EnviroAtlas

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EnviroAtlas: Connecting Ecosystems, People, and Well-being

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Background

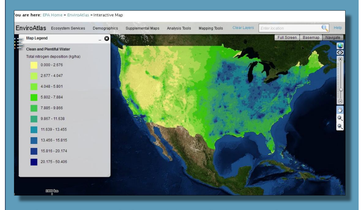
EnviroAtlas is a collection of tools and resources that promotes understanding of the relationships between ecosystems, the benefits they provide, and the well-being of the people that depend on them.

This collection includes a web-based, multi-scaled interactive map with over 200 data layers, web services, and integrated mapping and tools. All of the data are available to download, as are unique GIS toolboxes for performing local analyses. Research and publications, eco-wheels, data fact sheets, an interactive Eco-Health Relationship Browser, and other resources are also provided to support decision-making, education, and scientific research.

EnviroAtlas is designed for staff from all levels of government, environmental and public health professionals, researchers, educators, non-government organizations, and anyone else with an interest in ecosystem services and their role in cultivating sustainable and healthy communities.

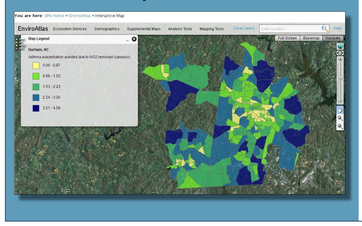
Data are available in the interactive map as web services and to download, making EnviroAtlas accessible to users of any GIS skill level.

Multi-scaled Data and Analysis



Above: Annual deposition of nitrogen by subwatershed (12-digit HUC) for the contiguous United States.

Below: Number of asthma exacerbation cases in each census block group in Durham, NC that are avoided each year because of the nitrogen dioxide removed by trees.



EnviroAtlas includes two primary scales:

National:

- Coverage of contiguous US
- Analysis of relationships between ecological indicators and sustainability.
- Based on 30-meter National Land Cover Dataset.
- Most metrics summarized by subwatershed (HUC 12).

Community:

- Examines public health and well-being connections to environmental conditions and ecosystem services.
- Based on derived 1-meter land cover.
- Most metrics summarized by US Census block group.
- Six pilot cities:

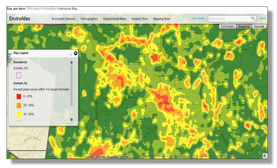
  Durham, NC; Portland, ME; Tampa, FL; Pittsburgh, PA Milwaukee, WI; Phoenix, AZ

Mapping Ecosystem Service Indicators

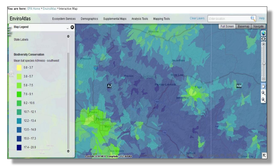
EnviroAtlas organizes ecological, demographic, built environment, and other relevant data into the following benefit categories:

- Clean Air
- Clean and Plentiful Water
- Natural Hazard Mitigation
- Climate Stabilization
- Recreation, Culture, and Aesthetics
- Food, Fuel, and Materials
- Biodiversity Conservation

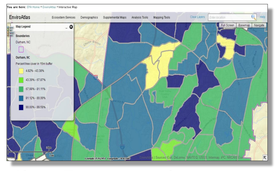
Above: Eco-wheels for each category illustrate natural resources that provide the service, drivers of change, and derivative benefits.



Above: Percent green space in ¼ km



Above: Mean bat species richness



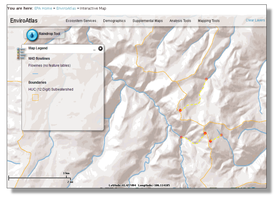
Above: Tree coverage along streams

Above: Extent of rare ecosystems

Integrated Tools

The EnviroAtlas suite of tools and resources compiles data and resources in a single location, enables the analysis of relationships between people and environmental indicators, and enhances user understanding of the interdependencies that exist between human and ecological communities.

- Graph the relationship between map layers *(in development)*
- Navigate up- and down-stream along waterways in a subwatershed (12-digit HUC)
- Follow the path of a raindrop from any point to the nearest downstream waterbody
- Combine multiple data attributes into a single index value *(in development)*

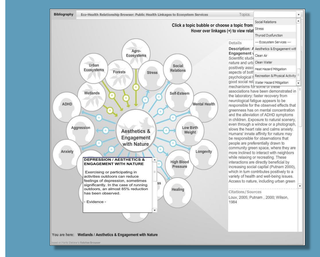


Integrated analysis tools in the interactive map such as the rain drop tool (*above*) support decision making, education and research.

Beyond the Maps: Making Connections

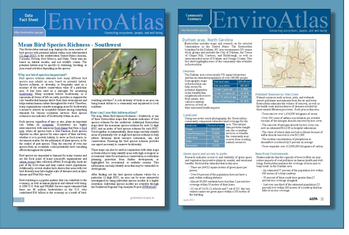
Eco-Health Relationship Browser

The Browser is an interactive tool in EnviroAtlas that illustrates the linkages between the surrounding environment and human health and well-being. The Browser demonstrates the connection between ecosystem services and human health using evidence from over 300 peer-reviewed articles.



Fact Sheets and Research

Available for each data layer, fact sheets use existing research to highlight connections with ecosystem services, stressors and drivers of change, sustainability, and well-being. Additional fact sheets showcase trends and statistics found for communities using EnviroAtlas data.



Target Outcomes

Jumpstart Innovation by Providing a Wealth of Data

- Supplement research across many organizations
- Increase development of proprietary and non-proprietary tools by outside organizations by allowing them to tap into EnviroAtlas data and tools

Increase Community Empowerment

- Provide easy public access to environmental data and analytical tools
- Post and integrate community data with national data
- Contrast and learn from conditions in other regions, communities and neighborhoods

Boost "Environmental Intelligence"

- Convey uses and benefits of green infrastructure
- Utilize systems thinking to reveal co-benefits and unintended consequences

Improve Public Health and Well-Being

- Identify underserved and vulnerable populations for management action
- Evaluate potential consequences of actions or inaction under alt. scenarios
- Advance the state of the science on the role of ecology in public health

Acknowledgements

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