EnviroAtlas: Connecting Ecosystems, People, and Wellbeing

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US EPA

Strategic Collaborative Science Program Summit II

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What is EnviroAtlas?

An online decision support tool giving users ability to view, analyze, and download geospatial data related to ecosystem services (nature's benefits)

- **Indicators of the supply, demand, and benefits of ecosystem services**
- **Indicators of drivers of change**
- **Indicators of built environment sustainability**
- **Indices built on combination of supply, demand, drivers of change**
- **Reference data (e.g., political and ecological boundaries, land cover, soils, hydrography, impaired water bodies, wetlands, demographics, and more**
- **Development of analytic and interpretive tools**

What is EnviroAtlas?

The Atlas is multi-scaled:

- National: Wall-to-wall coverage for conterminous US; summarized by 12 digit HUCs
- Community: High resolution component for selected communities; summarized by US census block groups

The Atlas is a multi-organization collaborative:

- USGS
- USFS
- NRCS
- Others

The Atlas is linked to other EPA and non-EPA tools

Who is Developing it?

Amazing EPA Team including:

Annie Neale, Megan Mehaffey, Laura Jackson, Rosie Moore, Tim Wade, Yongping Yuan, Bill Kepner, James Wickham, Drew Pilant, Jay Christensen, Taylor Jarnagin, Don Ebert, Betsy Smith, supportive management, Program Office support, and many others

A talented group of Student Services Contractors including:

Jeremy Baynes, Doug Browning, Jessica Daniel, Mathew Dannenberg, Jessica Daniel, Jessica Ferrer, Elena Horvath, Betsy McCorkle, Ilene Ruhoy, Alexandra Sears, Charles Rudder, Ben Riegel

Public Health and ORISE Fellows:

Kathleen Bush, Tara McAlexander, Samantha Sifleet, Brian Pickard

And:

USFS, Dave Nowak, Allison Bodine, Alexis Ellis, Eric Greenfield

USGS, Kevin Gergely, Alexa McKerrow, Norman Bliss (USGS contractor)

