

Updates from the CDC Environmental Public Health Tracking Program

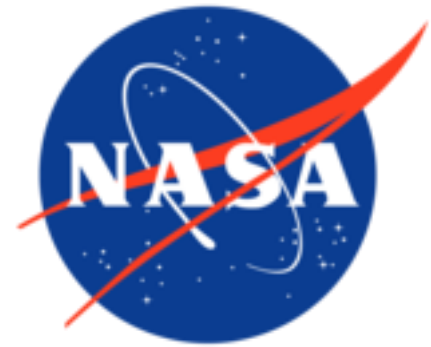
Health and Air Quality Applications Team Meeting

March 29, 2023

Fuyuen Yip, PhD, MPH

Emergency Management, Radiation, and Chemical Branch

Division of Environmental Health Science and Practice





ENVIRONMENTAL PUBLIC HEALTH

TRACKING

CONNECTS ENVIRONMENT & HEALTH INFORMATION

Environmental



- Radon
- Drought
- Sunlight & UV
- Wildfire Smoke
- Air Quality
- Extreme Heat
- Drinking Water
- Flood Vulnerability
- Community Design

- Pesticide Exposures
- Toxic Substance Releases
- Other Environmental Chemicals

Exposures



Health Effects



- Asthma
- Cancer
- Heart Disease
- Heat Stress Illness
- Childhood Lead Poisoning
- Developmental Disabilities
- Carbon Monoxide Poisoning
- Reproductive and Birth Outcomes

Population Characteristics



- Lifestyle Risk Factors
- Socioeconomics
- Demographics
- Vulnerabilities





ENVIRONMENTAL PUBLIC HEALTH

TRACKING

DELIVERS DATA RELEVANT TO YOUR NEEDS

Tracking makes standardized data easier to use.

Environmental Justice Dashboard

Home

Where we live, work, and play affects our health. Use our Environmental Justice Dashboard to explore data on environmental exposures, community characteristics, and health burden — factors important to understanding and addressing environmental justice issues.

Explore environmental justice data for your community.

Enter zip or county here

Why is environmental justice data important?

- 23.7%** About 23.7% of the U.S. population belongs to a racial or ethnic minority group.
- 12.3%** 12.3% of the U.S. population is living in poverty.

Racial and ethnic minority, low-income and indigenous communities are most often disproportionately affected by environmental hazards, such as environmental pollutants and climate-related events.



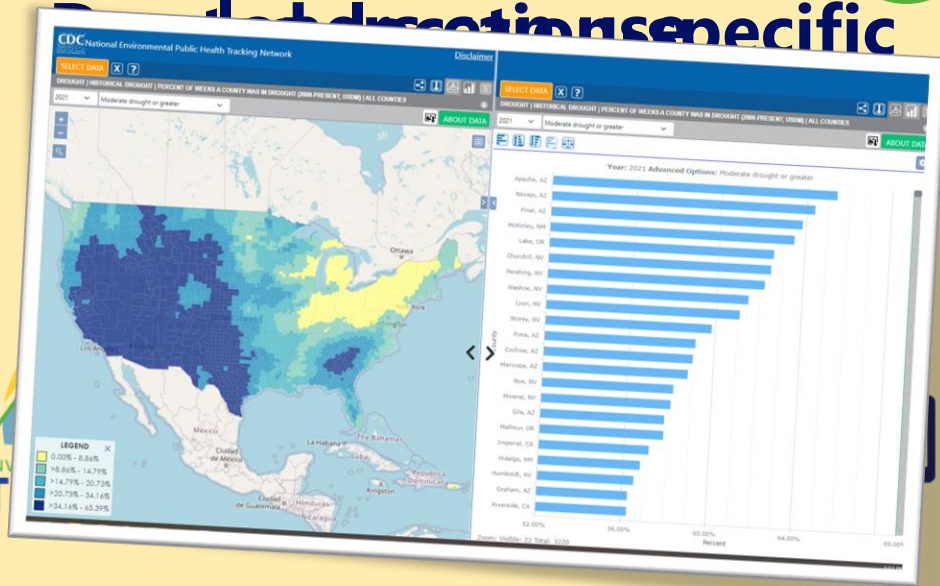
Interactive Data Explorer
(maps, charts, and tables)



