Summary

Our visualization shows the advance of desertification in the Northeastern region of Brazil. We plot the aridity index of Brazil obtained from satellite data on precipitation and evapotranspiration, showing graphs of the evolution of aridity indices from 2000 to 2023 in the Northeastern region of Brazil. We used the following datasets to create our visualization:

- MODIS/Terra Net Evapotranspiration Gap-Filled Yearly L4 Global 500 m SIN Grid
- GPM / IMERG Precipitation Data

Desertification, driven by both natural factors and human activities like overgrazing and unsustainable agriculture, leads to the gradual loss of land productivity in semi-arid regions. These regions are highly susceptible to the effects of climate change, representing about 40% of the Earth's surface and are home to more than 14% of the world's population. This process poses economic challenges, diminishing soil fertility and agricultural productivity, impacting food security (UN SDG 2). Ecologically, desertification contributes to biodiversity and vegetation loss, intensifiying climate change, aligning with the goal of Climate Action (UN SDG 13). Societally, it hampers water resources, compromising access to clean water and sanitation (UN SDG 6). We believe that our visualization can be an incentive for the adoption of sustainable agricultural practices in semi-arid regions, in particular in Brazil's Northeastern region.

Our visualization was created using a Jupyter Notebook in Python. The MODIS Evapotranspiration data was obtained from the AppEEars API by HTML request and the Precipitation data was obtained from the ClimateServ API. We also highlight the main Python packages used:

- Pandas
- Matplotlib
- GeoPandas
- ClimateservAccess
- Folium
- Rasterio