



# EnviroAtlas: Connecting people, nature, health, and the economy

**Anne Neale and Jessica Daniel**

*Center for Public Health and Environmental Assessment  
U.S. EPA Office of Research and Development*

**June 8, 2021**





U.S. ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF RESEARCH AND DEVELOPMENT

CENTER FOR PUBLIC HEALTH AND ENVIRONMENTAL ASSESSMENT



**ANNE NEALE**

EnviroAtlas Lead



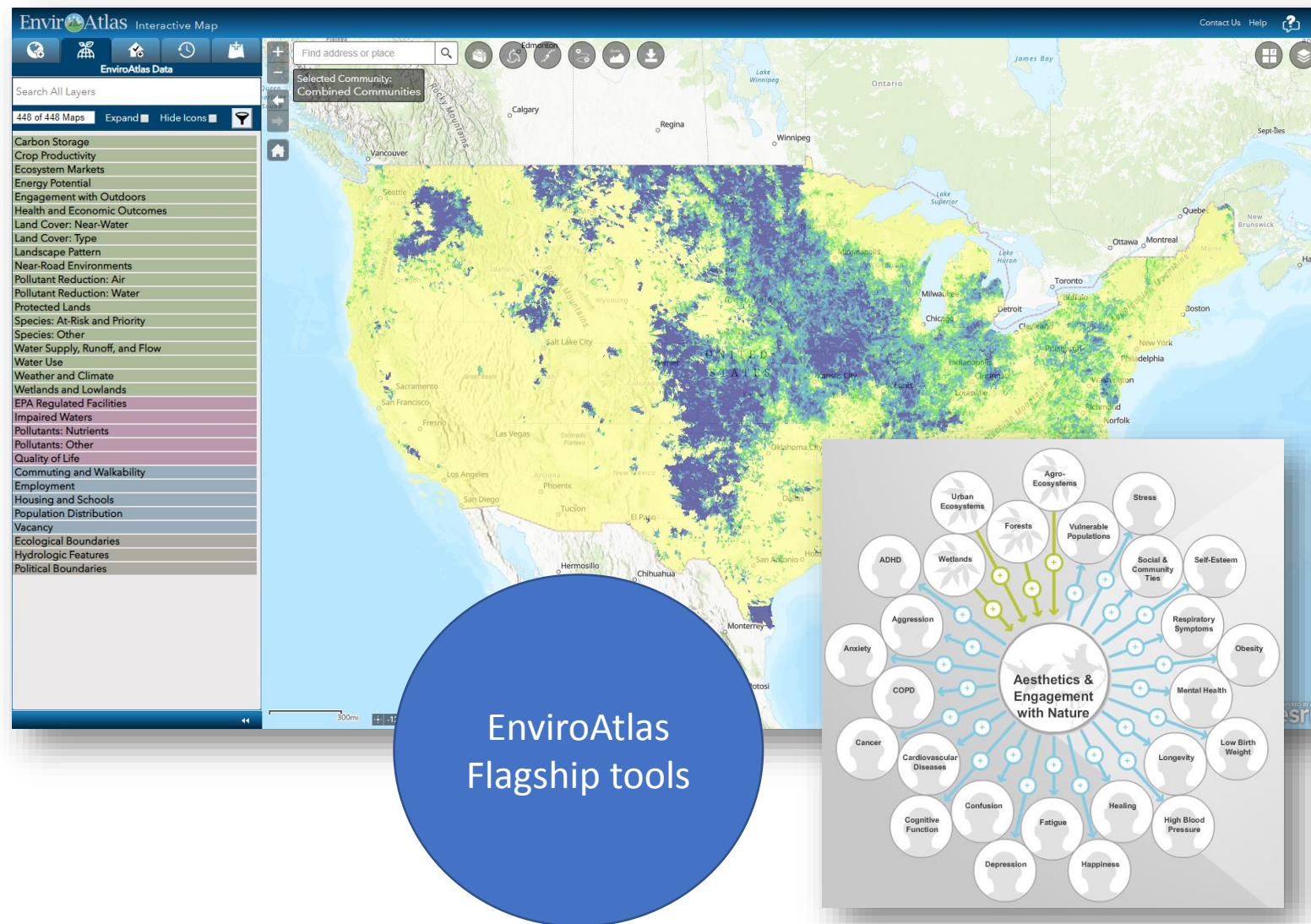
**JESSICA DANIEL**

Outreach & Stakeholder  
Engagement Lead

**EnviroAtlas** is an online resource providing geospatial data, easy-to-use tools, and other resources related to ecosystem services, their chemical and non-chemical stressors, connections to human health, and equity.

