AirQo African Air Quality Prediction Challenge

Can you use Sentinel 5P data to predict air quality around Africa for environmental justice?

Air pollution is the world's largest environmental health risk, contributing to 7 million premature deaths globally each year, and poor people in developing countries are the most heavily affected. Low-cost IoT sensor networks on the ground have the potential to close the climate data gaps in sub-Saharan Africa, but networks are expensive to implement and maintain in African cities.

Satellite-derived PM2.5 estimates based on Aerosol Optical Depth (AOD) and machine learning techniques can be used to estimate pollution levels over large areas to help develop interventions such as vulnerability risk profiles for urban spaces, health preservation and environmental protection for affected populations, as well as community empowerment, and climate change mitigation.

Project Objective

In this challenge, you are asked to estimate PM2.5 levels from satellite observations based on Aerosol Optical Depth (AOD) for eight cities in seven African countries - Lagos, Accra, Nairobi, Yaounde, Bujumbura, Kisumu, Kampala, and Gulu - with varying ground monitoring resolutions, using appropriate machine learning algorithms. Ground-based observations in the selected cities will be used to validate the satellite estimates.

Evaluation

The evaluation metric for this competition is Root Mean Squared Error.