NRCS, Sharon Waltman, Dave Hoover

NASS, Rich Iovanna

New Mexico State University, Ken Boykin and graduate students

NatureServe, Kyle Copas, Lori Scott, Whitney Weber

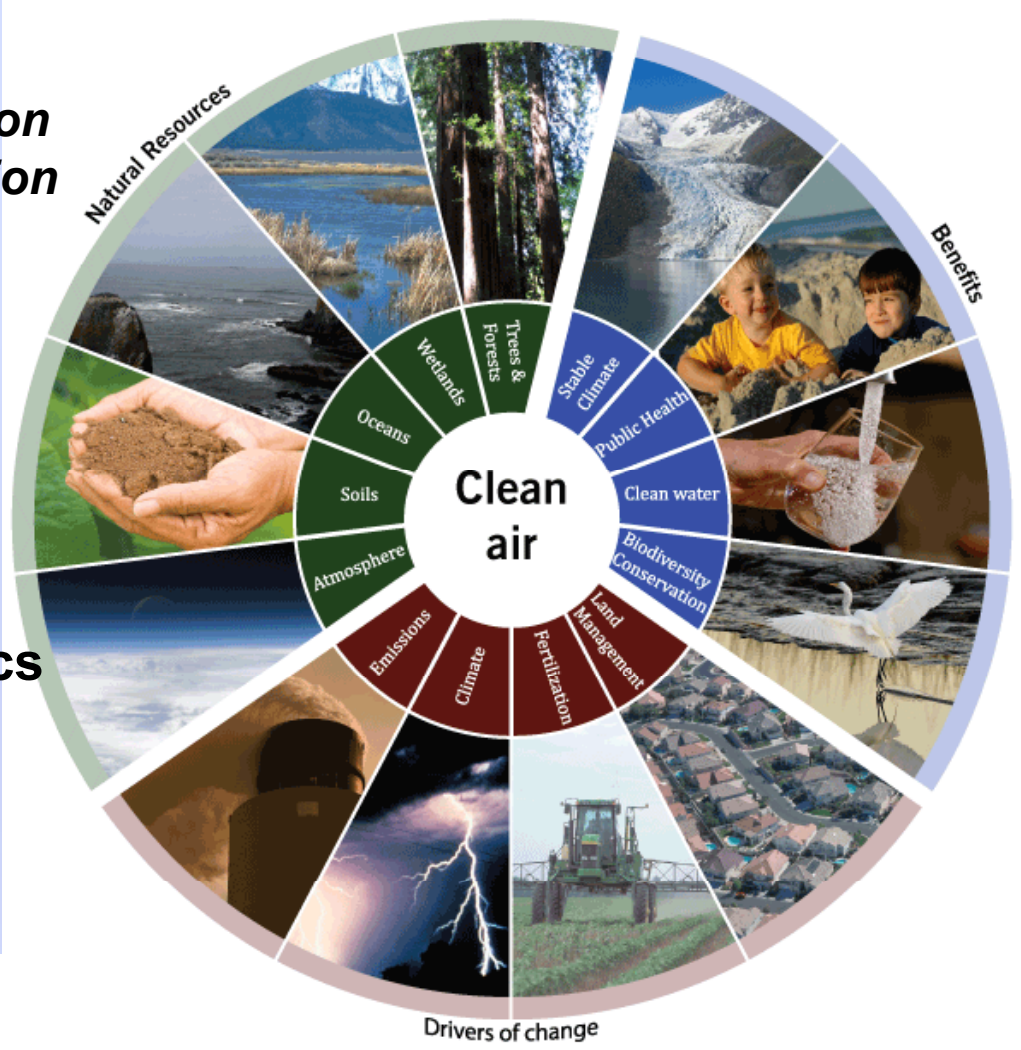
National Geographic, Frank Biasi