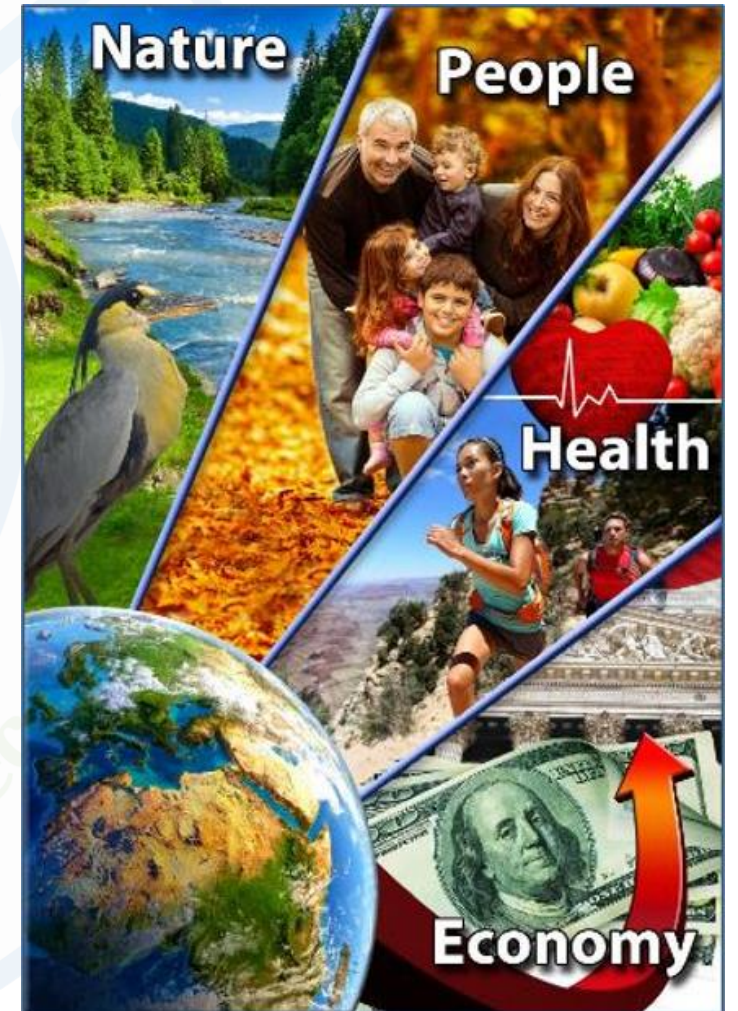
## EnviroAtlas Includes:

- Over 500 map layers, environmental and demographic
- **Interactive Mapping Application**
- **Eco-Health Relationship Browser**
- Analytic and Interpretive Tools
- GIS Toolboxes



# EnviroAtlas Objectives

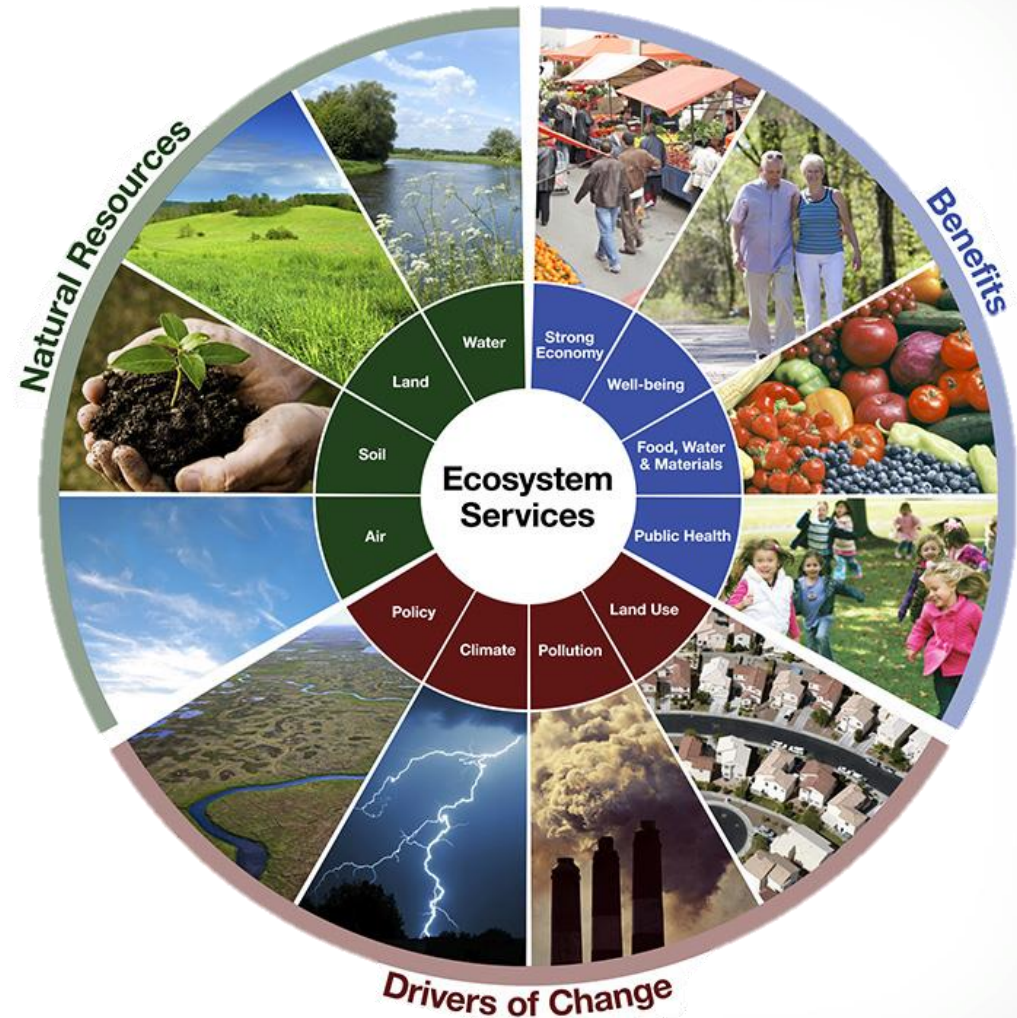
- Conduct research to produce data and tools linking nature, people, health, and the economy
- Publish that research in the science literature
- Integrate those products with other relevant data in an accessible application and website
- Reach a broad audience, including decision-makers, academia, and educators
- Increase geospatial intelligence





# Ecosystem Services and EnviroAtlas

- Ecosystem services are critically important to human well-being, but often overlooked.
- Ecosystem services not always distributed equitably.



