

ADVANCING EJ WITH NEW MEASUREMENTS METHODS

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Principal Deputy Associate
Administrator for Policy

U.S. EPA

Environmental Measurements
Symposium

August 3, 2022

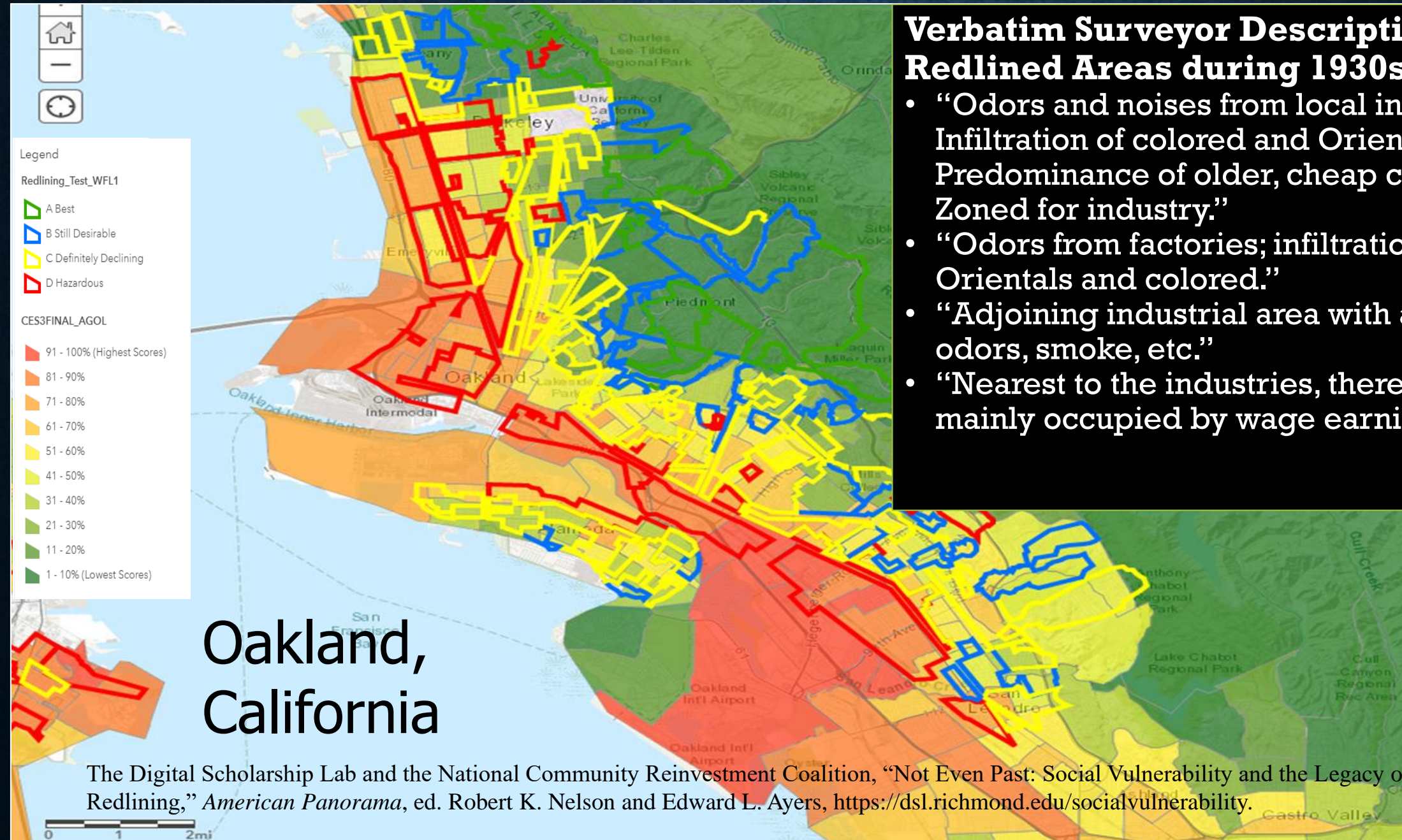
HISTORICAL LEGACY OF EJ: REDLINING AND SYSTEMIC RACISM

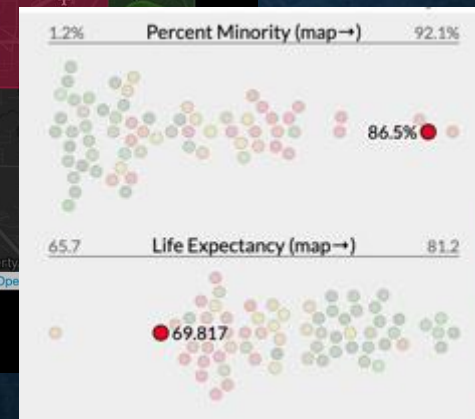
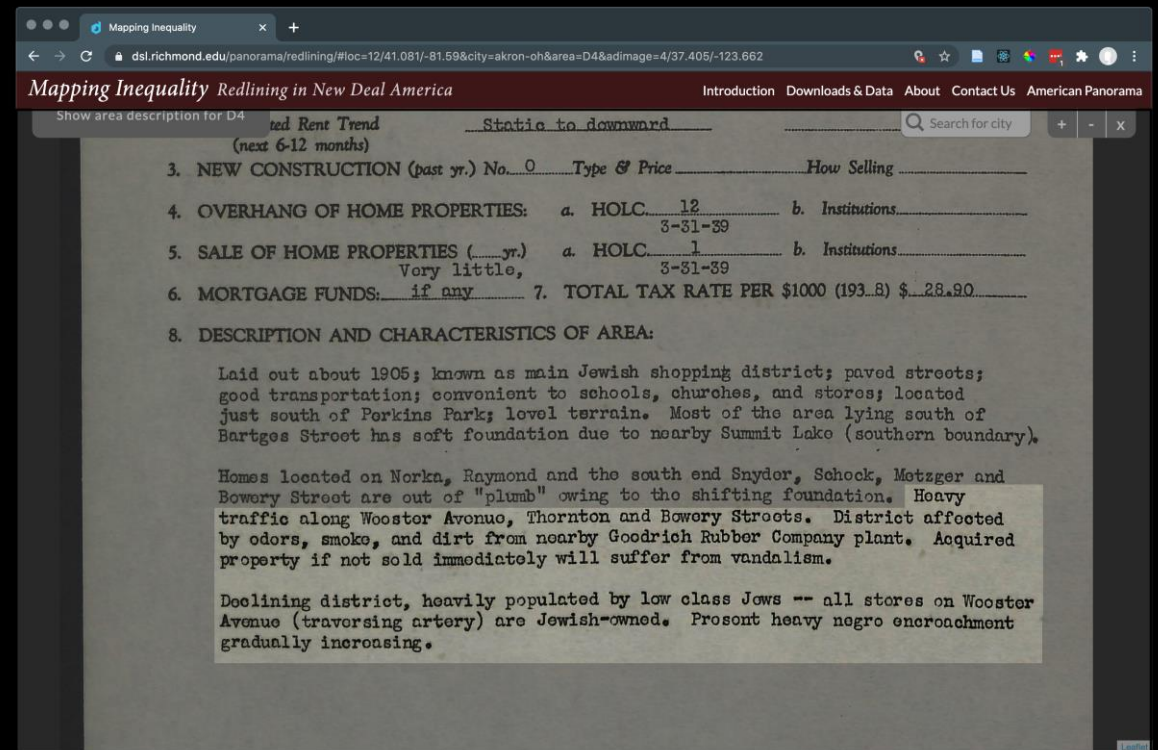
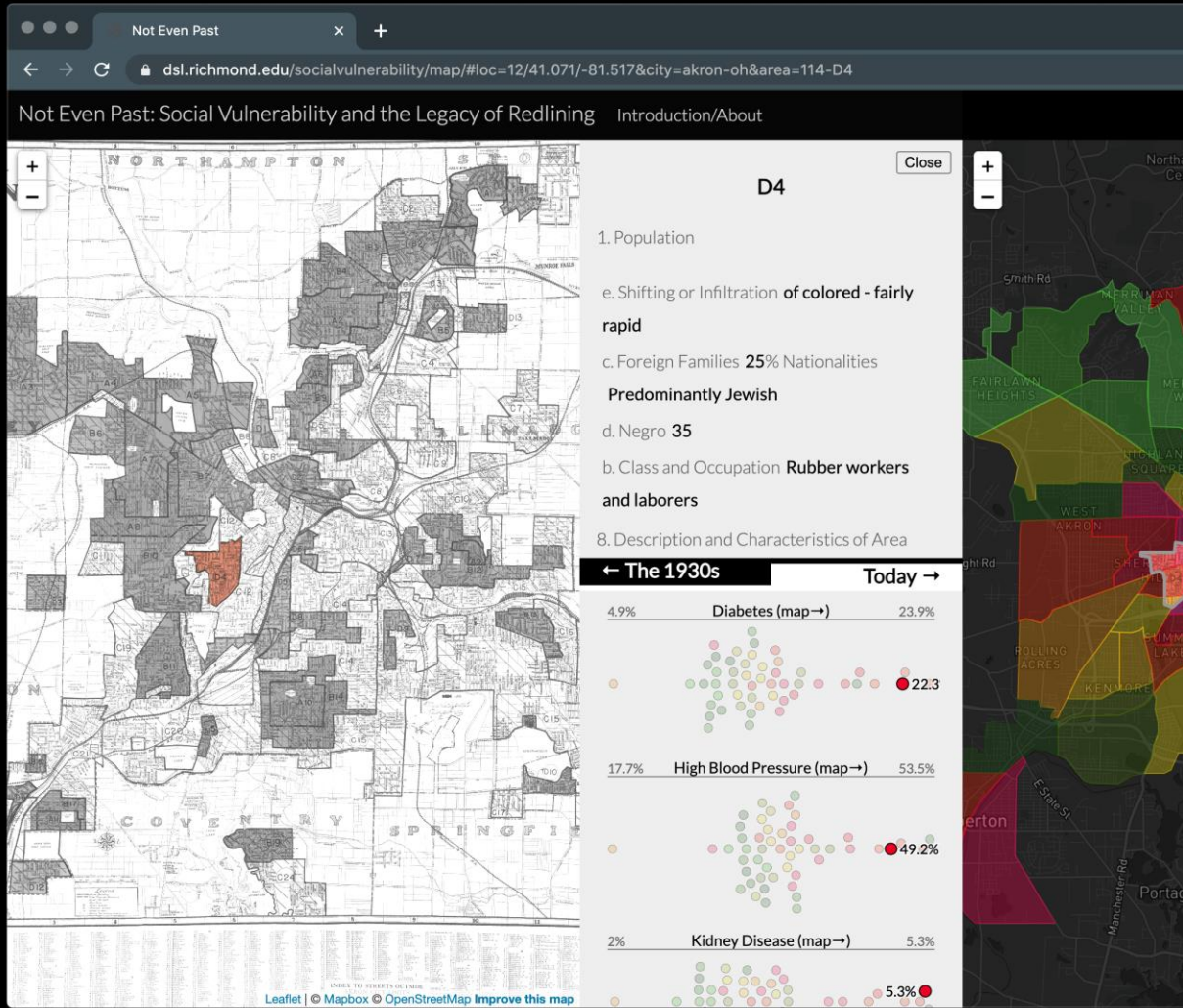
Verbatim Surveyor Descriptions of Redlined Areas during 1930s:

