



EnviroAtlas Mini Training

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Applied Science & Quality Assurance Branch



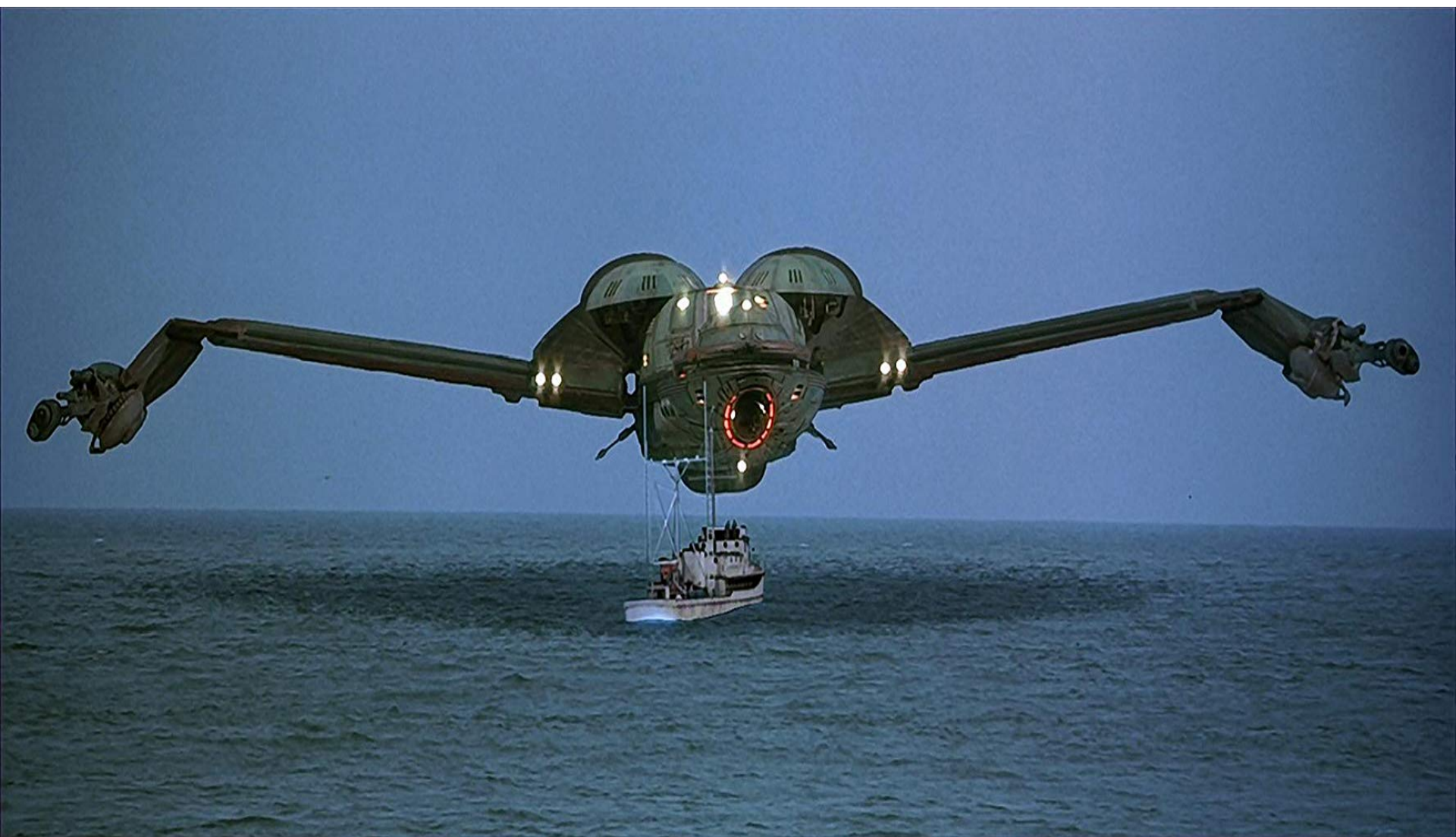




ANDREA GAIL
GLOUCESTER, MA.



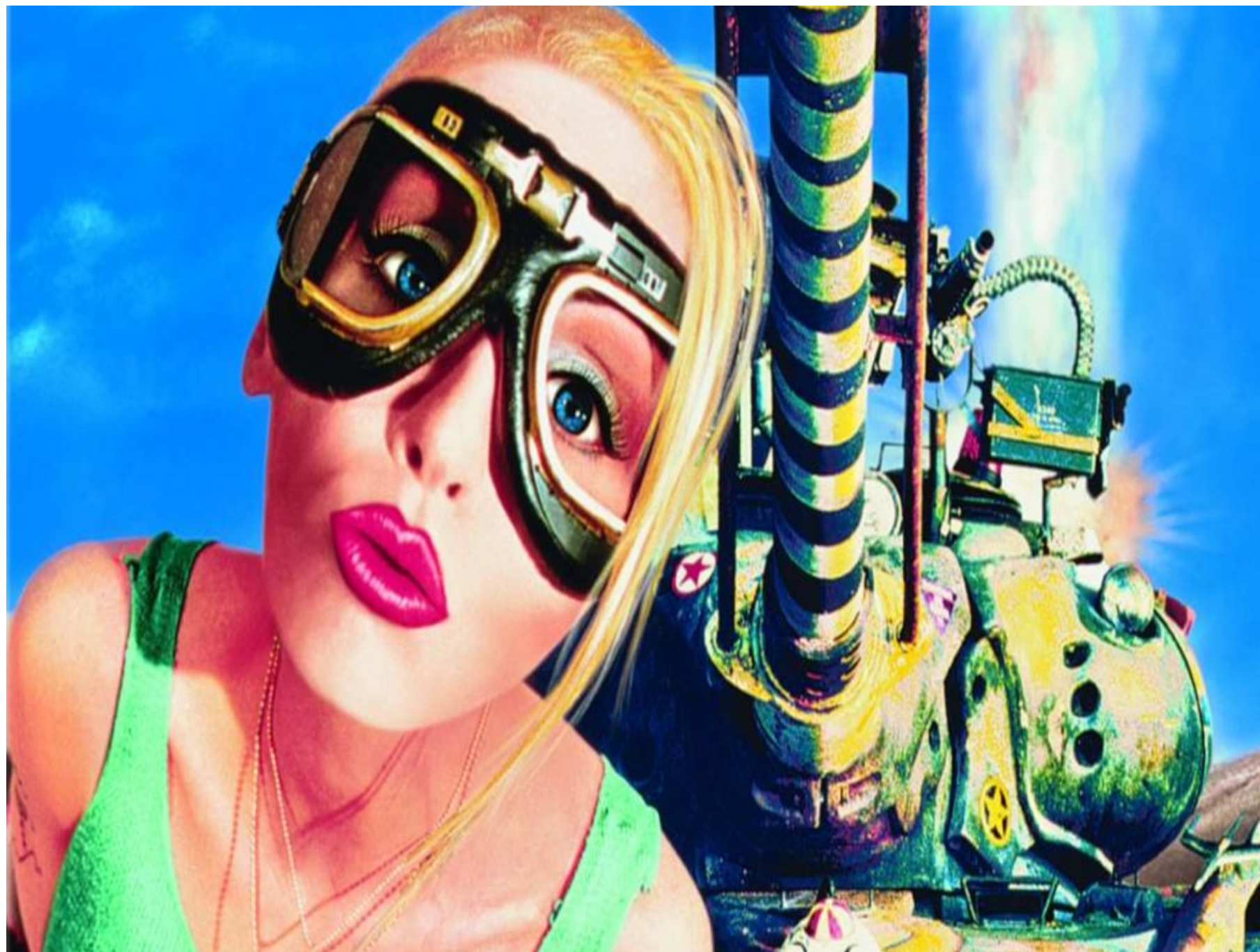






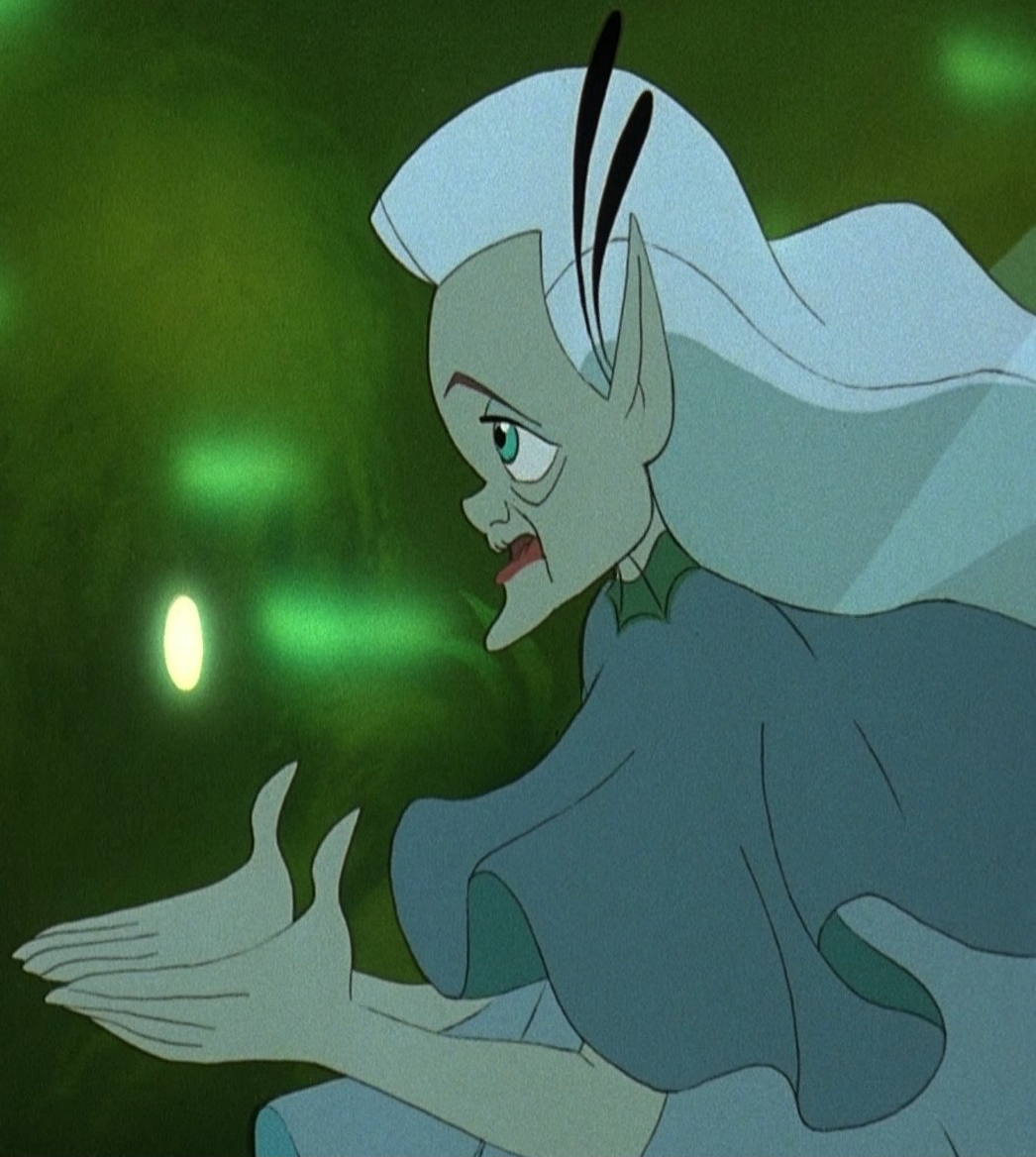
MANKIND WAS BORN ON EARTH. IT WAS NEVER MEANT TO DIE HERE.

