**Clean Air**



**Clean &  
Plentiful  
Water**



**Biodiversity  
Conservation**



**Food, Fuel,  
&  
Materials**



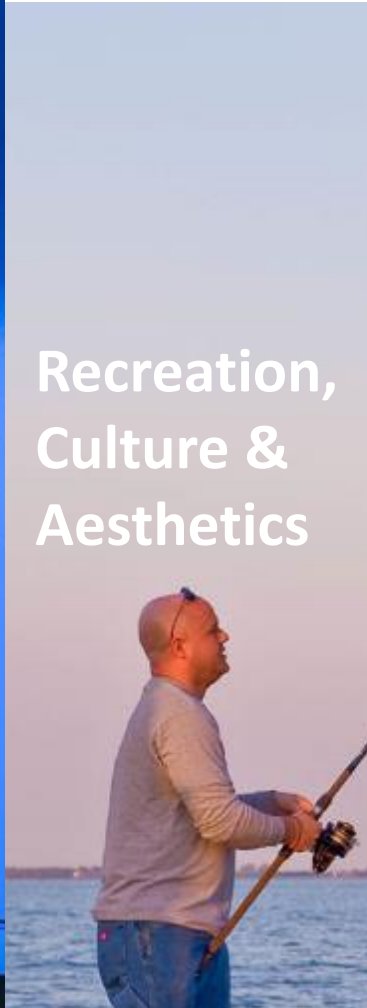
**Natural  
Hazard  
Mitigation**



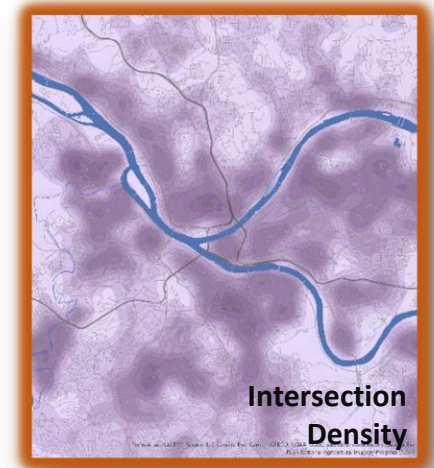
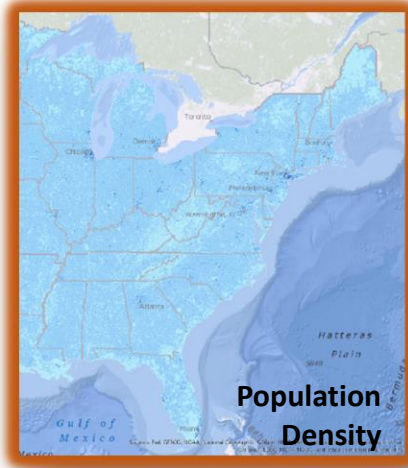
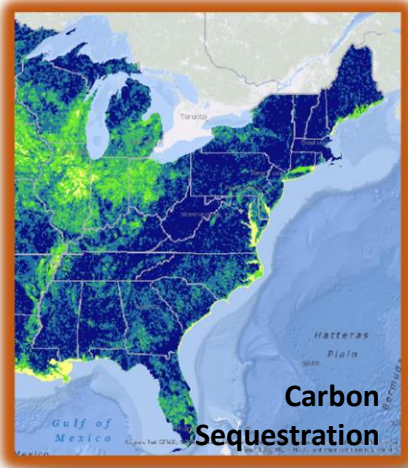
**Climate  
Stabilization**