- “Odors and noises from local industries. Infiltration of colored and Orientals. Predominance of older, cheap cottages. Zoned for industry.”
- “Odors from factories; infiltration of Orientals and colored.”
- “Adjoining industrial area with attendant odors, smoke, etc.”
- “Nearest to the industries, thereby being mainly occupied by wage earning families”

Oakland, California

The Digital Scholarship Lab and the National Community Reinvestment Coalition, “Not Even Past: Social Vulnerability and the Legacy of Redlining,” *American Panorama*, ed. Robert K. Nelson and Edward L. Ayers, <https://dsl.richmond.edu/socialvulnerability>.





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**SEPTEMBER 1982
WARREN COUNTY
NORTH CAROLINA**

TO: Christian R. Holmes
Assistant Administrator

F. Henry Habicht II
Deputy Administrator



THRU: AX

PROPOSAL

The Office of Administration and Resources Management (OARM) proposes to establish the Office of Environmental Equity which will report to the Deputy Assistant Administrator for Management and Administration in OARM.

BACKGROUND

In a report to the Administrator, the Environmental Equity Workgroup found that low-income and minority communities are disproportionately impacted by environmental dangers. The House Appropriations Report on the FY 1993 Budget documented Congress' concern over this matter and its requirement that targeted strategies be developed and implemented to address the environmental dangers to high-risk communities.

To address this issue, OARM proposes to establish the Office of Environmental Equity to serve as a centralized unit to deal with environmental impacts on racial and low-income populations. The Office will coordinate communication, outreach, education and

