

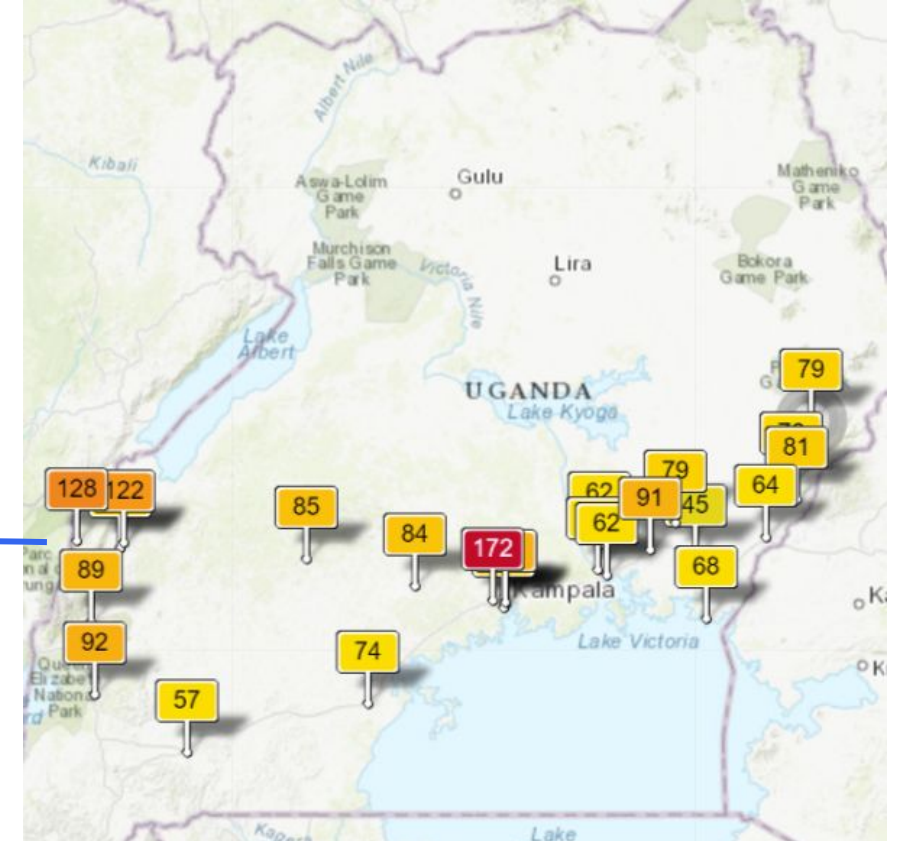
Seeing the air in African cities: Adapting low-cost sensors to advance sustained monitoring and engagement

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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

