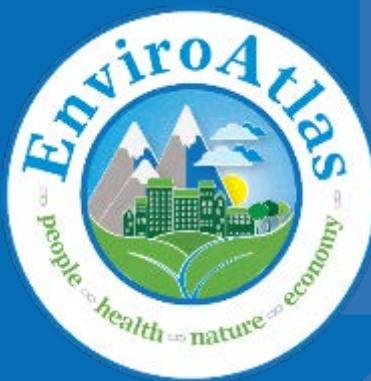
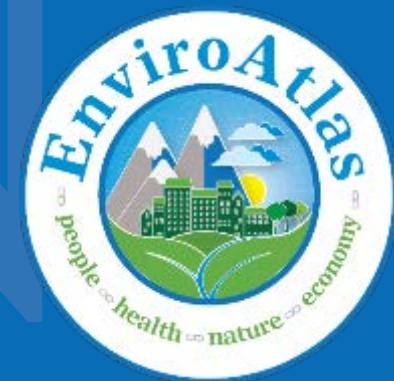


EnviroAtlas: Connecting People, Ecosystems, Health & the Economy



Anne C. Neale
EnviroAtlas Project Lead
US Environmental Protection Agency



Federal Committee on Statistical Methodology
Geospatial Interest Group
Geospatial Web Applications, Tools and Data Workshop
November 18th, 2016

Why are we Building EnviroAtlas?

- Inform efficient, effective, and equitable decision-making by providing access to consistent environmental, social, and economic data
- Facilitate systems approach to decision-making
- Provide data and tools for researchers and educators
- Synthesize research results to make them readily accessible

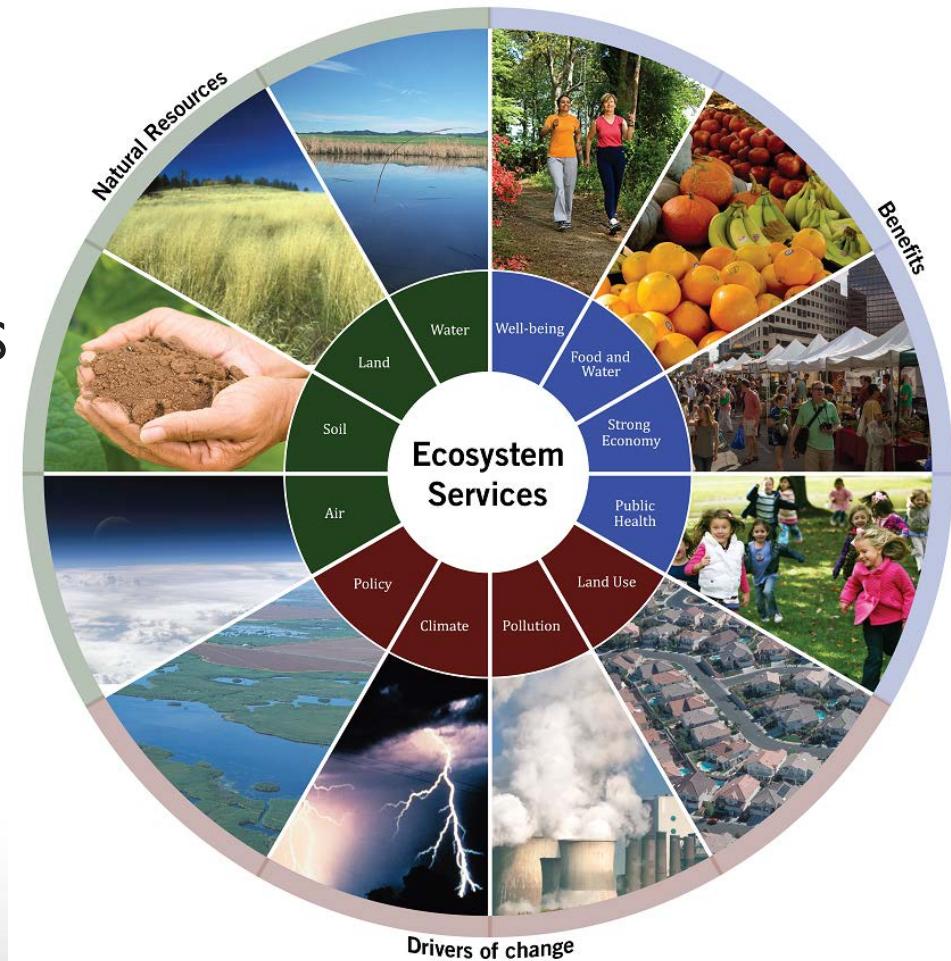


EnviroAtlas

An online tool giving users the ability to view, analyze, and download geospatial data and other resources; designed to inform decision-making, education, and additional research.

Serving data around a common theme:

- Geospatial indicators/indices of EGS
- Supplemental data (e.g., boundaries, land cover, soils, hydrography, impaired water bodies, wetlands, demographics, built infrastructure, roads)
- Analytic and interpretive tools
- Ecosystem marketplace data



Clean
Air



Biodiversity
Conservation



Food,
Fuel, &
Materials



Natural
Hazard
Mitigation



Climate
Stabilization



Recreation,
Culture, &
Aesthetics

Our data are organized into 7 ecosystem service benefit categories.



United States
Environmental Protection
Agency



HARVARD
MEDICAL SCHOOL



The
UNIVERSITY
of VERMONT



+ more...

The screenshot shows the EnviroAtlas website's homepage. On the left, there's a banner with the text "New to EnviroAtlas? Ecosystem services are critically important to human health, but often overlooked. EnviroAtlas works to bridge this gap (YouTube) [Exit](#)." Below this is a small image of a landscape with a river and mountains, followed by a navigation bar with buttons labeled 1, 2, 3, and 4. On the right is the EnviroAtlas logo, which is circular with a green border. Inside the border, the word "EnviroAtlas" is written in a stylized font above a blue globe icon. Below the globe, the words "people = health = nature = economy" are arranged in a circle.

EnviroAtlas provides interactive tools and resources for exploring the benefits people receive from nature or "ecosystem goods and services". Ecosystem goods and services are critically important to human health and well-being, but they are often overlooked due to lack of information. Using EnviroAtlas, many types of users can access, view, and analyze diverse information to better understand the potential impacts of various decisions.

The page is divided into three main sections:

- Get Started with EnviroAtlas**: This section is for new users and includes a link to "Ecosystem Services in EnviroAtlas" which describes how ecosystem services underpin human well-being.
- Access Interactive Apps**: This section features the EnviroAtlas Interactive Map and Eco-Health Relationship Browser.
- More GIS Resources**: This section is for users familiar with EnviroAtlas and includes links to EnviroAtlas Tools, Data Download, and Resources for Collaborators.

Ecosystem Services in EnviroAtlas

These benefits underpin almost every aspect of human well-being, including our food and water, security, health, and economy.

How to Use EnviroAtlas

Demo videos and training documents, including examples of how these tools can be applied in a variety of ways.

EnviroAtlas Data

Overview of EnviroAtlas data organization, spatial extents, & how to access.

Access Interactive Apps

The Interactive Map and Eco-Health Relationship Browser are the flagship EnviroAtlas applications.

EnviroAtlas Interactive Map

A multi-extent Interactive Map with broad scale data for the lower 48 states and fine scale data for selected communities.

EnviroAtlas Eco-Health Relationship Browser

An easy-to-use relational browser showing the linkages between ecosystems, the services they provide, and human health.

More GIS Resources

Already familiar with EnviroAtlas and GIS analysis? Explore these resources.

EnviroAtlas Tools

Access several downloadable GIS toolboxes and ArcMap extensions that work with user-supplied data.

EnviroAtlas Data Download

EnviroAtlas National and Community data are made freely available for download.

Resources for EnviroAtlas Collaborators

Information and document templates to guide the development of data, metadata, widgets, tools and fact sheets.

