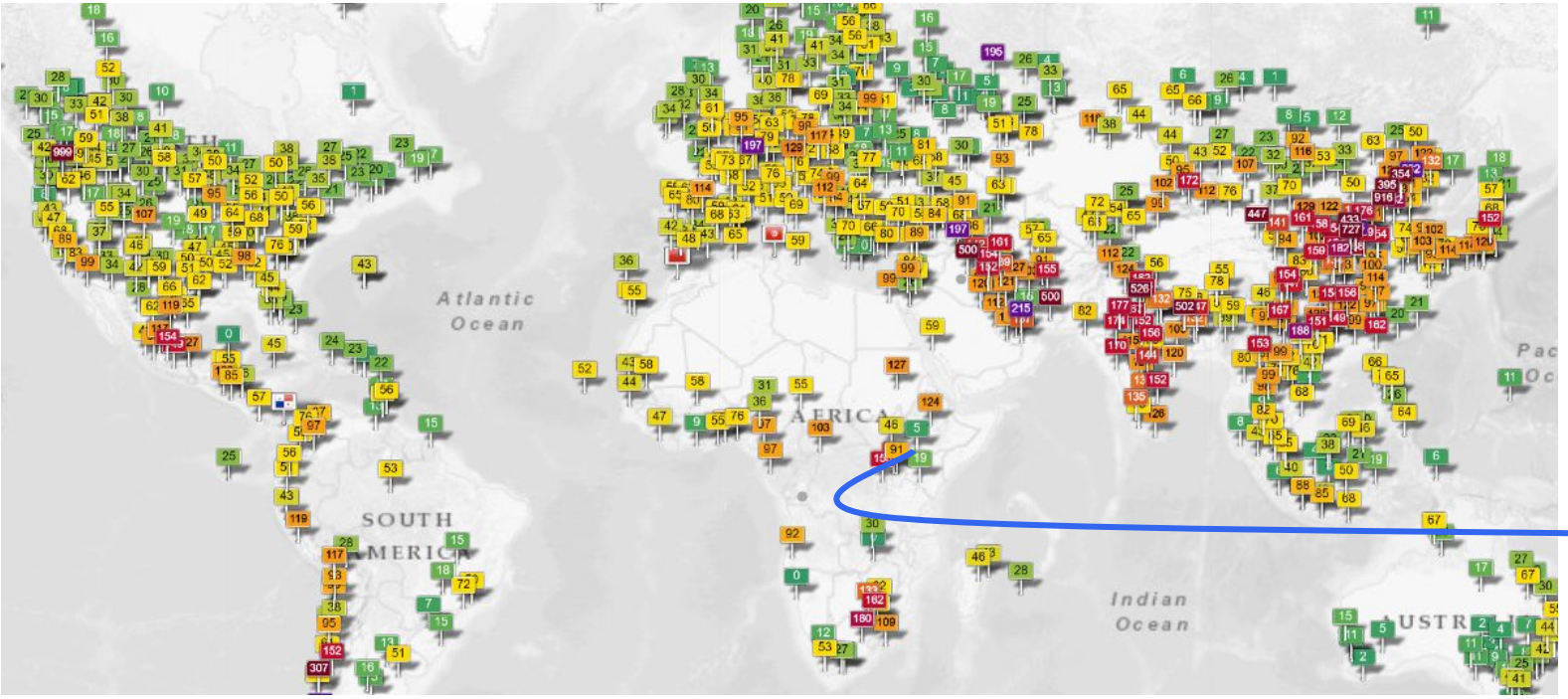
Seeing the air in African cities: Adapting low-cost sensors to advance sustained monitoring and engagement

Deo Okure
Air Quality Scientist and Programme Manager

airqo
Breathe Clean.

MAKERERE UNIVERSITY

Scarcity of ground monitoring data in Africa and the global South



Source:https://waqi.info/ (May. 05, 2022: 09:06 EAT)

- Low-cost sensor networks could close the air quality data gaps in the global South

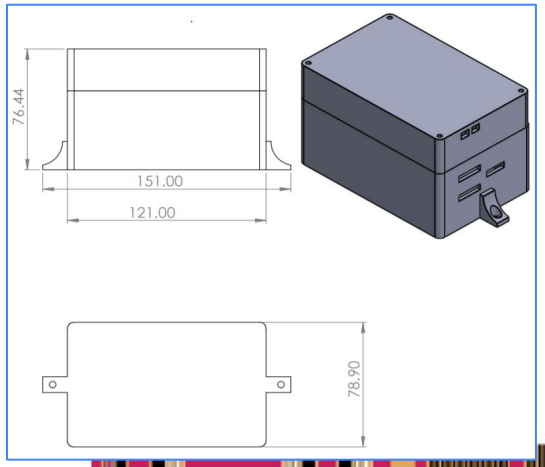
Leveraging AI and computing capabilities for effective data management and awareness: a test case for sustained monitoring

airqo
Breathe Clean.