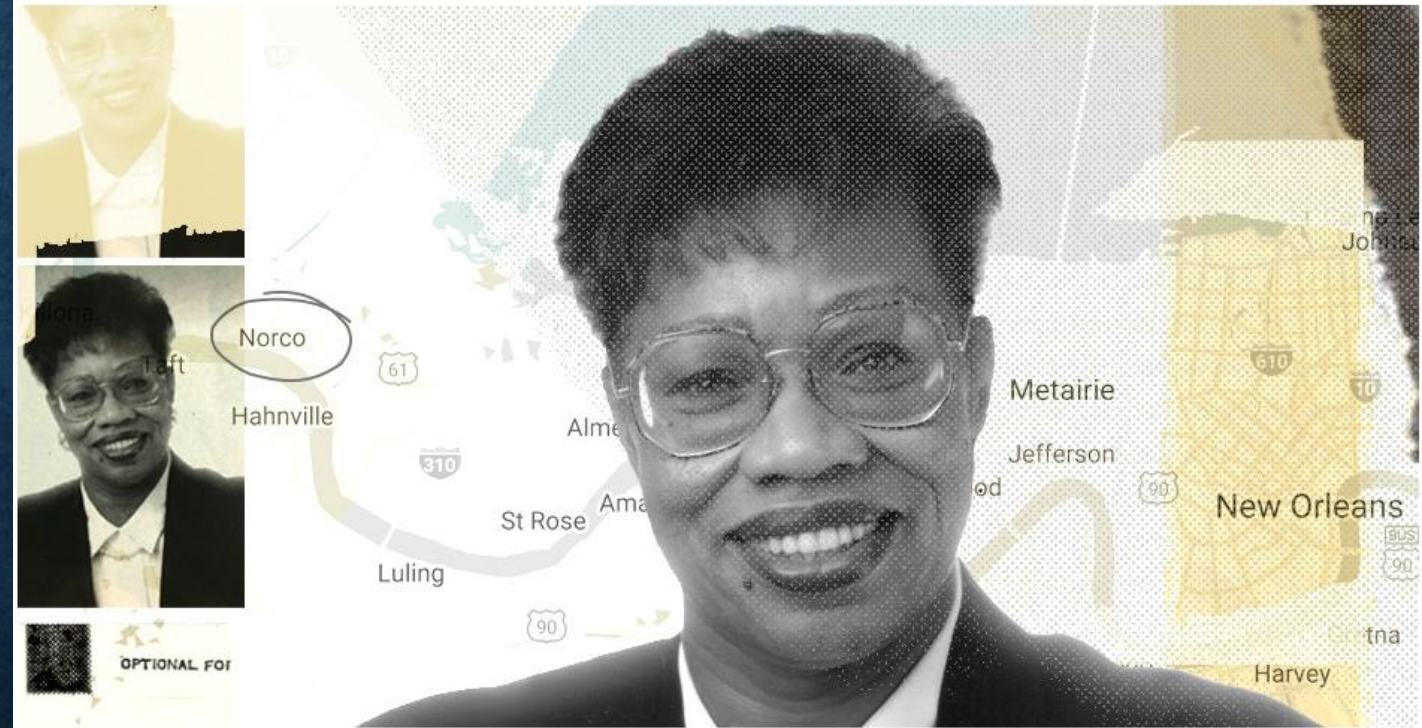


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ENVIRONMENTAL JUSTICE

The trip that changed everything for an EPA pioneer

Hannah Northey, E&E News reporter • Published: Thursday, August 13, 2020



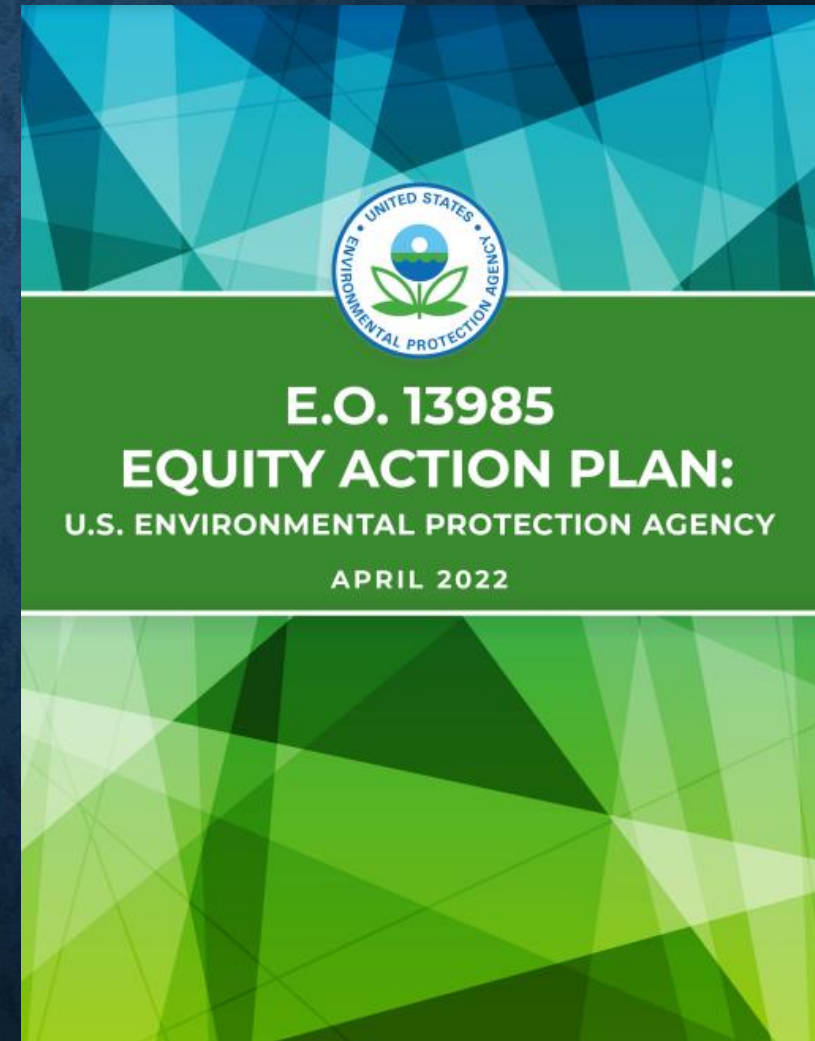
Clarice Gaylord was the first director of EPA's Office of Environmental Justice. Claudine Hellmuth/E&E News (illustration), Clarice Gaylord (photo); Snazzy maps© 2020 Google

EO 13985

Executive Order On Advancing Racial Equity and Support for Underserved Communities Through the Federal Government

JANUARY 20, 2021 • PRESIDENTIAL ACTIONS

- All of Government approach to equity
- Equity Action Plans crafted by every agency
- EPA's plan leans heavily into EJ





EO 14008

- Justice40 – at least 40% of the benefits of certain programs flow to disadvantaged communities
- Climate and Economic Justice Screening Tool
- EJ Scorecard
- Significant public engagement

Things to know

This tool identifies communities that are marginalized, underserved, and overburdened by pollution. These communities are located in census tracts that are at or above the thresholds in one or more of eight categories of criteria.



The tool uses census tracts that represent about 4,000 people, which is the

Executive Order on Tackling the Climate Crisis at Home and Abroad

JANUARY 27, 2021 • PRESIDENTIAL ACTIONS

Draft FY 2022-2026 EPA Strategic Plan Framework

Mission: To Protect Human Health and the Environment

Principles: Follow the Science, Follow the Law, Be Transparent, Advance Justice and Equity



Strategy 1:

Ensure Scientific Integrity and Science-Based Decision Making



Strategy 2:

Consider the Health of Children at All Life Stages and Other Vulnerable Populations



Strategy 3:

Advance EPA's Organizational Excellence and Workforce Equity



Strategy 4:

Strengthen Tribal, State, and Local Partnerships and Enhance Engagement



Goal 1:

Tackle the Climate Crisis



Goal 2:

Take Decisive Action to Advance Environmental Justice and Civil Rights



Goal 3:

Enforce Environmental Laws and Ensure Compliance



Goal 4:

Ensure Clean and Healthy Air for All Communities



Goal 5:

Ensure Clean and Safe Water for All Communities



Goal 6:

Safeguard and Revitalize Communities



Goal 7:

Ensure Safety of Chemicals for People and the Environment

American Rescue Plan (ARP)

- EPA received a supplemental FY 2021 appropriation of \$100 million from the ARP to address health outcome disparities from pollution and the COVID-19 pandemic.
- EPA's appropriation was split into two \$50 million line items – one dedicated to support environmental justice (EJ) priorities, and the other dedicated to enhance air quality monitoring
 - On July 7, 2021, EPA announced its plans for the \$50 million in ARP funding available to improve ambient air quality monitoring for communities across the United States



AMERICAN RESCUE PLAN – AIR MONITORING

EPA is making \$50 million in American Rescue Plan (ARP) funding available to **enhance ambient air quality monitoring in communities** across the United States. (<https://www.epa.gov/arp>)

1. Grant Competition for Community Monitoring (\$20M)

- EPA launched a \$20 million grant competition that called for proposals from nonprofit community-based organizations, state, Tribal and local air agencies -- individually or in partnerships -- to conduct monitoring of pollutants of greatest concern in communities with health outcome disparities.

2. Direct Awards to Air Agencies for Continuous PM_{2.5} Monitoring and Other Common Air Pollutants (\$22.5M)

- EPA is in the process of awarding \$22.5 million to state, Tribal or local air agencies for enhanced monitoring of PM_{2.5} and five other air pollutants regulated by the National Ambient Air Quality Standards under the Clean Air Act.

3. Enhanced Regional Capacity for Short-term Community Monitoring Needs (\$5M)

4. Administrative Support (\$2.5M)

FY 2022 EJ BUDGET

EPA received a \$100M appropriation for its EJ program in FY22. This is an increase from approximately \$15M/year for over the last decade.

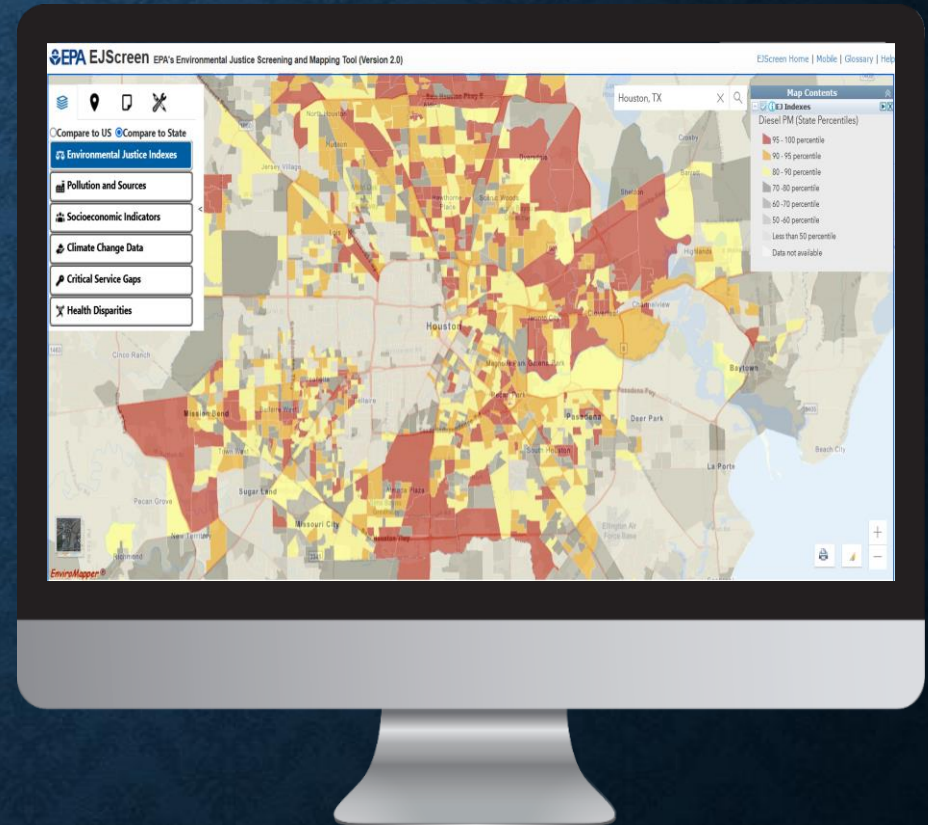
1. EJ Grants – EPA will develop a new grants and technical assistance programs based upon recipient and potential applicant feedback received this summer.
 - \$20M for direct community support
 - \$20M for states, tribes, local governments
 - \$11M for capacity building technical assistance to communities and their partners
2. EJ Staffing – EPA will invest in an expansion of dedicated EJ staff in headquarters and the regions
 - Increase to 110 staff throughout regions (currently 13)
 - Increase to 90+ in HQ (currently approx. 30)
3. Support for NEJAC, WHEJAC, EJScreen, etc.