The Eco-Health Relationship Browser

4 ecosystems:

- Forests
- Urban Ecosystems
- Wetlands
- Agro-Ecosystems

6 Ecosystem Services:

Health promotional services

- Aesthetics & Engagement with Nature
- Recreation & Physical Activity

Buffering services

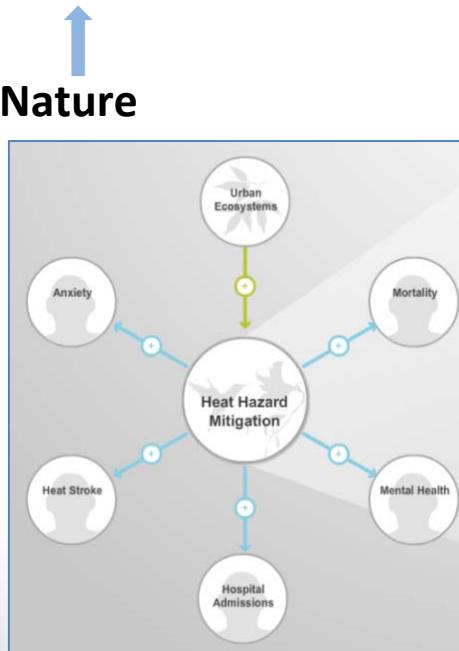
- Clean Air
- Clean Water
- Heat Hazard Mitigation
- Water Hazard Mitigation

Incl. extensive bibliography (n ~ 300)



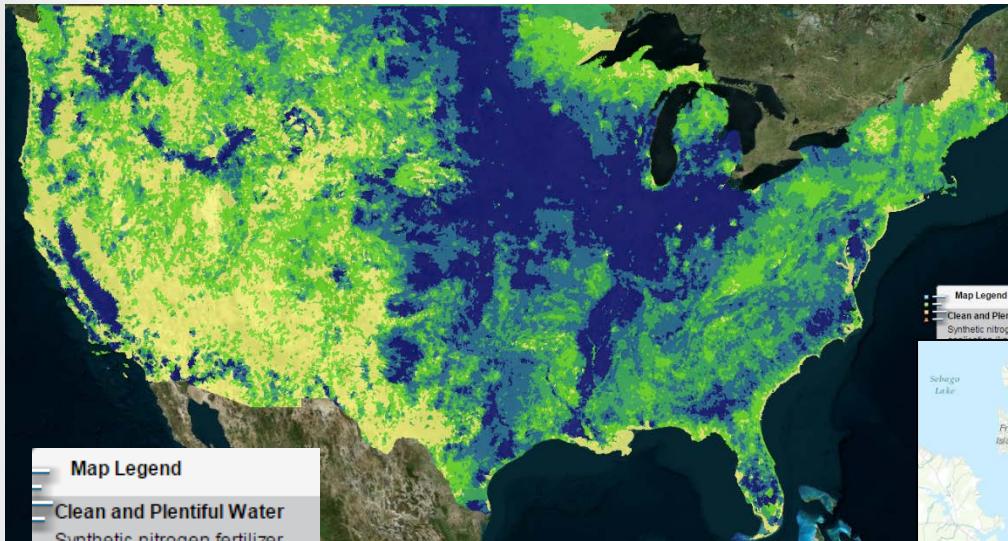
30+ health outcomes:

- Asthma
- ADHD
- Cancers
- Cardiovascular diseases
- Heat stroke
- Healing
- Diabetes
- Obesity
- Social relations
- Stress
- ... many more

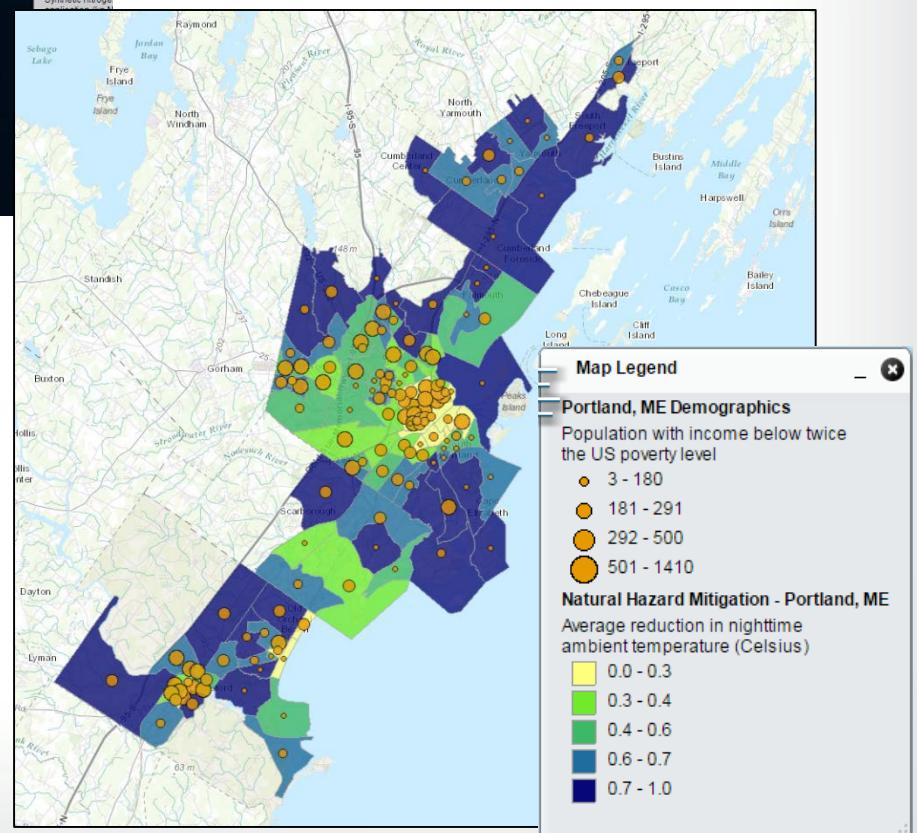


EnviroAtlas includes an Interactive Map

300+ map layers available online



National: Wall-to-wall coverage for conterminous US; summarized by ~90,000 drainage basins (12-digit HUCs).



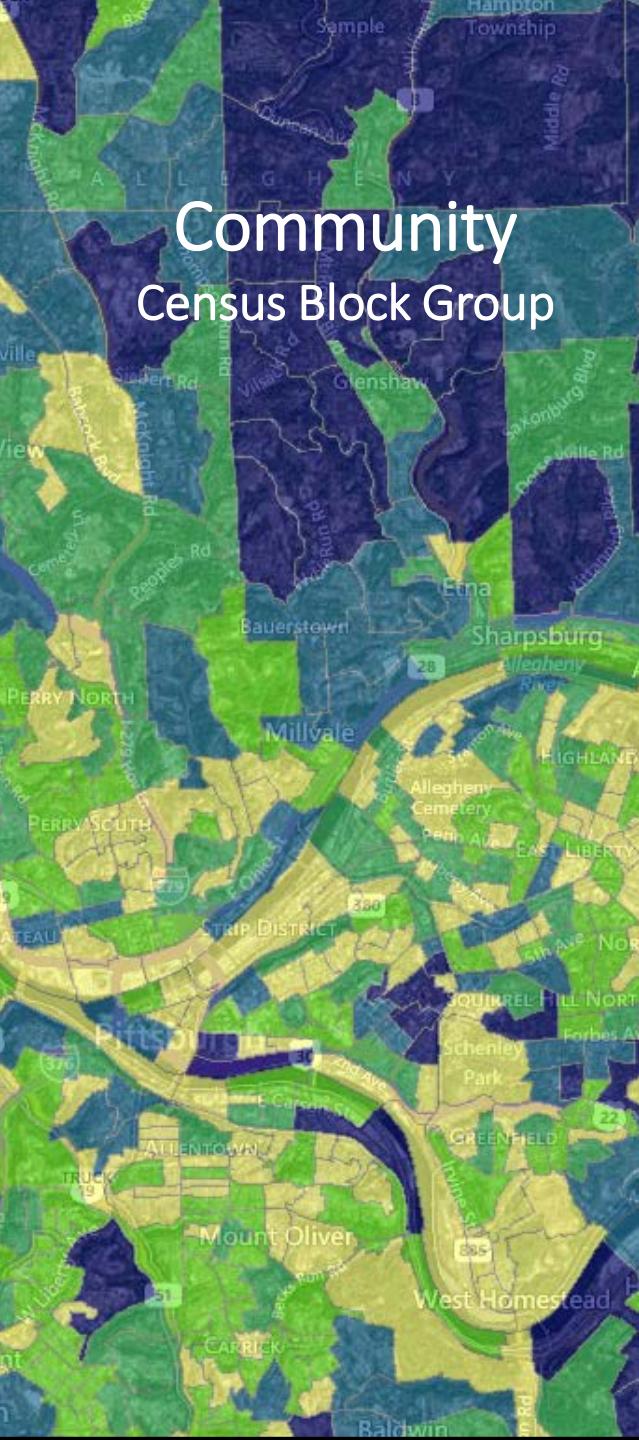
Community: High resolution component for 50 populated places; summarized by US census block group. 100+ data layers

