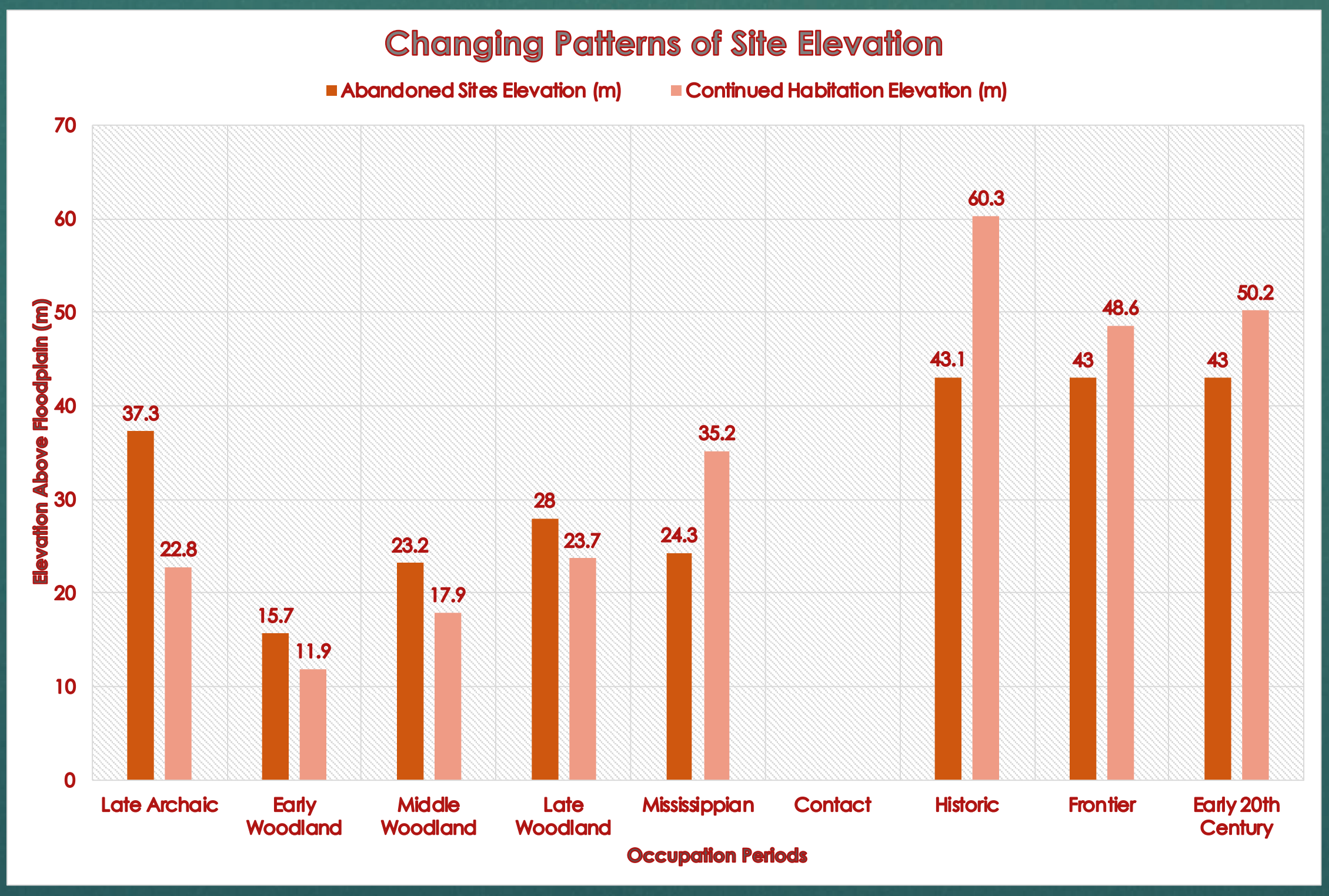


Figure 5: Shows the changing elevations for different periods as sites are abandoned or continually lived in. Precontact there are trends for populations to abandon sites of higher elevation and continue to live in sites of lower elevation for each consecutive period. Post Contact this trend reverses. These numbers are elevation above the floodplain in the LIV.