EnviroAtlas

EnviroAtlas is an interactive, web-based tool that anybody can use to help inform decisions that impact the places where people live, learn, work and play.

- **geospatial data**
- **easy to use**
- **publicly accessible**

New to EnviroAtlas?

Ecosystem services are critically important to human health, but often overlooked. [EnviroAtlas works to bridge this gap \(YouTube\)](#)

EXIT

1 2 3 4

EnviroAtlas interactive tools allow users to discover, analyze, and download data and maps related to [ecosystem services](#), or the benefits people receive from nature. Ecosystem services underpin most aspects of human well-being, including water, security, and the economy.

Get started with EnviroAtlas

- [Project Fact Sheet](#)
- [Community Component Fact Sheet](#)
- [Current Status of EnviroAtlas](#)
- [EnviroAtlas Introduction Video](#) EXIT

Access Interactive Apps

- [EnviroAtlas Interactive Map](#) - Discover and use hundreds of maps
- [Eco-Health Relationship Browser](#) - See the many linkages between ecosystem services and human health

EnviroAtlas Data

- [Learn about EnviroAtlas Data](#) - Spatial extents, organization, and approach
- [Data Matrix](#) - Search and sort 300+ maps
- [Data Download](#)

www.epa.gov/enviroatlas

Developed through cooperative effort amongst multiple Federal agencies and other organizations.

Released May 2014



Ecosystem Services Benefit Categories

Clean
Air

Clean &
Plentiful
Water

Biodiversity
Conservation

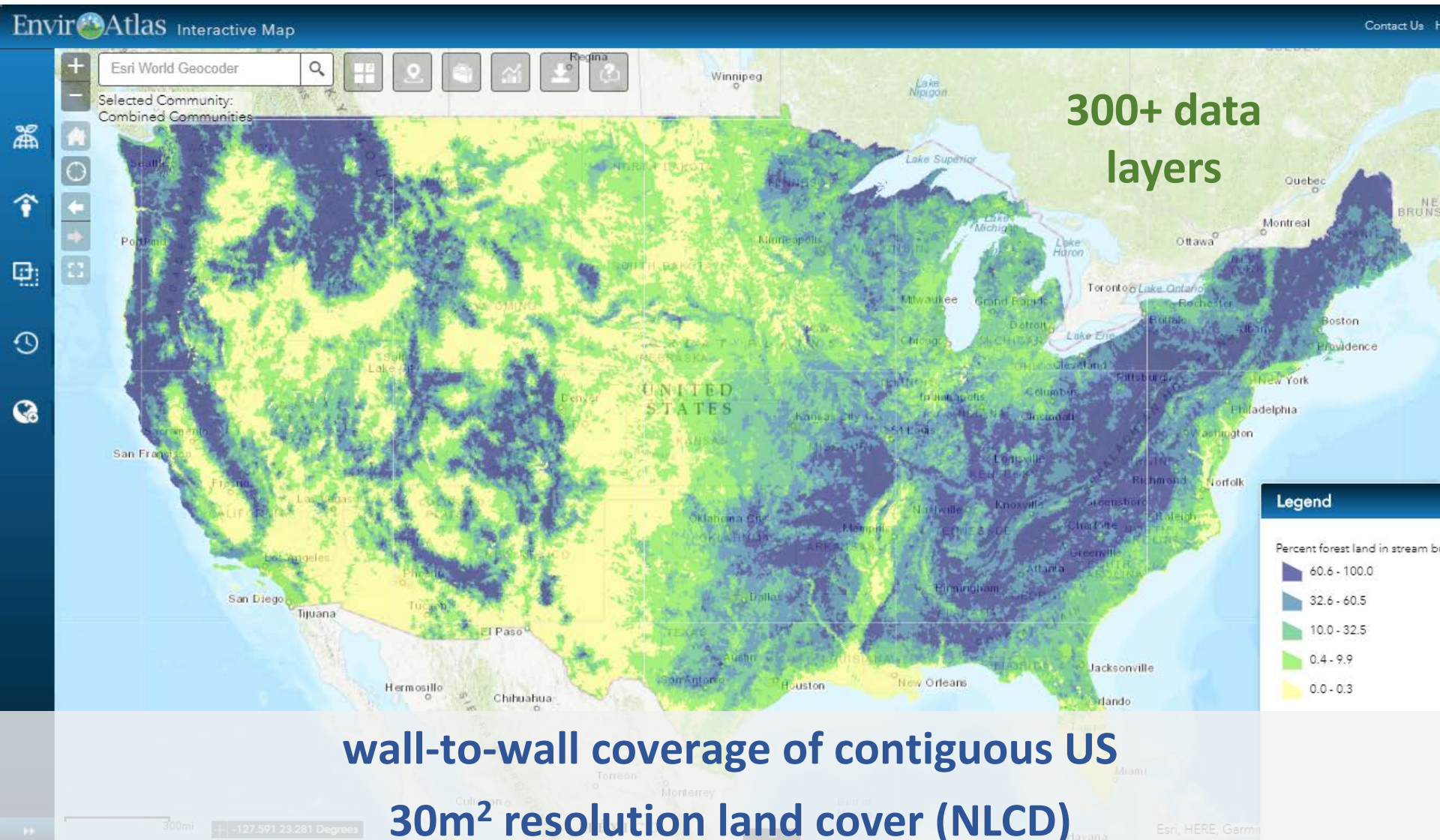
Food, Fuel &
Materials

Natural Hazard
Mitigation

Climate
Stabilization

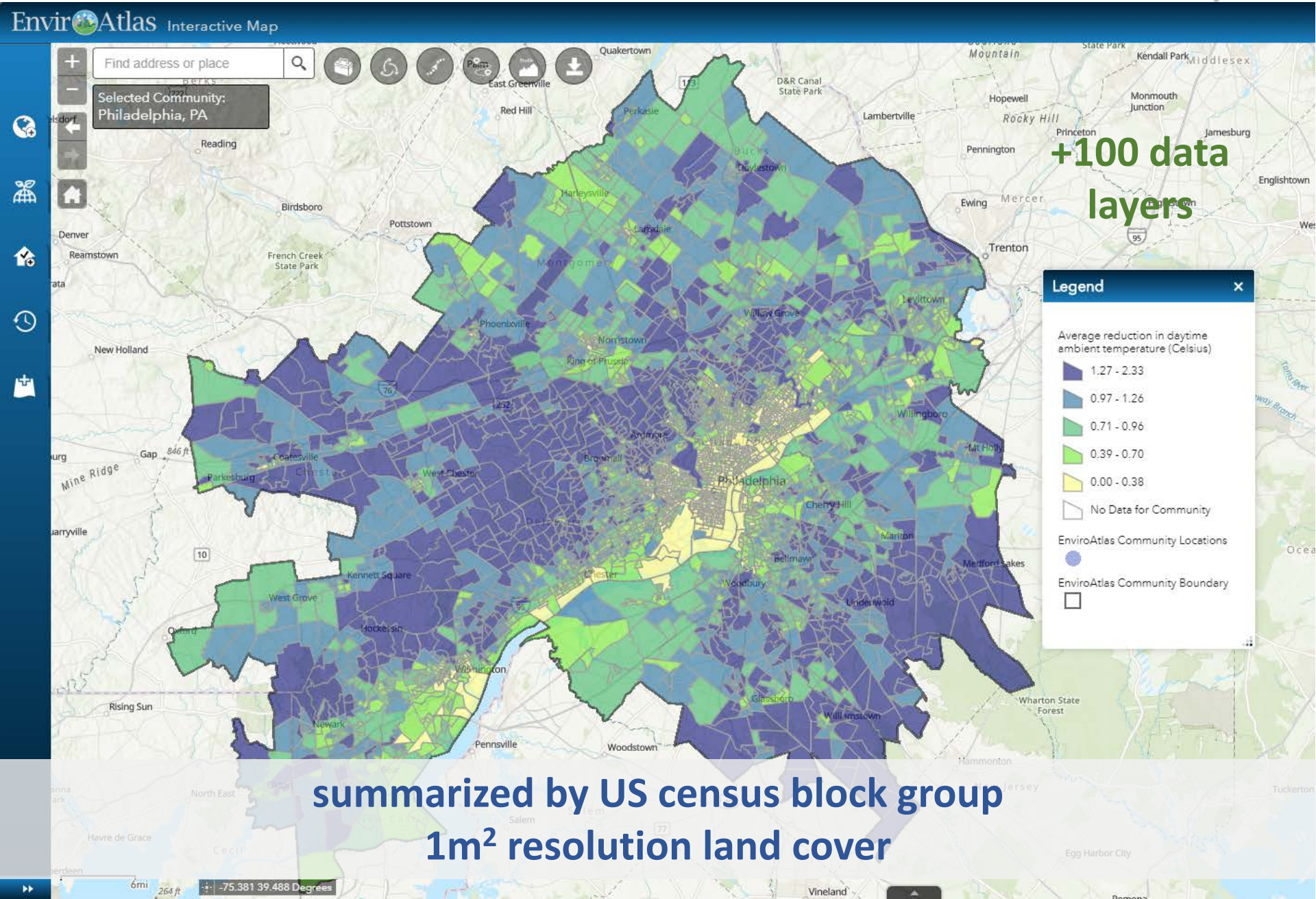
Recreation,
Culture &
Aesthetics

EnviroAtlas map is multi-extent: National



summarized by medium-sized drainage basins (12-digit HUCs)

