National Aeronautics and Space Administration

NASA earth

Promoting Earth Observations for Air Quality and Health Research and Action

April 28, 2026

Helena Chapman, MD, PhD, MPH

Associate Program Manager, Health and Air Quality

Earth Action Program (Booz Allen Hamilton)

Earth Science Division

NASA Science Mission Directorate

NASA earth ACTION

Agriculture

Disasters

Earth Information Center

EarthRISE

Ecological Conservation

Interagency Satellite Observation Needs

Energy & Infrastructure

Health & Air Quality

Private Sector Engagement

Water Resources

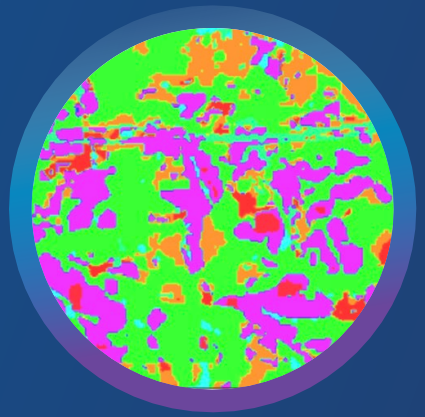
Wildland Fires

Commercial Satellite Data Acquisition

Earth Action **Connects**

Drive U.S. Economic Growth

Help American businesses use Earth data to grow and compete, training workers, decision-makers, and turning data into real-world solutions.



Accelerate AI Use

Widen access to Earth information and scale-up the impact of using AI for Earth applications.

Equip Local Leaders to Act

Deliver trusted data and tools to state, local, tribal, and federal partners to increase resilience, security, and prosperity.

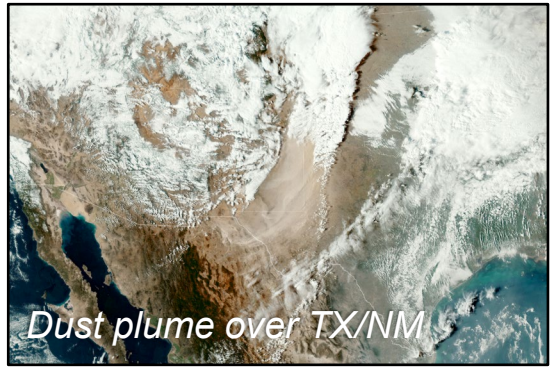
Strengthen American Resilience

Strengthen American resilience to hazards such as fires, floods, drought, heat, and health threats.

NASA Health and Air Quality Applications

We support the use of Earth observation data in air quality management and public health applications to protect and enhance health, security, and the economy in the areas of:

- Infectious diseases and environmental health
- Toxic and pathogenic exposures and health-related hazards
- Implementation of air quality standards, policies, and regulations
- Effects of climate change on public health and air quality

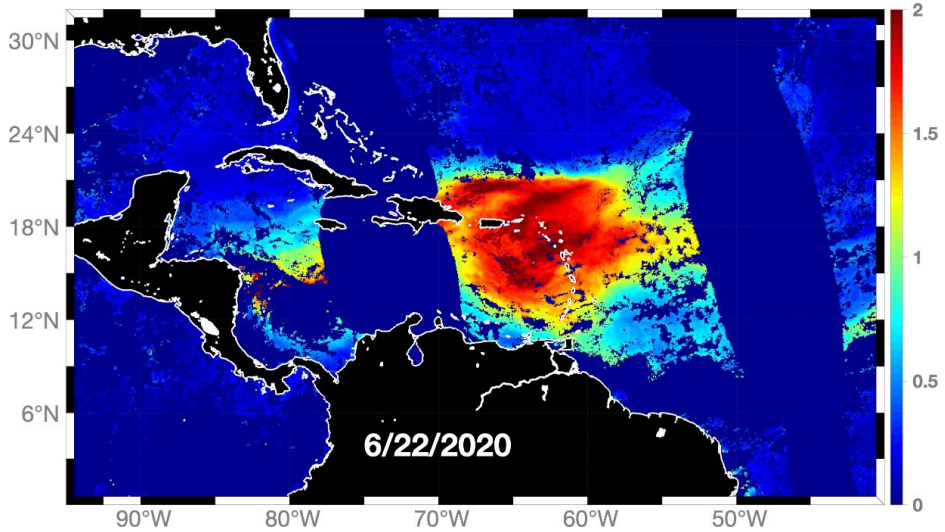


Major Partners include International (e.g., GEO, UNICEF), Federal (e.g., CDC, EPA, NIH, NOAA), State (e.g., South Dakota, California, Texas), and Private sectors (e.g., Google, Moore Foundation).