Pictured: Greater Portland, ME

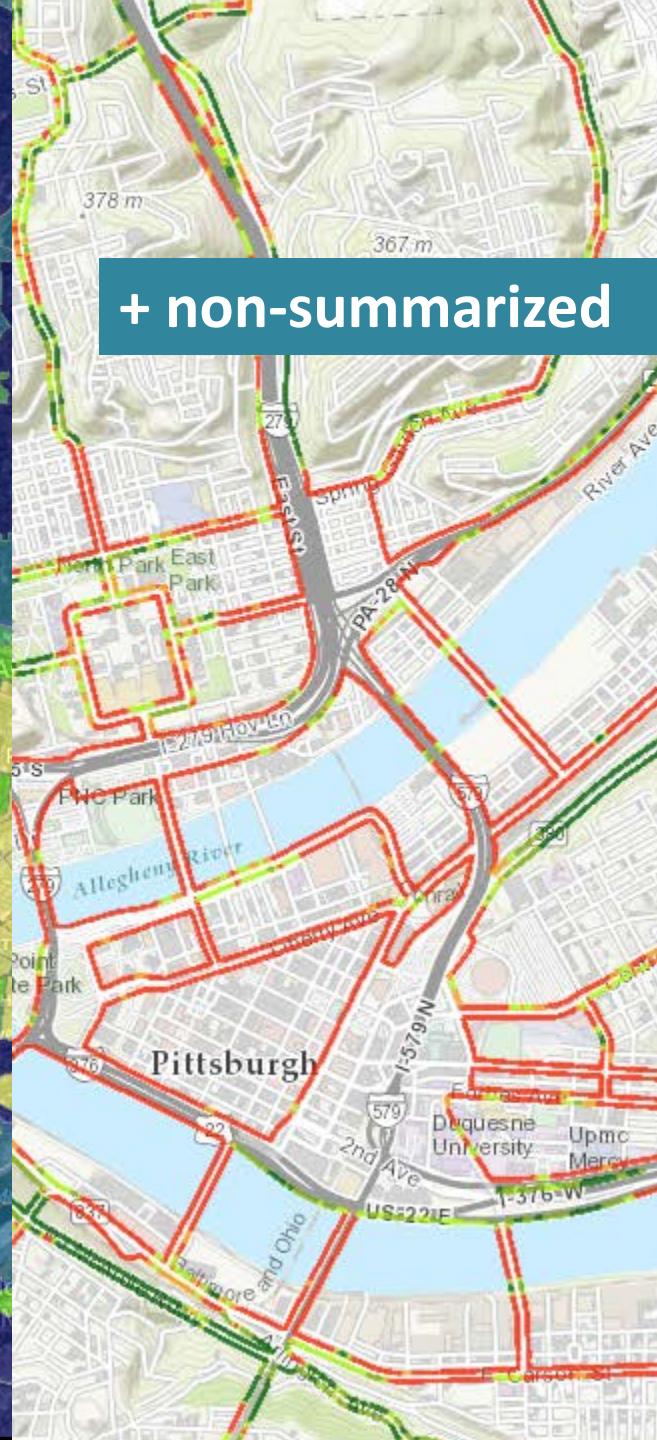
National Subwatershed



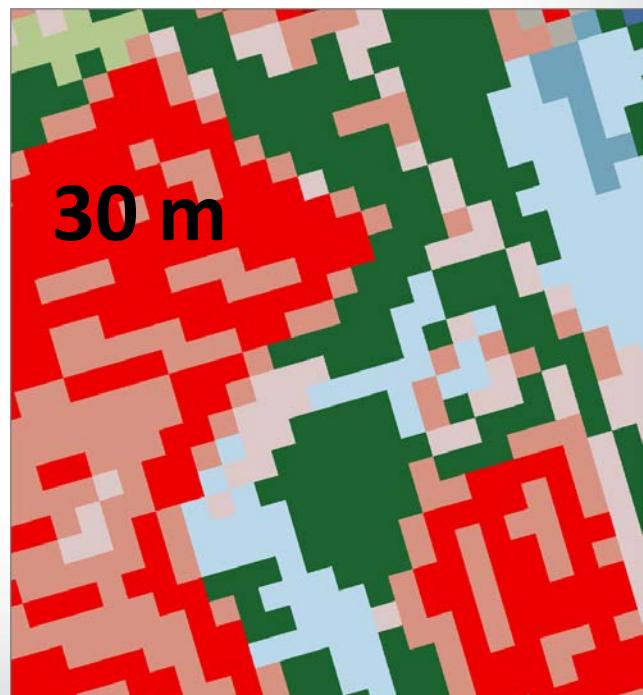
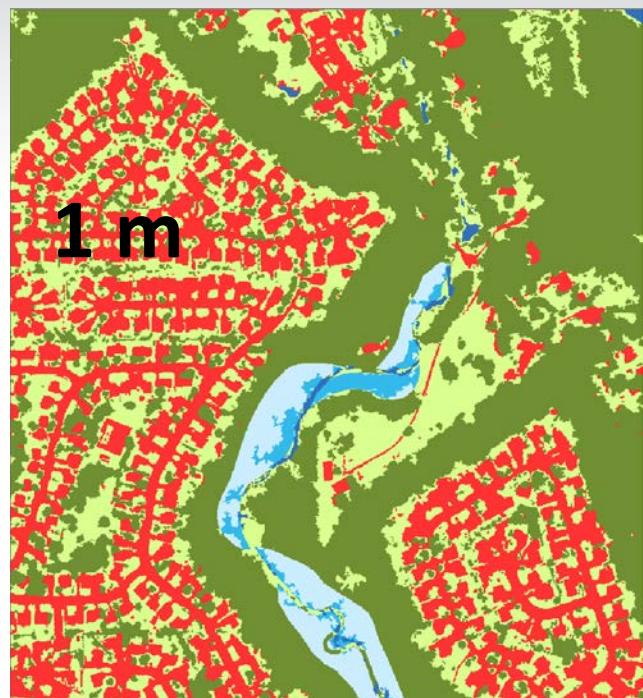
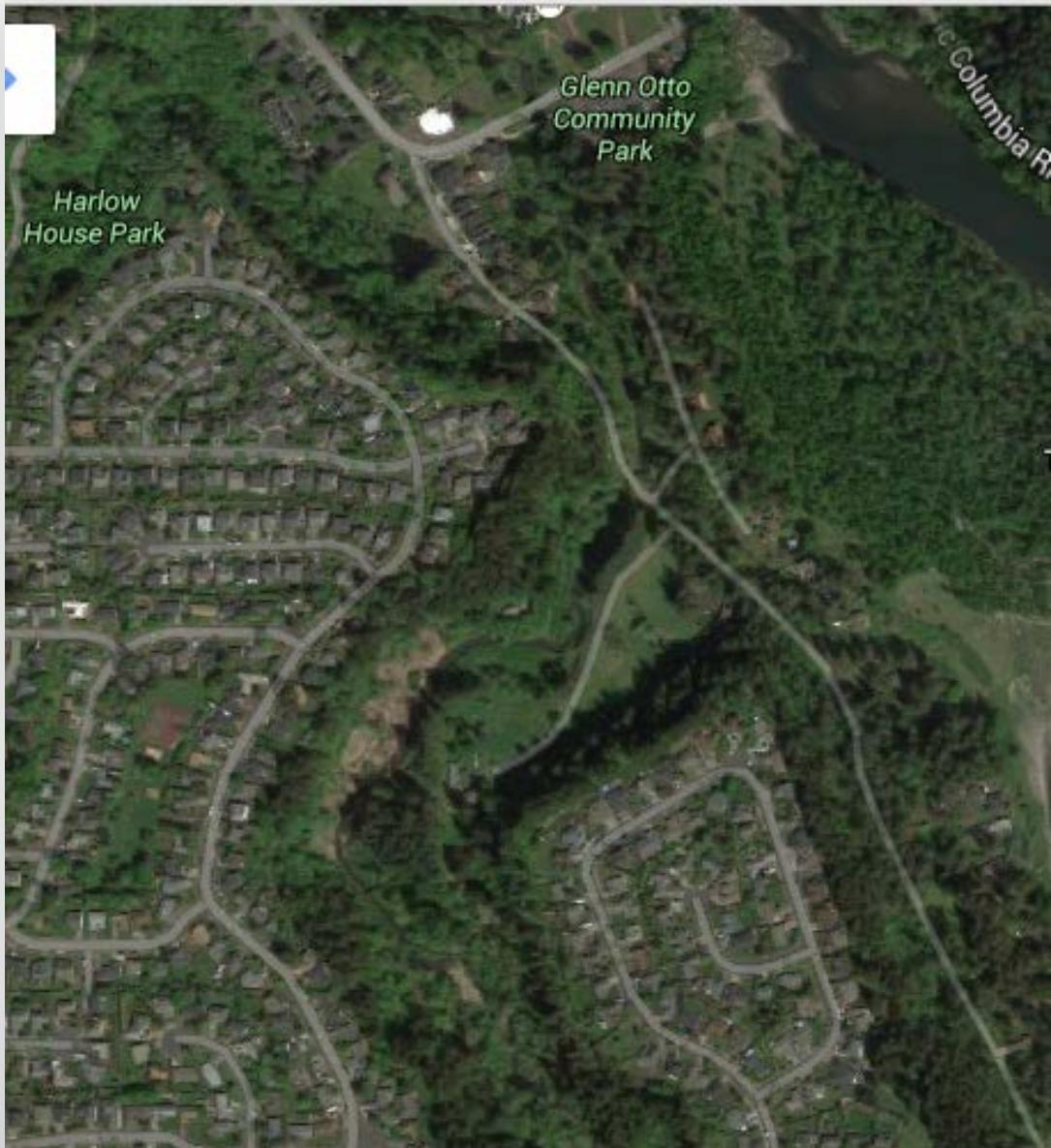
Community Census Block Group