Dashboards



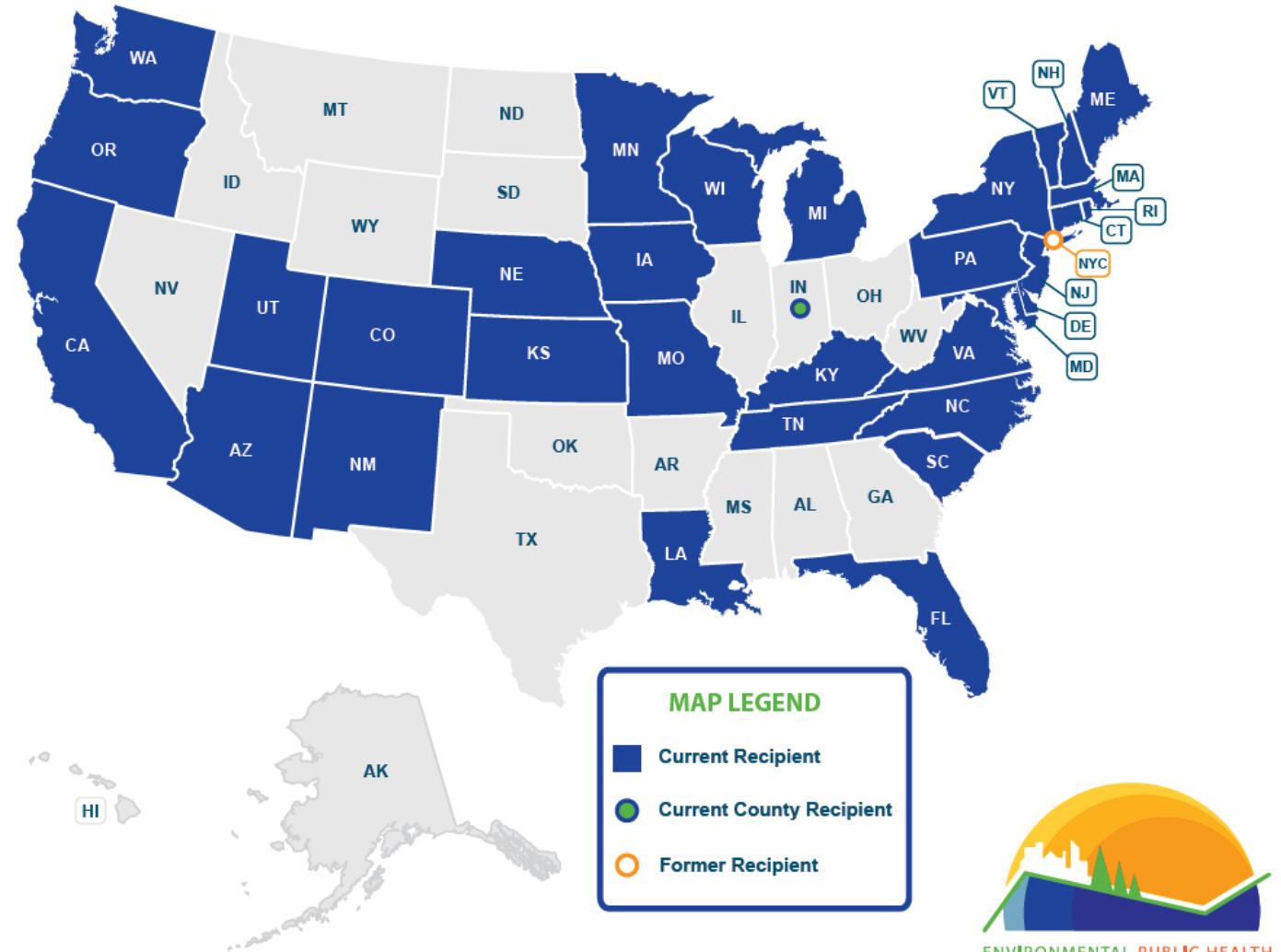
Application Program Interface (API)



EH22-2202 Recipients

Welcome to our new additions!