EJ ENFORCEMENT

- Memorandum from Acting Assistant Administrator Larry Starfield, Using All Appropriate Injunctive Relief Tools in Civil Enforcement Settlements, April 26, 2021 - (April 26, 2021)
- Memorandum from Acting Assistant Administrator for Enforcement and Compliance Assurance Larry Starfield, "Strengthening Enforcement in Communities with Environmental Justice Concerns" - (April 30, 2021)
- Memorandum from Acting Assistant Administrator for Enforcement and Compliance Assurance Larry Starfield, "Strengthening Environmental Justice Through Criminal Enforcement" (pdf) (June 21, 2021) " - (June 21, 2021)
- Memorandum from Acting Assistant Administrator for Enforcement and Compliance Assurance Larry Starfield, "Strengthening Environmental Justice Through Cleanup Enforcement Actions" (pdf) (July 1, 2021) - (July 1, 2021)

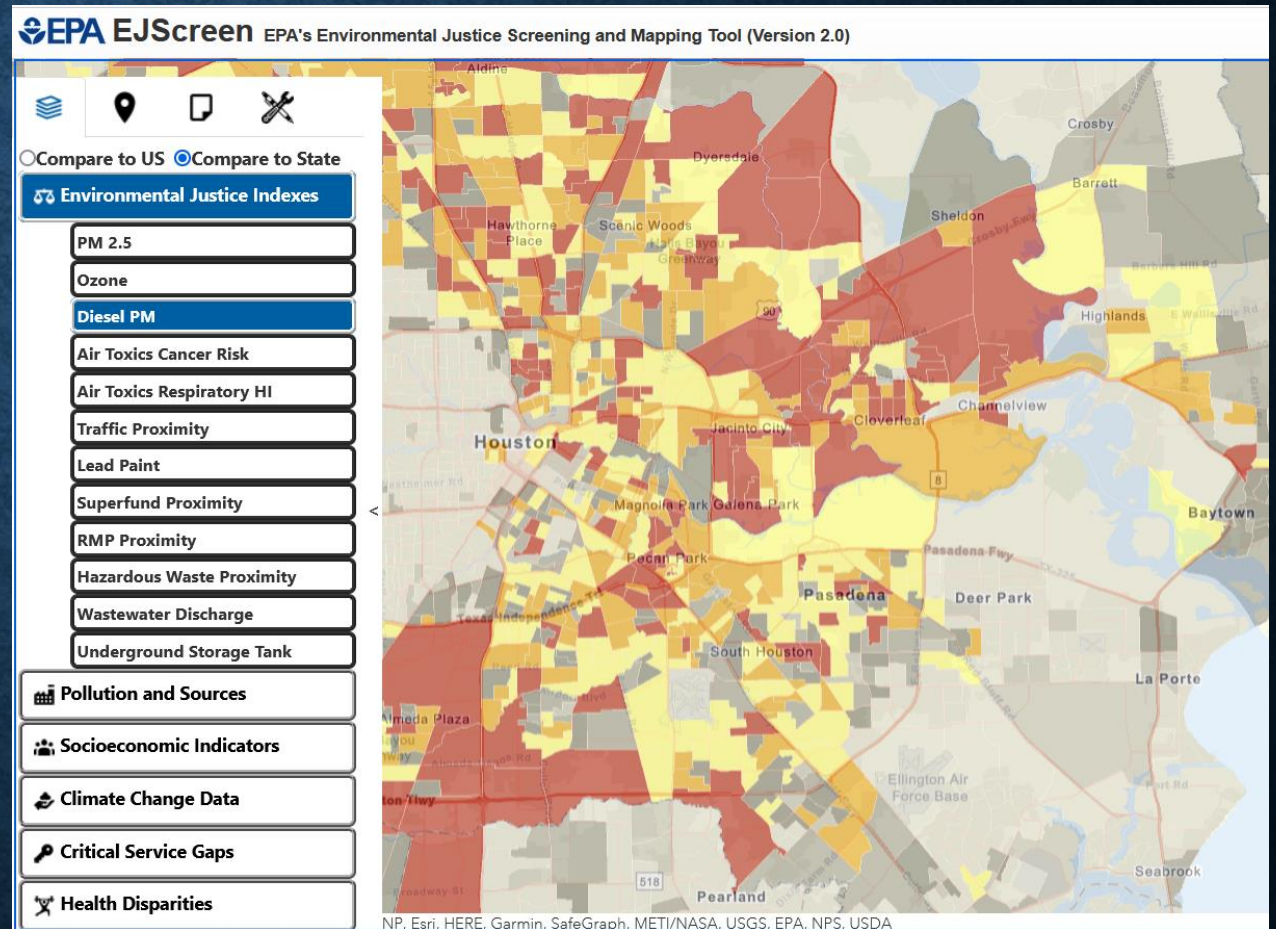
What is EJSCREEN?

- EPA's web-based GIS tool for nationally consistent EJ screening and mapping
- Combines environmental and demographic data to highlight areas where vulnerable populations may be disproportionately impacted by pollution
- Starting point for agency considerations of environmental justice



EJSCREEN KEY FEATURES

- 12 EJ Indexes – one for each environmental indicator
- Annually updated environmental data
- Annually updated demographics – from most recent U.S. Census data
- Highest resolution data available
- Ability to download data
- Accessibility / ease of use



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Governor Murphy Signs Historic Environmental Justice Legislation

09/18/2020

Nation's Strongest Measure to Protect Overburdened Communities from Pollutants

Fulfilling a commitment to enact sweeping protections for environmental justice communities, Governor Phil Murphy today, alongside U.S. Senator Cory Booker, Mayor Ras Baraka, Senator Troy Singleton, Assemblyman John McKeon, and environmental advocates, signed legislation (S232), which requires the New Jersey Department of Environmental Protection to evaluate the environmental and public health impacts of certain facilities on overburdened communities when reviewing certain permit applications. New Jersey is the first state in the nation to require mandatory permit denials if an environmental justice analysis determines a new facility will have a disproportionately negative impact on overburdened communities.

The bill defines an overburdened community as any community where 35 percent of the households qualify as low-income according to the U.S. Census, 40 percent of households are minority, or 40 percent of households have limited English proficiency. There are approximately 310 municipalities with populations totaling approximately 4,489,000 that have overburdened communities within their municipalities.

are your views on

Senate Bill S8830

2021-2022 Legislative Session

Makes provisions regarding the siting of environmental facilities in minority communities or economically distressed areas

Implications of all these commitments

- All of government approach to equity and justice
- Bringing together compliance with civil rights laws and integration of EJ considerations across the environmental regulatory endeavor
- Disproportionality and cumulative impacts in regulatory decisions (i.e., permits, rules)
- Disproportionality and cumulative impacts in formal agreements with regulatory partners (i.e., states, tribes, local governments)
- Clear responsiveness to community input in our decisions
- Just treatment and meaningful engagement with communities with EJ concerns