Figure 6: Map of the Early Woodland Sites in the Lower Illinois Valley. Vast majority are located in the floodplain. Average elevation is 465 ft above sea level and slope is 6.143

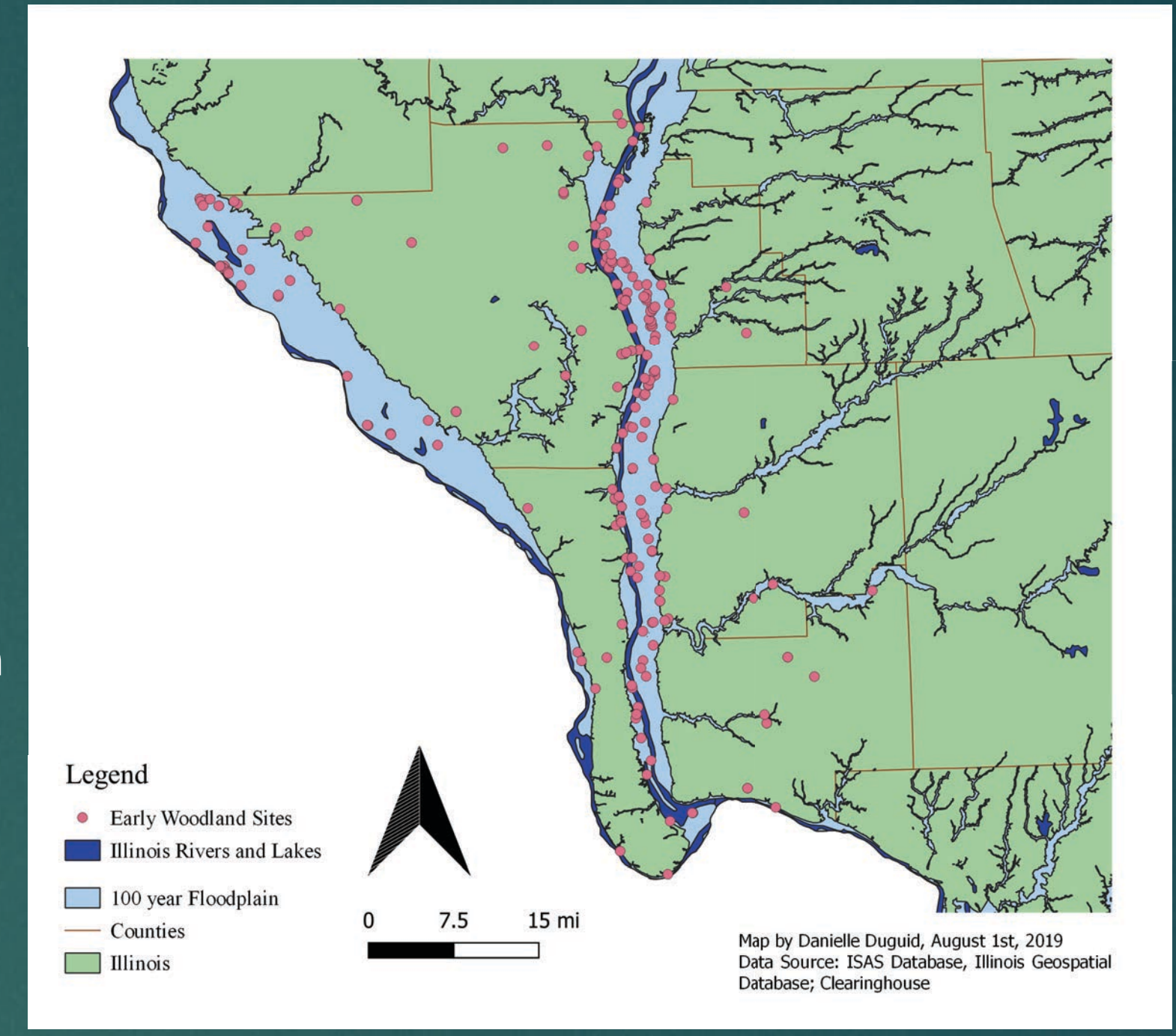
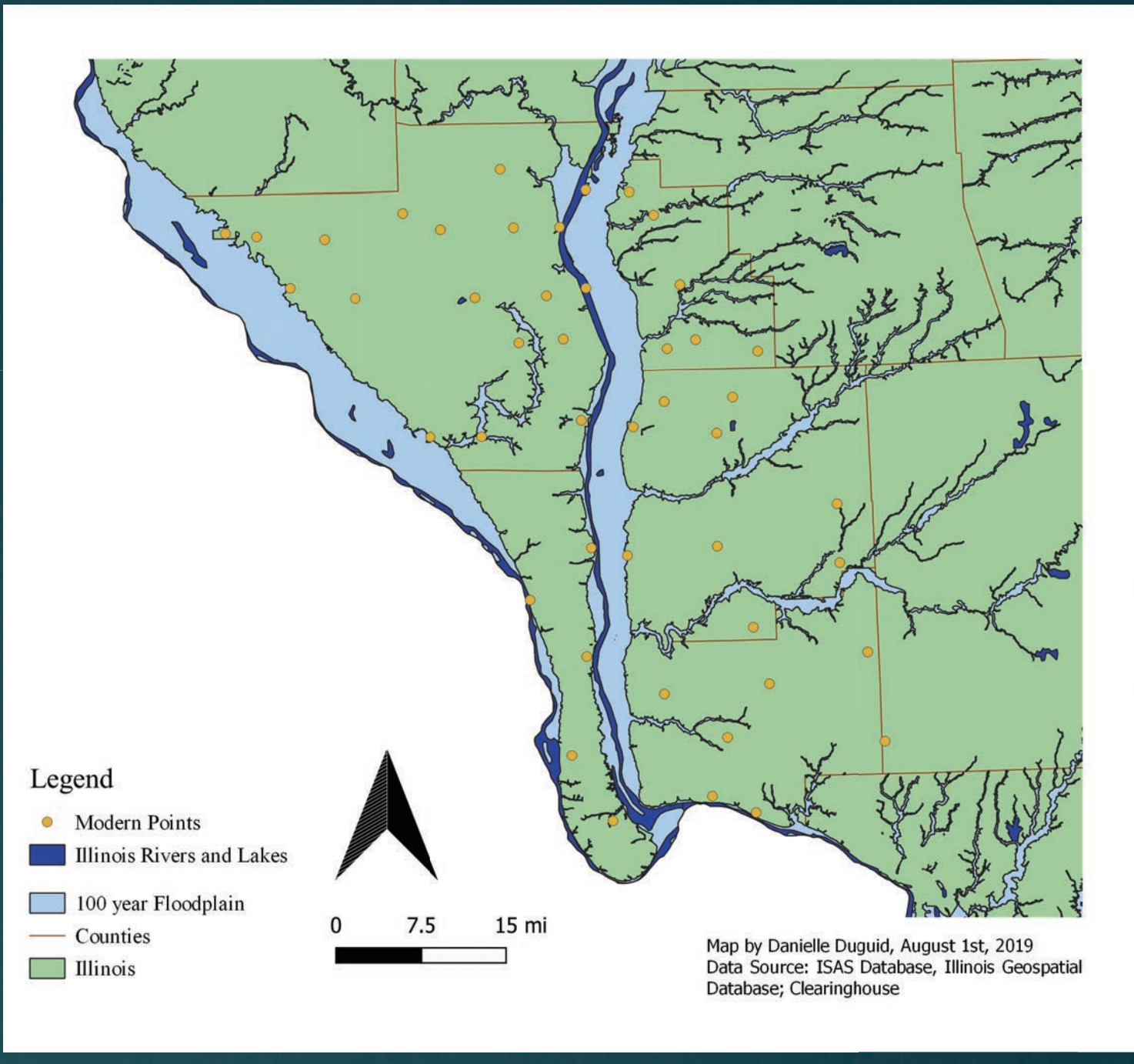