And:

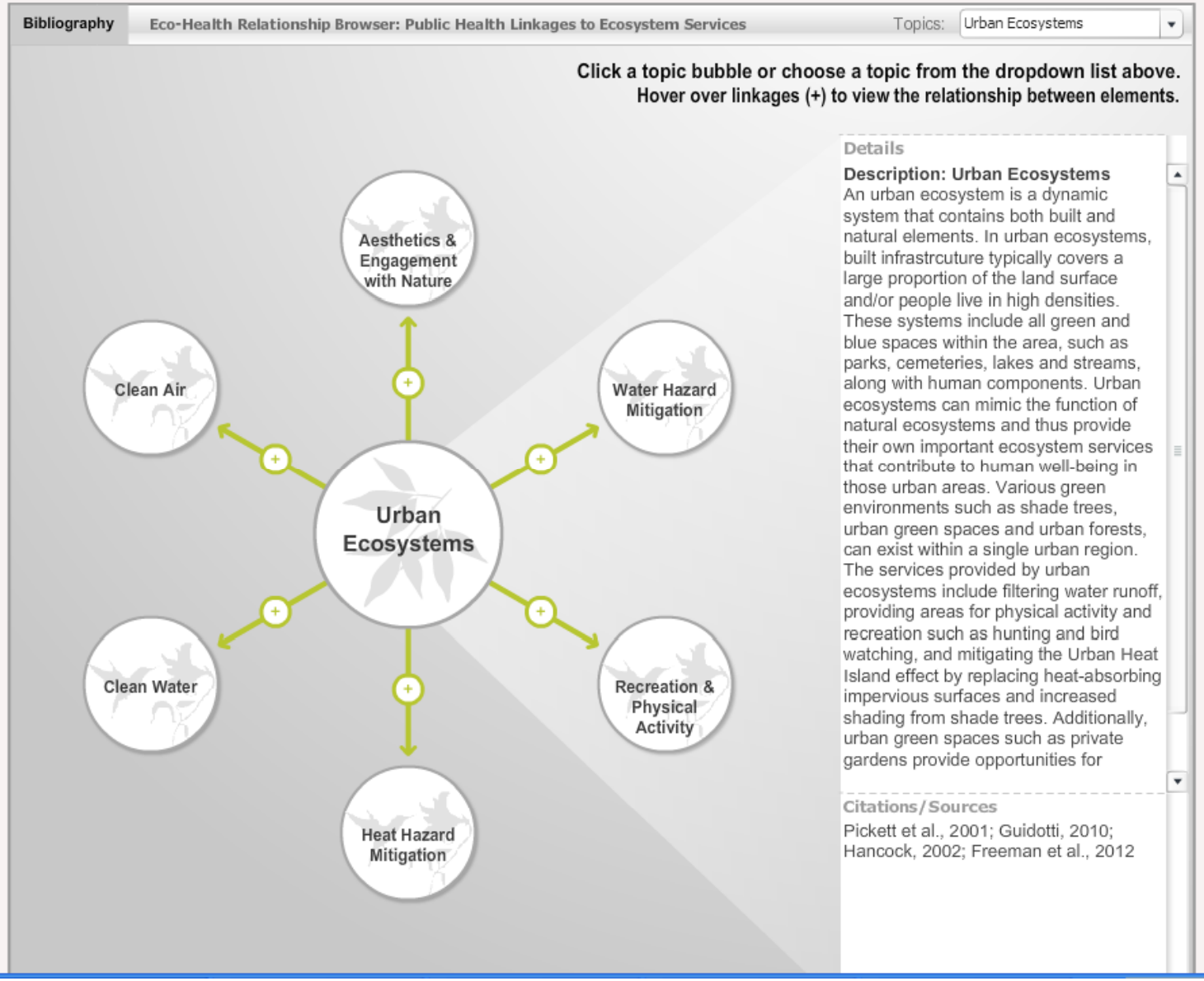
Innovate! Inc., Barbara Rosenbaum and Suzanne Pierson
OTIE, David Eskew, Don Catanzaro, Katie Conlon
RTI, Bill Wheaton, Jay Rineer
Tetra-Tech, Michael Paul, Peter Cada