Credits: .Méndez-Lázaro

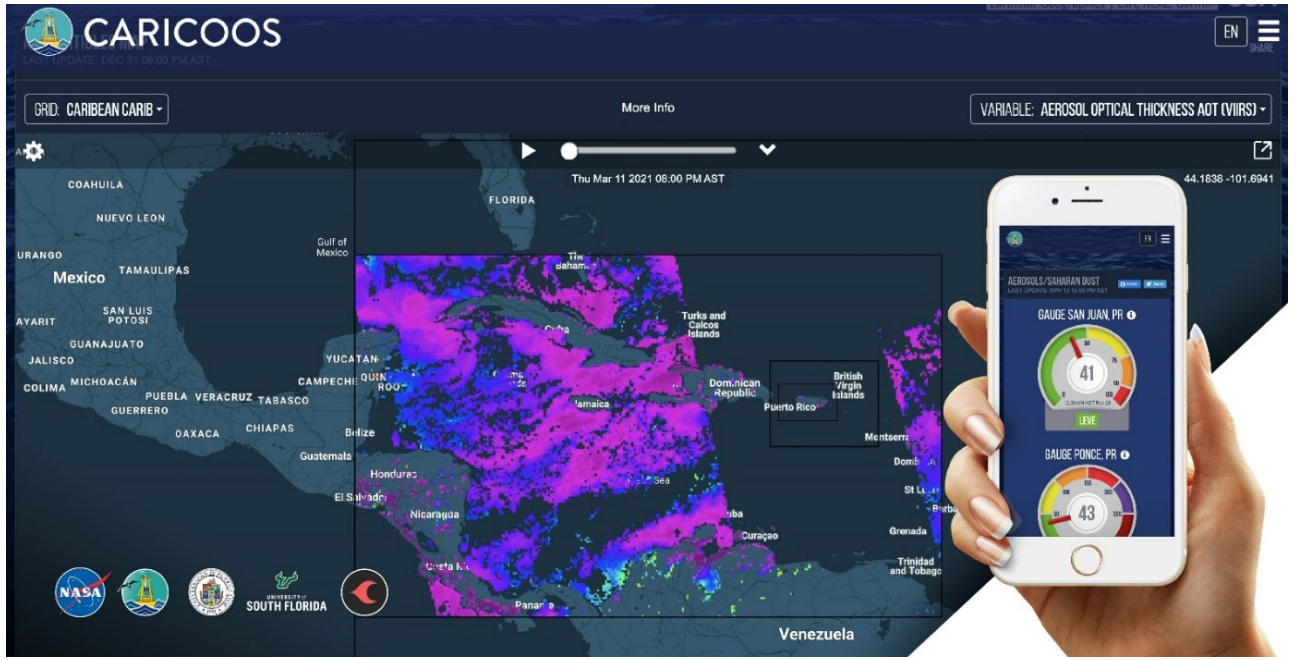
Forecasting Poor Air Quality Events (Caribbean)

Dr. Pablo Méndez-Lázaro (University of Puerto Rico)



Suomi NPP VIIRS (AOD/dust concentration)