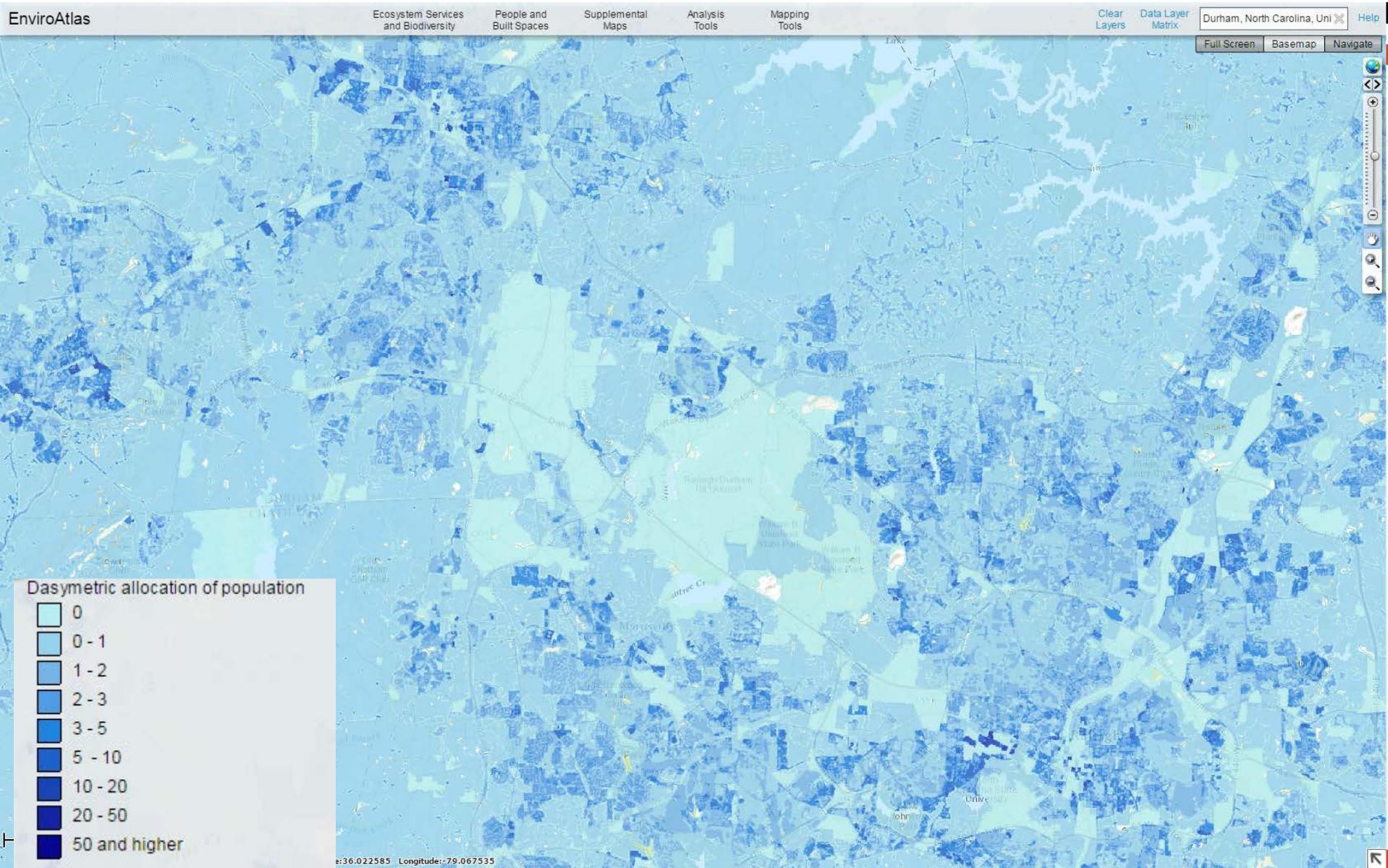
+ non-summarized



Land Cover is an Important Input



People are also an important input



Multi-Sector Current and Future Water Demand

Ecosystem Services
and Biodiversity

People and
Built Spaces

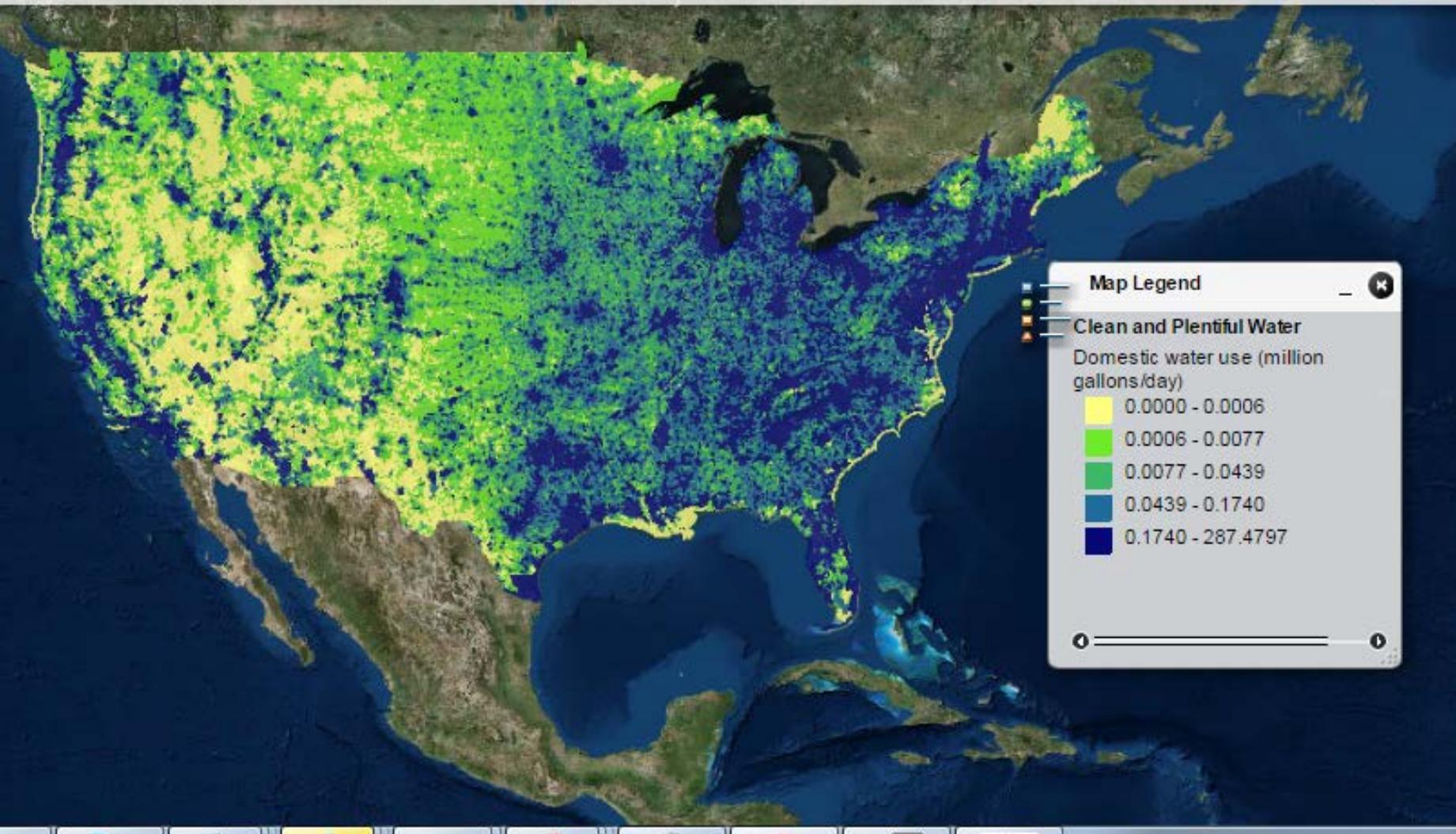
Supplemental
Maps

Analysis
Tools

Mapping
Tools

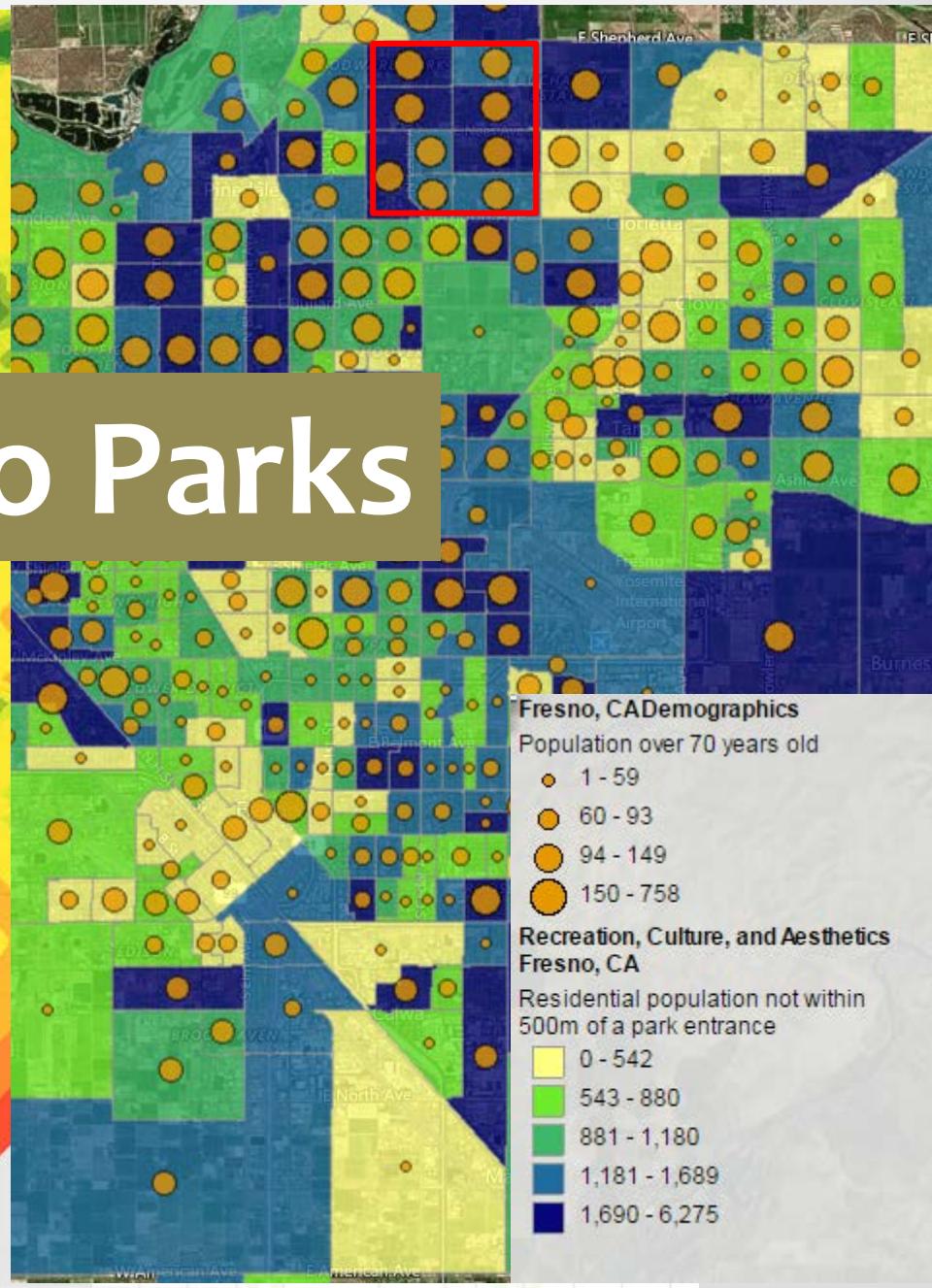
Clear
Layers

Data
N



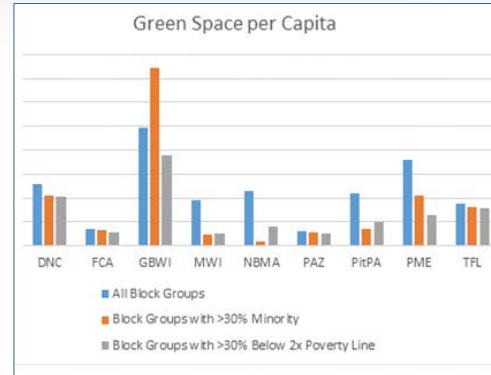
Is there easy access to parks in this community?

Access to Parks



Also Includes: Analysis Tools, Guides, and Information

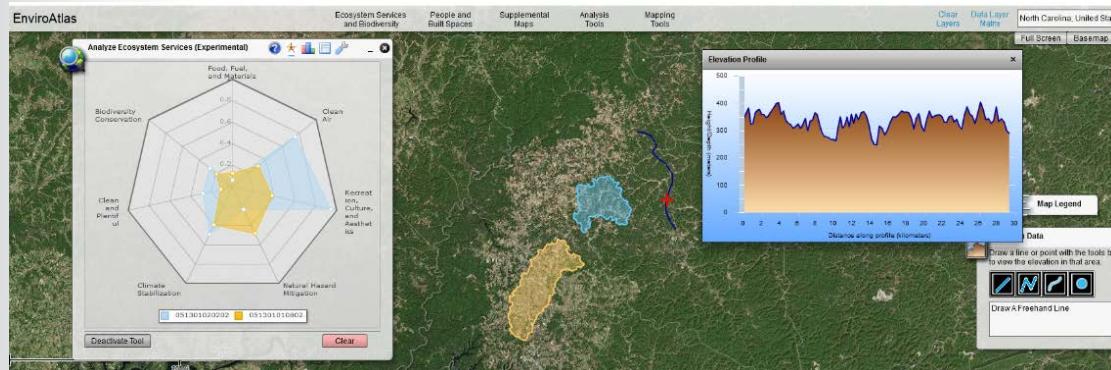
- Eco-Health Browser
- Mapping and analysis tools
- User added data
- Downloadable GIS toolboxes
- Use cases
- Guides for classroom and HIAs
- Standardized Interpretive fact sheets for every data layer



EnviroAtlas is a web-based environmental assessment tool developed by the U.S. Environmental Protection Agency (EPA) and the National Resources Conservation Service (NRCS). It provides users with the ability to analyze ecosystem services and land use patterns across the United States.

The interface includes several key components:

- Map View:** Shows a satellite map of North Carolina with blue outlines indicating stream buffer zones. A search bar and filter options are available for navigating specific hydrologic units (HUCs).
- Analysis Tools:** A sidebar on the left contains links to "Analyze Ecosystem Services (Experimental)", "Ecosystem Services and Biodiversity", "People and Built Spaces", "Supplemental Maps", "Analysis Tools", and "Mapping Tools".
- Fact Sheets:** A central panel displays a "Percent Stream Buffer Zone as Natural Land Cover" fact sheet for a specific location. This sheet includes a map, elevation profile, and detailed text about the data's calculation and limitations.
- Information Panels:** To the right of the fact sheet are two panels: one titled "How can I get more information?" and another titled "What can I do with this information?", both providing links to EPA resources and publications.
