



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

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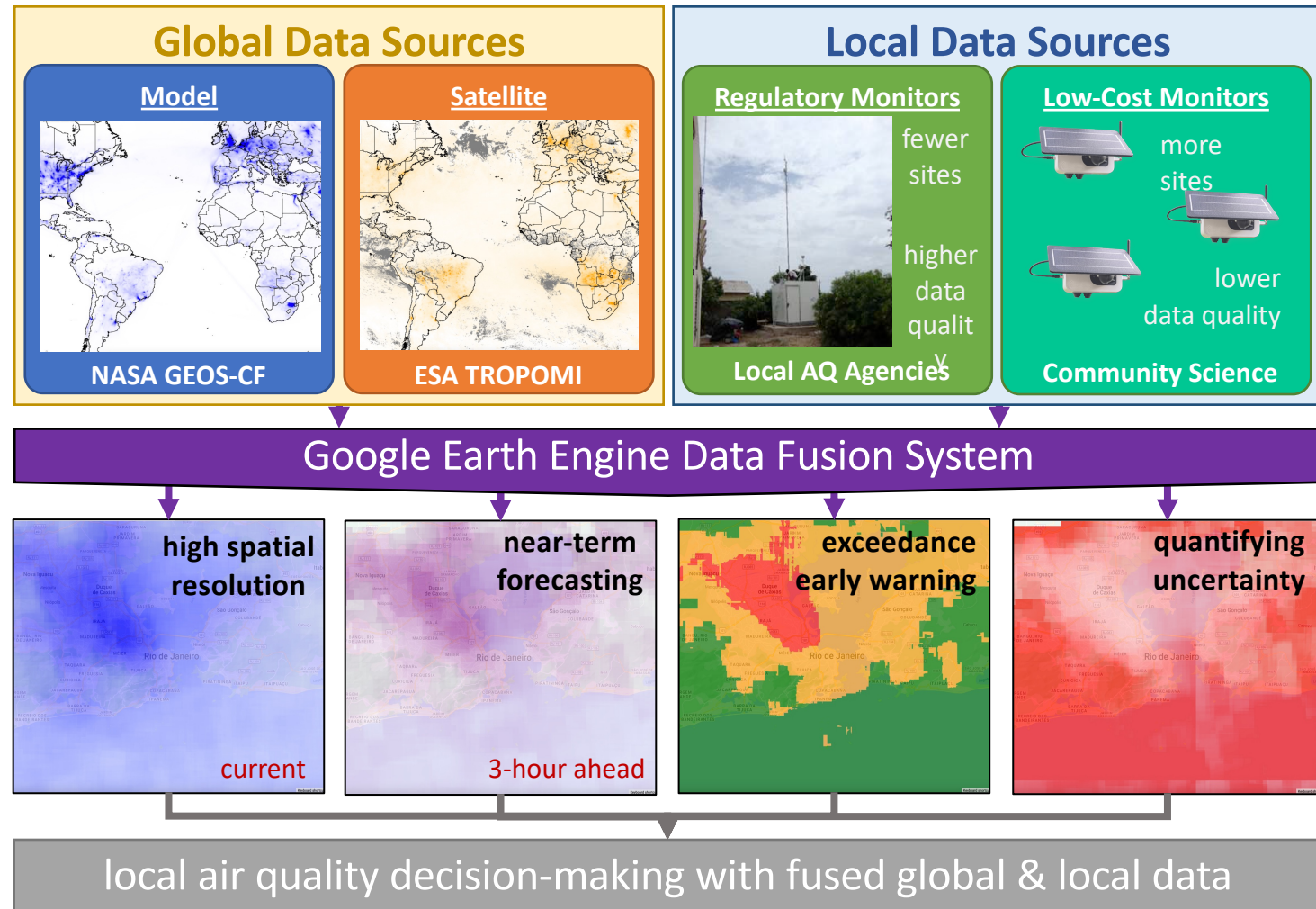
The goal of our project is to...