EnviroAtlas map is multi-extent: Community



EnviroAtlas Communities



MidAtlantic Communities:

Baltimore, MD

Philadelphia, PA

Pittsburgh, PA

Virginia Beach/Williamsburg, VA

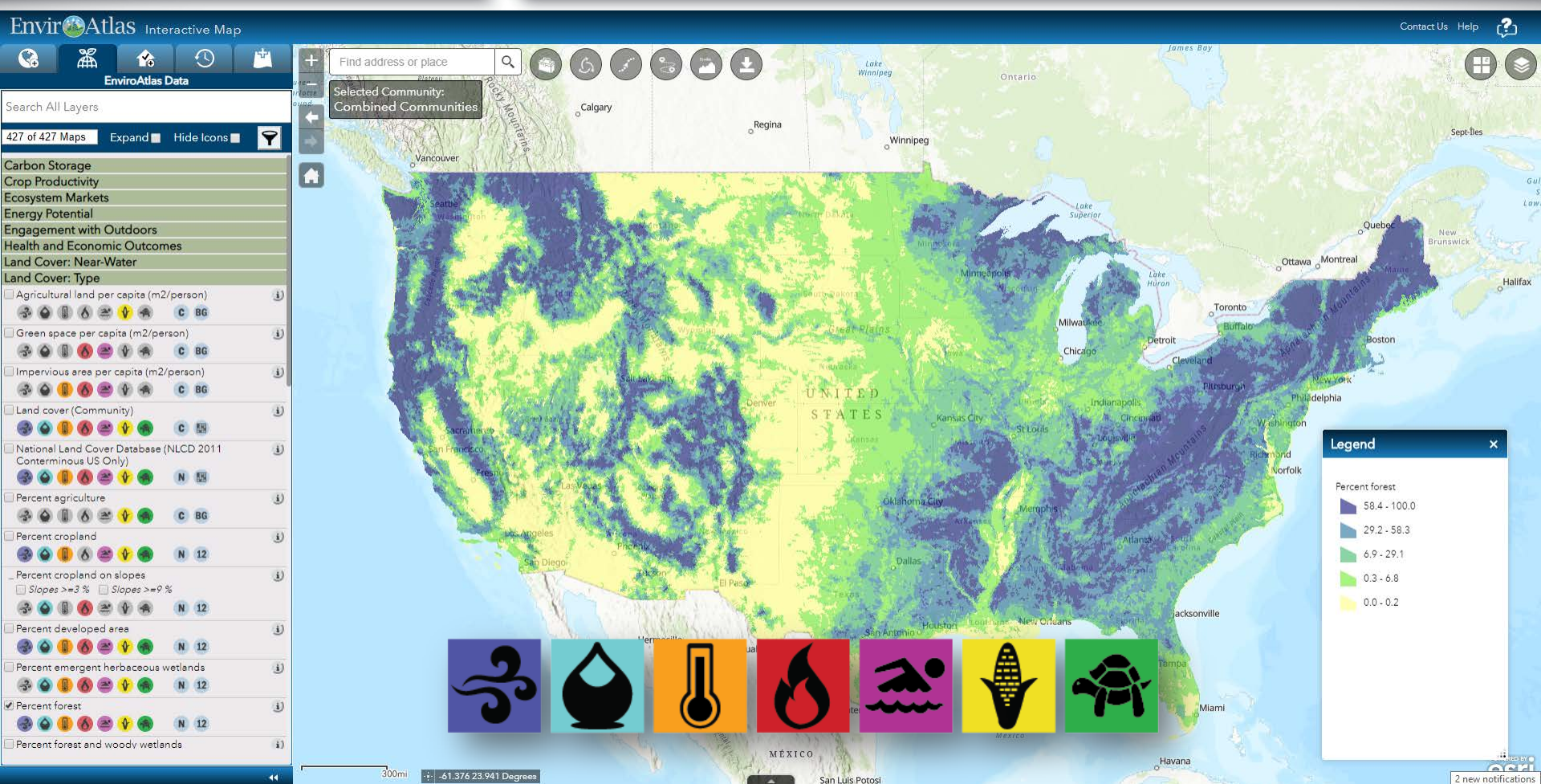
Washington, D.C. (coming soon)

950+ cities and towns centered on
27 U.S. urbanized community areas





Access EnviroAtlas Data




400+ indicators of Ecosystem Goods and Services
Demographic and supplemental data



Analysis tools, Guides & More

- Mapping & analysis tools
- Fact sheets for all data layer
- Downloadable data
- User added data
- Web services
- GIS toolboxes
- Example use cases
- Guides for classroom & HIAs
- Eco-health Relationship Browser



EnviroAtlas

people ♦ health ♦ nature ♦ economy

Fact Sheet

www.epa.gov/enviroatlas

Stream Length Impaired by Nutrients

This EnviroAtlas national map displays the length in kilometers of streams, coasts, canals, and other linear hydrographic features that are impaired by nutrients from the 303(d) list of impaired waters within each 12-digit hydrological unit ([HUC](#)).

Why are impaired streams important?

Stream impairments can be due to a wide variety of causes, including chemical pollutants, physical conditions such as siltation, or biological contaminants such as bacteria. This map shows waters that are impaired by nutrients, namely excesses in nitrogen and phosphorus. This process of nutrient enrichment ([eutrophication](#)) creates high productivity of aquatic plants and algae in aquatic ecosystems. Nutrient enrichment can occur naturally or human activity can accelerate it by increasing [nutrient loading](#). Eutrophication can have serious impacts on ecosystems, human health, and the economy.

Though nitrogen and phosphorus are a natural part of stream ecosystems, they can have adverse effects in high concentrations. Excessive algal growth can damage fish gills, block sunlight from reaching other organisms, and reduce oxygen levels in water, killing plants and animals and reducing biodiversity in streams and lakes. Blue-green algae can produce chemicals that are toxic to humans and animals, known as [biotoxins](#) or cyanotoxins.¹ Algae can also produce unpleasant smells, clog fishing nets, make it harder to treat water for drinking, and make streams less suitable for fish spawning.² When nutrients from streams make their way to the ocean, they can cause similar harm there and create "dead zones."³ Eutrophication can reduce opportunities for tourism and recreation, harm fishing industries and the seafood supply, and make drinking water more expensive to



Photo: Eric Vance/USEPA

Nitrogen in the atmosphere can travel hundreds of kilometers⁴ and be deposited in the soil and water through atmospheric deposition, the transfer of gases and particles from the atmosphere to the earth's surface.

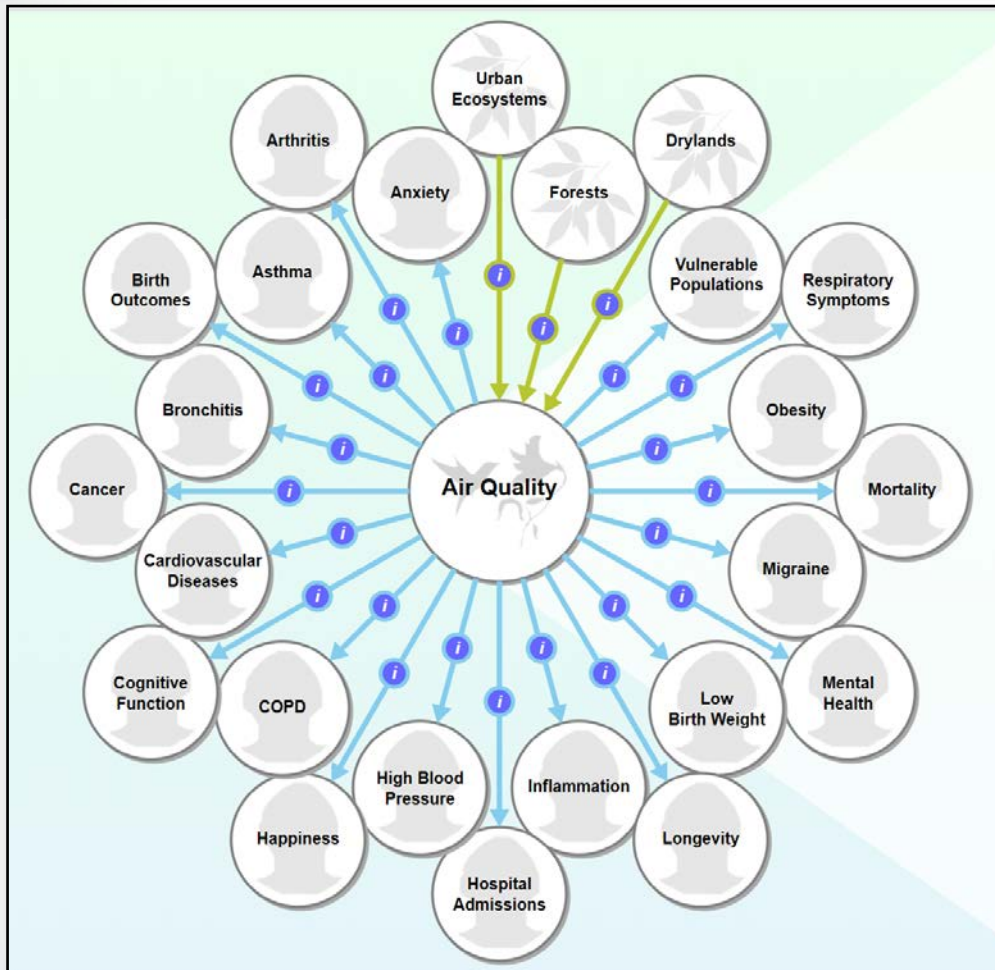
Section 303(d) of the Clean Water Act requires states to identify impaired waters, which are waters that do not support state-designated uses, such as fishing, irrigation, industrial uses, or drinking water supply, due to pollution or other impairments. The states must then establish [Total Maximum Daily Loads](#) (TMDLs), which cap the amount of each pollutant allowed in the water body based on its use. The TMDL sets a load limit in order for the water body to meet water quality standards and then divides the load into allowable contributions from [point](#) and [nonpoint](#) sources.

