AQ4Zim: Integrating TROPOMI Satellite Data and Ground Networks for Improved Air Quality Monitoring in Zimbabwe

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Scientific Background and Objectives

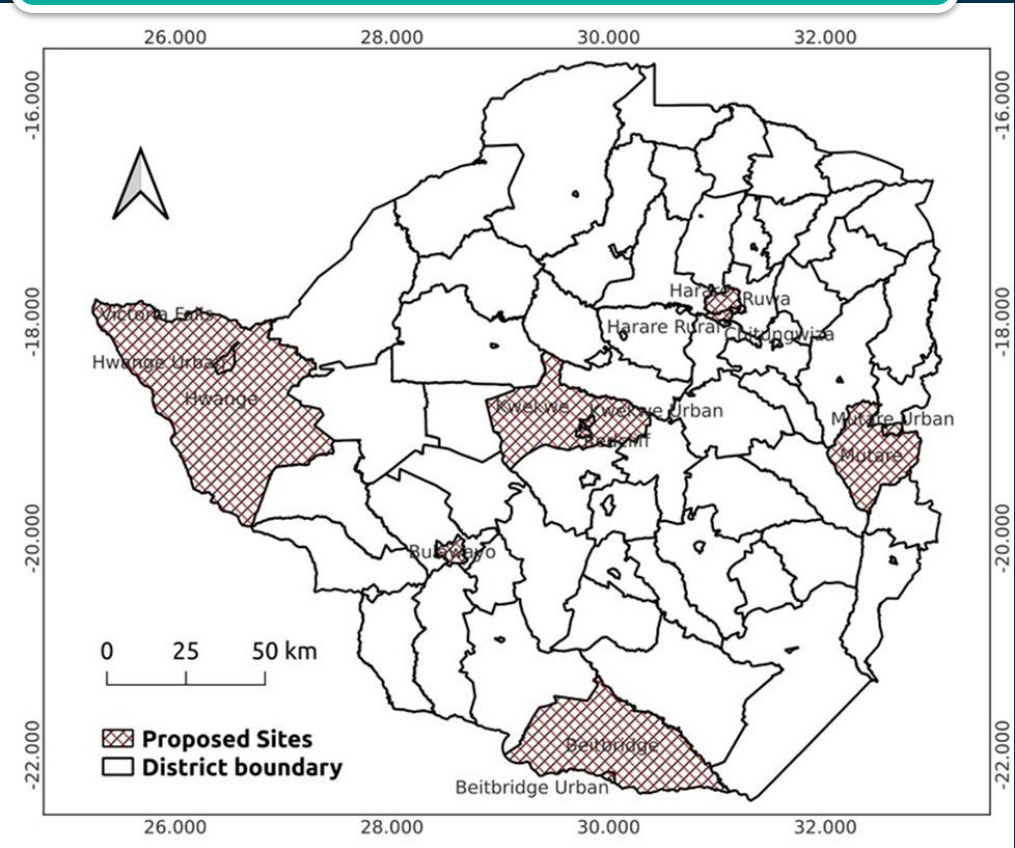
AQ4ZIM project objectives:

- Densify air quality monitoring network through installation of Low-Cost Air Quality Sensors (LCAQS);
- Explore the spatial and temporal variations in TROPOMI Aerosol patterns across Zimbabwe and validate aerosol products;
- Develop and evaluate a smoke-dust discriminator for TROPOMI.

