Role of Combining Remote Sensing and Modeling in Air Quality Monitoring in Rwanda

Didier NTWALI, Rwanda Space Agency, Rwanda.
Email: dntwali@space.gov.rw

Research Question

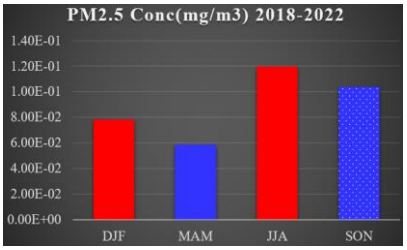
How can we combine ground-based sensors, satellite observations and models to accurately monitor air quality?

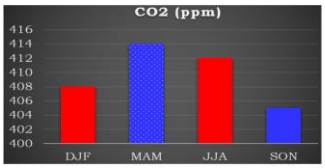
Remote Sensing Data

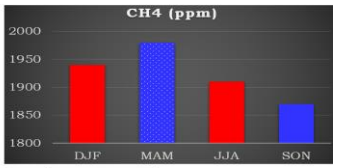
- Rwanda Climate Observatory Project (RCO).
- Satellites Observations: MODIS Terra/Aqua and Sentinel 5P-Tropomi.

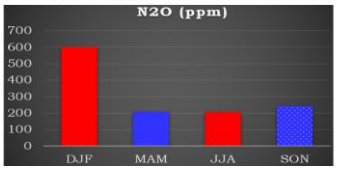
Modeling & Reanalysis Data

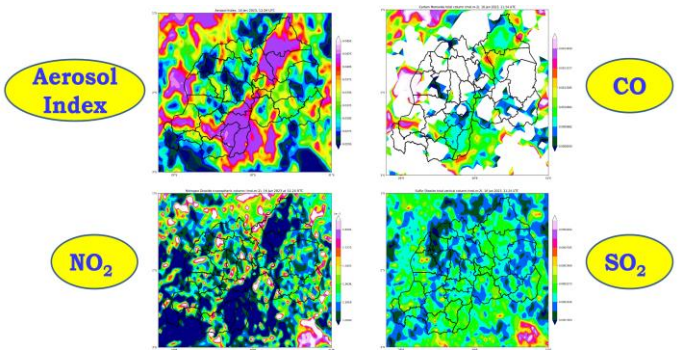
- HYSPLIT
- ERA5

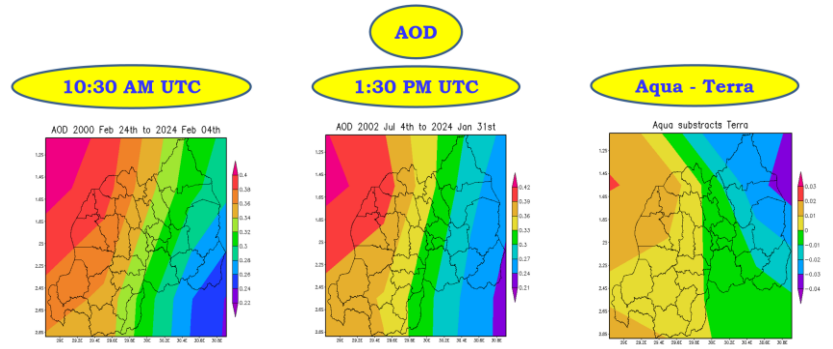


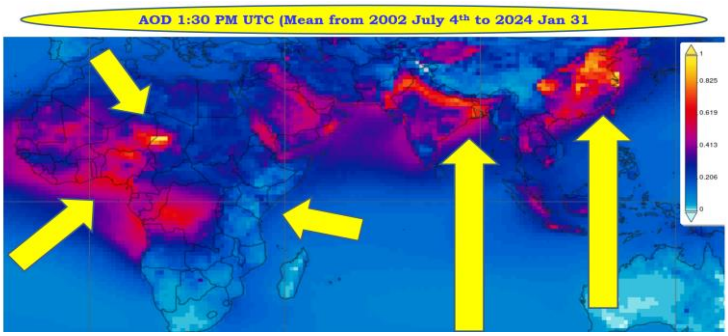


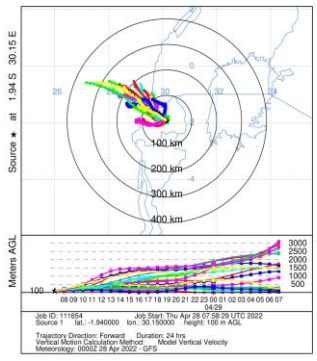


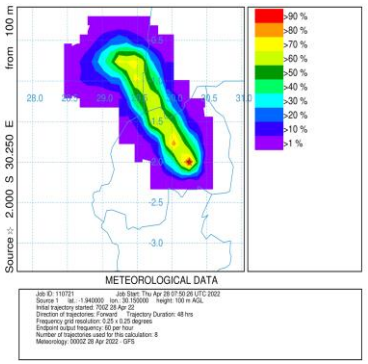


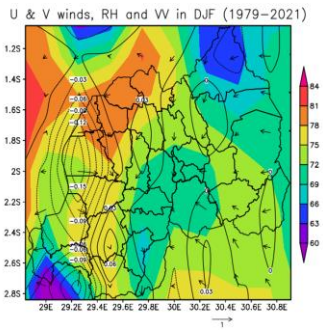


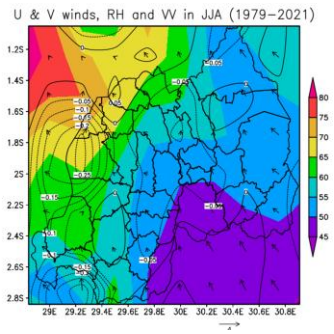












Findings

- It is crucial to combine data from ground-based sensors, satellites and models to accurately provide the air quality status.
- The anthropogenic activities are significantly contributing to change in air quality.
- The spatial variability is remarkably affected by the annual dominant south-easterly winds.
- The satellites observations enable us to get more spatial coverage while ground-based sensors are crucial during cloudy season.