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TGIS 503

Lab 4 Accompanying Write-Up

GitHub Link: https://ermian98-uw.github.io/GIS/Anderson_Lab4/lab4.html

Because the amount of publicly available GEOJSON temperature data is few and far between, I decided to make Lab 4 an expansion of Lab 3, using Lab 3 as a template. I added two more key variables to my study: the Texas population estimate by county for 2018, and the temperature anomaly since 1895 by county. I extracted these data from a .csv file and manually inserted them into my existing GEOJSON file (see footnotes of webpage). Since my Lab 3 climate data was from 1999, I multiplied this new 2018 population data by 0.70 to get a 1999 estimate (since the 1999 population in Texas was 70% that of 2018, according to the US Census).

My objective was to visualize the variation of temperature and precipitation across small regions of space (e.g., counties in a US state); therefore, county boundaries were an important spatial element. These variations are explained by weather patterns and minor statistical errors, but the explanation was not my focus. I wanted to show how the region has warmed or cooled in the past 100 years and how patterns of global warming are not smooth over the course of a year or century. To accomplish this, I utilized slider bars to automatically advance time in front of the users' eyes. I was especially proud of my map that oscillates between 1895 and 1999 temperatures every two seconds while time is paused. To calculate the 1895 estimates alongside the actual 1999 data, I used nested regular expressions to subtract the 1999 values from their ~100-year temperature anomalies, and used Boolean operators to determine which temperature corresponded to which hexadecimal color. To give the illusion of time passing, I implemented event listeners and setInterval() methods to dynamically pull and replace map layers.

I chose MapBox as my mapping platform for three main reasons: I already built Lab 3 around it, I could reuse my stylish custom basemap, and the implementation of MapBox into JavaScript was more natural for me since I have previous Java coding experience. Additionally, I didn't have to use any elaborate plugins or packages – it was easy to add controls like fullscreen and north reorientation with the basic MapBox GL library. The ability to right-click and experience a 3-D view while the time-lapse plays is also an enjoyable feature!