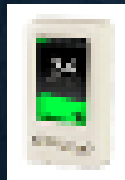
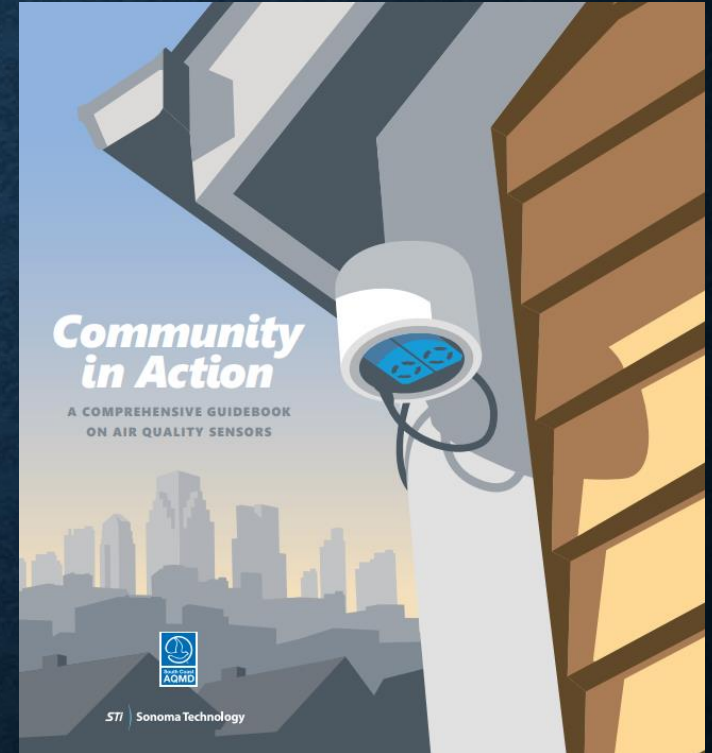
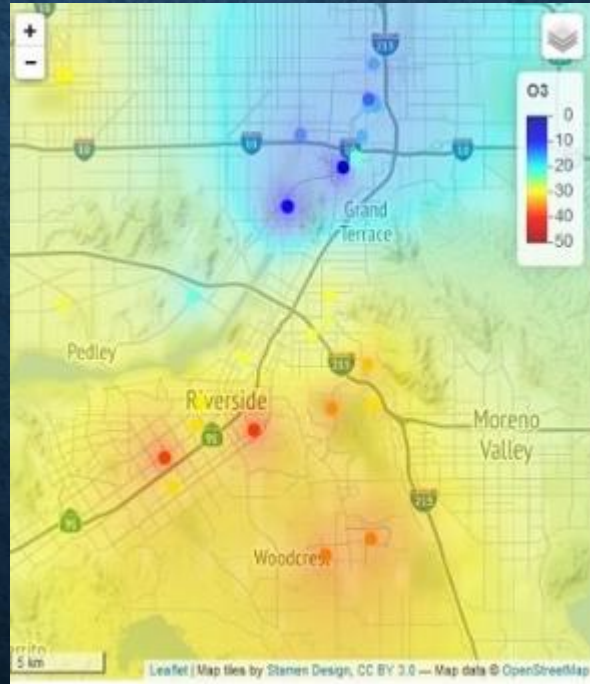
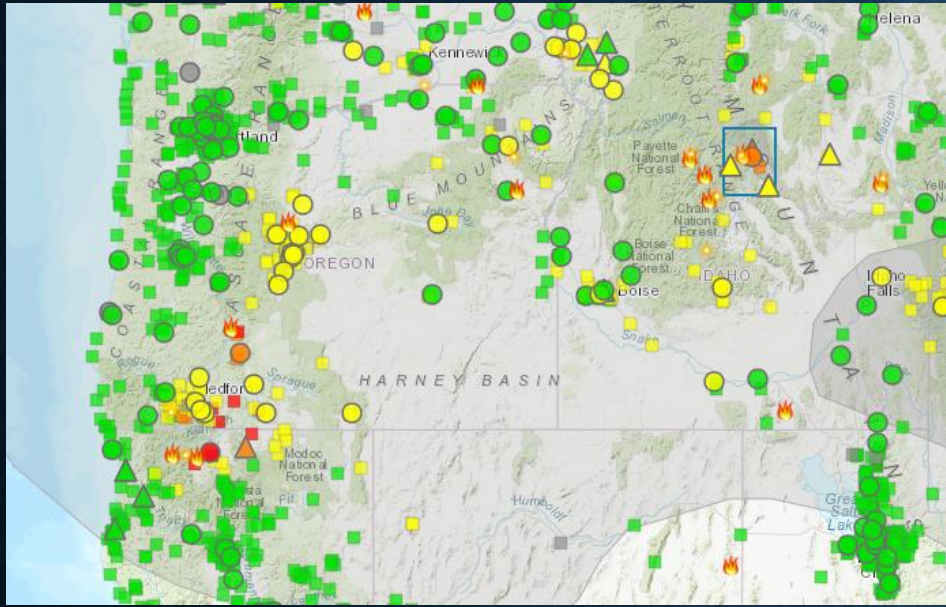
Environmental Monitoring and EJ

- Many communities with EJ concerns frequently request additional monitoring in their communities
 - Monitoring objectives should be clear
 - ✓ to identify a problem
 - ✓ to measure the extent of the problem
 - ✓ to identify the source of a problem
 - ✓ to ensure the remedy is solving the problem
- Some communities are tired of being “studied” and just want solutions
 - If the extent and source of the problem are known to all, focus on solutions

Environmental Monitoring and EJ (2)

- More localized pollutant data is critical to advancing EJ
- Traditional methods are too sparse and/or expensive to deploy at the neighborhood scale
- Recent low-cost and/or advanced methods offer the answer
 - Low-cost sensors / Community-based participatory science
 - Mobile air monitoring platforms
 - Facility fence-line air monitoring
 - Satellite measurements

Low-Cost Sensors / Community Science



Toxic Metals Source Monitoring



October 2016



May 2017



November 2017



As of February 1, 2019

4820

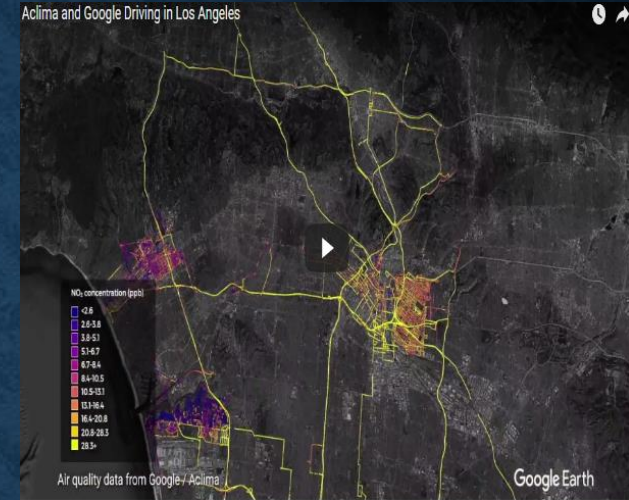
Samples analyzed
for hexavalent
chromium at 46 sites
since Oct 2016

38

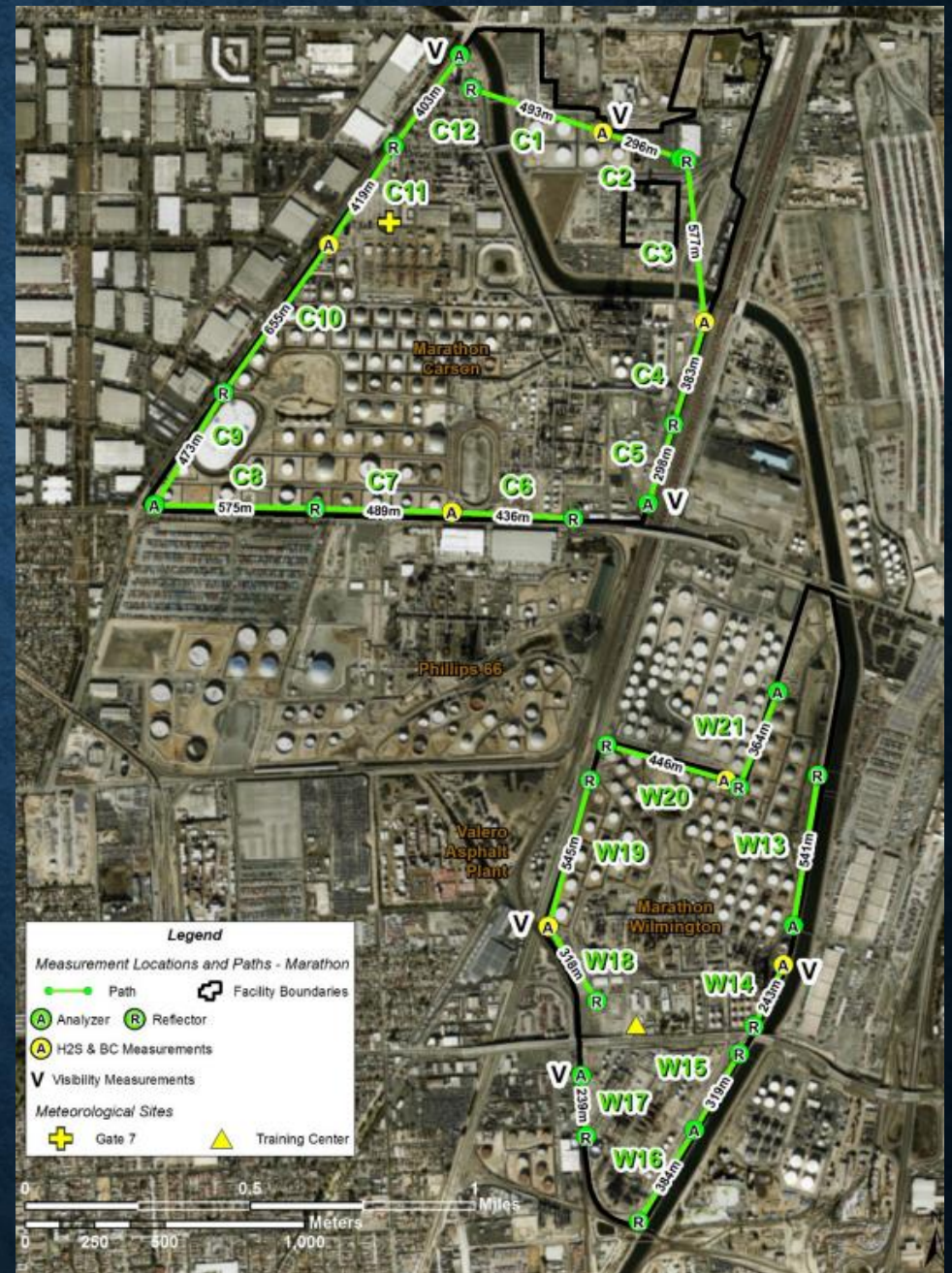
Sampling Locations

- Over 10 ng/m³
- Between 5 to 10 ng/m³
- Between 1 and 5 ng/m³
- Less than 1 ng/m³

