Getting Started with Bokeh: Interactive Python Visualizations Made Easy

I recently discovered the Bokeh package for creating interactive, visually appealing data visualizations in Python, and I wanted to share a few lessons that might be useful for others just starting out.

Installation Tips

Bokeh is a fairly large package, and I initially ran into issues when trying to install it into environments with other heavy dependencies, especially ones with **ArcPy** or GIS-related configurations. In my experience, it installs much more smoothly into a **clean Conda environment**.

I tested Bokeh in both **Spyder** and **Jupyter Notebook**—while it technically works in both, **Jupyter Notebook was much more stable**. Spyder crashed my environment a couple of times during rendering, while Jupyter handled everything without issues.

First Impressions

Once installed, Bokeh offers incredible flexibility. First released in 2013, the package has matured significantly and now supports a wide variety of visualizations—from simple line plots to multilayer toggle charts with hover tools, sliders, and other interactive widgets.

A quick tip: **only import the components you need**. For example:

'from bokeh.models import HoverTool, LinearColorMapper, ColorBar'

Bokeh has a vast number of modules, so keeping imports minimal can help with readability and performance.

Using Bokeh for Spatial Data

When working with spatial data, you'll need to convert your layers to **GeoJSON** early in your process. Bokeh is optimized to read and render GeoJSON via GeoJSONDataSource, and it doesn't natively support formats like shapefiles or GeoDataFrames. Converting to GeoJSON ensures that maps render correctly and interactive tools like hover and tap function as expected.

My Project: Mapping Biodiversity in Florida

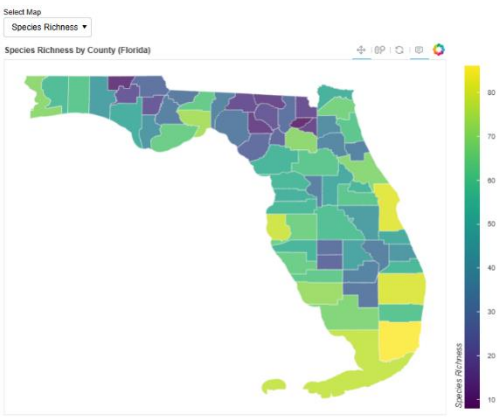
For a recent project, I used Bokeh to create an **interactive dashboard** exploring the relationship between **species richness** and **dominant land cover type** across Florida counties. The dashboard includes two toggleable maps:

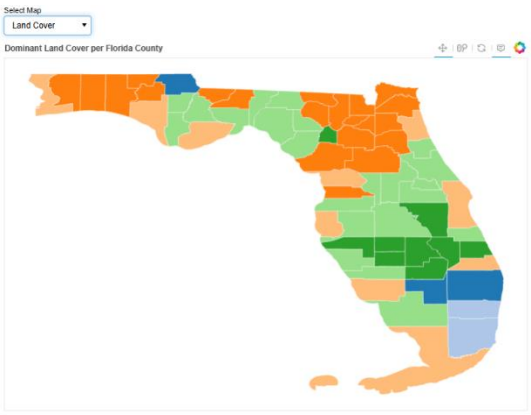
- **Map 1:** Dominant land cover by county

- **Map 2:** Species richness by county

Each county displays a tooltip on hover showing the county name and exact values. This interactive functionality made the data far easier to explore and communicate.

Here are static previews of the two maps (interactive version not shown):





Key Features Highlighted:

- **Hover tools** that show dynamic values
- **Map toggles** for switching between datasets
- **Custom color palettes** for visual clarity

Looking at the visuals, users can easily identify spatial patterns in biodiversity and land use. The interactivity was key to helping my audience understand the data intuitively.

Final Thoughts

Bokeh is an incredibly powerful tool for creating browser-based visualizations without requiring JavaScript. If you're working with spatial data or building interactive dashboards in Python, it's definitely worth learning. I'd recommend exploring the Bokeh documentation and gallery for ideas—they include great tutorials on plotting, interactivity, layouts, and Bokeh server apps.