Data: MODIS, VIIRS, GOES-16 EAST, public health

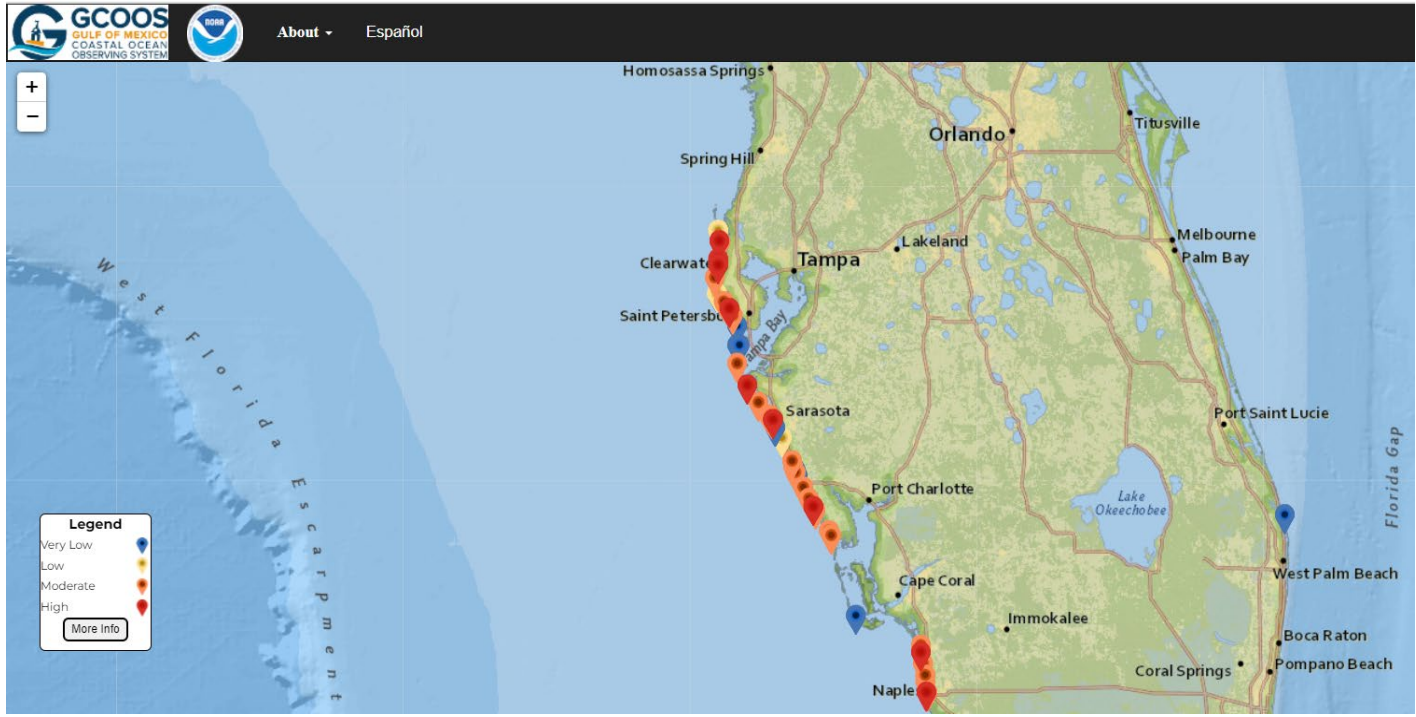


The team developed a **decision-support tool to monitor aerosols** that can inform policy decisions and community education about the **health risks related to dust storms**.

Islander: https://www.islander.org/2020/12/scoping-blooms/

Improving Forecasts of Respiratory Hazards from Toxic Algal Blooms (USA)

Dr. Richard Stumpf (NOAA)



Data: Terra (MODIS), Joint Polar Satellite System (VIIRS), Copernicus Sentinel-3, HABscope (Citizen Science)

The team developed a **24-hour Red Tide Respiratory Forecast** to **monitor the presence and extent of harmful algal blooms** in the Gulf

MAIA

Multi-Angle Imager for Aerosols

Ambient airborne particulate matter (PM) is the top environmental health risk worldwide *(Global Burden of Disease).*

However, the toxicity of different PM types – mixtures of particles with different sizes, shapes, and compositions – is not well understood.

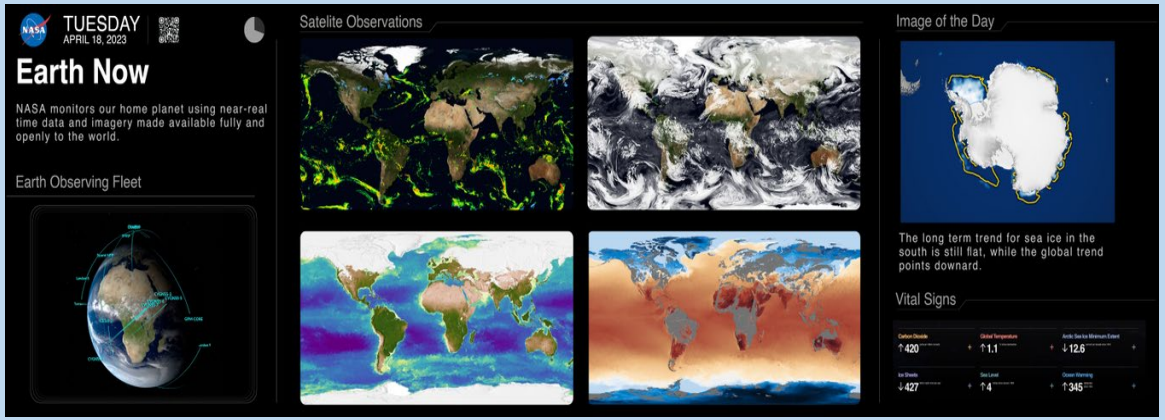
MAIA will integrate satellite observations, surface monitor data, chemical transport model outputs, and health records over a set of globally distributed Primary Target Areas to investigate the impacts of chemically speciated PM on human health.

https://maia.jpl.nasa.gov

Jet Propulsion Laboratory
California Institute of Technology

Agenzia Spaziale Italiana

Earth Information Center



NASA · FEMA · NOAA · USAID · USDA · USGS

https://earth.gov/

Improving Health Decision-Making Using Environmental Observations

Global network of governments, organizations, and observers, who seek to use Earth observation data to improve health decision-making at the international, regional, country, and district levels

Work Groups

Heat	Infectious Diseases
Air Quality	Animal Health
Food Security & Safety	Health Care Infrastructure

https://www.geohealthcop.org/

Together, we are One Health change agents!

As researchers and practitioners with diverse expertise, we are the driving force of local and national health initiatives and can:

- ❑Lead **successful knowledge translation** from environmental scientists and practitioners to target audiences
- ❑Foster **community connections and engagement**
- ❑Serve as a **pivotal community voice** for sustainable action in public health

NASA earth

science.nasa.gov/earth

Your Home. Our Mission.