**Recreation,  
Culture &  
Aesthetics**



**Ecosystem Services Benefit Categories**



## National Data

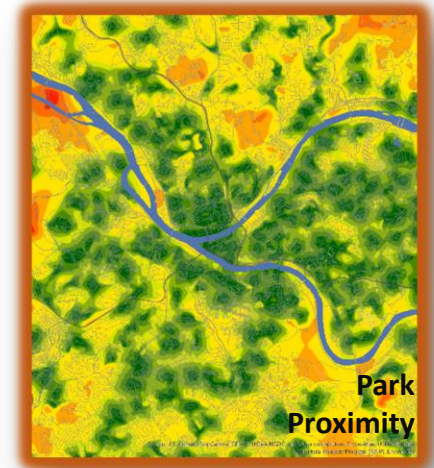
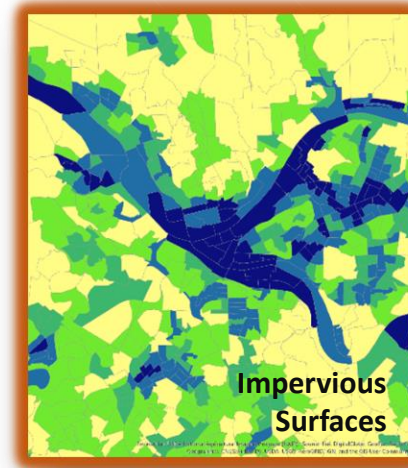
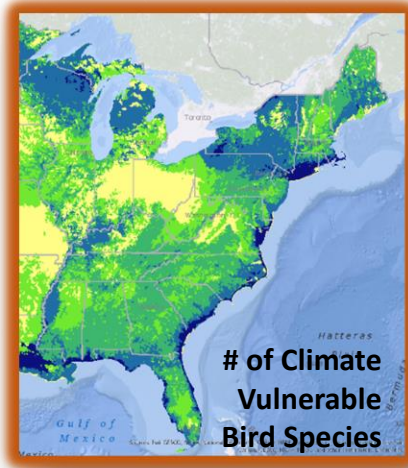
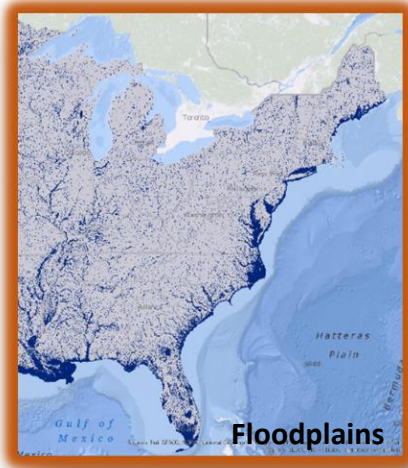
30-meter land cover  
 400+ unique data layers  
 Consistent data for the  
 conterminous U.S.

**EnviroAtlas**

Data Fact Sheets  
 Peer-reviewed  
 Standard Metadata  
 Open access

## Community Data

1-meter land cover  
 100+ unique data layers  
 30 metropolitan areas  
 1450 cities & towns (65+ million people)



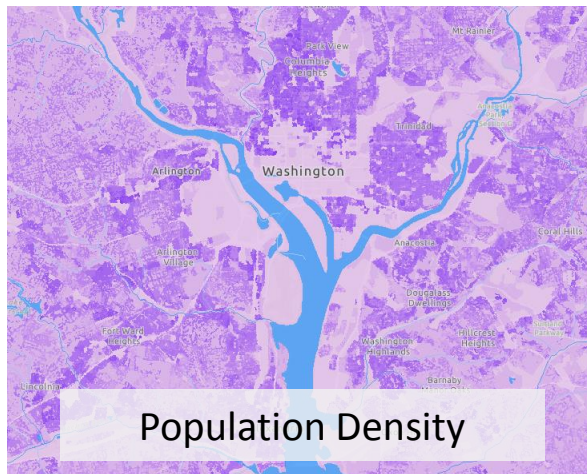
# Data in EnviroAtlas

- EnviroAtlas provides data at multiple extents and scales

## Types of Data

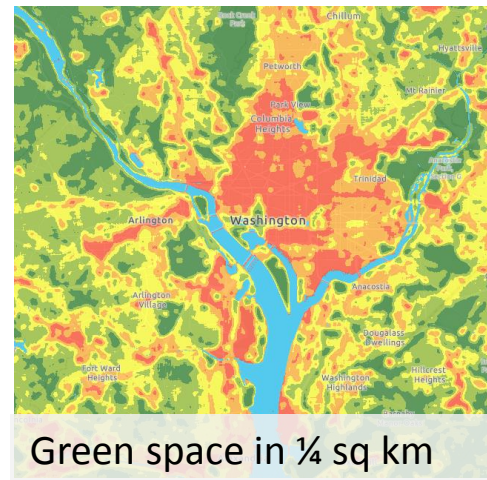
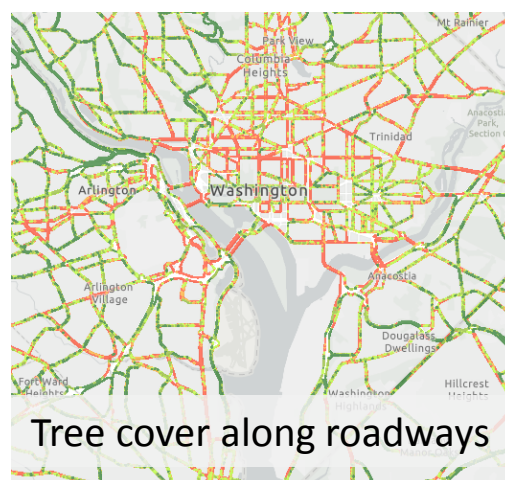
### Pixel based / Raster

