

Air Quality Forecasting at US Diplomatic Posts Abroad

(A Department of State & NASA Partnership)

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Air Pollution – The Problem

More than three-quarters of U.S. diplomatic posts have annual air pollution levels above U.S. standards.



Solution – Air Monitoring, Forecasting & Expanding Data Access

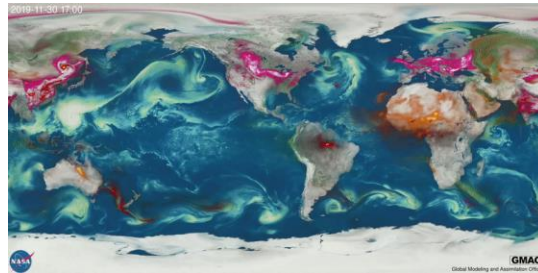


Challenges:
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Long-lead time (6-12
months)
Ongoing Maintenance

HAQAST – 2020

Objective: Provide Air Quality Forecasting at selected US Missions

GEOS-FP

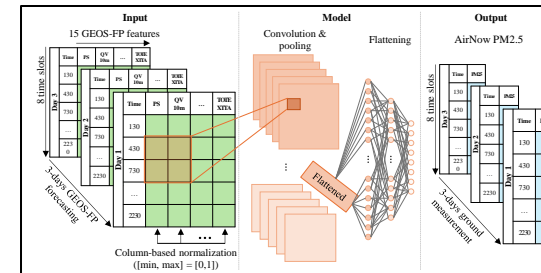


Goddard Earth Observing System (GEOS)
Earth System Model

DoSAir
Measurements

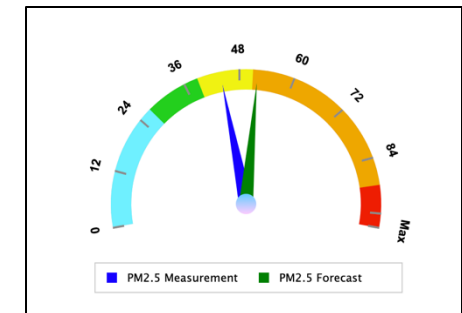


Machine Learning
Algorithms

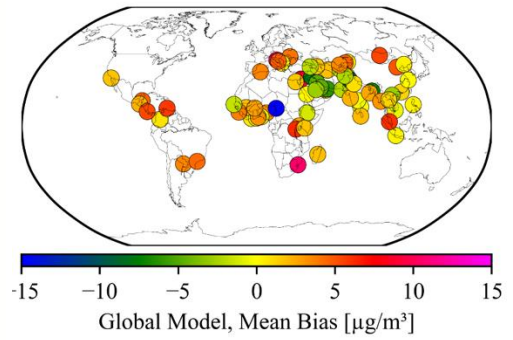
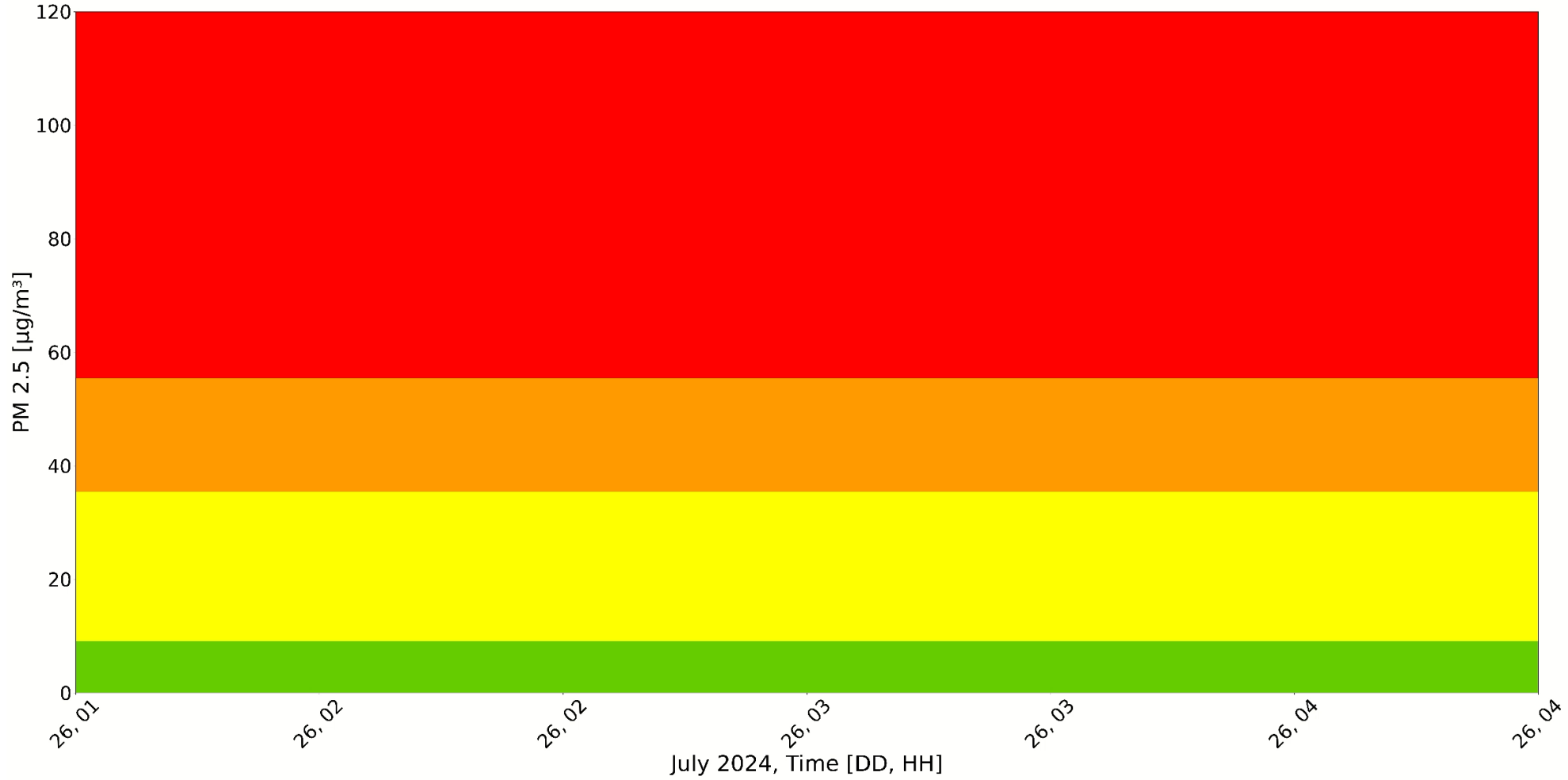