How can I use this information?

The map, Stream Length Impaired by Nutrients, provides information about the length of streams and other waters



Eco-Health Browser



30+ Health Outcomes

6 Ecosystem Services

5 Ecosystems



ecosystems
providing a
service



ecosystem
services
impacting a
health outcome

Evidence-based linkages between human health and ecosystem services.

700+ scientific articles



Eco-Health Browser



Linkages

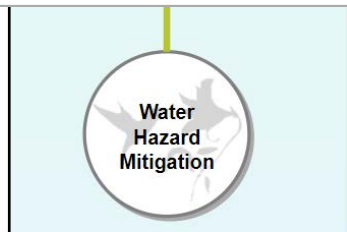
Air Quality | Asthma

When air pollution increases, the odds of having an asthma attack worsen. Though vegetation can remove air pollutants, green space has been shown to have neutral or negative implications for asthma.

Trees' effects on asthma

[1] The amount of urban tree canopy within 250m of the home has been positively associated with asthma prevalence at 7 years of age. For every 8% increase in tree cover, asthma prevalence increased by 17% (Lovasi et al., 2013; n=427, New York City).

[2] Residential proximity to forest land (within 300m) was not associated with children's asthma prevalence. However, residential proximity to parkland was associated with 60%...



30+ Health Outcomes

6 Ecosystem Services

5 Ecosystems



Evidence-based linkages between human health and ecosystem services.

INTERACTIVE MAP



EnviroAtlas Data Panel

Interactive Map

The screenshot displays the EnviroAtlas Interactive Map interface. The main map area shows a map of North America, including the United States, Canada, and Mexico. Major cities like Vancouver, Seattle, San Francisco, Los Angeles, San Jose, Dallas, Houston, Chicago, Detroit, Toronto, Montreal, Boston, New York, Miami, Havana, and Port-au-Prince are labeled. The map is overlaid with various data layers, including the Rocky Mountains, Great Plains, and Gulf of Mexico. The interface includes a search bar at the top left with the text "Find address or place". Below the search bar, a dropdown menu shows "Selected Community: Combined Communities". The top right corner has links for "Contact Us" and "Help". The bottom right corner features the "esri" logo and the text "POWERED BY".

EnviroAtlas Interactive Map

EnviroAtlas Data

Search All Layers

487 of 487 Maps Expand Hide Icons

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
Pollutant Reduction: Air
Pollutant Reduction: Water
Protected Lands
Species: At-Risk and Priority
Species: Other
Water Supply, Runoff, and Flow
Water Use
Weather and Climate
Wetlands and Lowlands
EPA Regulated Facilities
Impaired Waters
National Air Toxics Assessment
Pollutants: Nutrients
Pollutants: Other
Commuting and Walkability
Employment
Housing and Schools

Find address or place

Selected Community: Combined Communities

600mi -134.914 49.566 Degrees

esri



Data Layer Tab

EnviroAtlas Interactive Map

EnviroAtlas Data

Search All Layers

448 of 448 Maps Expand Hide Icons

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
Pollutant Reduction: Air
Pollutant Reduction: Water
Protected Lands
Species: At-Risk and Priority
Species: Other
Water Supply, Runoff, and Flow
Water Use
Weather and Climate

☐ Average annual precipitation (inches/yr)

☐ Average reduction in ambient temperature (Celsius)

☐ Daytime ☐ Nighttime

Wetlands and Lowlands

EPA Regulated Facilities
Impaired Waters
Pollutants: Nitrogen
Pollutants: Carbon
Quality of Life
Commuting and Walkability
Employment

Data Layer

Find address or place

Selected Community: Combined Communities

Weather and Climate

Average reduction in ambient temperature (Celsius)

☐ Daytime ☐ Nighttime

C BG

Guadalajara Merida CUBA

esri



Searching for Data

EnviroAtlas Interactive Map

Search All Layers

427 of 427 Maps Collapse Hide Icons

Carbon Storage

- Carbon sequestered by tree cover
 - Total (mt/yr) Value (\$/yr)
 - Icons: [Tree] [Fire] [Wind] [Water] [Sun] [Moon] [Cloud] [Snow] [Rain] [Thunder] [Lightning] [Fire] [Wind] [Water] [Sun] [Moon] [Cloud] [Snow] [Rain] [Thunder] [Lightning]
 - Legend: C BG
- Carbon storage by tree biomass (metric tons)
 - Icons: [Tree] [Fire] [Wind] [Water] [Sun] [Moon] [Cloud] [Snow] [Rain] [Thunder] [Lightning]
 - Legend: N 12
- Carbon storage by tree root biomass (metric tons)
 - Icons: [Tree] [Fire] [Wind] [Water] [Sun] [Moon] [Cloud] [Snow] [Rain] [Thunder] [Lightning]
 - Legend: N 12
- Carbon stored by tree cover
 - Total (mt/yr) Value (\$/yr)
 - Icons: [Tree] [Fire] [Wind] [Water] [Sun] [Moon] [Cloud] [Snow] [Rain] [Thunder] [Lightning]
 - Legend: C BG

Crop Productivity

- Acres of pollinated crops with no nearby pollinator habitat
 - Icons: [Tree] [Fire] [Wind] [Water] [Sun] [Moon] [Cloud] [Snow] [Rain] [Thunder] [Lightning]
 - Legend: N 12
- Cotton Crops
 - Yields Hectares Value
 - Icons: [Tree] [Fire] [Wind] [Water] [Sun] [Moon] [Cloud] [Snow] [Rain] [Thunder] [Lightning]
 - Legend: N 12
- Fruit Crops
 - Yields Hectares Number
 - Icons: [Tree] [Fire] [Wind] [Water] [Sun] [Moon] [Cloud] [Snow] [Rain] [Thunder] [Lightning]
 - Legend: N 12
- Grain Crops
 - Yields Hectares Number Value
 - Icons: [Tree] [Fire] [Wind] [Water] [Sun] [Moon] [Cloud] [Snow] [Rain] [Thunder] [Lightning]
 - Legend: N 12
- Mean rental rate per acre for farm land, 2008-2016
 - Irrigated Non-irrigated Pasture
 - Icons: [Tree] [Fire] [Wind] [Water] [Sun] [Moon] [Cloud] [Snow] [Rain] [Thunder] [Lightning]
 - Legend: N 12
- Vegetable Crops
 - Yields Hectares Number
 - Icons: [Tree] [Fire] [Wind] [Water] [Sun] [Moon] [Cloud] [Snow] [Rain] [Thunder] [Lightning]
 - Legend: N 12

Ecosystem Markets

- Enabling Conditions

search bar

filter

Map showing the United States and Mexico with various data layers overlaid.

Scale: 300mi

Coordinates: -117.670 19.451 Degrees

Map Data: Esri, HERE, Garmin, FAO, NOAA, USGS, EPA



Searching for Data

EnviroAtlas

[CONTACT US](#)

SHARE

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EnviroAtlas Dynamic Data Matrix

Search, Sort, & View

- **Sort** columns by clicking in the header.
- **Start typing** in the search box to instantly narrow data layers.
- **Hover** over the data layer name to get a short map description.
- **Access** the data fact sheet and metadata by clicking the appropriate icon.
- *Want to download the data?* [Go to our download page.](#)

Showing 3 EnviroAtlas layers (filtered from 427 total entries)

Search:

| Data Layer Name | Benefit Categories | Topic | Extent | Fact Sheet | Metadata |
|--|--|------------------|----------|---|---|
| | ALL | Energy F | ALL | | |
| Area of solar energy (km2) |        | Energy Potential | National |  |  |
| Average annual daily potential solar energy (kWh/m2/day) |        | Energy Potential | National |  |  |
| Average annual daily potential wind energy (kWh/m2/day) |        | Energy Potential | National |  |  |

[Contact Us](#) to ask a question, provide feedback, or report a problem.



Land Cover

EnviroAtlas Interactive Map

Contact Us Help

Find address or place

Selected Community:
Combined Communities

1-meter
land cover
classification

Layer List

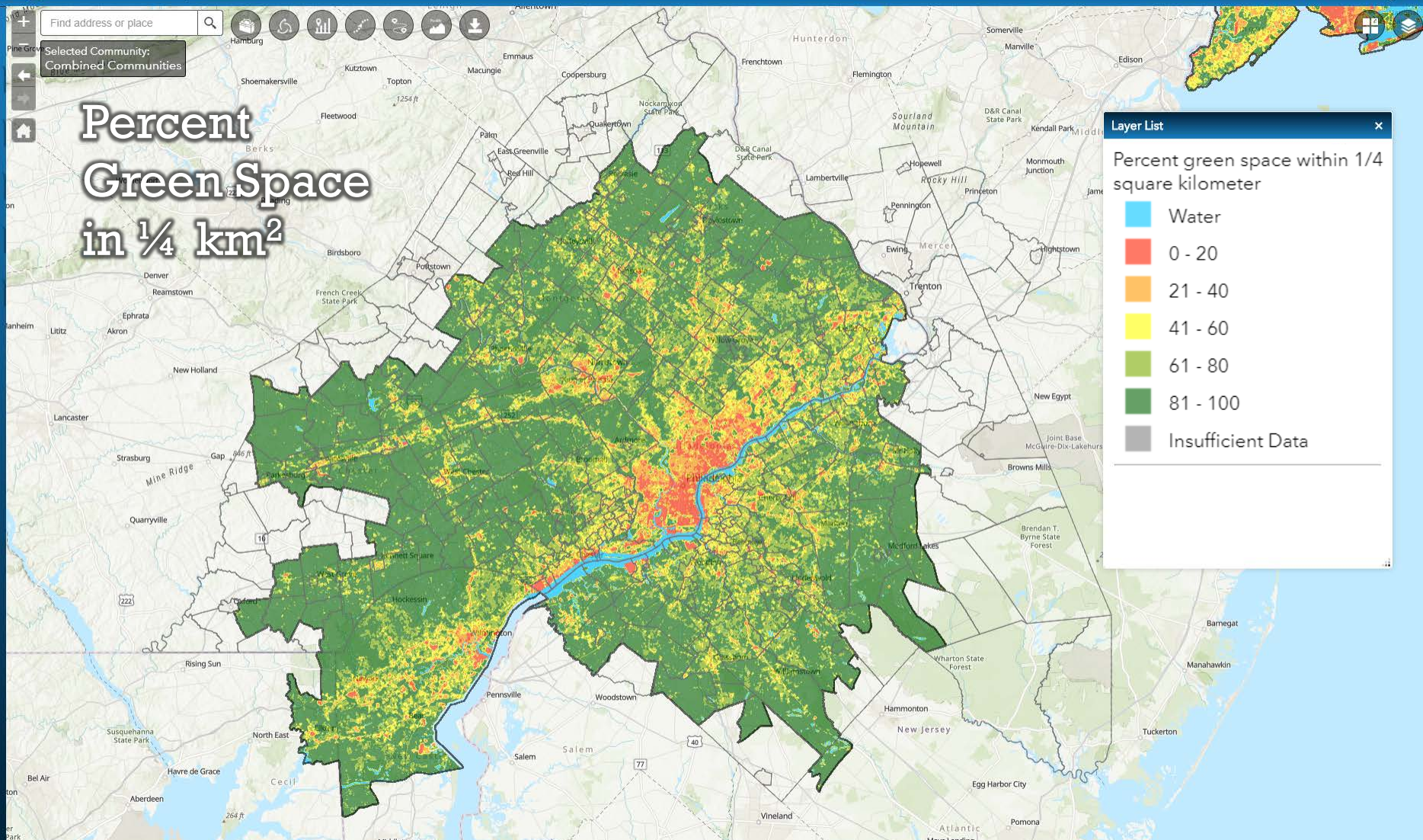
- Water
- Impervious surface
- Soil and barren
- Trees and forest
- Shrubs
- Grass and herbaceous
- Agriculture
- Orchards
- Woody wetlands
- Emergent wetlands