- Delaware
- Marion County, Indiana
- Nebraska
- North Carolina
- Pennsylvania
- South Carolina
- Tennessee
- Virginia



August 2022



EH22-2202: Modernizing Environmental Public Health Tracking to Advance Environmental Health Surveillance

Purpose:

continue building capacity & expertise in environmental health surveillance

modernize data systems



empower information-driven decisions that affect health

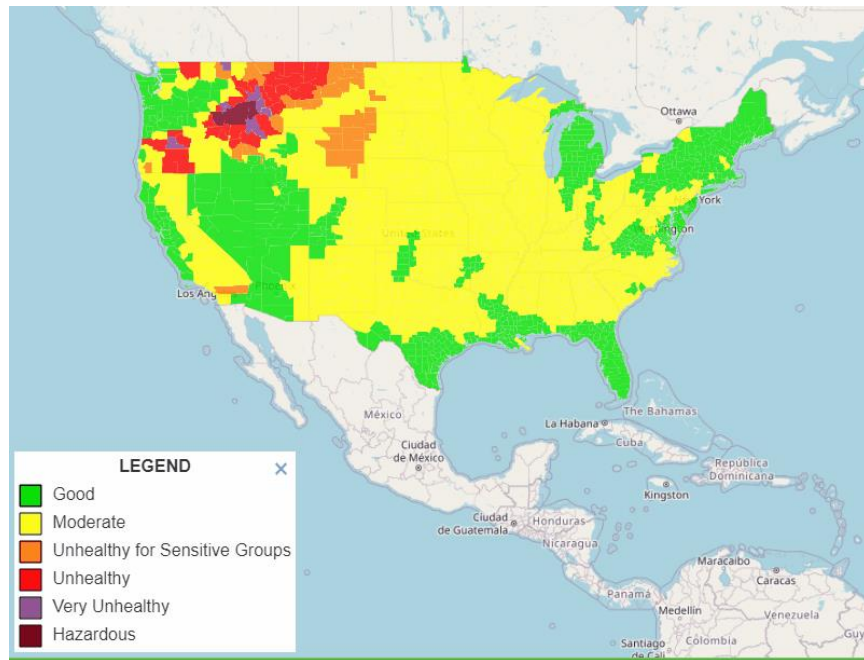
Learn more: <https://www.cdc.gov/nceh/tracking/foa.htm>

DEMONSTRATION

CURRENT WORK/OPPORTUNITIES FOR COLLABORATION

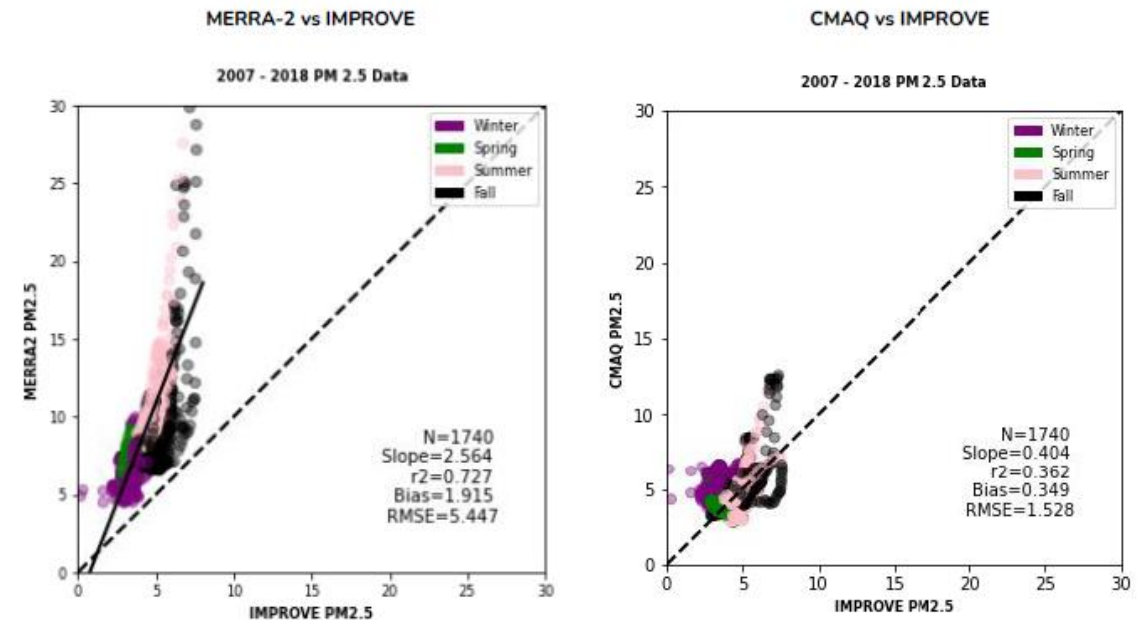
Recently Completed: NASA Collaborative Projects