Nature's Benefits Featured in EnviroAtlas

- **Clean Air**
  - ✓ ***Natural filtration***
  - ✓ ***Health benefits of natural filtration***
  - ✓ ***Economic benefits of nat. filtration***
  - ✓ ***Potential air stressors***
  - ✓ ***Near-road environment***
- **Clean & Plentiful Water**
- **Natural Hazard Mitigation**
- **Climate Stabilization**
- **Recreation, Culture & Aesthetics**
- **Food, Fiber & Materials**
- **Biodiversity Conservation**



Click HERE to open the Relation Browser in a new window, or HERE for a copy of all the Relation Browser data.

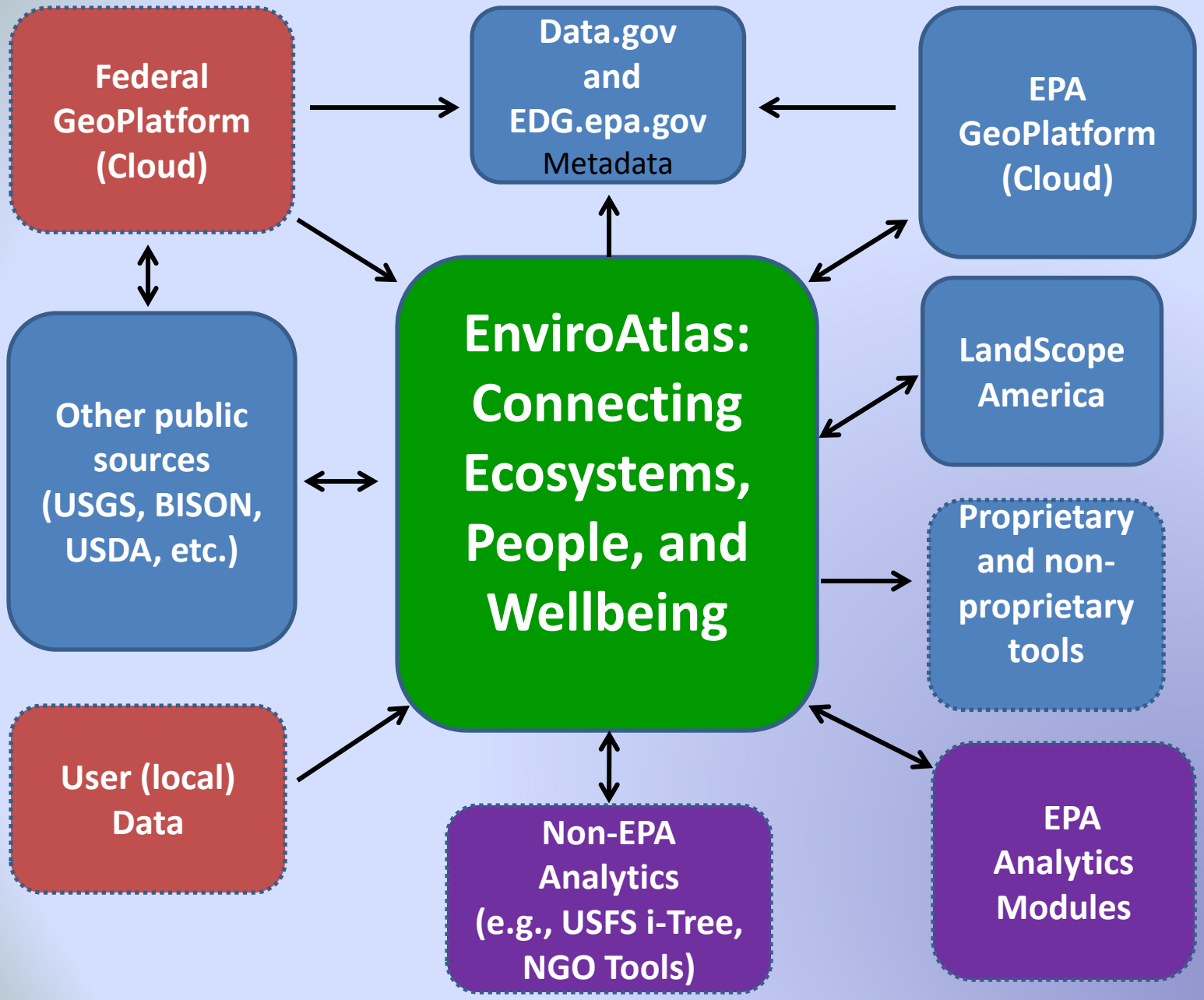


May 2013 Map Layer Title	EnviroAtlas Community Data Description	Clean Air	Clean and Plentiful Water	Natural Hazard Mitigation	Climate Stabilization	Recreation, Culture, and Aesthetics	Food, Fuel, and Materials	Biodiversity Conservation
Estimated percent tree cover within 26 meters of busy road edge	This map estimates the percent of total tree cover within 26 meters of a busy road edge at any given point throughout the community. A “busy” roadway in EnviroAtlas is defined to include interstates, arterial roads, and collector roads. It does not include local or neighborhood roads, though some of these roads may also experience consistent and heavy traffic.	x				x		x
Estimated vegetated cover within 15 meters of a stream or lake	This map estimates the percent vegetated cover within 15 meters of hydrologically connected non-coastal waters. It is not summarized by census block group.		x	x		x		x
Estimated walking distance to a park entrance	This map estimates the total kilometers, or walking distance, from each park entrance.					x		
Impervious area per capita	This map estimates the square meters of total land per person within each census block group that is covered by impervious surfaces. Impervious surfaces do not allow the penetration of water and include buildings, roads, and sidewalks.			x	x	x		x