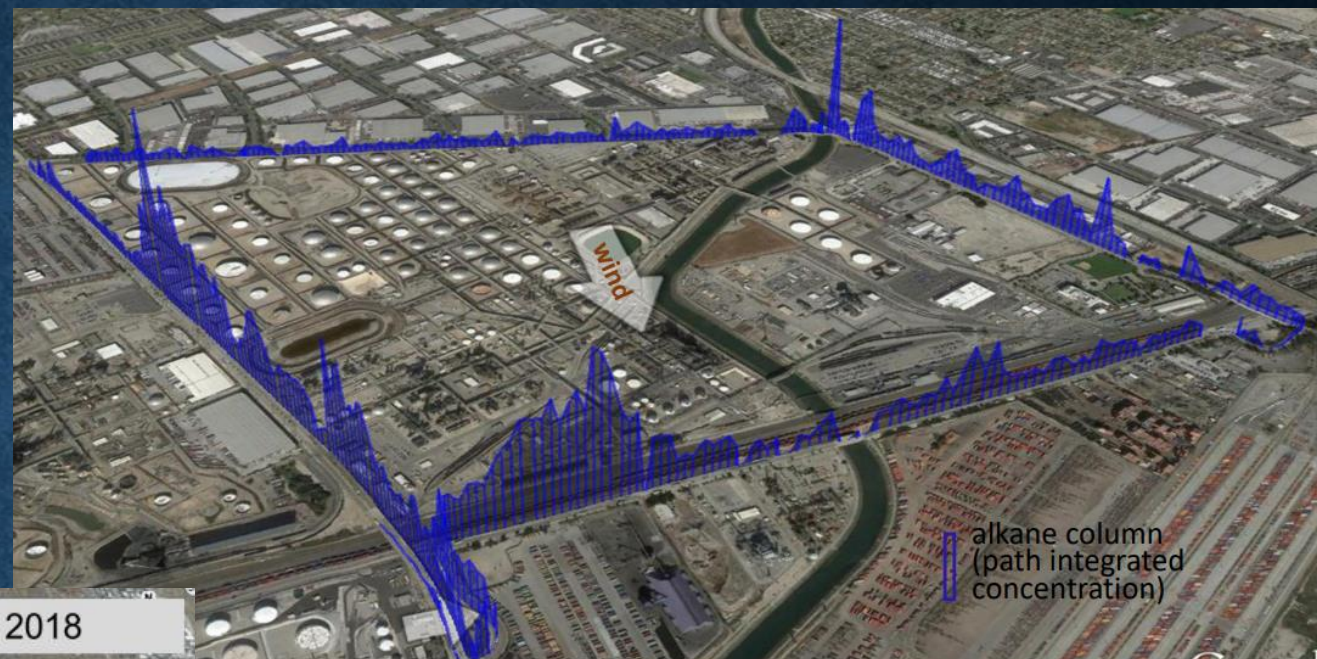
Mobile Air Monitoring Platforms



Fence-line Air Monitoring



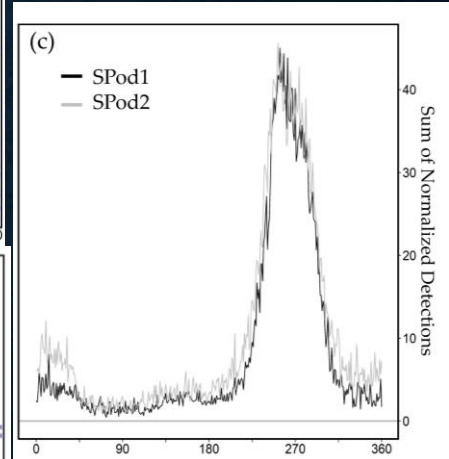
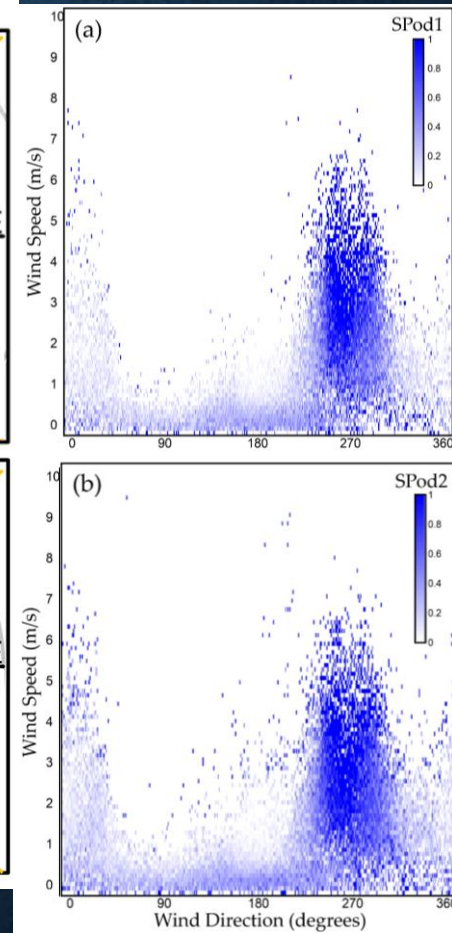
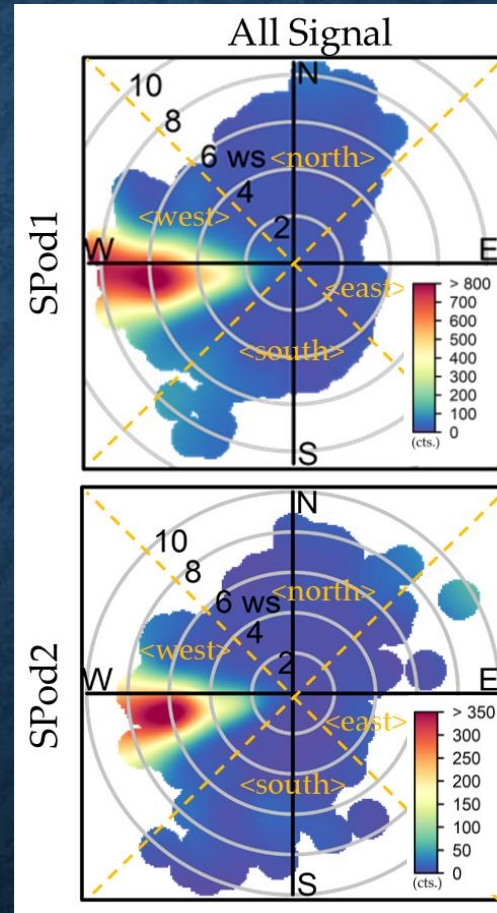
Mobile Monitoring: Solar Occultation Flux



