

```
pip install geopandas bokeh pandas shapely
```

```
Requirement already satisfied: geopandas in c:\users\jjjes\anaconda3\lib\site-packages (1.0.1)
Requirement already satisfied: bokeh in c:\users\jjjes\anaconda3\lib\site-packages (3.4.1)
Requirement already satisfied: pandas in c:\users\jjjes\anaconda3\lib\site-packages (2.2.2)
Requirement already satisfied: shapely in c:\users\jjjes\anaconda3\lib\site-packages (2.0.6)
Requirement already satisfied: numpy>=1.22 in c:\users\jjjes\anaconda3\lib\site-packages (from geopandas) (1.26.4)
Requirement already satisfied: pyogrio>=0.7.2 in c:\users\jjjes\anaconda3\lib\site-packages (from geopandas) (0.10.0)
Requirement already satisfied: packaging in c:\users\jjjes\anaconda3\lib\site-packages (from geopandas) (23.2)
Requirement already satisfied: pyproj>=3.3.0 in c:\users\jjjes\anaconda3\lib\site-packages (from geopandas) (3.7.0)
Requirement already satisfied: Jinja2>=2.9 in c:\users\jjjes\anaconda3\lib\site-packages (from bokeh) (3.1.4)
Requirement already satisfied: contourpy>=1.2 in c:\users\jjjes\anaconda3\lib\site-packages (from bokeh) (1.2.0)
Requirement already satisfied: pillow>=7.1.0 in c:\users\jjjes\anaconda3\lib\site-packages (from bokeh) (10.3.0)
Requirement already satisfied: PyYAML>=3.10 in c:\users\jjjes\anaconda3\lib\site-packages (from bokeh) (6.0.1)
Requirement already satisfied: tornado>=6.2 in c:\users\jjjes\anaconda3\lib\site-packages (from bokeh) (6.4.1)
Requirement already satisfied: xyzservices>=2021.09.1 in c:\users\jjjes\anaconda3\lib\site-packages (from bokeh) (2022.9.0)
Requirement already satisfied: python-dateutil>=2.8.2 in c:\users\jjjes\anaconda3\lib\site-packages (from pandas) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in c:\users\jjjes\anaconda3\lib\site-packages (from pandas) (2024.1)
Requirement already satisfied: tzdata>=2022.7 in c:\users\jjjes\anaconda3\lib\site-packages (from pandas) (2023.3)
Requirement already satisfied: MarkupSafe>=2.0 in c:\users\jjjes\anaconda3\lib\site-packages (from Jinja2>=2.9->bokeh) (2.1.3)
Requirement already satisfied: certifi in c:\users\jjjes\anaconda3\lib\site-packages (from pyogrio>=0.7.2->geopandas) (2024.7.4)
Requirement already satisfied: six>=1.5 in c:\users\jjjes\anaconda3\lib\site-packages (from python-dateutil>=2.8.2->pandas) (1.16.0)
Note: you may need to restart the kernel to use updated packages.
```

```
from bokeh.io import output_file, show
from bokeh.plotting import figure
from bokeh.models import GeoJSONDataSource, HoverTool
import geopandas as gpd
```

Load your data

```
world = gpd.read_file("C:\\Users\\jijes\\Downloads\\  
ne_110m_admin_0_countries\\ne_110m_admin_0_countries.shp")
```

Convert GeoDataFrame to GeoJSON

```
geo_source = GeoJSONDataSource(geojson=world.to_json())
```

Create a Bokeh figure

```
p = figure(title="Interactive Map with Hover",  
tools="pan,wheel_zoom,reset,save", x_axis_location=None,  
y_axis_location=None)  
p.grid.grid_line_color = None
```

Add world countries

```
p.patches('xs', 'ys', source=geo_source, fill_color='blue',  
line_color='black', line_width=0.5, fill_alpha=0.7)  
GlyphRenderer(id='p1036', ...)
```

Add hover tool

```
hover = HoverTool()  
hover.tooltips = [("Name", "Berklin"), ("Population", "2000000")]  
p.add_tools(hover)
```

Output and show

```
output_file("interactive_map.html")  
show(p)
```