State of the Science FACT SHEET

Environmental Justice

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION • UNITED STATES DEPARTMENT OF COMMERCE

What is Environmental Justice?

Environmental Justice (EJ) is a transdisciplinary research topic, a social movement, and a framework for equitable science. The US Federal Government defines EJ as "*the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies*."[1] It believes that EJ will be achieved when "everyone enjoys the same degree of protection from environmental and health hazards, and equal access to the decision-making process to have a healthy environment in which to live, learn, and work."[2] Social, economic, and political factors can disproportionately harm certain peoples' wellbeing and health, which limits the public's overall resilience and adaptive capacity to environmental change. EJ science aims to understand claims of environmental harms through data, then productively engage with impacted communities *on their own terms* to improve the natural environment for everyone. For NOAA, approaching work with an EJ framework is key to improving the accessibility, usefulness, and impact of our science and services.

What In-House EJ Science and Research does NOAA Perform? (Case Studies)

NOAA's vision for the future includes "resilient communities and institutions that derive goods from ecosystems in a way that does not compromise ecosystem integrity, yet is economically feasible and socially just for future generations".[3] EJ science at NOAA investigates *how* - spatially, temporally, and socially - and *why* - physically, economically, and socially - environmental conditions are distributed.

NOAA's National Integrated Heat Health Information System (NIHHIS)[4] runs a community-led Urban Heat Island Mapping program, funded by the NOAA Climate Program Office, that facilitates community science field campaigns to map and study how heat is distributed within urban areas. Urban heat islands disproportionately affect low-income or communities of color, often due to racist historical housing policies like redlining.[5] This project reveals the inequitable distribution of extreme heat. The program produces high-resolution air temperature and heat index maps used in city planning, urban forestry, public health campaigns, and research projects to promote equitable heat risk mitigation.

Brief Environmental Justice History[6]

1982 Residents organize sit-in against a toxic polychlorinated biphenyl (PCB) landfill in Warren County, NC

1983 In response, Government Accountability Office releases "Siting of Hazardous Waste Landfills and Their Correlation with Racial and Economic Status of Surrounding Communities" report

1987 United Church of Christ Commission on Racial Justice releases "Toxic Waste in the United States" report

1991 National People of Color Environmental Leadership Summit adopts "17 Principles of Environmental Justice"

1994 President Bill Clinton signs Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" and creates ensuing EJ Interagency Working Group

2015 US Environmental Protection Agency (EPA) launches EJSCREEN web-based tool

2021 President Joe Biden signs Executive Order 14008 "Tackling the Climate Crisis at Home and Abroad" and directs Federal Agencies to make EJ part of their missions

NOAA's Regional Integrated Sciences and Assessments (RISA)[7] program builds sustained relationships between decision-makers and climate researchers that support collaborative and equitable adaptation to climate risks in a local context. RISA teams develop integrated approaches to tackle the complex issues influencing a community's ability to adapt to climate change. Small grants are available to directly fund partnerships with disadvantaged communities. Principles of EJ are integrated into project reviews and evaluation. RISA's efforts have informed New York City's Cool Neighborhoods plan,[8] supported the indigenous data sovereignty movement,[9] and identified gaps in reaching rural African American communities.[10]

NOAA's Regional Climate Services Program (RCS)[11] builds sustained community relationships to understand context-specific user needs for information, develops and delivers operational information products and services to regional decision-makers, and translates data into meaningful information easily leveraged by users. Through Regional Climate Centers and in partnership with State Climatologists, RCS assists underserved communities through supporting the NOAA Tribal Team, NIDIS, and RISA.

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[1] US Environmental Protection Agency, 2021.
[2] See footnote 1.
[3] National Oceanic and Atmospheric Administration, 2021.
[4] National Integrated Heat Health Information System, 2021.
[5] Hoffman, J.S.; Shandas, V.; Pendleton, N. The Effects of Historical Housing Policies on Resident Exposure to Intra-Urban Heat: A Study of 108 US Urban Areas. *Climate* **2020**, *8*, 12.
[6] Adapted from US Environmental Protection Agency, 2021.
[7] Regional Integrated Sciences and Assessments, 2021.
[8] NOAA Climate.gov, 2019. NOAA RISA's CCRUN Team: Responding to the risk of extreme heat on vulnerable populations.
[9] USIDSN, 2021. United States Indigenous Data Sovereignty Network.
[10] Jurjonas, Matthew, et al., 2020. Uncovering climate (in)justice with an adaptive capacity assessment: A multiple case study in rural coastal North Carolina. Land Use Policy 94.
[11] Regional Climate Services Directors, 2021.

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How are NOAA Data Products and Services Used to Facilitate EJ? (Case Studies)

NOAA data is frequently used by outside parties to advance EJ in the field.