- Fine detail



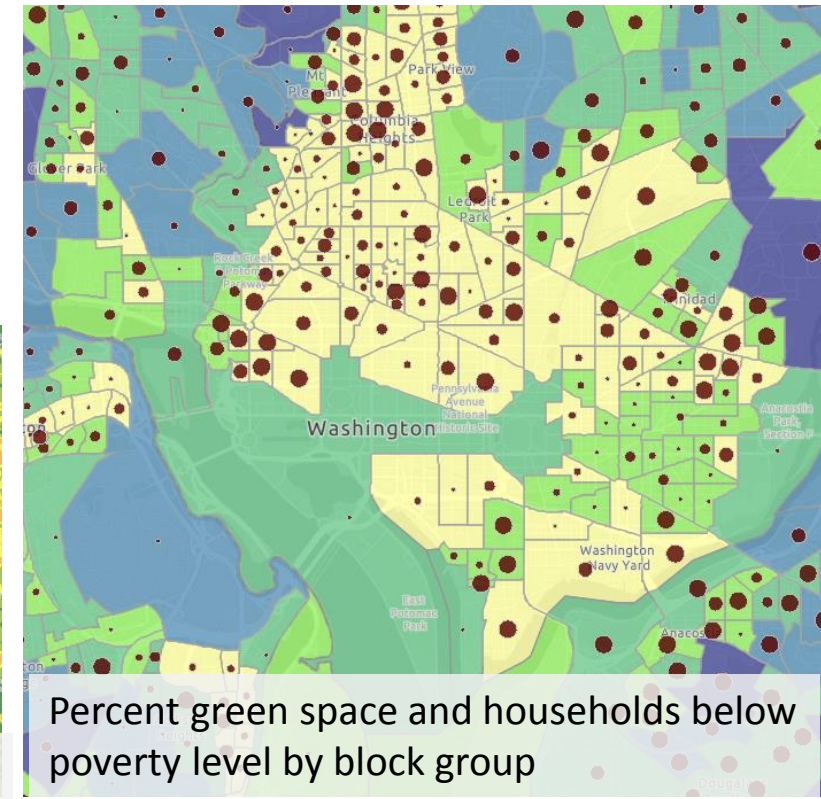
### Lines/Vectors

- Individual features



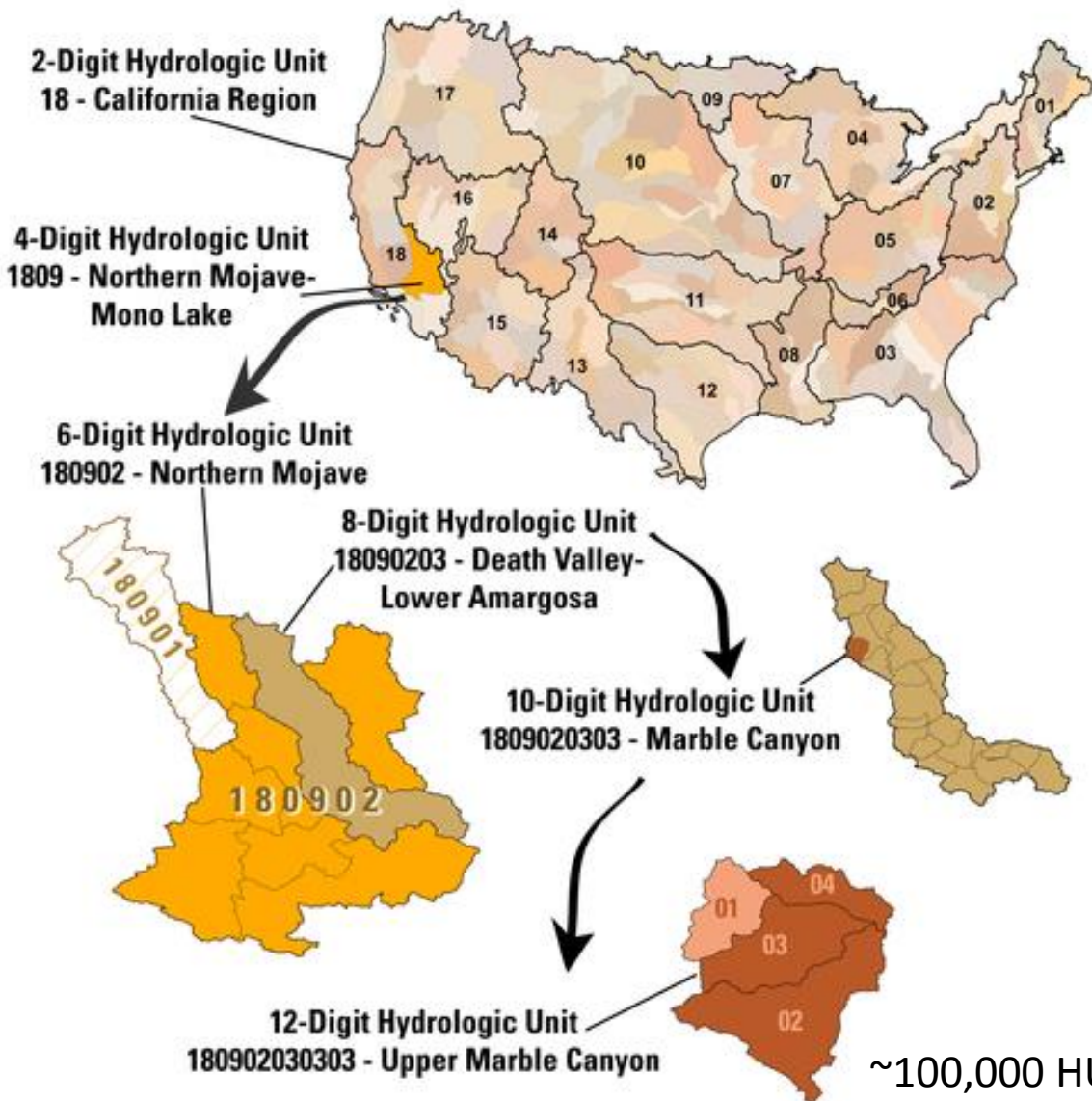
### Summaries by Census block group, Census tract, watersheds