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

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

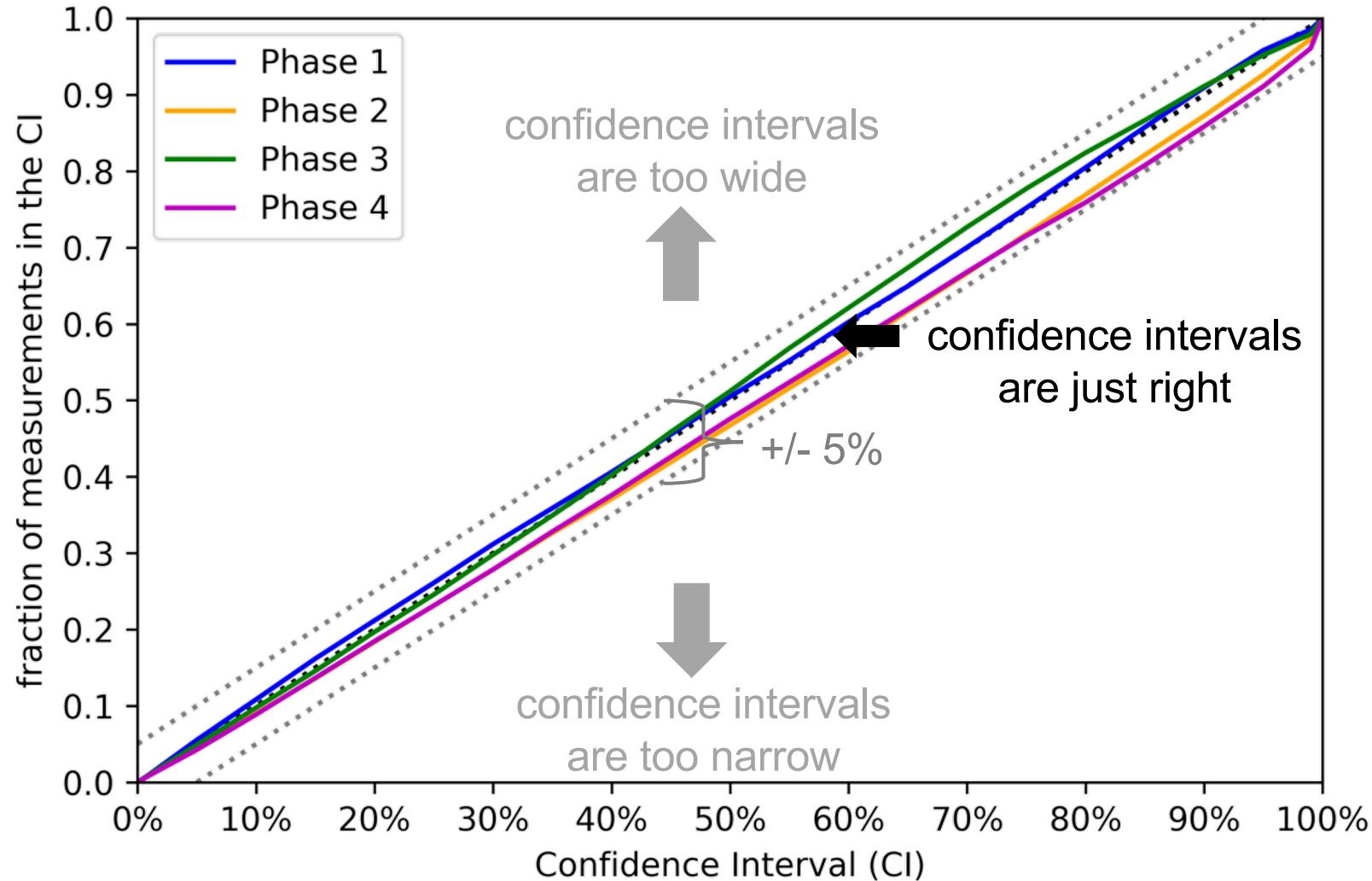
...to provide synthesized **estimates** and **forecasts** of air quality at a **local** scale but with a **global** scope...

...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”](#)