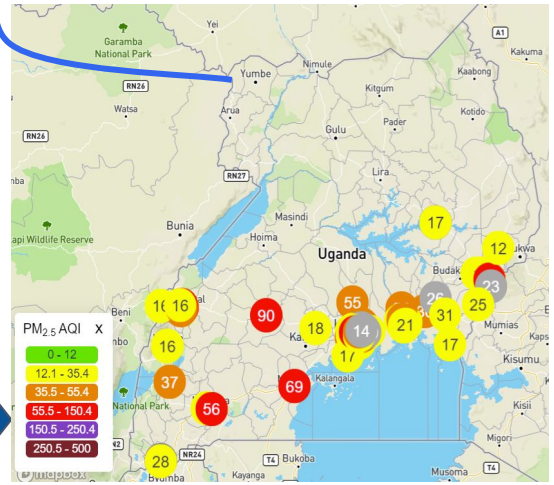
MAKERERE UNIVERSITY

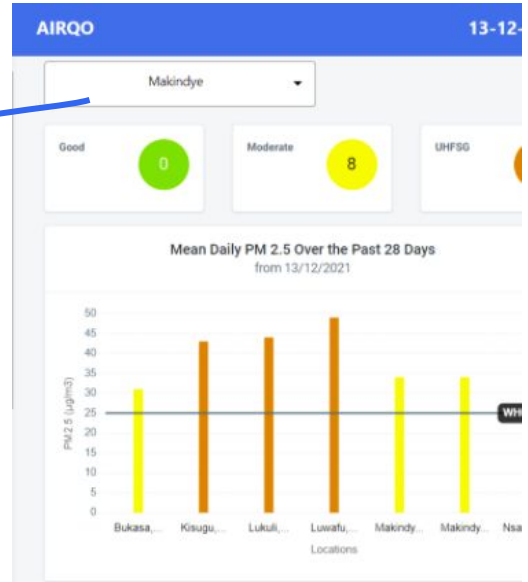
Custom air quality solutions

Over ~120 low-cost devices deployed



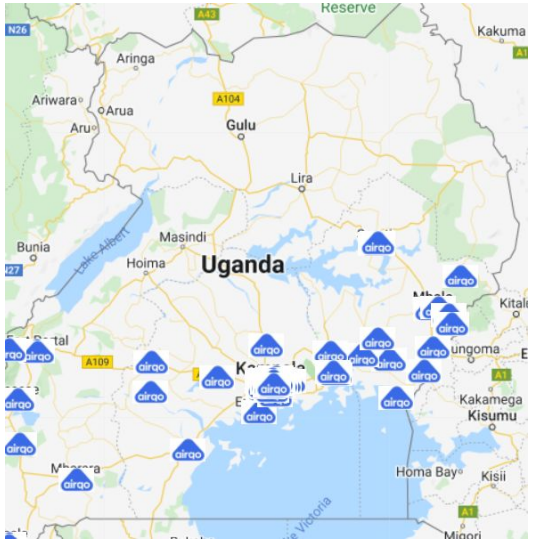
Locally developed technology





Custom-made dashboards

The Low-cost data pipeline



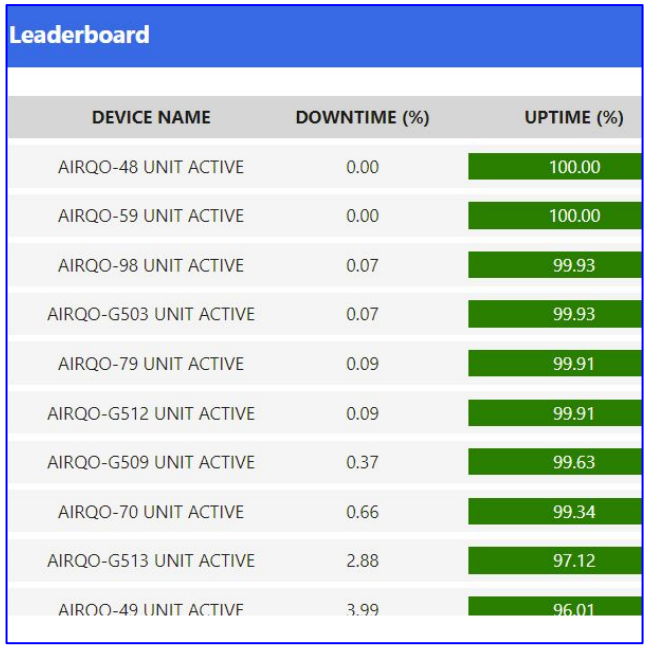
Physical network

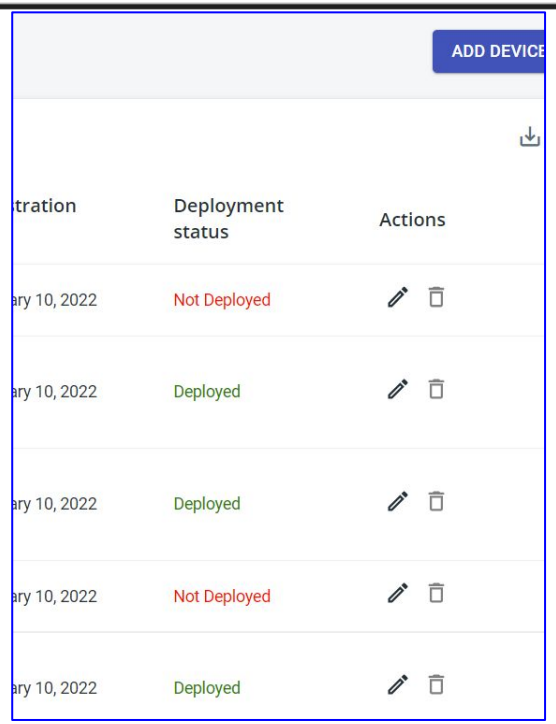
1. **Cloud IoT**
2. **Data (pre)processing and raw data storage**
3. **Local Calibration model (retrained monthly)**
4. **Calibrated data stored**
5. **Analytics modelling**

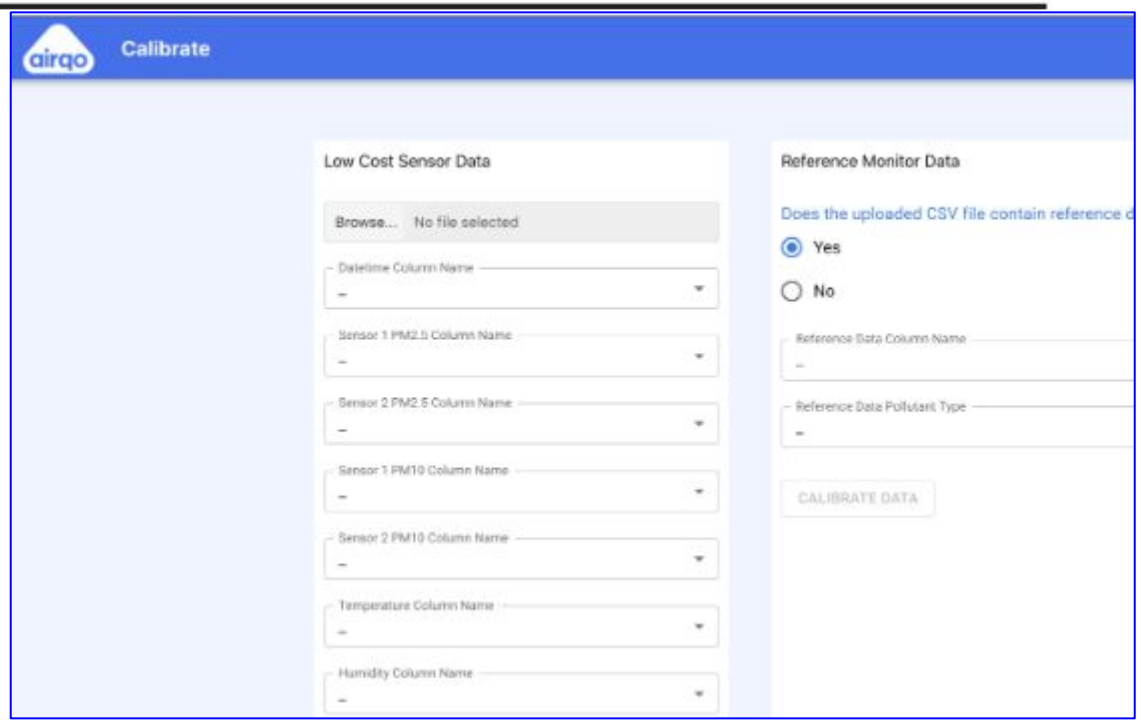
Public data access through custom digital platforms and API

www.airqo.net

NETManager: What does it take to manage a large network of devices?







- Site details and metadata
- Understanding device uptime and overall device performance

- Calibration as a userable product for low-cost sensor initiatives
- Opportunity to have a one-stop centre for quality assurance

Engagement for policy and awareness

- Utilising different avenues to engage diverse stakeholder groups

U.S. Mission Uganda Retweeted

U.S. Ambassador to Uganda @USAmbUganda · May 7

Today I learned about 🇺🇸 / 🇺🇬 cooperation across sectors to improve the quality of the air we all breathe and how this can save lives & create jobs. #CleanAir4Kampala #AQAW2021 #KnowYourAir

Implications and lessons

- Routine maintenance to ensure data integrity
- Power optimisation continues to be critical towards device performance
- Dual sensor approach has been very useful for validation
- Hands-on training for (potential) data users critical for uptake