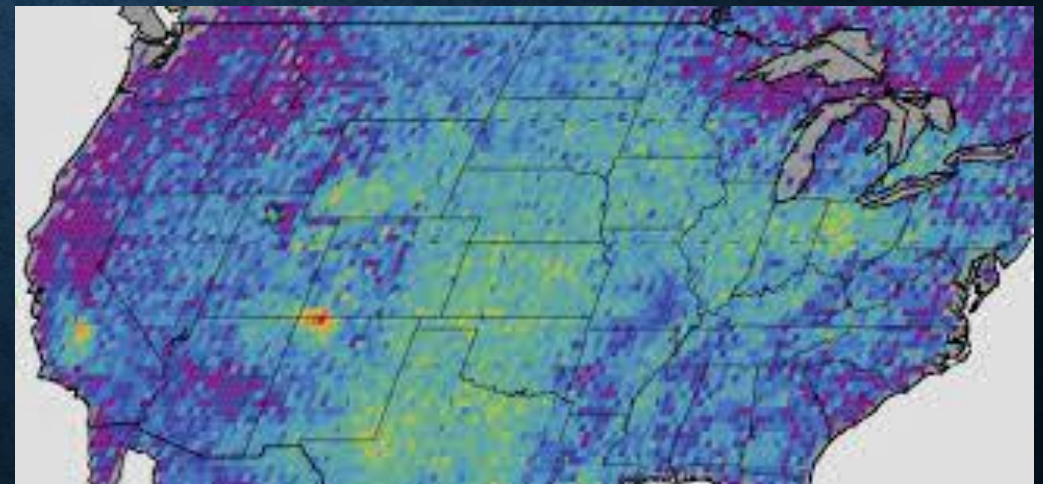
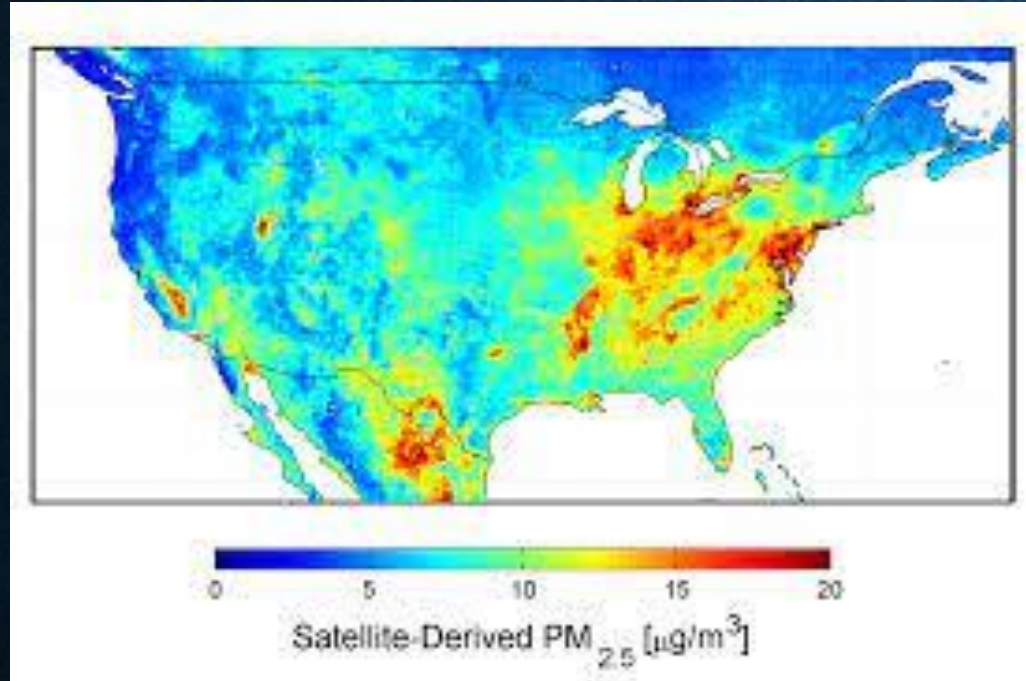
Source: SCAQMD

EPA ORD - RUBBERTOWN NGEM DEMO PROJECT

Fenceline SPod



Satellite Measurements



HAQAST SD4EJ “TIGER TEAM”



John Haynes



NASA Health and Air Quality Applied Science Team (said hay-cast)

- Program Manager: John Haynes; Team Lead: Tracey Holloway

Tracey Holloway



1. Satellite data for environmental justice (SD4EJ)

Team Lead: HAQAST investigators Susan Anenberg and Qian Xiao

Partners: Centers for Disease Control and Prevention (CDC), Texas Department of State Health Services, Environmental Defense Fund (EDF), White House Council on Environmental Quality, University of Maryland, Baltimore County, Consortium for the Valuation of Applications Benefits Linked with Earth Science (VALUABLES), National Oceanic and Atmospheric Administration (NOAA), Center for Applied Environmental Law and Policy (CAELP), DC Department of Energy & Environment, **United States Environmental Protection Agency (EPA) Office of Environmental Justice**



HAQAST Members and Collaborators: Gaige Kerr, Cici Bauer, Bryan Duncan, Mariana Figueiro, Arlene Fiore, Emily Fischer, Emily Gargulinski, Dan Goldberg, Pawan Gupta, Tracey Holloway, Yang Liu, Jeff Pierce, Ted Russell, Amber Soja, Christopher Uejio, Daniel Tong, Jun Wang, and Randall Martin also contribute to this team.

Goal: To integrate satellite data into environmental justice (EJ) screening & mapping tools.

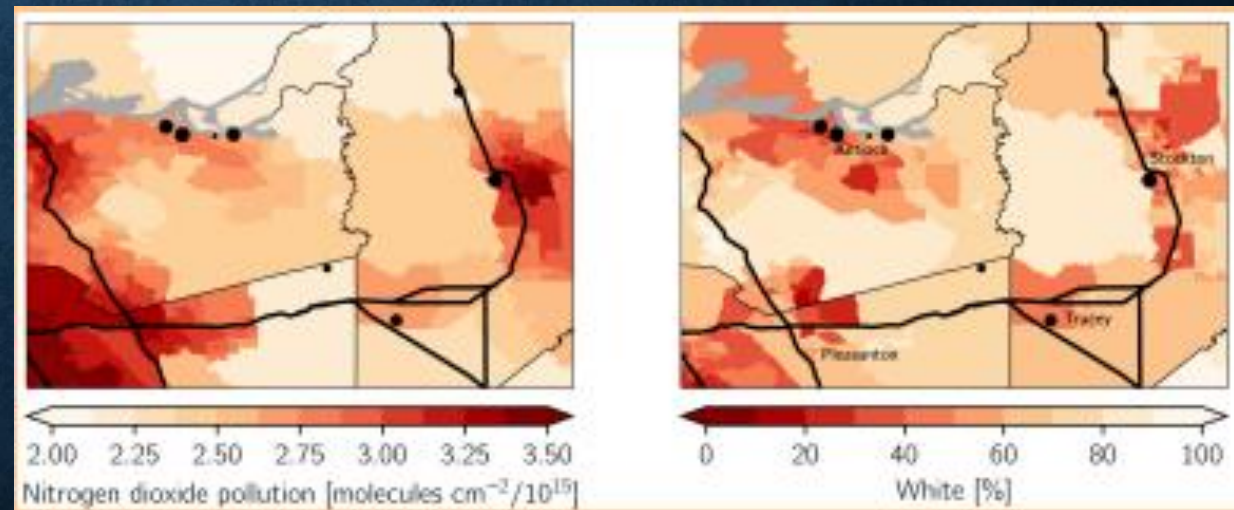
<https://haqast.org/tiger-teams/>



HOW CAN WE USE SATELLITE DATA TO ADVANCE EJ?

- Satellite data have strength in spatial coverage to comprehensively identify and target EJ communities for investments and/or remediation.
 - Current spatial resolution requires oversampling or downscaling.
 - Geostationary satellites will have higher resolution and more frequency.
- Satellite data have the ability to discern differences in heat, pollution, and other environmental hazards within individual census tracts.

Recently-launched satellite instruments allow us to better understand the co-location of high levels of nitrogen dioxide, an air pollutant hazardous to health, and communities of color. In this image, Stockton, California and surrounding cities are featured, and large industrial facilities are shown with black dots and highways with black lines.

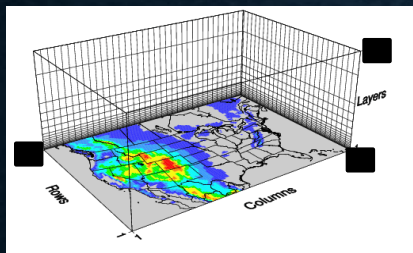


Slide content from: SD4EJ NASA HAQAST Flyer (Leads: Susan Anenberg and Qian Xiao)

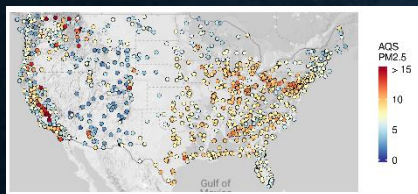
<https://haqast.org/wp-content/uploads/sites/91/2022/03/Satellite-Data-for-Environmental-Justice-Flyer-Publicly-Shareable.pdf>