- Logos:** At the bottom of the page are logos for the U.S. Environmental Protection Agency (EPA), Landscape Services, NRCS, USGS, and the U.S. Geological Survey.



EnviroAtlas Facilitates Data Access through Multiple Means

- **Access data via published web services:**

No download required, users always using most current data.

EcoINFORMA

Climate Resilience Toolkit

Data Basin

Climate.Data.gov

ESRI

Community mapping portals,
e.g., Durham, NC

EPA Geoplatform

The screenshot shows the EcoINFORMA website's "Data Hubs" section. At the top, there is a navigation bar with links: EcoINFORMA, Data Hubs, Data Catalog, Map Viewer, Related Topics, and Contact Ecosystems. Below the navigation bar, the title "Data Hubs" is displayed. A descriptive text block explains that EcoINFORMA's Resource Hubs are data hubs that serve as primary entry points for access and visualization of data around common ecosystem-related themes and their corresponding communities of practice. It states that established resource hubs of EcoINFORMA can be accessed below. Three resource hubs are listed: "Biodiversity Resource Hub" (with a sub-section "Biodiversity Information Serving Our Nation" featuring an orange poppy flower and a map), "EnviroAtlas" (with a sub-section "EnviroAtlas" featuring a photo of people in a field and a map), and "Land Cover Dynamics Resource Hub" (with a sub-section "Multi-Resolution Land Characteristics Consortium" featuring a map of the United States). A blue circle highlights the "EnviroAtlas" hub.

- **Access data via EnviroAtlas interactive map:**

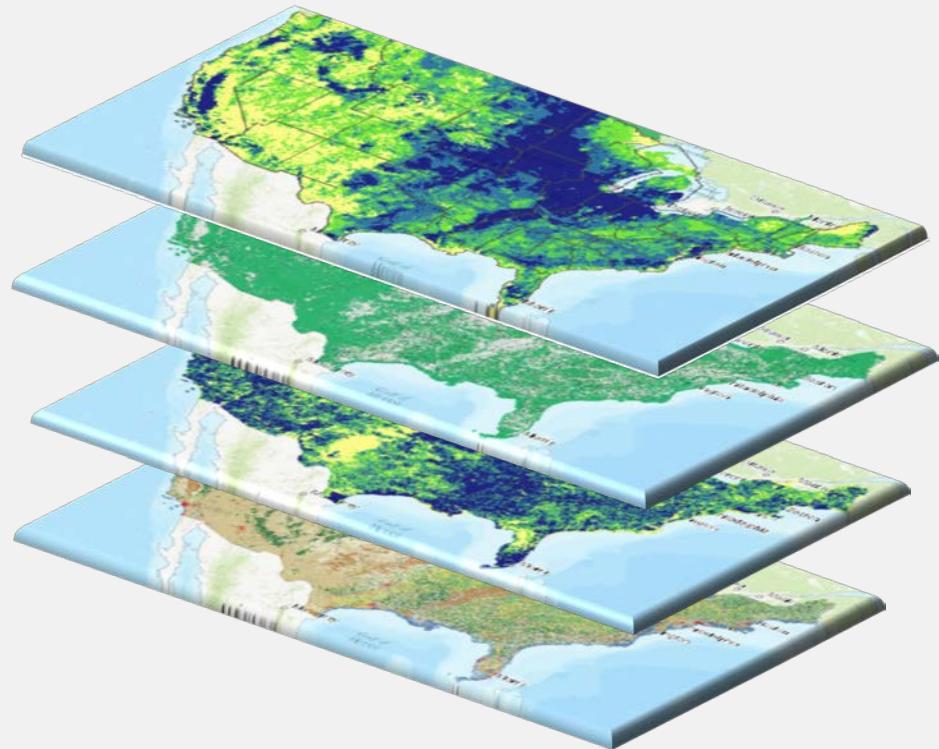
Interactive analysis tools

Additional context

- **Download the data and run:**

Summary

- Broadly applicable across scales, topic areas, uses
- Provides streamlined access to wealth of data
- Consistent format and documentation
- Ability for technology transfer
- Provides connectivity context