Once per day
3-hour forecasts
for next 72 hours

Localized PM2.5
forecasts



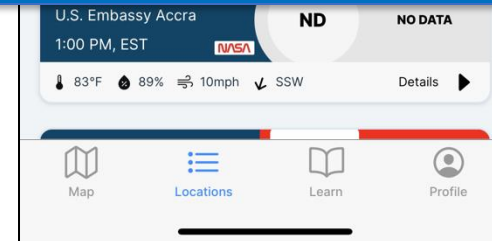
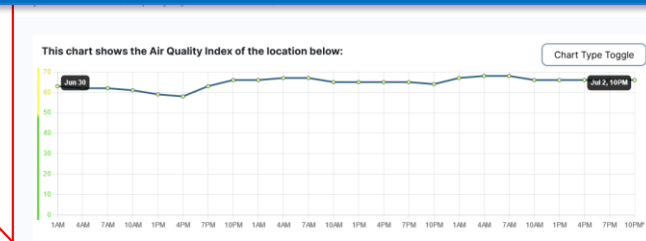
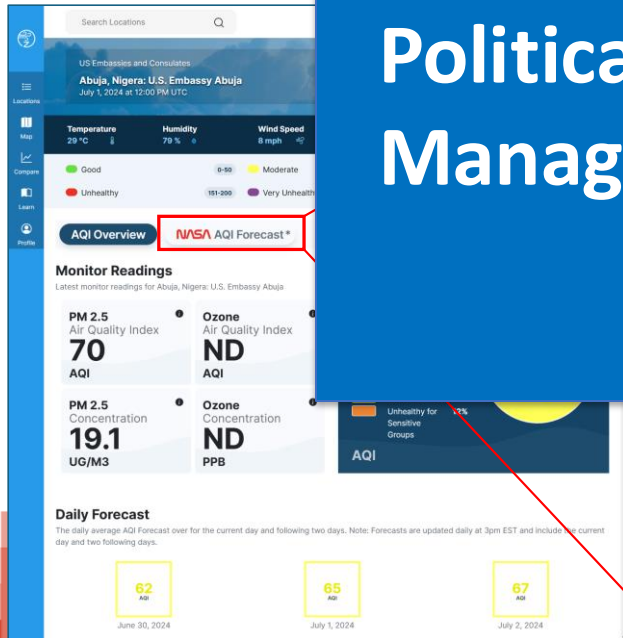
Forecasting Evaluation



Sao et al., 2025 – in review

Implementation & Decision Making

“Air quality is a top priority for my family as we think about [our next assignment], so having more information is a huge help.” - Political Officer at the U.S. embassy in Managua, Nicaragua.



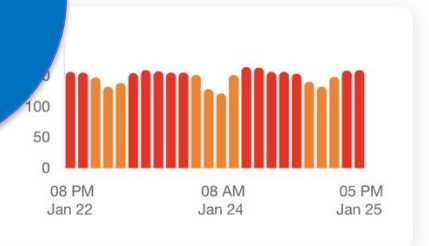
ication



25 Jan 24, 2025 Jan 25, 2025

ailed Forecast

ormed about the air quality area with our AQI Forecast



Map Locations Learn Profile

Developed, Delivered, Operationalized, Sustainable



Stephanie Christel



Dr. John Kerekes



Mary Tran



Dr. Junhyeon Seo



Dr. Alqamah Sayeed



Dr. Pawan Gupta (PI)



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Data API



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