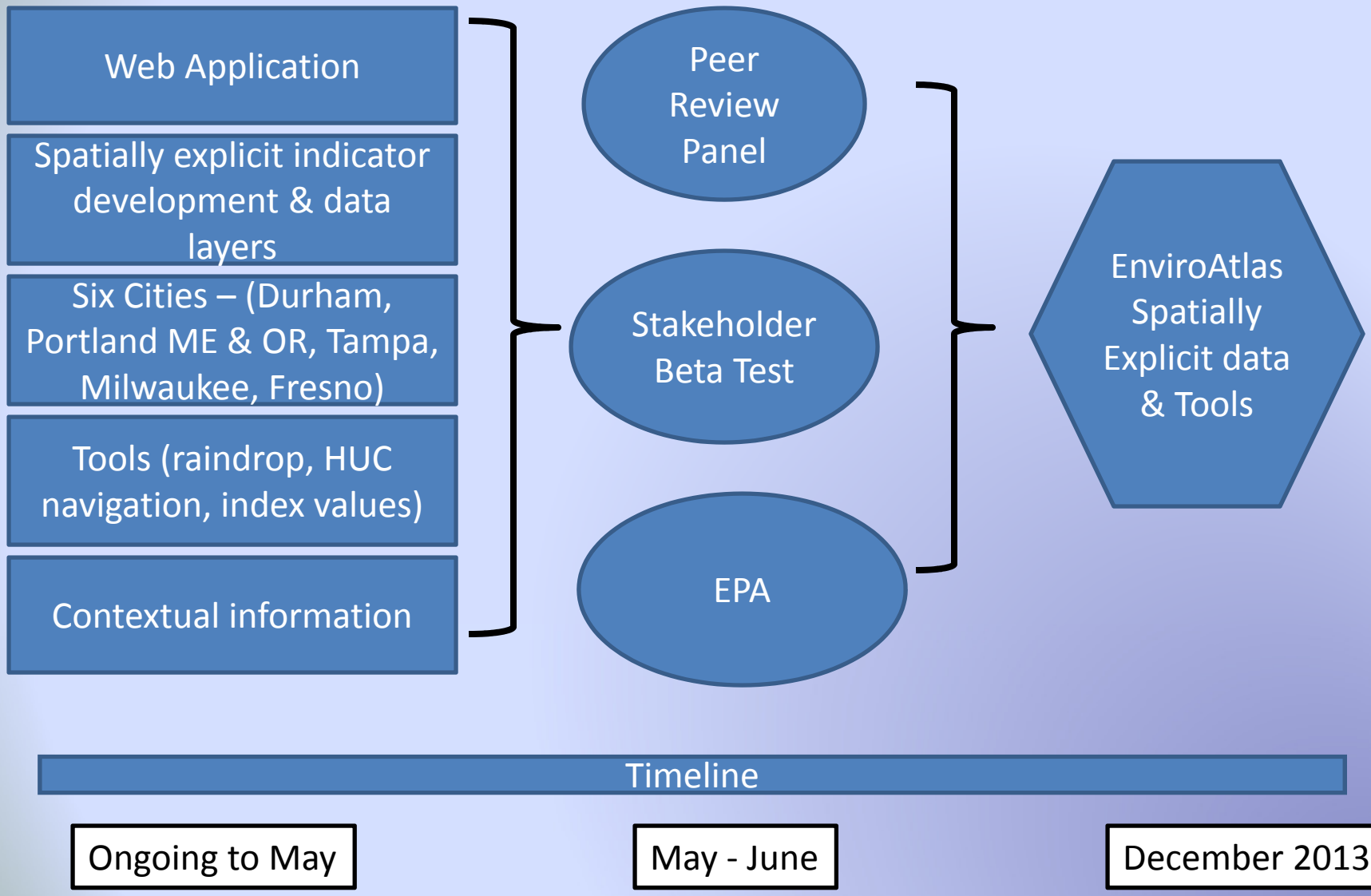
Planned Future Functionality

- Display up to 4 map windows side-by-side
- Construct graphs from summary map data
- Access metrics of the built environment from Census data
- Provide additional socioeconomic and environmental data
- Filter data and include clip-and-ship functionality
- Map multi-metric indices and build user-defined indices
- Use local user data in EnviroAtlas
- Develop additional analysis and mapping “widgets”

Atlas Vision -- What is the data model?