Demo

www.epa.gov/enviroatlas



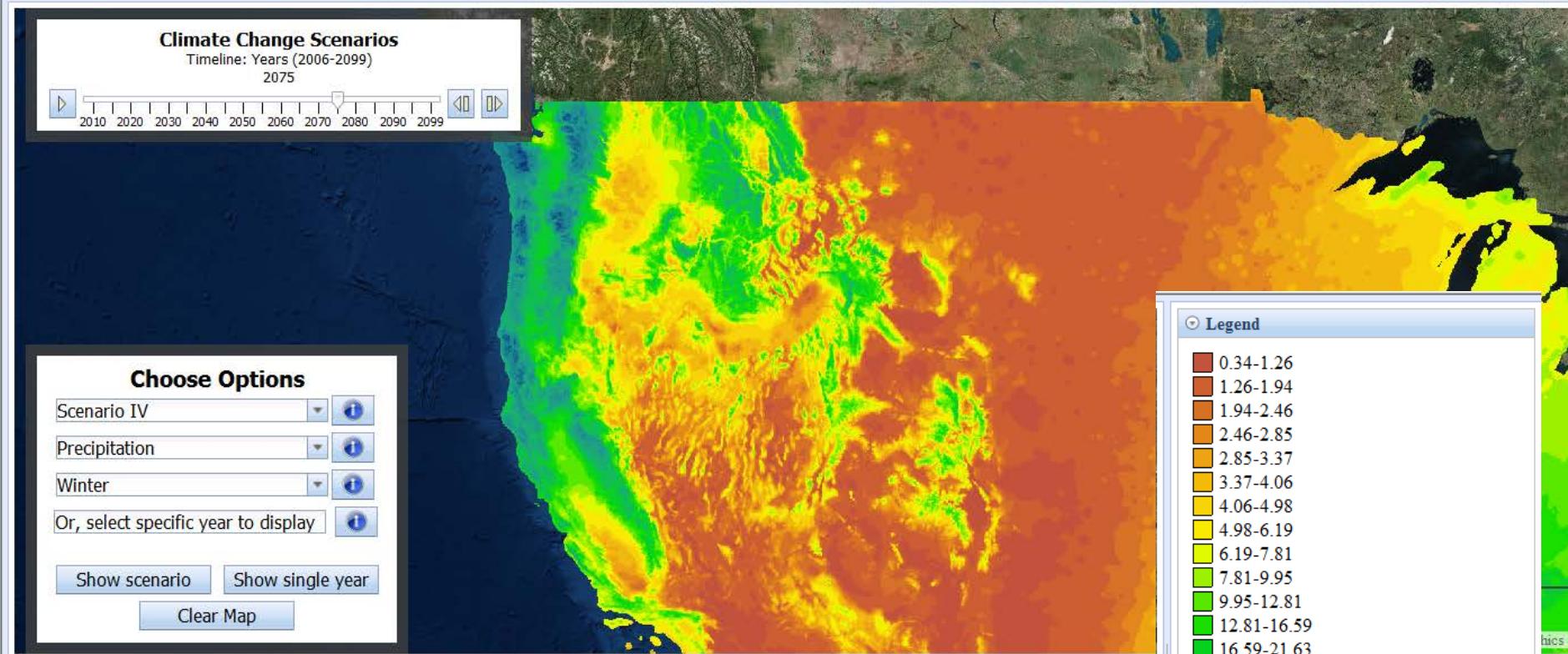
Email:
enviroatlas@epa.gov
neale.anne@epa.gov

Coming to EnviroAtlas Soon and Not-so Soon

- Climate change metrics
- Watershed navigation
- Sophisticated multi-metric analysis
- Future land use scenarios
- Summarized point discharges
- Recreation demand
- More spatially explicit riparian buffer metrics
- Runoff and recharge metrics
- Multi-Sector Sustainability Web Browser
- Remote-sensing derived harmful algal bloom data (close to real-time)
- Drought projections & impacts
- Flood plain mapping
- Pesticide loadings to streams

Coming Soon: Climate Scenarios

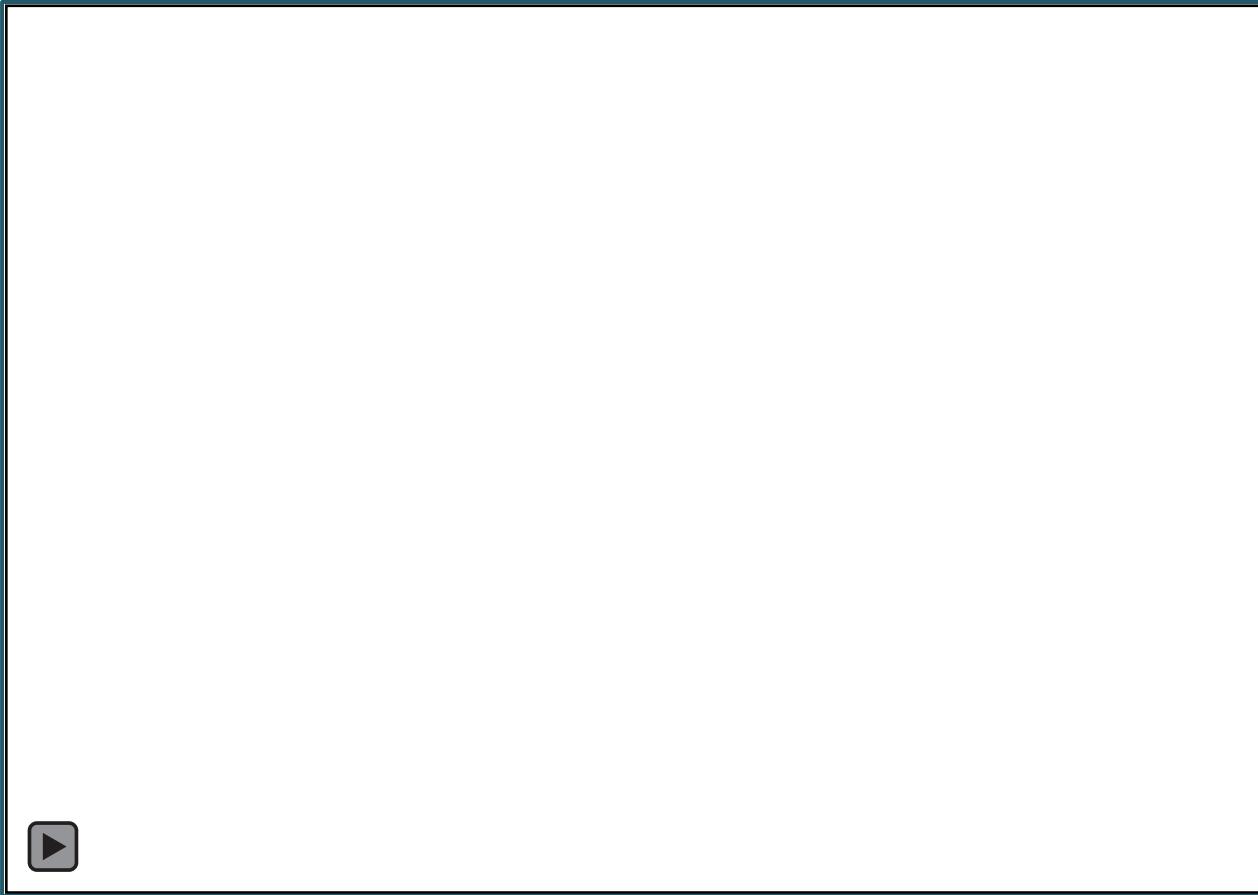
You are here: EPA Home » Research » Ecosystem Research » EnviroAtlas » Interactive Map