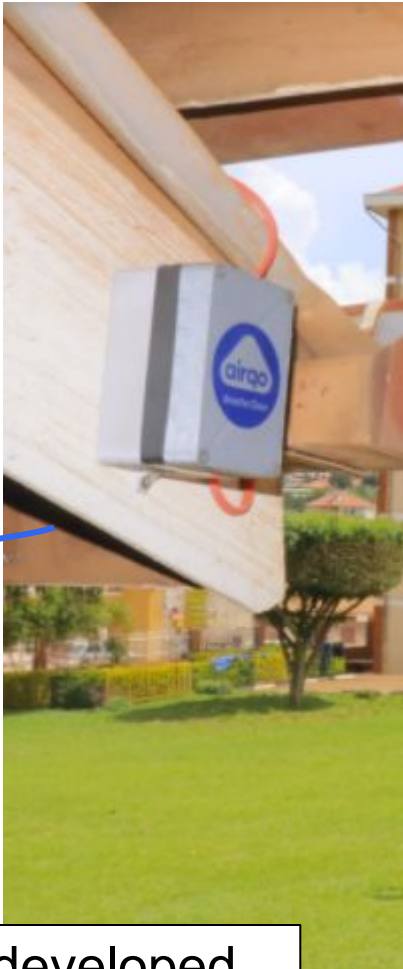


MAKERERE UNIVERSITY



Custom air quality solutions

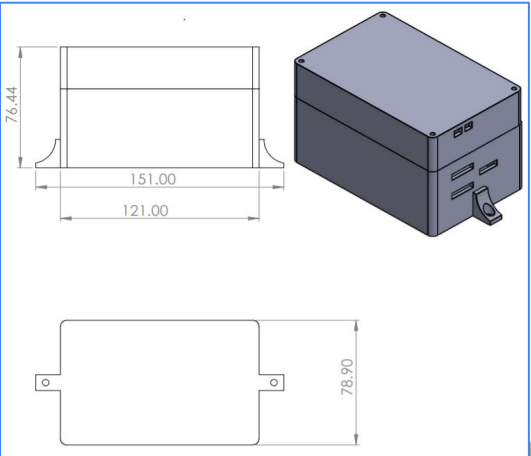
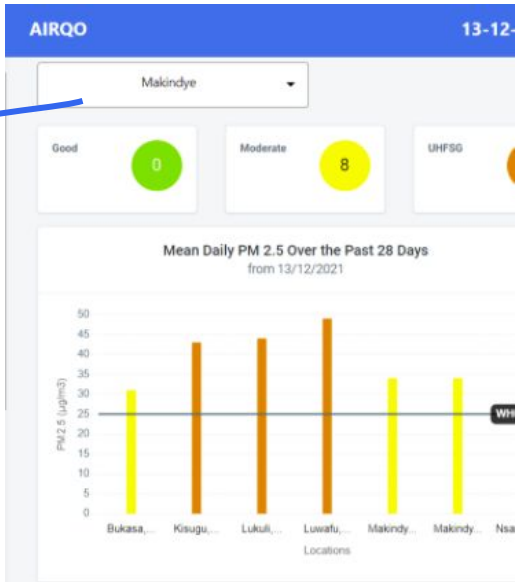
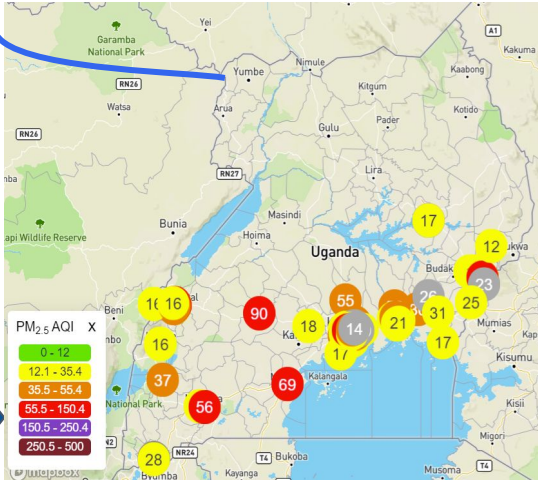
Over ~120 low-cost devices deployed



Locally developed technology



Custom-made dashboards





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

Leaderboard		
DEVICE NAME	DOWNTIME (%)	UPTIME (%)
AIRQO-48 UNIT ACTIVE	0.00	100.00
AIRQO-59 UNIT ACTIVE	0.00	100.00
AIRQO-98 UNIT ACTIVE	0.07	99.93
AIRQO-G503 UNIT ACTIVE	0.07	99.93
AIRQO-79 UNIT ACTIVE	0.09	99.91
AIRQO-G512 UNIT ACTIVE	0.09	99.91
AIRQO-G509 UNIT ACTIVE	0.37	99.63
AIRQO-70 UNIT ACTIVE	0.66	99.34
AIRQO-G513 UNIT ACTIVE	2.88	97.12
AIRQO-49 UNIT ACTIVE	3.99	96.01

Location	Deployment status	Actions
ary 10, 2022	Not Deployed	
ary 10, 2022	Deployed	
ary 10, 2022	Deployed	
ary 10, 2022	Not Deployed	
ary 10, 2022	Deployed	

The 'Calibrate' interface is divided into two main sections: 'Low Cost Sensor Data' and 'Reference Monitor Data'. The 'Low Cost Sensor Data' section includes a 'Browse...' button for file selection and several dropdown menus for specifying column names: 'Datetime Column Name', 'Sensor 1 PM2.5 Column Name', 'Sensor 2 PM2.5 Column Name', 'Sensor 1 PM10 Column Name', 'Sensor 2 PM10 Column Name', 'Temperature Column Name', and 'Humidity Column Name'. The 'Reference Monitor Data' section features radio buttons for 'Yes' (selected) and 'No' to indicate if the uploaded CSV file contains reference data, along with a 'Reference Data Column Name' field and a 'Reference Data Pollutant Type' dropdown. A 'CALIBRATE DATA' button is located at the bottom right of the form.


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

- Calibration as a usable 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