Green Space

EnviroAtlas Interactive Map

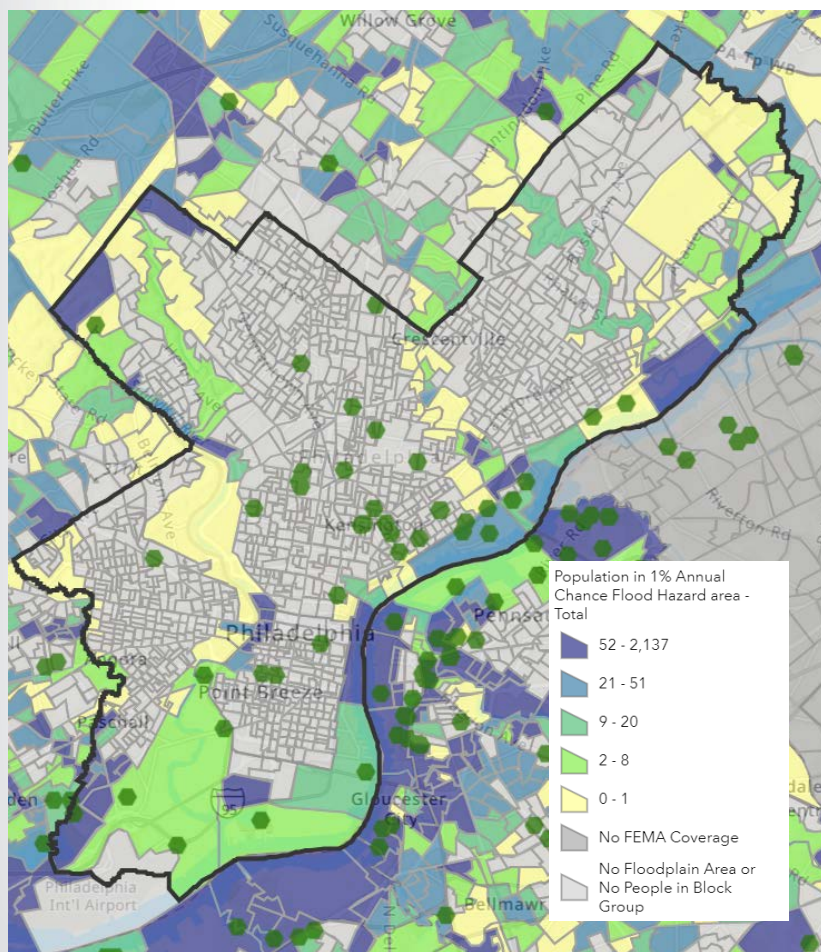
Contact Us Help



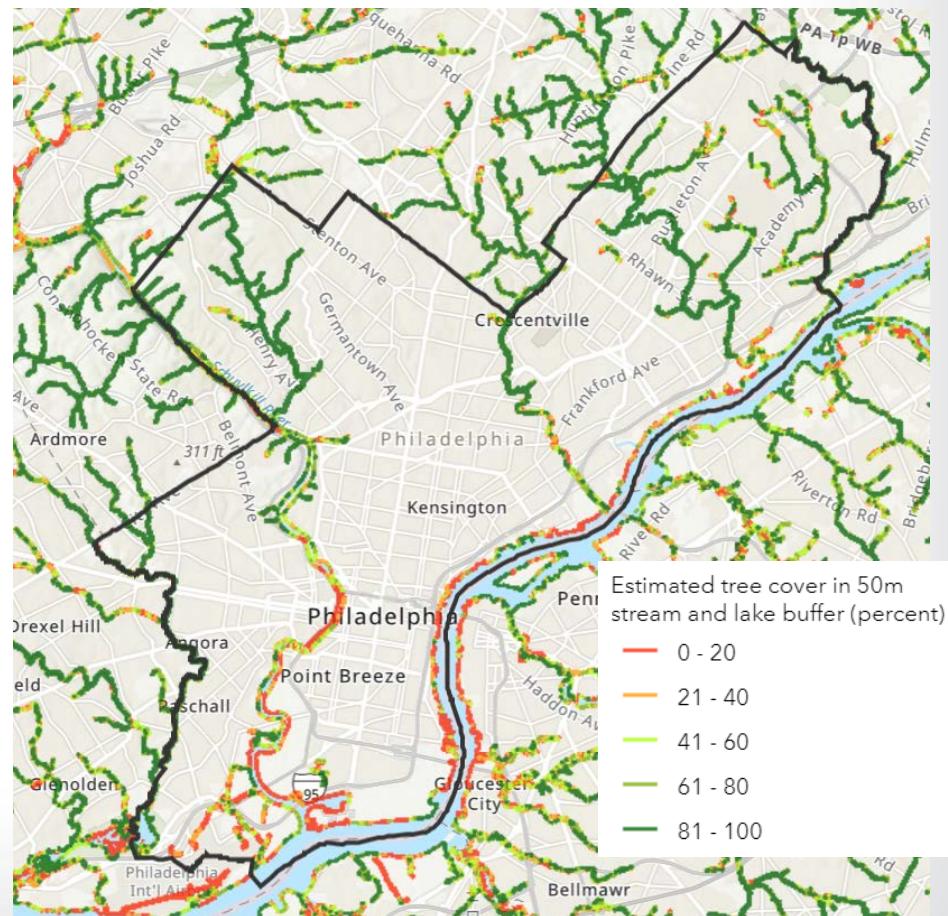


Population at Risk

Population in Flood Hazard Area,
Superfund Sites overlayed

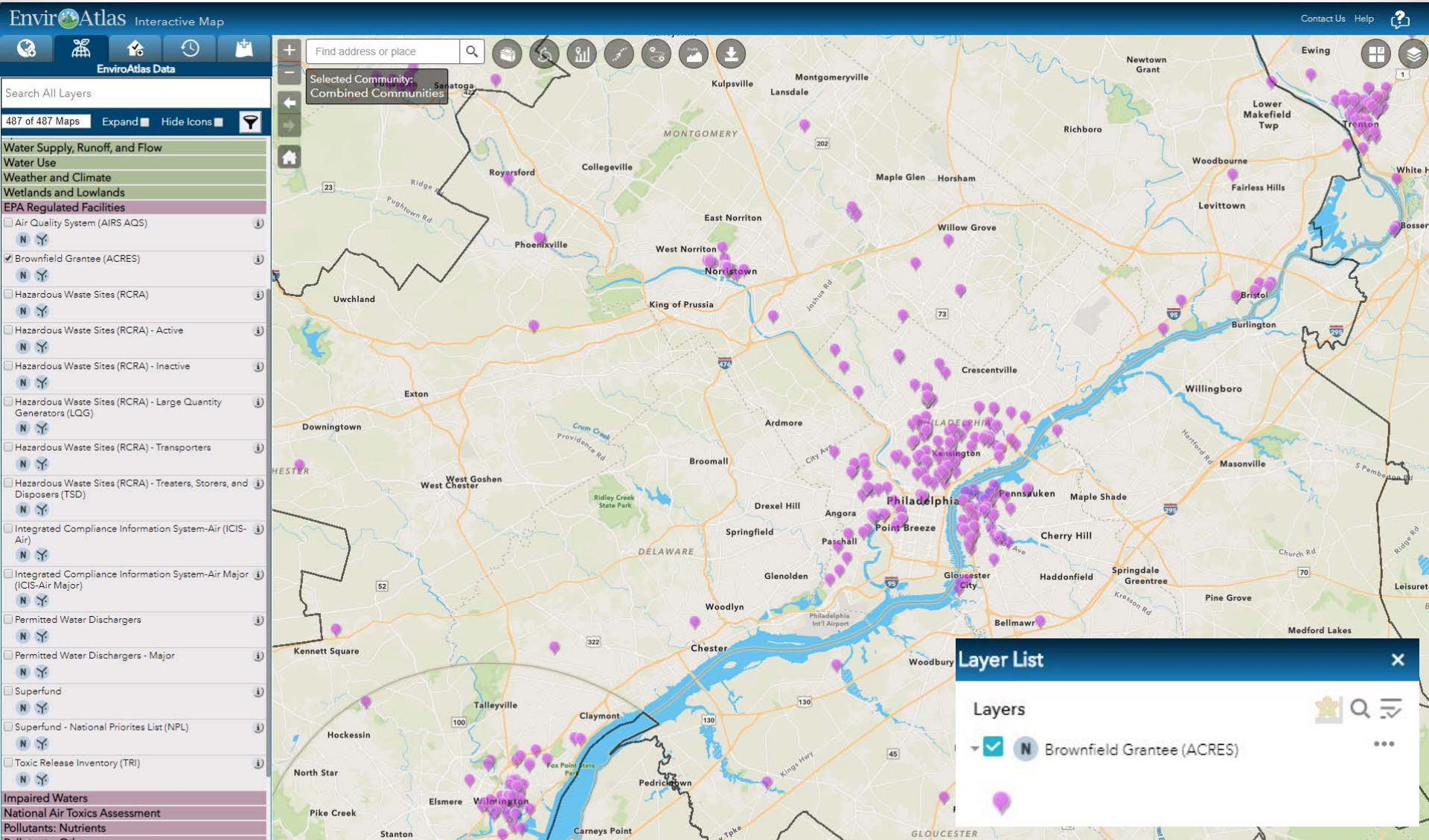


Estimated tree cover in 50m
stream/lake buffer



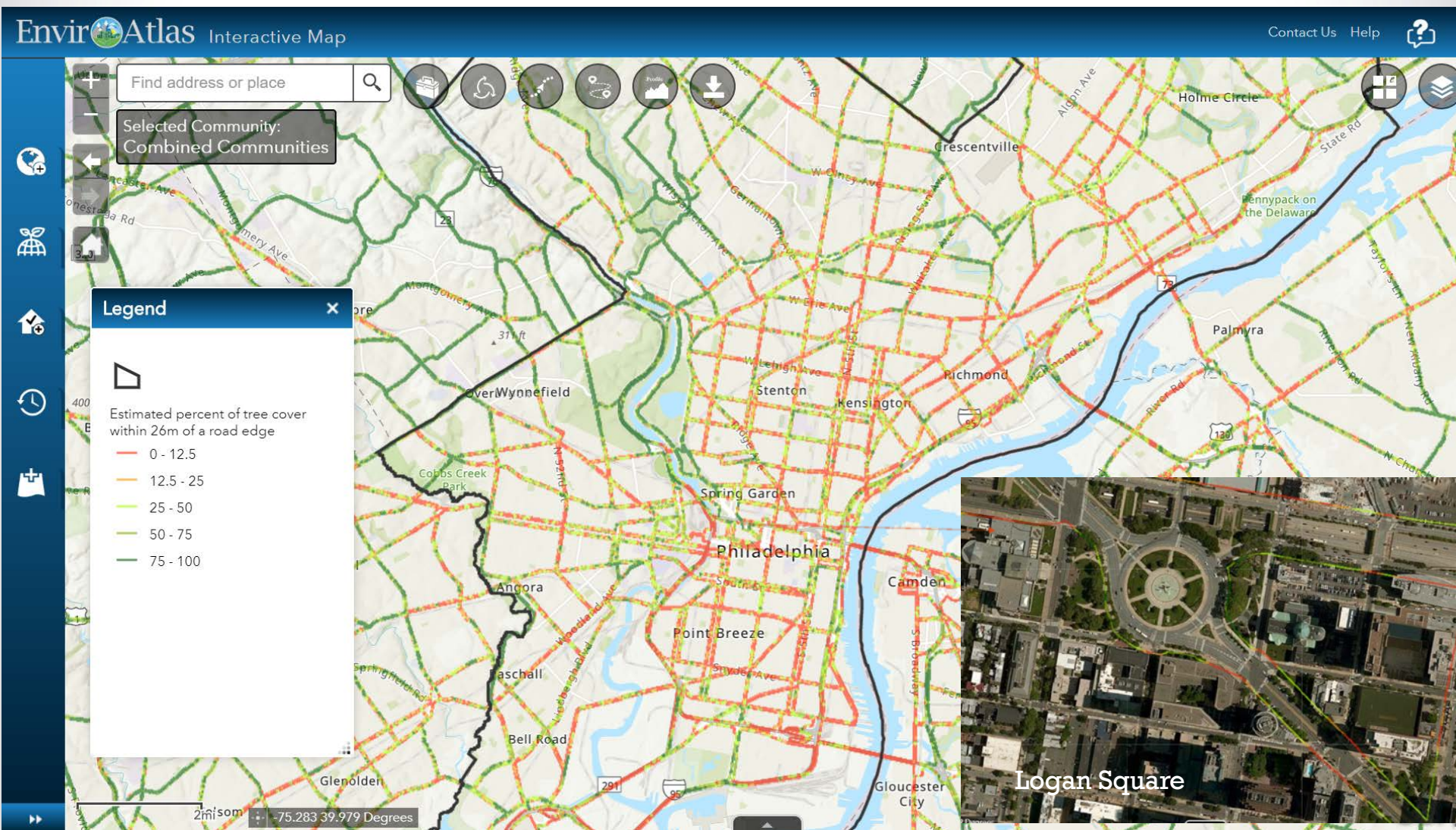


EPA Regulated Facilities





% Tree Cover Near Busy Roads

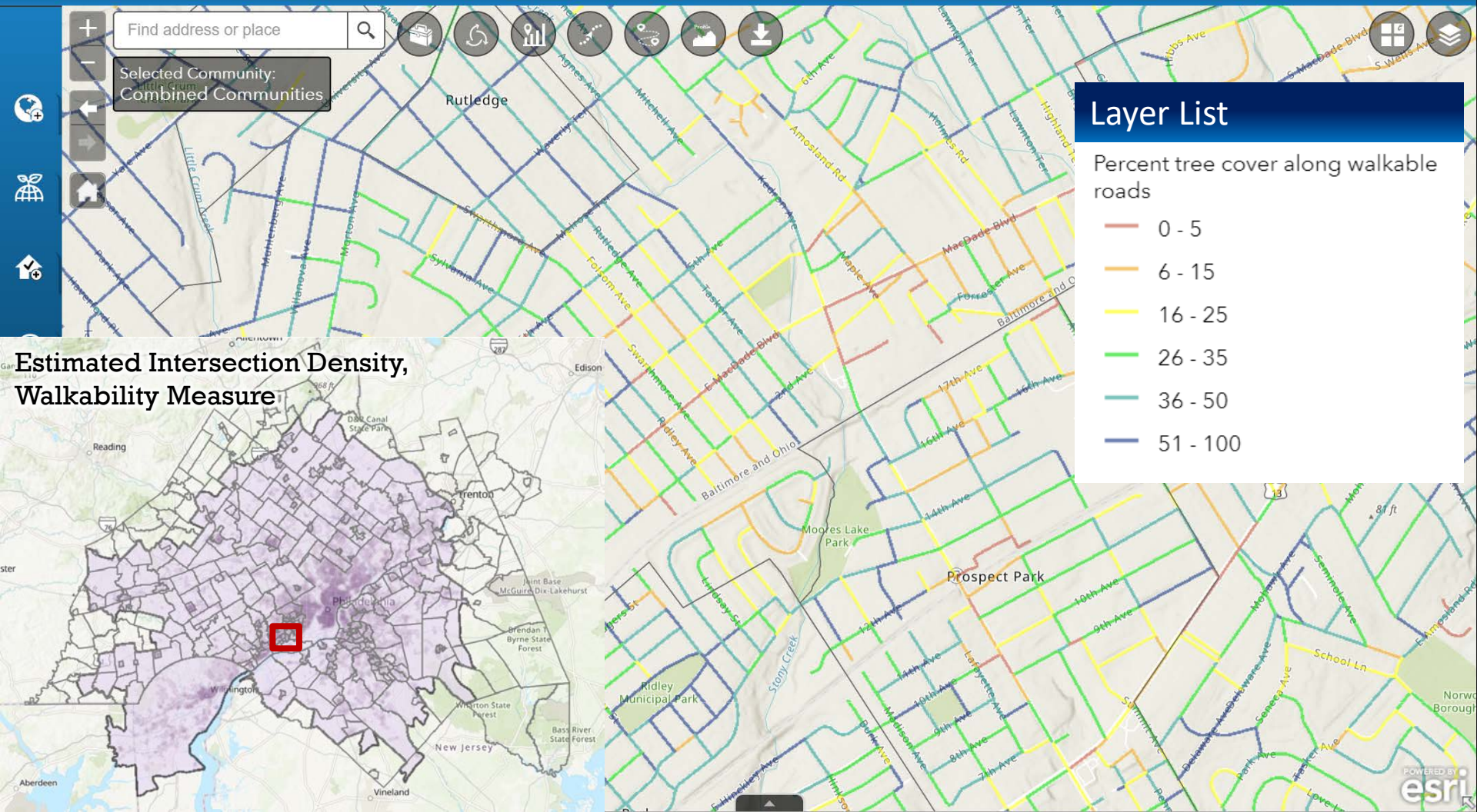




Walkability

EnviroAtlas Interactive Map

Contact Us Help ?





Walkability

EnviroAtlas Interactive Map

Contact Us Help ?

Add Data

Search

URL

File

ArcGIS Online

Within map...