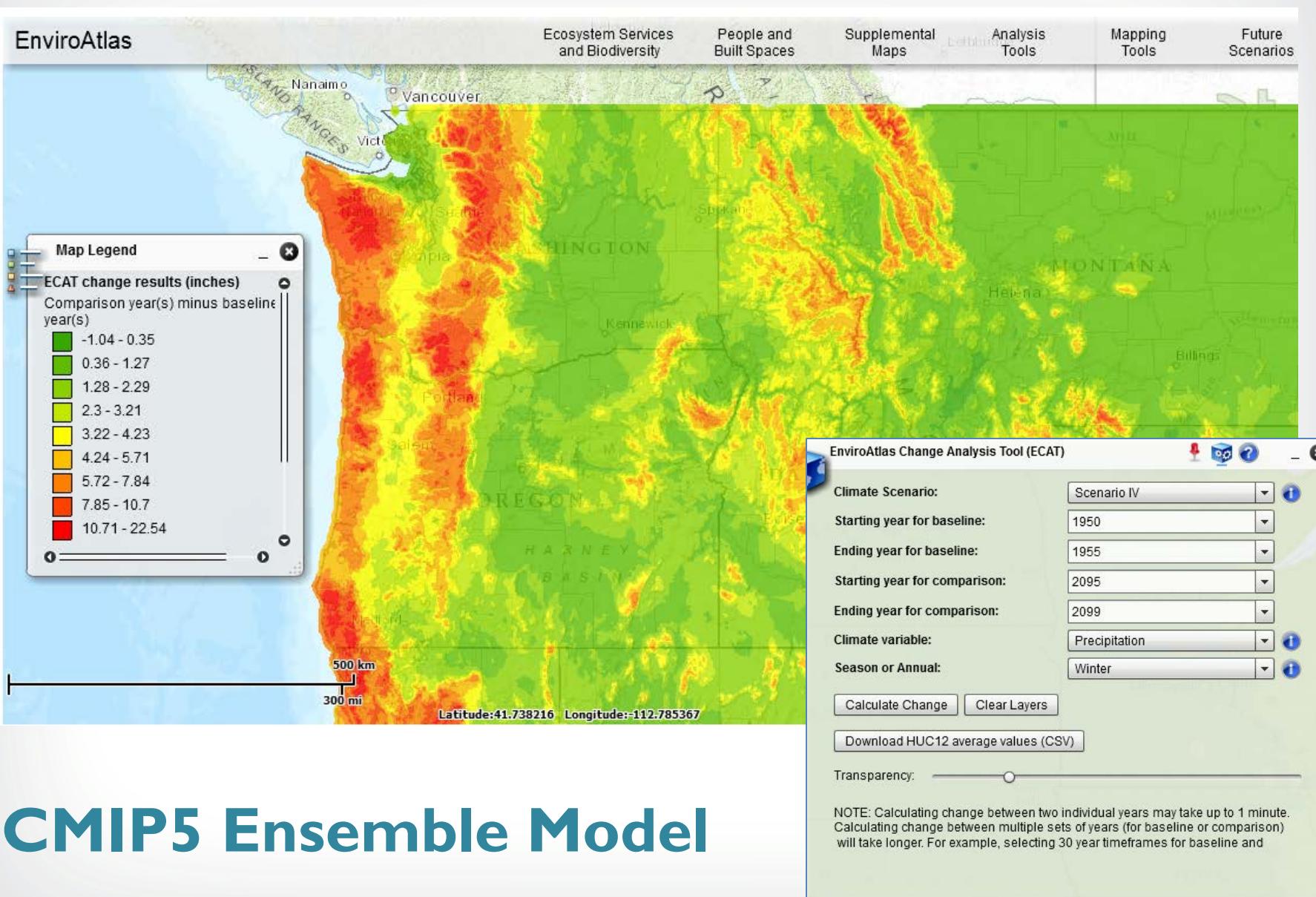
- CMIP5 Ensemble Model, RCPs 2.6, 4.5, 6.0 and 8.5
- Min/Max Temperature
- Precipitation
- Potential Evapotranspiration
- Water Supply
- Domestic Water Demand

Model Summary/Metadata
EnviroAtlas image service of
RCP85WinterPrecip for time slider

Coming Soon: Climate Scenarios

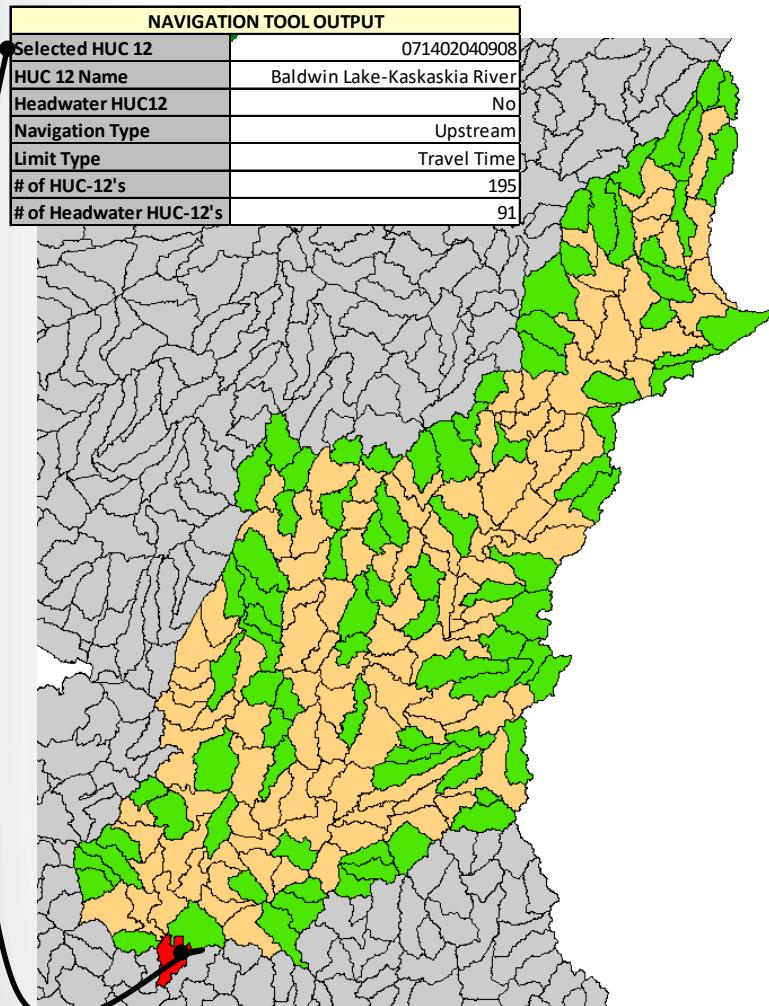


EnviroAtlas Change Analysis Tool



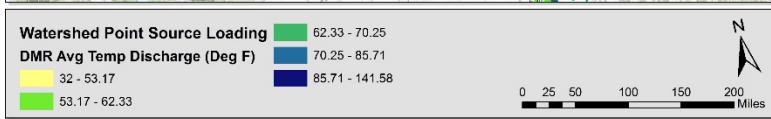
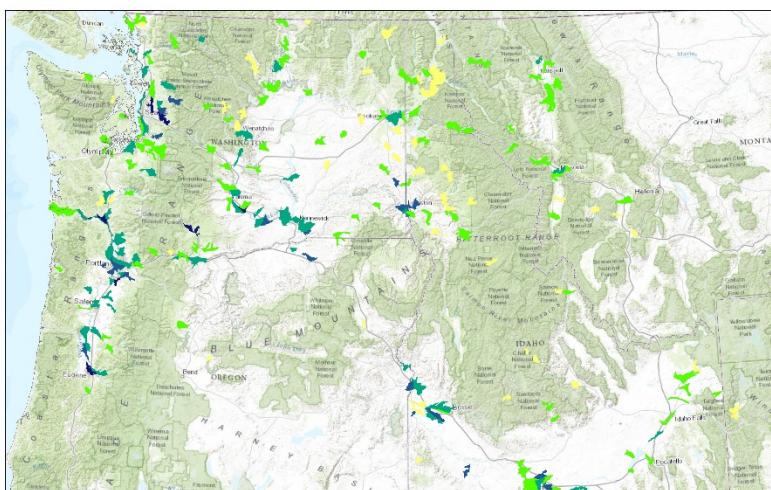
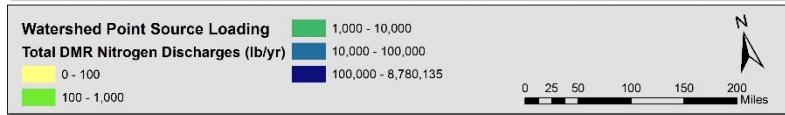
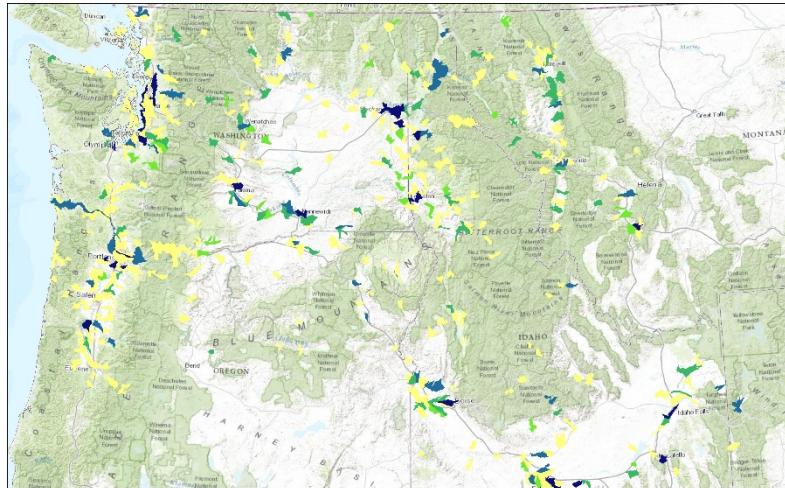
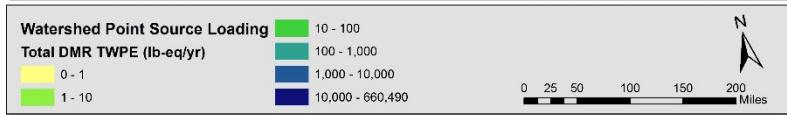
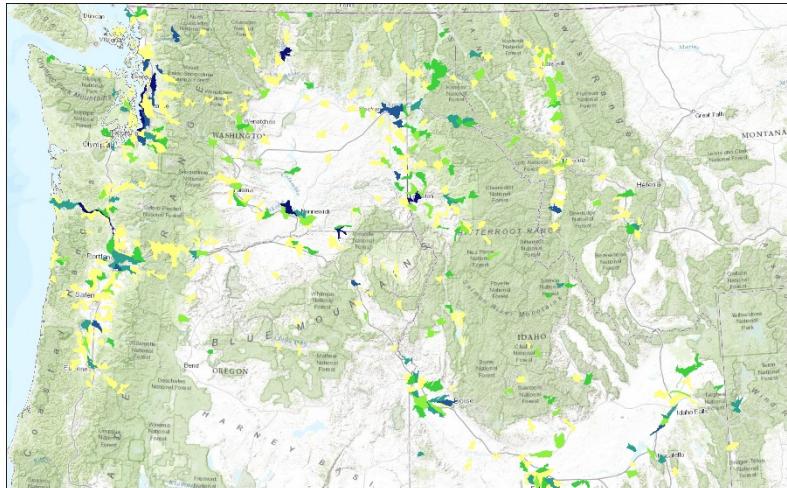
CMIP5 Ensemble Model

