NASAs Open Source Integrated Analytic Platform for Air Quality and Wildfire

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Professional Open-Source Earth System Digital Twin Framework

Automate access to fire data repositories for the each fire event of interest
Harmonize datasets to track pre-fire, active fire, and post fire impacts for the event of interest
Decision Support and Science
Forecast and Prediction

Sentinel-5P TROPOMI
- Carbon Monoxide (CO)
- Methane (CH₄)
- Nitrogen Dioxide (NO₂)
- Oxygen (O₂)
- Nitrogen Dioxide (NO₂)
- Methane (CH₄)
- Aerosol Optical Depth
MODIS Aqua & Terra
- Aerosol Optical Depth (AOD)

Current Dataset

Satellites
- Sentinel-5P TROPOMI
- OCO-3

In-Situ Sensors
- PurpleAir (PM₁₀)
- AirNow (CO, O₃, NO, NO₂, PM₁₀, PM₂.₅)
- Suomi NPP VIIRS
- Deep Blue Aerosol Angstrom Exponent
- Deep Blue Aerosol Optical Thickness

Models
- High Performance GEOS-Chem (GCHP)
- OCO-3
- MERRA-2
- Surface Air Temperature (TML)
- Surface Exchange Coefficient for Heat (CDH)
- GEOS Composition Forecasts (GEOS-CF)

TROPIOMI Chemical Reanalysis (O₃)

Integrated Air Quality Information Platform

Web-based Interactive Data Analysis Tool

Immersive Science

Interactive Jupyter Notebook

ML/AI Models

Air Quality Prediction

Current Developments & Future Directions

New Satellite Data
- MAIA
- TEMPO

Socioeconomic Data for Environmental Justice Analysis

Field Campaigns Data
- Aircraft Measurements, Mobile Monitoring

Health Effects Analysis

Wildfire Prediction, Spread Projection, and Air Quality Impact

Scenario-based Analysis

What if?

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