Air Quality Forecasting with Uncertainty Quantification by Fusing model, satellite, and in-situ data

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The goal of our project is to...

...integrate diverse global and local air quality data sources...

...using the cloud computing platform of Google Earth Engine...

...to provide synthesized estimates and forecasts of air quality at a local scale but with a global scope...

...freely accessible by air quality managers worldwide, facilitating their decision-making processes.

Source: NASA GMAO Science Snapshot “Google Earth Engine Data Fusion Tool to support Air Quality Managers”
Our Method Quantifies Forecast Uncertainty

Implementing Data Fusion in Google Earth Engine

Sub-city air quality forecasts

This application visualizes hourly NO₂ concentration forecasts for different locations around the world. Forecasts are generated daily for the next day using the NASA GES-OF forecast, satellite retrievals from the TROPOMI instrument, and ground-level air quality measurements from reference-grade monitors and low-cost sensors. Reference-grade monitor data are shown with purple squares, while low-cost sensors are shown using green circles. Currently, all times are displayed in UTC/GMT.

Select the region, input data, and time of interest to view forecasts

![Map of Rio de Janeiro showing air quality forecasts via Google Earth Engine](image)

Thank you!

Questions?

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