Team Viva Aqua

Our visual depicts estimated groundwater level at a resolution of about 177 meters across the urban west coast of Gambia, including the capital city of Banjul and parts of the Western subdivision, which depend heavily on groundwater for access to clean drinking water. Due to the limited time we had to create this, we feel that it represents merely the tip of the iceberg with regards to the potential of our main thesis - that is, producing high-resolution, near real-time maps of groundwater level using machine learning. First and foremost, our project could go a long way to advance SDG 6 (Clean Water), helping to identify suitable locations for borehole wells, addressing clean water scarcity, and effectively monitoring groundwater. What's more, it could also contribute to SDG 2 (Zero Hunger) because of the role that groundwater plays in sustaining agriculture and food production, thus mitigating hunger. In terms of SDG 13 (Climate Action), it would provide the necessary tools to promote sustainable water resource management and enhance global climate resiliency. So as you can see, there are a plethora of potential benefits, and we think that this visual serves as a good proof-of-concept for what this project is capable of. **Tools used** throughout the project include Python (Jupyter Notebooks, Pandas, NumPy, Matplotlib, Seaborn, Geopandas, Scikit-Learn, netCDF4, Xarray, ClimateservAccess), QGIS, kepler.gl, HTML, CSS, JS, AppEEARS, and ClimateSERV. **Datasets used** include GGIS (Global Groundwater Information System), IMERG (Integrated Multi-satellitE Retrievals for Global Precipitation Mission), SPoRT/SERVIR LIS (Land Information System), MODIS (Moderate Resolution Imaging Spectroradiometer), and BGS (British Geological Survey).