EnviroAtlas Product Development – FY13



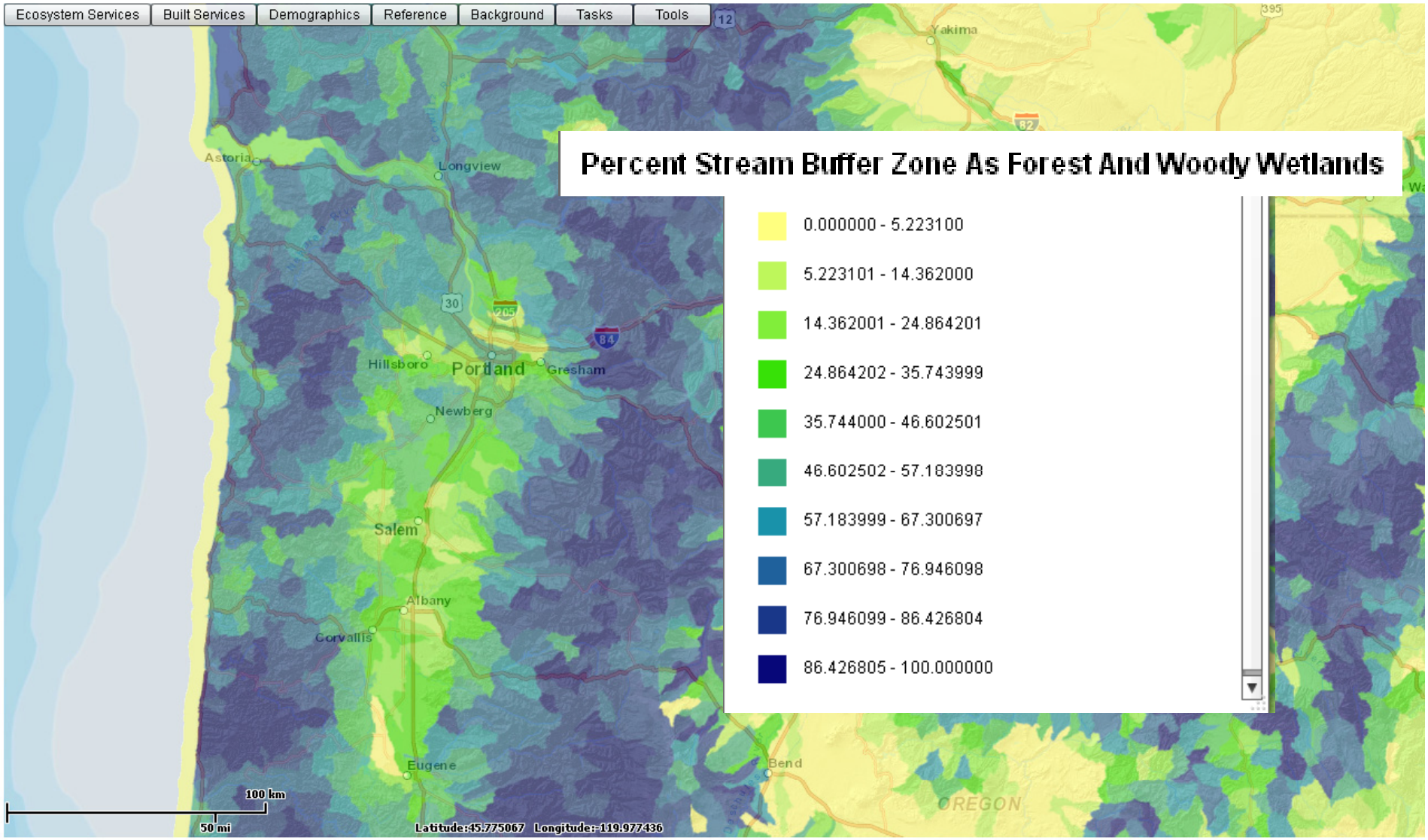
Many Opportunities to Collaborate with EnviroAtlas

- Spatial Tools
- Spatially explicit indicator development & data layers
- Use of data and tools to develop "Use Cases"
- Interoperability with other Tools
- Non Spatial Tools

- Clean air
- Clean and plentiful water
- Biodiversity conservation
- Food and raw materials
- Natural hazard mitigation
- Climate stabilization
- Recreation, culture, and aesthetics
- Linkages between ecosystems and human health
- Built environment sustainability