HUC Navigator Tool

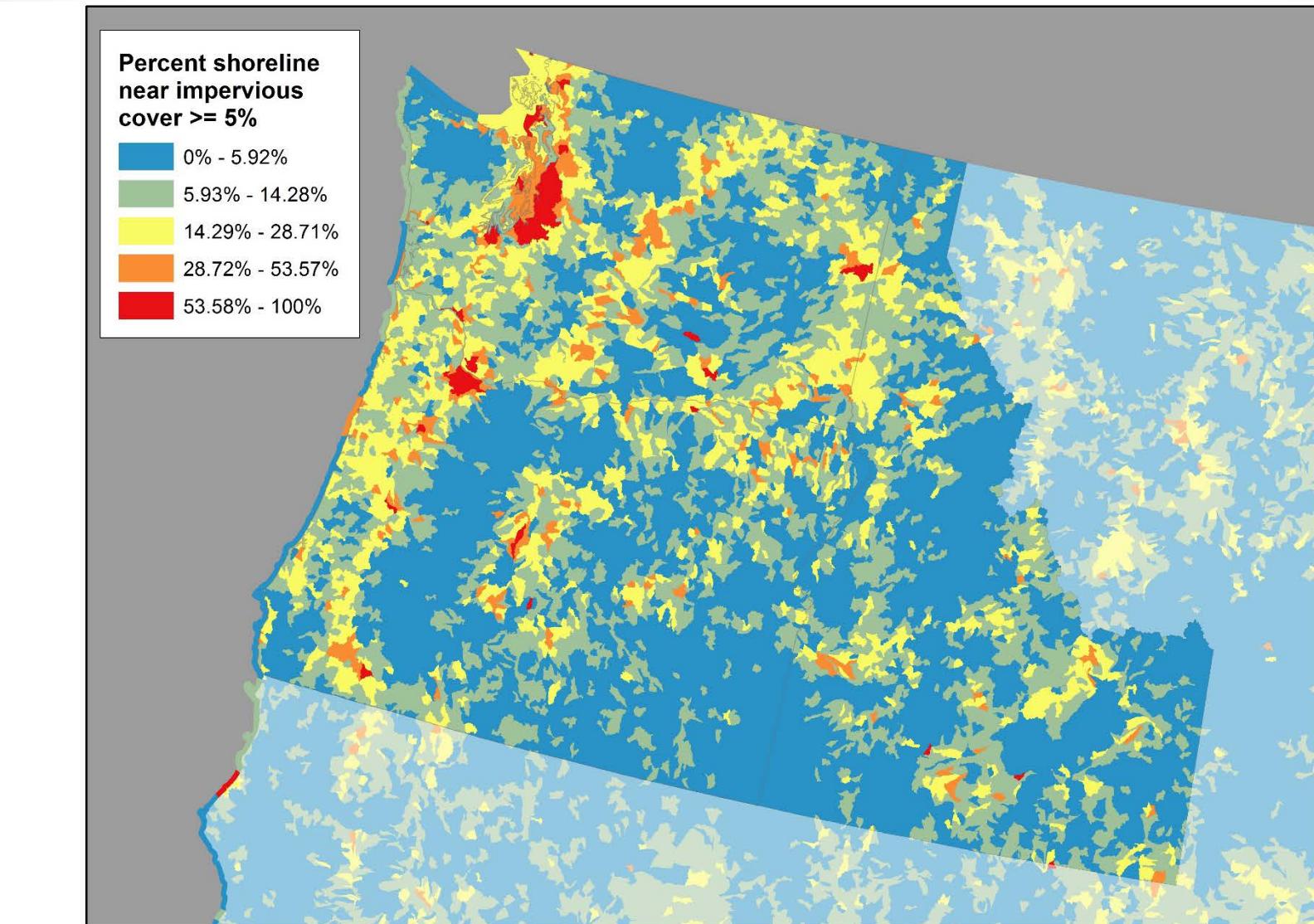


- Navigate up or downstream
- Navigate by time of travel or distance
- Identify headwater HUCS
- Identify sinks (no outflow)
- Identify terminal HUC and outlet

Summarized Point Source Discharges

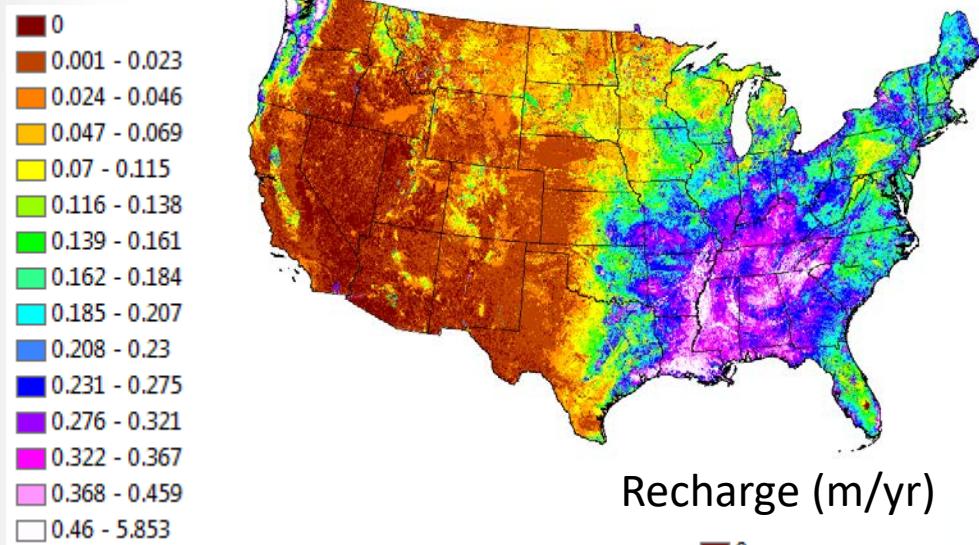


Percentage of Stream and Water Body Shoreline Lengths that have Impervious Surface Cover $\geq 5\%$ within 30 meters

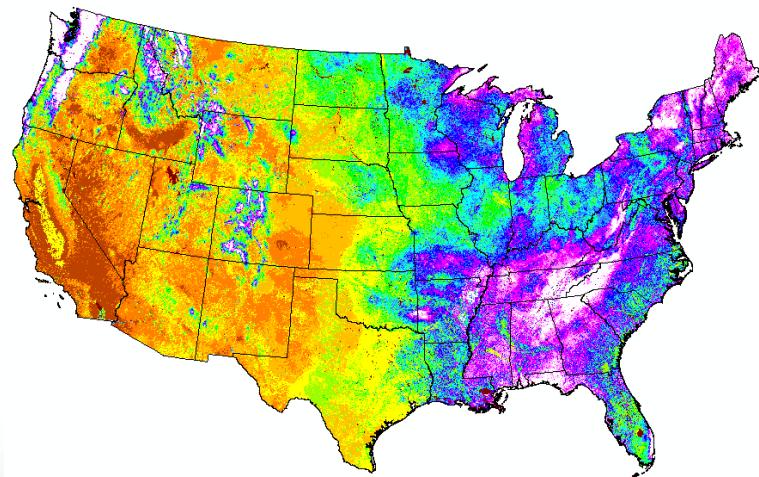


Empirical-regression Based Annual Estimates of Runoff and Recharge 2013, Preliminary Results

Runoff (m/yr¹)



Recharge (m/yr)



Thank You

www.epa.gov/enviroatlas

Contact us:

enviroatlas@epa.gov

Or

neale.anne@epa.gov