Type

Relevance

DVRPC Pedestrian Network - Sidewalks
Feature Service by DVRPCGIS
[REMOVE](#) [DETAILS](#)

DVRPC 2013 Tract-level Demographic Pro...
Feature Service by DVRPCGIS
[ADD](#) [DETAILS](#)

DVRPC Equity Through Access - Priority S...
Feature Service by DVRPCGIS
[ADD](#) [DETAILS](#)

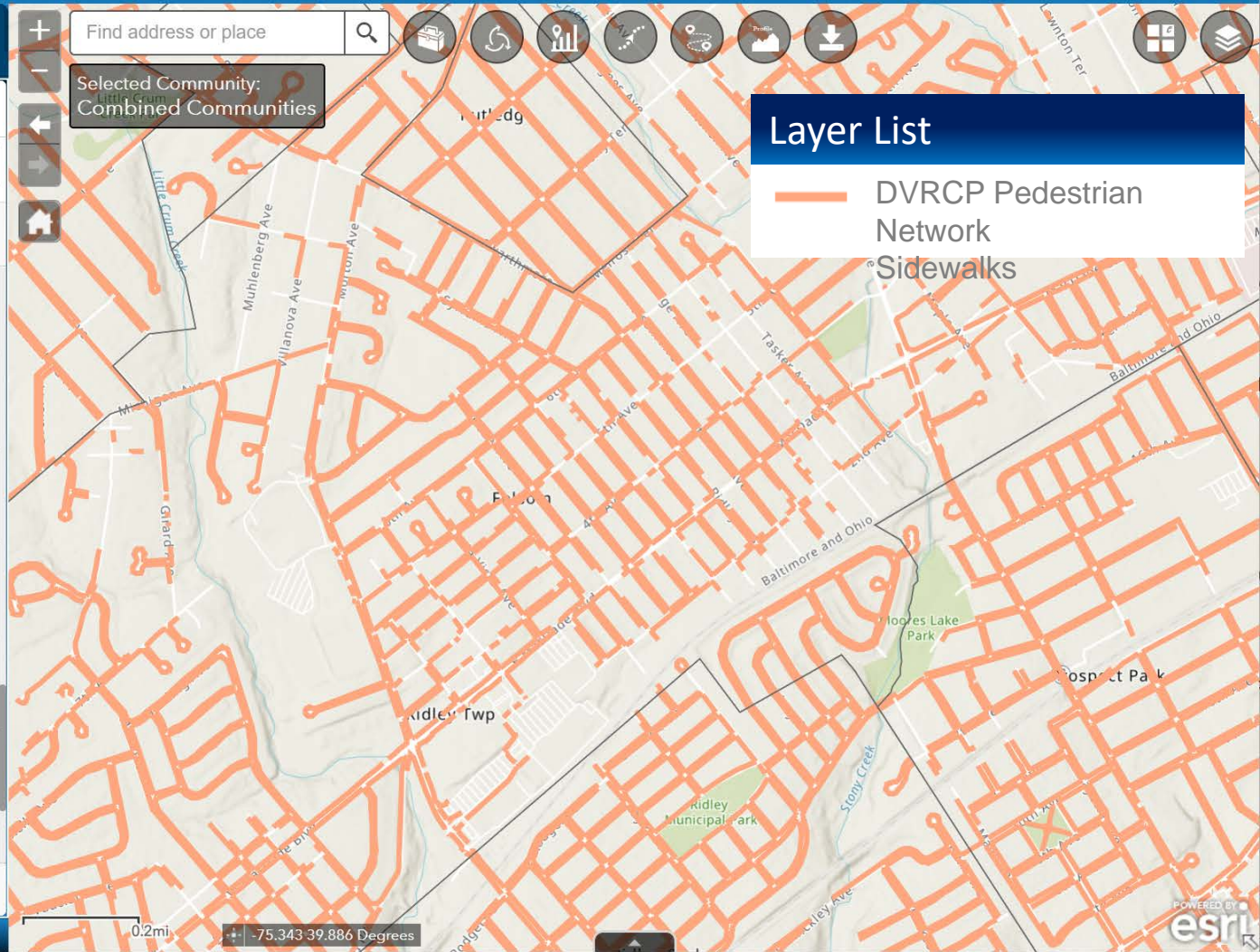
DVRPC Connections 2045 Planning Areas
Feature Service by DVRPCGIS
[ADD](#) [DETAILS](#)

DVRPC Pedestrian Network - Curb Ramps
Feature Service by DVRPCGIS
[ADD](#) [DETAILS](#)

DVRPC New Jersey Transportation Improv...
Feature Service by DVRPCGIS
[ADD](#) [DETAILS](#)