- Allows for data overlays

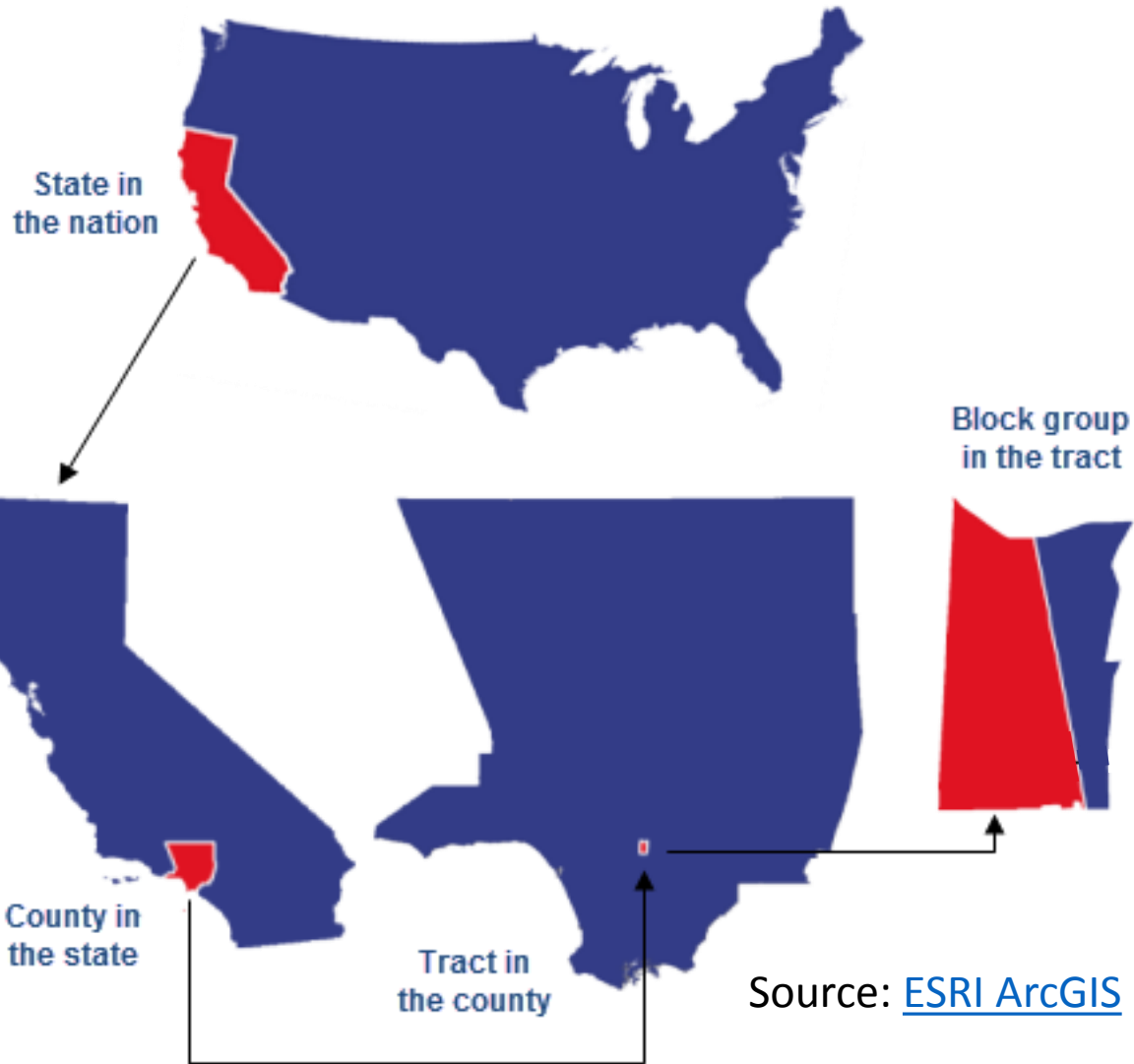




# Summarized Data



~100,000 HUC12 units in US



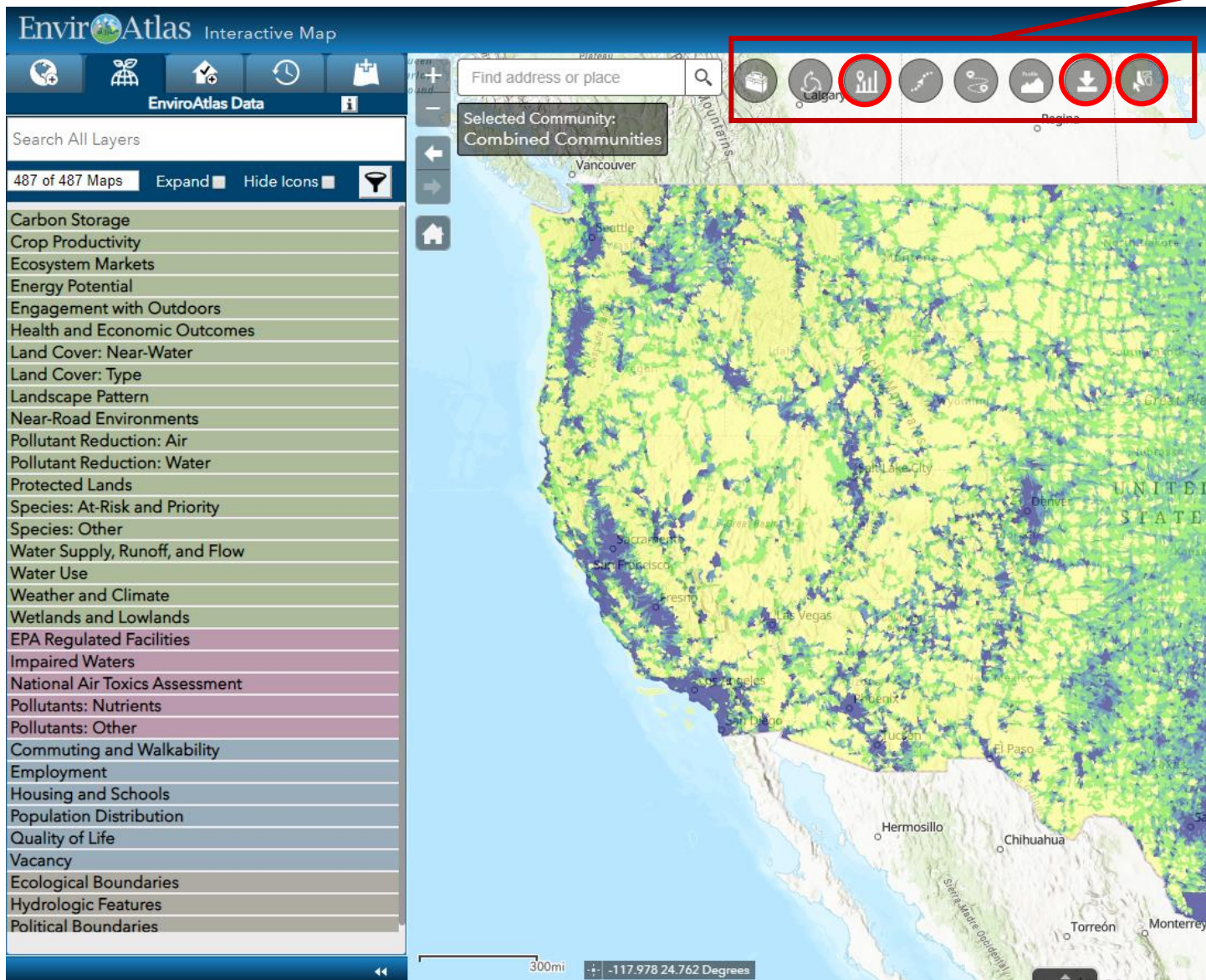
~218,000 block groups in US

Source: [ESRI ArcGIS](https://www.esri.com/)

Source: [USGS](https://www.usgs.gov/)

# EnviroAtlas Interactive Map

## Data Topics



## Built-in analysis tools

- Access EnviroAtlas Data:
  - Via our Interactive Map
  - Use web services
  - Download data
- Users can add their own data to our map for a session
- Users can search for data from the internet and add to map
- Save your session and return to it

EnviroAtlas data and resources can be used in a range of projects, from regional to local scales. The examples provided here are meant to introduce some EnviroAtlas datasets and tools and demonstrate how they might be used in various contexts. [If you have used EnviroAtlas resources, or have an idea for an example use or case study, we'd love to hear from you!](#)

EnviroAtlas  
people health nature economy  
www.epa.gov/enviroatlas

### Acres of Land Enrolled in the Conservation Reserve Program (CRP)

This EnviroAtlas national map depicts the acres of land within each 12-digit hydrologic unit (HUC) enrolled in the US Department of Agriculture's (USDA) Conservation Reserve Program (CRP). The CRP, established in 1985, is administered by the USDA Farm Service Agency. Farmers enrolled in the program receive annual rent payments and establishment cost share to remove environmentally sensitive land from crop production and plant environmentally beneficial perennial species.



#### Why is the Conservation Reserve Program important?

Farmers may voluntarily enroll marginal farmland in the CRP for 10 to 15 years. Environmentally sensitive or marginal farmland includes stream or lake riparian areas, periodically saturated or flooded lowland, or soils subject to wind or water erosion. Depending on the character of the candidate farmland, the CRP offers a number of initiatives with management practices tailored to wetland and riparian areas, duck and upland bird habitat, wildlife enhancement, retention of highly erodible soils, or honeybee and native pollinator habitat.