New Forecasted Air Quality Measures on Tracking Portal



GEOS Composition Forecasting (GEOS-CF) system – Four-day county-level forecasts of PM_{2.5}, NO₂, CO, O₃, SO₂

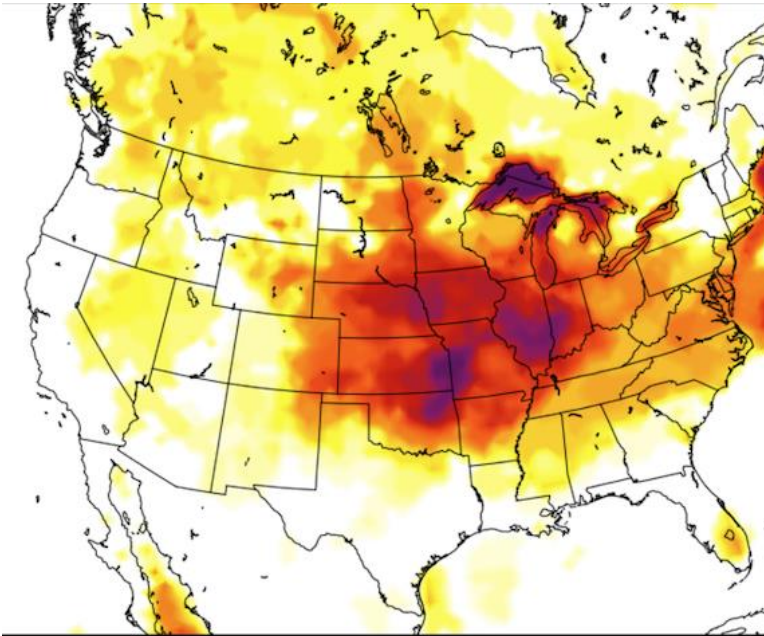
SSAI (Goddard contractor) intern evaluation of MERRA-2/CMAQ Accuracy



Comparison of MERRA-2 derived PM_{2.5} and CMAQ PM_{2.5} against AQS and IMPROVE monitors – MERRA-2 performs better in rural areas and during wildfires, CMAQ better in urban locations

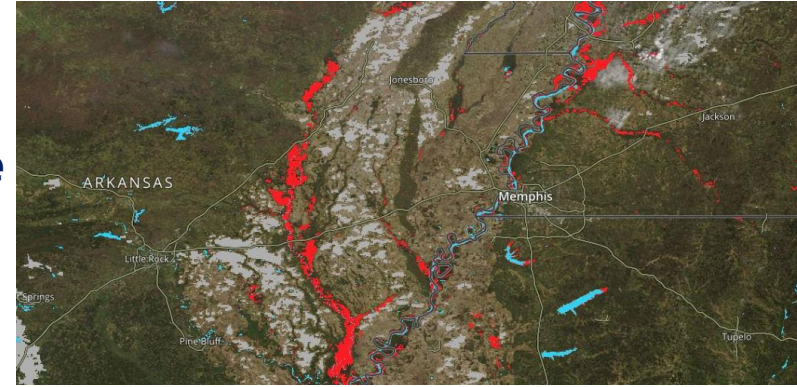
Ongoing – NASA Collaborative Projects

MERRA-2 derived Air Quality Measures



Developing daily county-level measures of PM_{2.5} (and constituents), CO, and SO₂. May also include weather variables in the future.