Figure 7: Map of Modern Towns in the Lower Illinois Valley. Average elevation is 584 ft above sea level and slope is 6.389.



## Results

- Pre-Contact settlement data shows consistent abandonment of higher elevation settlements and continued habitation at settlements of lower elevations.
- Post-Contact data depicts the opposite, with abandonment of lower elevation sites and continued habitation at higher altitudes.
- Of the 3,773 sites analyzed, different periods showed a higher percentage of floodplain habitation. Early Woodland demonstrates the highest occupation levels (71.48%) with Middle Woodland as the second highest (55.96%).
- More recent sites show a gradual shift towards abandonment of the floodplain. 0.0% of Modern sites are in the traditional 100-year floodplain.
- Early Woodland and Modern Sites have the smallest slopes but have the largest range in elevation.

## Discussion and Further Questions

The findings here demonstrate multiple shifts in priorities between past and present communities in this region. One would assume that proximity to the river and the floodplain are the most important things in location, but Post-Contact sites seem to say this is not as essential. The difference between elevation of Pre-Contact sites and Post-Contact sites is remarkable, with the later periods living almost twice as high off the floodplain that the previous ones did. The choices the different groups make is distinctive too. In Pre-Contact periods, groups seem to consistently chose to abandon sites of higher elevations and continue habitation in sites of lower elevations. This trend reverses in Post-Contact. Hypothetically this shift could be related to the construction of levees, which changed how the river functions, but this change appears to be before levees were constructed. Reasons could be diminished importance in using the river for subsistence, as the world slowly became more globalized and food could be shipped in various places. This analysis has shown a different measurement of shifts in living patterns in the Lower Illinois River Valley, but further analysis needs to be done to determine the exact reason.

Possible biases in this study are the locations of sites. We can only study the sites that have been found, and those found are often in during construction. (I-72 that goes through Pittsfield, and HWY 100 through Calhoun). In the example of HWY 100, it most likely creates a bias of lower elevation sites in the database. In addition, archaeologists tend to divide the world into sites and not sites. This neglects the fact that humans have been using this entire landscape, not just a small area. We need to be careful to address this fact when studying these patterns.