DVRPC Freight Centers

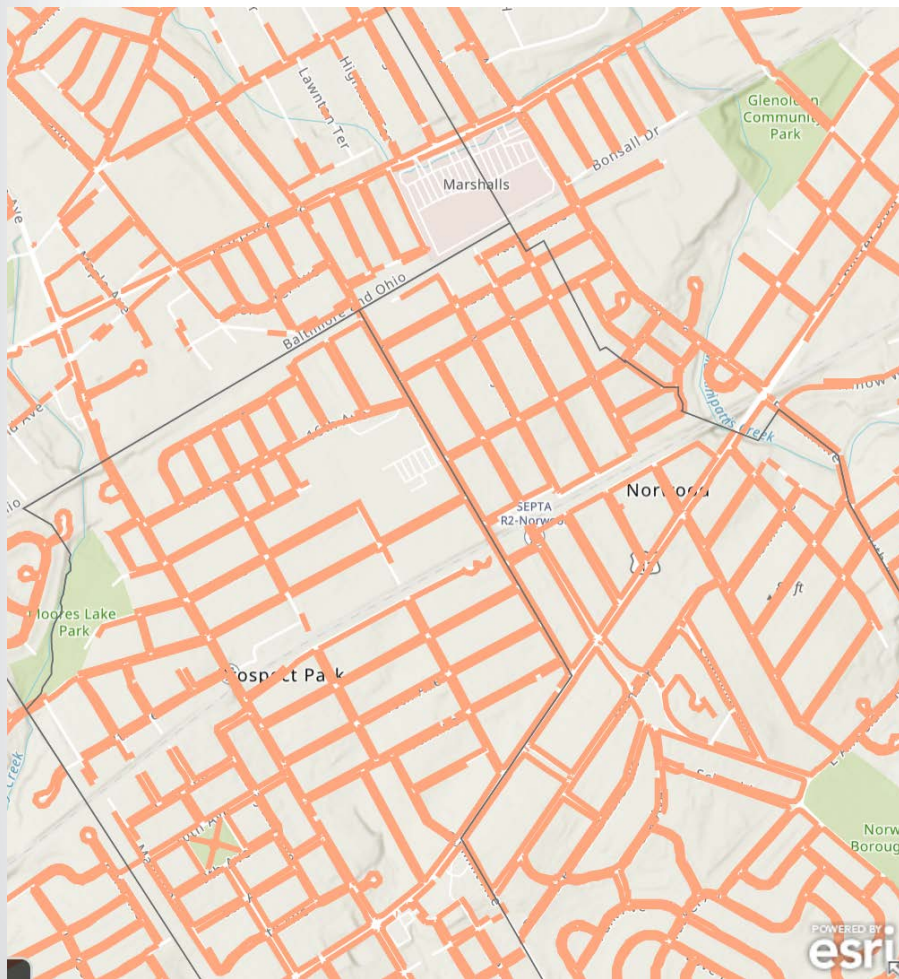
266 Items LAYERS



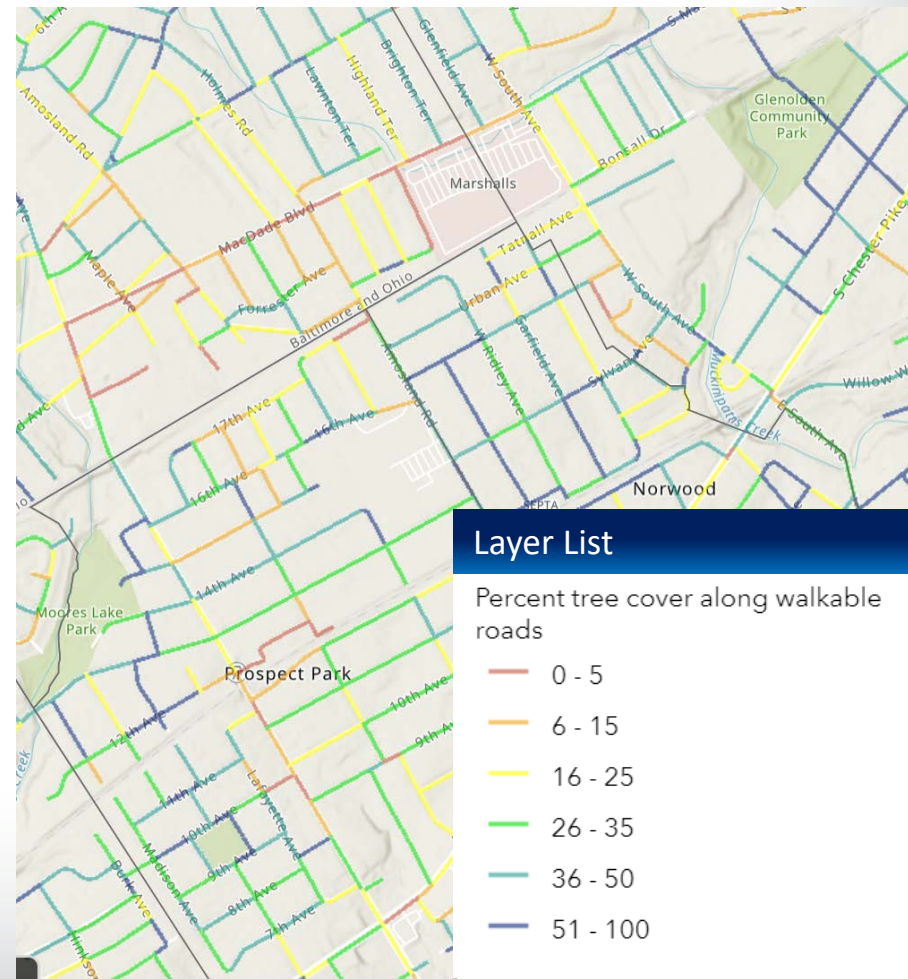


Walkability

DVRPC Pedestrian Network: Sidewalks

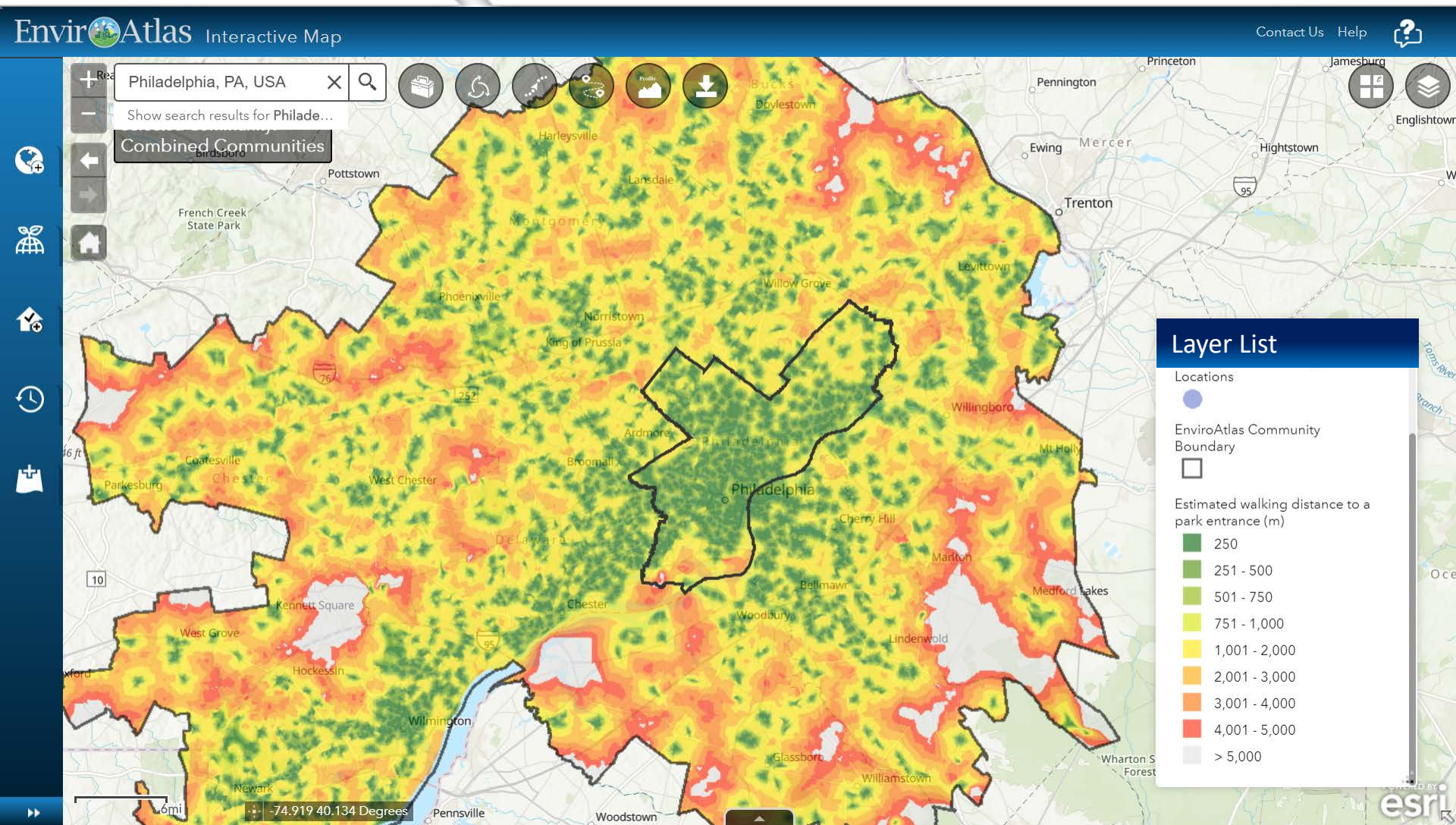


Percent Tree Cover Along Walkable Roads



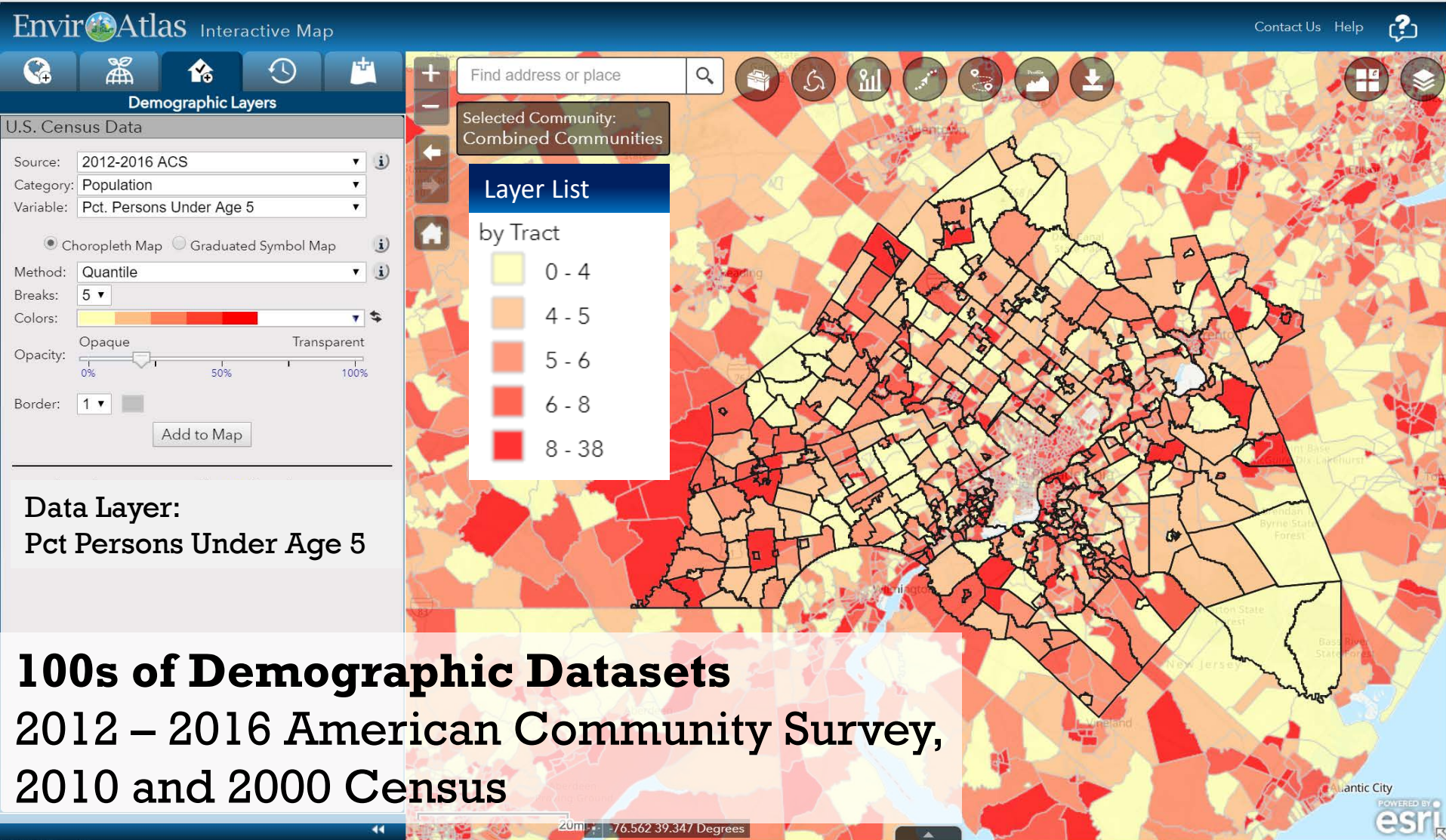


Walkability to Parks





Demographic Data Tab





Time Series Tab

EnviroAtlas Interactive Map

Times Series Layers

Climate Scenarios

Scenario: **RCP4.5 (Peak Emissions Year 2040)** ⓘ

Climate Variable: **Maximum Temperature** ⓘ

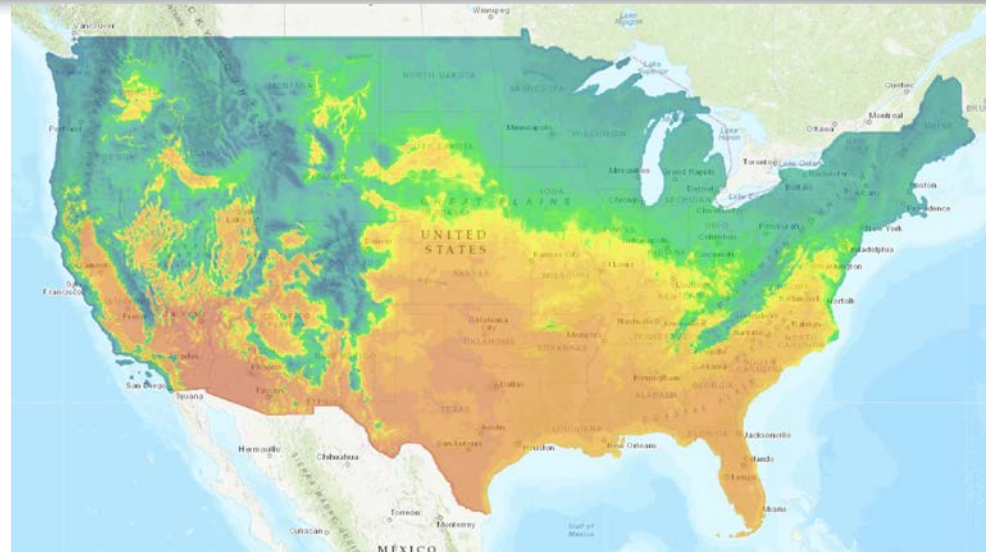
Season: **Summer** ⓘ

Add to Map **Clear Map**

Timeline: 2010 - 2099
2099

2010 2020 2030 2040 2050 2060 2070 2080 2090 2099

Note: These projections are from the NEX-DCP30 dataset, prepared by the Climate Analytics Group and NASA Ames Research Center using the NASA Earth Exchange, and distributed by the NASA Center for Climate Simulation. Climate scenarios provide likely approximations of future conditions given a set of assumptions. The future is inherently uncertain, and the US EPA cannot guarantee that these scenarios reflect what will occur. See Fact Sheets for details.



Climate scenarios based on:

- **Emissions scenario**
- **Climate variable**
- **Season**



Featured Collections Tab

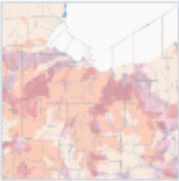
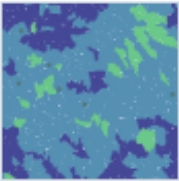
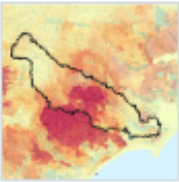
EnviroAtlas Interactive Map

Featured Collections

The featured collections of data below show how EnviroAtlas datasets can be used together to make decisions.

Select a featured collection to begin exploring.

[Public](#) [My Content](#)

- **Agricultural Erosion and Sediment-I...**
Aids waterway remediation efforts by highlighting the interplay between ...
[Add to map](#)
- **Guidance for Carbon Storage**
Provides guidance for tree-based carbon storage efforts by identifying extant ...
[Add to map](#)
- **Nitrogen Inputs to Watersheds**
This collection of layers will help users explore potential wetlands restoration ...
[Add to map](#)

prepackaged data layers, shows how EnviroAtlas datasets can be used together to make decisions



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