Farmland returned to natural cover may provide a number of ecosystem services that represent a long term investment in increased agro-ecosystem productivity. Natural land cover on sensitive areas helps protect water quality and terrestrial and aquatic habitat. Natural grassland and woodland slow stormwater runoff, filter pollutants from the air and soil, recharge groundwater, moderate air and water temperatures, and sequester carbon to mitigate global warming. A recent Farm Service Agency study reported that exports of sediment and nutrients fell to 0 after marginal cropland was planted with CRP natural cover.<sup>1</sup> By FSA estimates, CRP is responsible for a reduction of 450 million tons of erosion annually. Targeting the most highly erodible cropland could further increase the retention of erodible soils.<sup>2</sup> Another study on the high plains Ogallala aquifer in Oklahoma found that CRP parcels significantly increased groundwater recharge in areas where irrigation had reduced groundwater supplies.<sup>3</sup>

CRP acreage, particularly native pollinators such as bees, butterflies provide a critical service in ecosystems. About 75% of all crop and domesticated (honeybee) pollinators.<sup>4</sup> The lack of local

pollinators can result in lost crop productivity. Recent declines in honeybee populations make the services provided by wild pollinators even more critical to maintaining stable crop yields.<sup>4</sup> Native pollinators require blooming plants throughout the growing season and nesting habitat in tree cavities or abandoned insect or rodent nests.<sup>5</sup>

CRP acreage is important in the Prairie Pothole region of the Northern Great Plains to maintain and restore duck breeding habitat. Results from a study evaluating the nesting success of 5 duck species during 1992-1997 in CRP vs. non-CRP acres estimated an additional 12.4 million recruits to the fall migration attributed to improved CRP habitat.<sup>6</sup>

CRP enrollment is affected by factors such as farm bill enrollment caps, high commodity crop prices, and regional rental rates. The most recent 2014 farm bill reduced annual enrollment to a cap of 24 million acres in 2018, a reduction from a high enrollment of 37 million acres in 2007.<sup>7</sup> High crop prices and early opt-out provisions raise concerns that more CRP acreage may be returned to agricultural uses.

#### How can I use this information?

This map identifies the number of acres of agricultural lands within a 12-digit HUC that are enrolled in the CRP. The map can be used to compare CRP acres that may be in need of set may be compared with other data such as National Wetland Inventory floodplains to analyze how agricultural lands relate to wetland ecosystem services.

## Use Cases

[Is it whether to adopt a plan and organizations to use in county parks.](#) [PDF]

## Fact Sheets

[CRP Acreage](#)

[CRP Enrollment](#)

[CRP Land Use](#)

[CRP Water Quality](#)

[CRP Wildlife](#)

[CRP Wetlands](#)

[CRP Watersheds](#)

[CRP Watersheds](#)

[CRP Watersheds](#)

[CRP Watersheds](#)

[CRP Watersheds](#)

[CRP Watersheds](#)

[CRP Watersheds](#)

[CRP Watersheds](#)

EnviroAtlas - Accessing a National Dataset

Search All Layers

427 of 427 Maps

Carbon Storage

Crop Productivity

Ecosystem Markets

Energy Potential

Engagement with Outdoors

Health and Economic Outcomes

Land Cover: Near Water

Land Cover: Type

Landscape Pattern

Near-Road Environments

Pollution Reduction: Air

Pollution Reduction: Water

Protected Lands

Species At Risk and Priority

Common bird species in steep decline

Modeled 01, 02, 03 species

Modeled IUCN threatened terrestrial vertebrate species

Modeled Partners in Amphibian and Reptile Conservation (PARC) species

Modeled Partners in Flight Watch List bird species

Modeled State of the Birds species of conservation concern

Modeled threatened and endangered vertebrate species

Modeled threatened and endangered vertebrate species

Watch on YouTube

Tutorials

EPA  
United States  
Environmental Protection  
Agency

EPA/600/RR-15/128

## Health Impact Assessment (HIA) & EnviroAtlas

Integrating Ecosystem Services in the Making Process

Guides

Office of Research and Development  
National Exposure Research Laboratory

# Data and tools are not enough

Educational materials

K - 6

Exploring Your Watershed

4 - 6

Introduction to Ecosystem Services

4 - 12+

Connecting Ecosystems and Human Health

9 - 12+

Building a Greenway Case Study

# EnviroAtlas & Environmental Justice

- Includes data relevant to environmental justice, such as:
  - Demographic Data
  - Opportunity Zones
  - Climate scenarios, flooding, exposure, and other environmental variables affecting vulnerable populations
  - Redlining (coming soon)
- Add data function allows for inclusion of:
  - EJSCREEN indices
  - Local data of interest
- Educational lesson plan (high school, undergraduate) incorporating EJ concepts and data from EJSCREEN

The background of the slide is a watercolor wash. It features a large, irregular shape in the center, primarily composed of shades of blue and green. The blue is a medium, slightly muted tone, while the green is a vibrant, medium-green. The colors blend into each other and into the surrounding white paper, creating a soft, painterly effect. The overall composition is centered and balanced.

# Demonstration

<https://www.epa.gov/enviroatlas>

# CONTACT US

U.S. ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF RESEARCH AND DEVELOPMENT



[enviroatlas@epa.gov](mailto:enviroatlas@epa.gov)



**ANNE NEALE**

EnviroAtlas Lead

[Neale.anne@epa.gov](mailto:Neale.anne@epa.gov)



**JESSICA DANIEL**

Outreach & Stakeholder  
Engagement Lead

[Daniel.jessica@epa.gov](mailto:Daniel.jessica@epa.gov)