FUTURE PROJECTIONS OF EXPOSURE DISPARITIES FOR PM_{2.5}: 2011 TO 2028

CMAQ Modeling



Monitoring



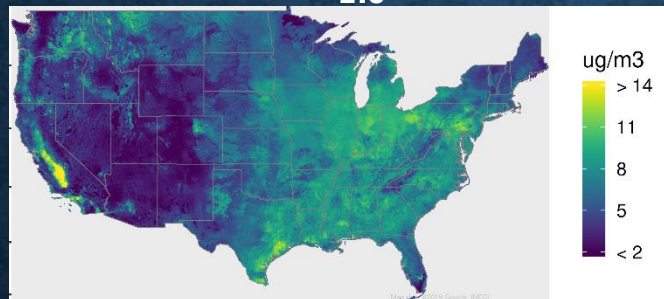
Remote Sensing



Other Data



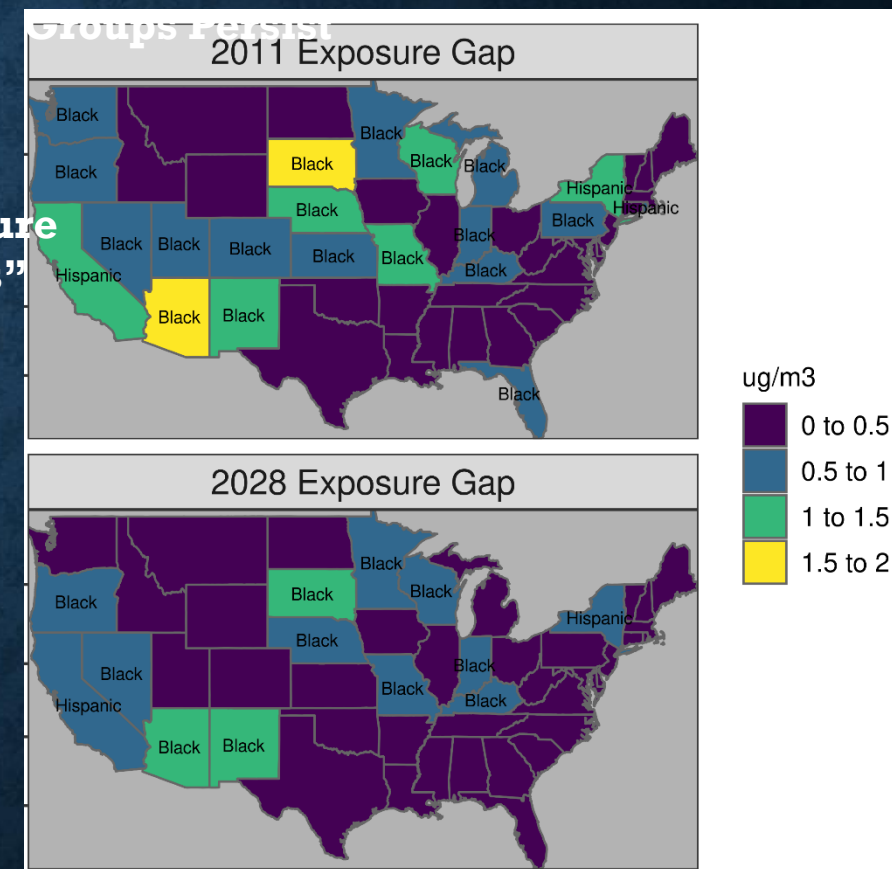
Fused PM_{2.5} Field



Project w/ Future
"On-the-Books"
AQ Modeling



Exposure Gap* by State Decreases from 2011 to 2028 but Most-Exposed Groups Persist

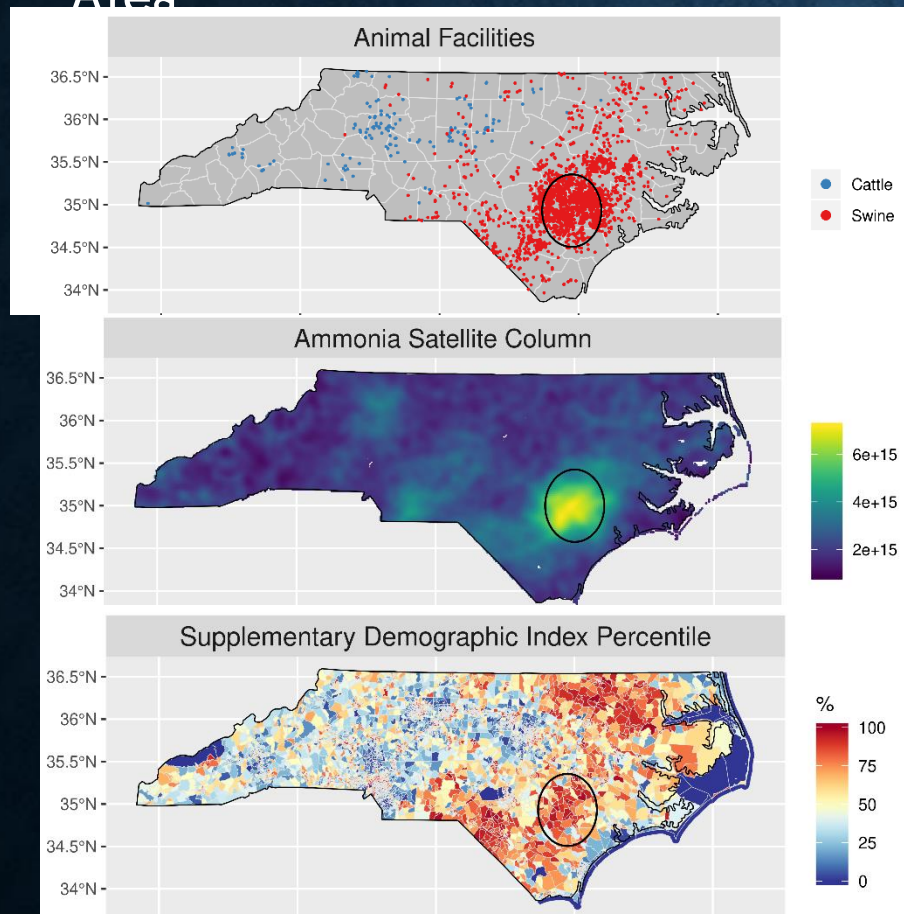


*Exposure gap is defined here as the difference in population-weighted concentration between the most and least exposed group (but could be defined differently, e.g., gap between low-income non-white and high-income white)

CURRENT EXAMPLES OF EJ EXPOSURE ISSUES: USE OF SATELLITE DATA

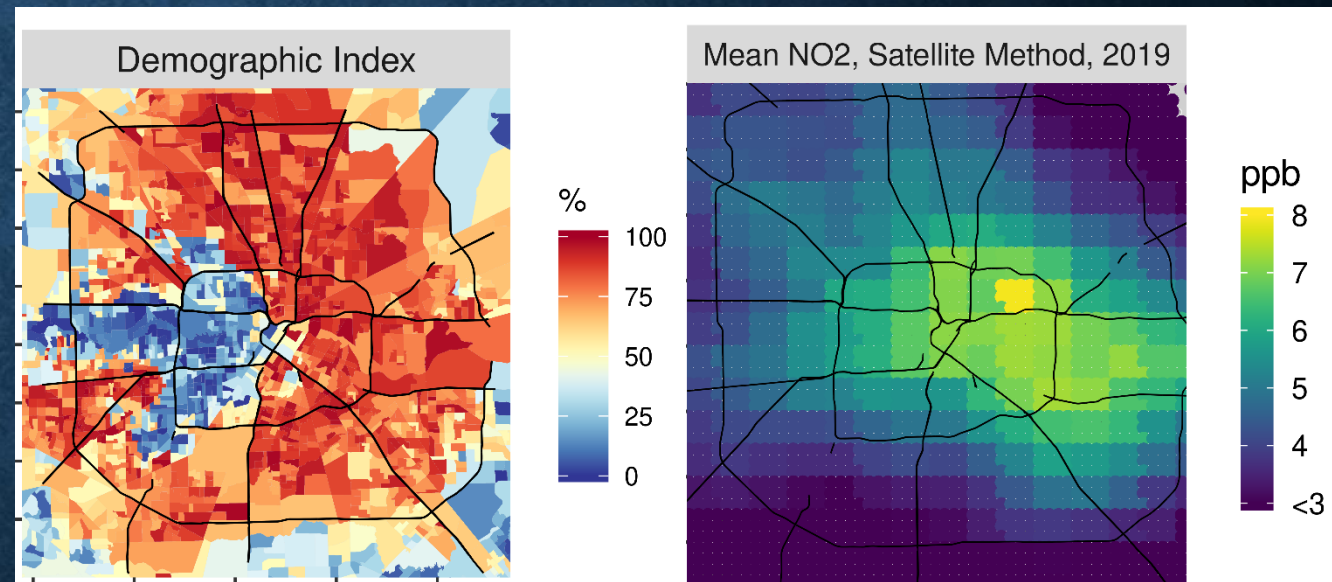
NC Hog Farms

High ammonia is indicator of hog farm exposure in high Demo. Index Area



Houston

High NO₂ Concentrations Co-located with high Demographic Index



Thanks!

Contact Info

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fine.philip@epa.gov