Research Outline

Study Area

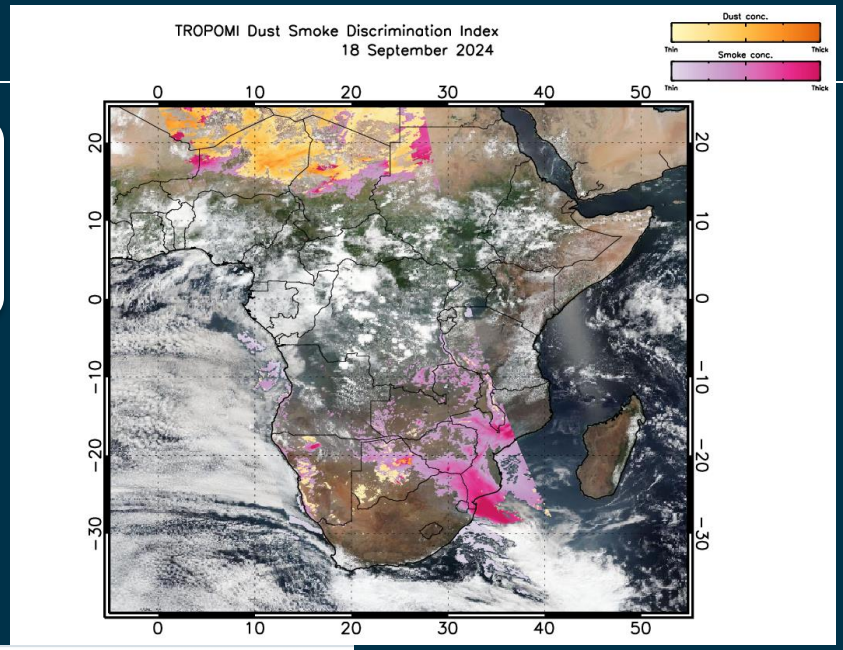
Map of Zimbabwe showing the designated areas for monitoring air quality, including remote areas.



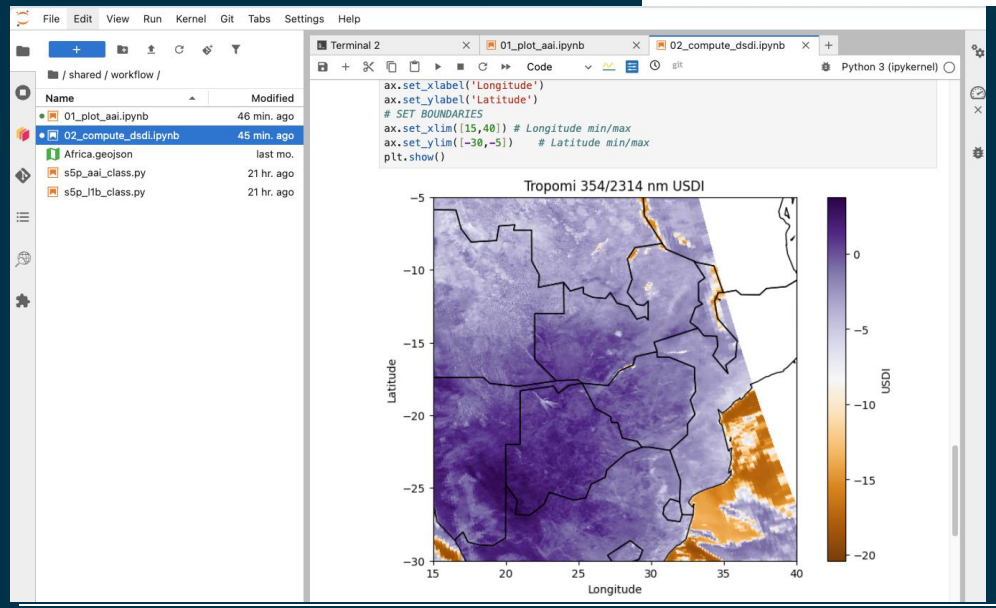
Assembly of LCAQS shelters and mounts.

Results

TROPOMI dust and smoke estimates, showing 'river of smoke'.



TROPOMI dsdi script on the Innovation Lab



Further work

AQ4ZIM project outlook:

- Further densify air quality monitoring network through installation of LCAQS;
- Analyse the data from the LCAQS, establish error estimates, automate monitoring and maintenance of sensors;
- Compare LCAQS and TROPOMI data.

Layout for social media posts

Photos from the Project Closure Workshop, 26-27 February 2026, Harare. Next to a strong scientific workshop highlighting Air Quality Monitoring initiatives in Zimbabwe, it saw the final assembly of all low-cost air quality sensors to be installed across the country.

Read the stories here:
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