The National Air Quality Forecasting Capability (NAQFC)[12] provides air quality forecast guidance for surface ozone and particulate matter, used along with satellite imagery and ground monitoring data to forecast warnings and alerts for hazardous air quality. Utilizing these datasets, independent users have shown that dangerous urban heat and poor air quality disproportionately affects low-income populations and communities of color, costing $900 billion and causing 100,000 premature deaths in the US each year.[13] Studies indicate that even when national air pollution levels drop, as was the case during the COVID-19 pandemic-related lockdown, communities of color are exposed to ~50% more pollution than white communities.[14]

NOAA's Community Social Vulnerability Indicators Toolbox[15] is a suite of 14 statistically robust social, economic, and climate change indicators that uniquely characterize and evaluate fishing communities' vulnerability and resilience to disturbances (regulations, extreme weather, oil spills, sea level rise, etc). The Toolbox enables users to analyze both EJ as well as the climate vulnerability of over 4,600 coastal communities in 24 states (Fig 1).[16] The Toolbox is routinely used for National Environmental Policy Act, Magnuson-Stevens Act, and Regional Ecosystem Status Reports analyses.

NOAA's National Integrated Drought Information System (NIDIS)[17] helps save lives and property across the board, while paying particular attention to the unique needs, perspectives and experiences of Indigenous, Tribal, and Native communities. Through its Tribal Drought Engagement Strategy, NIDIS and Tribal partners are forging a mutually beneficial relationship with Tribal Nations as equal partners in researching, preparing for, and responding to drought.

What Other NOAA Programs Support EJ?

NOAA provides additional support for EJ through programs including:

1. Climate Program Office
2. Cooperative Institutes
3. Educational Partnership Program with Minority Serving Institutions and Cooperative Science Centers
4. Environmental Literacy Program
5. Hollings Undergraduate Scholarship
6. National Centers for Environmental Information
7. National Sea Grant College Program
8. Regional Integrated Sciences and Assessment Small Grants & Collaborative Planning Activity Grants

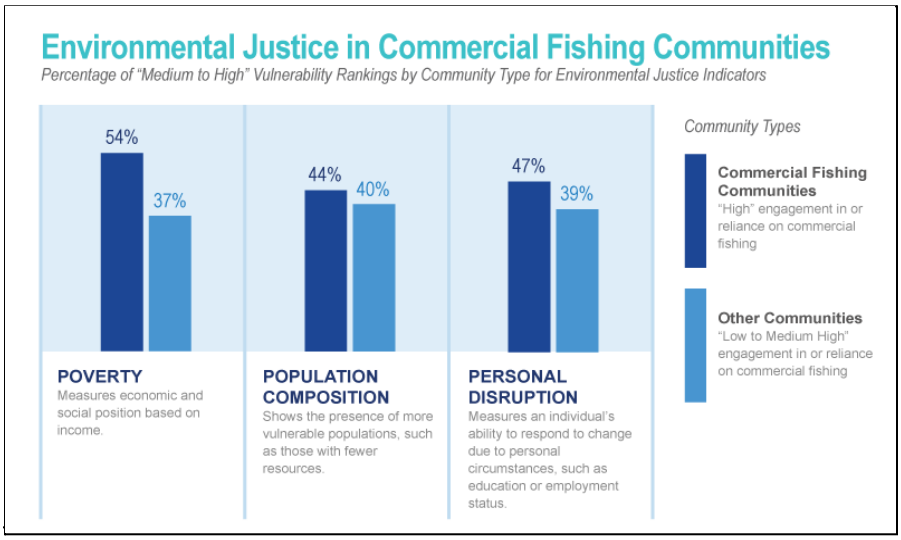

Figure 1: A 2021 NOAA study of hundreds of coastal US communities utilizing the Community Social Vulnerability Indicators Toolbox demonstrated that communities dependent upon commercial fishing are far more likely to be poor, have a larger percentage of minority and tribal populations, and/or have residents with less "personal capacity" to respond to change, e.g., higher unemployment rates or lower educational attainment. *NOAA Fisheries*.

[12] National Air Quality Forecasting Capacity, 2021.
[13] Fann et al., Risk Analysis, 2012. Estimating the National Public Health Burden Associated with Exposure to Ambient PM2.5 and Ozone.
[14] Kerr et al. COVID-19 lockdowns reveal pronounced disparities in nitrogen dioxide pollution levels, PNAS, in press
[15] Social Indicators for Coastal Communities, 2021.
[16] Figure 1 adapted from Colburn et al., 2016. Indicators of climate change and social vulnerability in fishing dependent communities along the Eastern and Gulf Coasts of the US.
[17] National Integrated Drought Information System, 2021.