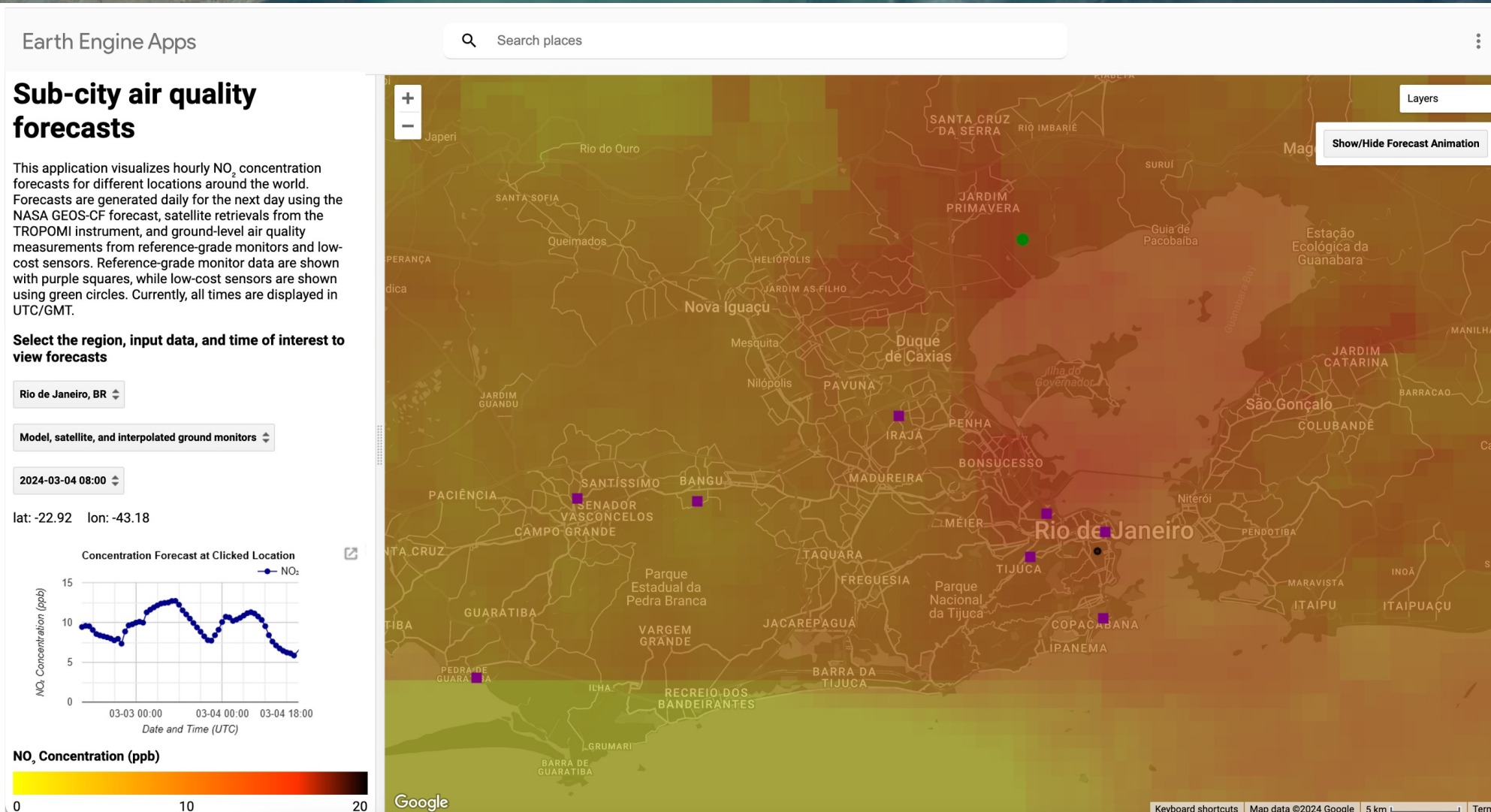
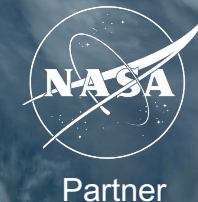
Our Method Quantifies Forecast Uncertainty



Confidence Interval Coverage is Typically Within ~5% of the Target

Malings et al. (2024), "Air Quality Estimation and Forecasting via Data Fusion with Uncertainty Quantification: Theoretical Framework and Preliminary Results" *JGR: Machine Learning & Computation* (under review). [PREPRINT DOI: 10.22541/essoar.171052565.52477494/v1](https://doi.org/10.22541/essoar.171052565.52477494/v1)

Implementing Data Fusion in Google Earth Engine



Prototype User Interface for Rio de Janeiro showing forecasts via Google Earth Engine

Malings et al. (2024), “Air Quality Estimation and Forecasting via Data Fusion with Uncertainty Quantification: Theoretical Framework and Preliminary Results” *JGR: Machine Learning & Computation* (under review). [PREPRINT DOI: 10.22541/essoar.171052565.52477494/v1](https://doi.org/10.22541/essoar.171052565.52477494/v1)

Thank you!

Questions?

This material is based upon work supported by the National Aeronautics and Space Administration (NASA) under Grants 80NSSC22K1473 and WBS 389018.02.09.02.72 issued through the NASA Health and Air Quality Applied Sciences Program.