MODIS/VIIRS near real-time flood data



Developing daily census-tract estimates of flooded area under new NASA Goddard/Tracking IAA.

Preparing for TEMPO launch



Working with team at NASA Marshall and UAH to prepare for acquisition of TEMPO data. Focus will be on near real-time estimates O₃.

Ongoing – NASA Collaborative Projects

DSU HABs

Minnesota

About the Data

Potential Exposure to Cyanobacteria Blooms

Rationale: Cyanobacteria are microorganisms that can produce harmful algal blooms (HABs) in water systems. Some cyanobacterial blooms form toxins that cause illness in animals and people, harm aquatic ecosystems, and disrupt drinking water supplies, local economies, and recreational activities. The frequency, extent, and magnitude of these blooms are expected to worsen in the future with increased surface water temperatures and vertical stratification. Remote sensing of CyanoHABs offers a unique opportunity to estimate the potential for exposure to cyanotoxins over specific geographic areas. Understanding areas of potential exposure may help health departments identify populations that may have higher annual exposures to cyanobacteria, which can assist with providing better messaging and community outreach about potential health risks to animals and people.

Use of the measure: The purpose of this indicator is to quantify potential exposure to cyanobacteria in the census tracts surrounding waterbodies, as defined by CyAN metrics. Maps are available for viewing the categories of cyanobacteria risk exposure as described above. The legend indicates which category a census falls in based on the percentage of the tract that waterbody(s) encompass times the magnitude of the annual lake bloom. Potential exposures are calculated for the area of the lake boundary, area with 1-mile boundary around the lake, and 3-mile boundary around the lake and are provided as different tabs on the map. The different boundaries are provided to understand the potential risk of exposure to cyanobacteria blooms through proximity to waterbodies.

A side-by-side comparison map is provided that includes the social vulnerability index (SVI). Tabs on the map are available to view the total SVI ranking for the census tract and rankings of each of the four components to assist state partners in quickly understanding the sociodemographic makeup of the tract.

Cyanobacteria Exposure Potential

3 Mile 1 Mile 0 Mile

Exposure Potential

- Unknown
- low
- low medium
- medium
- medium high
- high
- NA

Social Vulnerability

Housing Minority Status Household Socioeconomic

SVI: Socioeconomic Percentile Rank

- 0% - 25%
- 25% - 50%
- 50% - 75%
- 75% - 100%

Developing measures that quantify the potential risk of exposure to cyanobacteria in the census tracts surrounding waterbodies, as defined by Cyanobacteria Assessment Network (CyAN) data metrics.

Looking Forward – Opportunities for Collaboration

- Characterize exposure, vulnerabilities, and health impacts to take public health action
 - Extreme weather events: tornado warnings and watches, probabilistic forecasting, power outages
 - Air quality: Additional real-time and satellite-derived sources
 - Climate change impacts: Identifying connections with health outcomes
- Using the Tracking Network as a Decision Support System and as a platform to host earth science data products and applications
 - Developing scripts/data pipelines to enable dissemination of near real-time NASA data on Tracking portal
 - Supporting state and local funding recipients in understanding, utilizing, and developing their own advanced data streams (e.g., leveraging satellite data via NASA APIs)

Thank you!

Questions or Comments?

For more information, contact NCEH
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov
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The findings and conclusions in this report have not been formally disseminated by the Centers for Disease Control and Prevention/the Agency for Toxic Substances and Disease Registry, are those of the authors, and do not necessarily represent the official position of the Centers for Disease Control and Prevention and the Agency for Toxic Substances and Disease Registry.