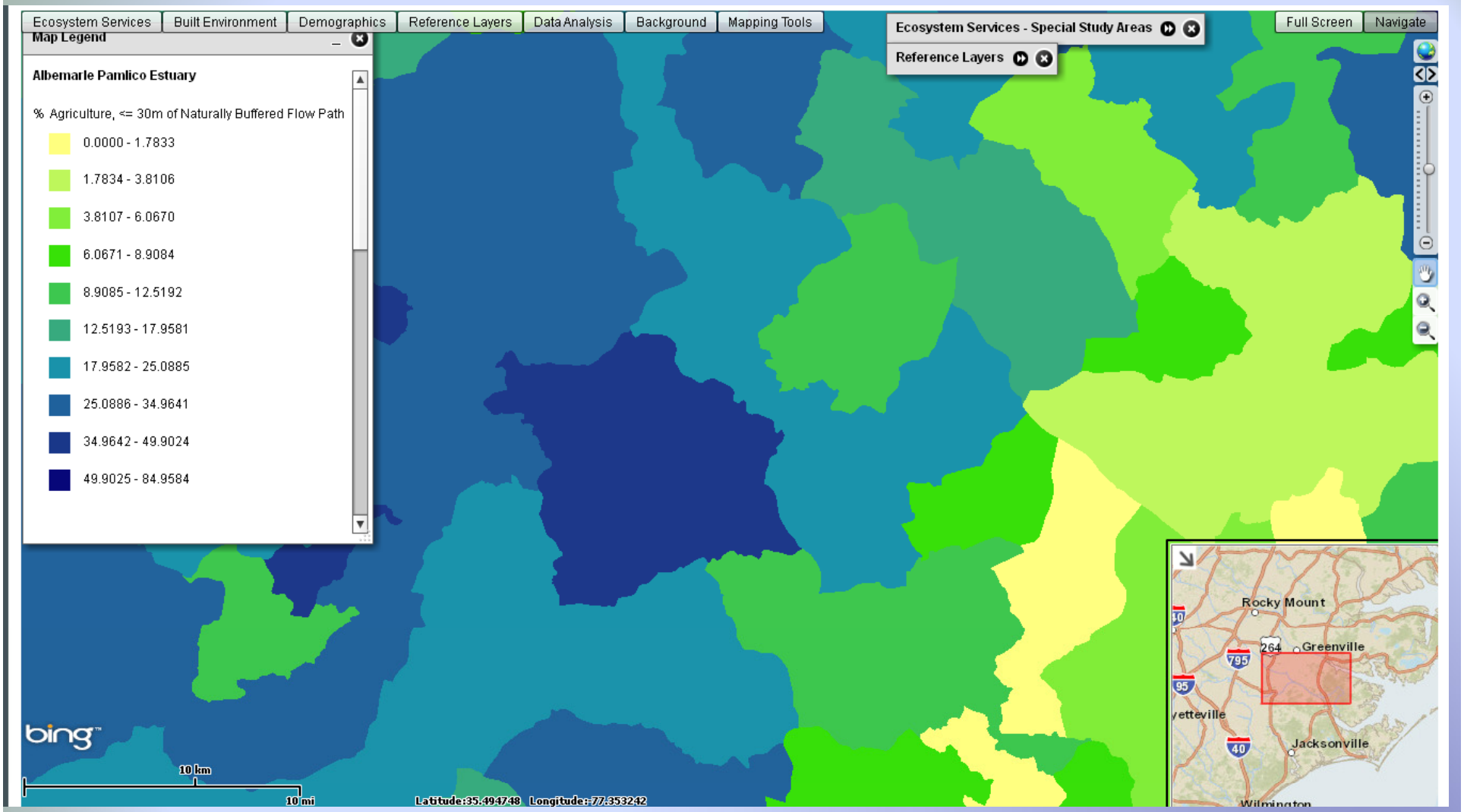
EnviroAtlas Spatially Explicit data & Tools

Example National Data Layers

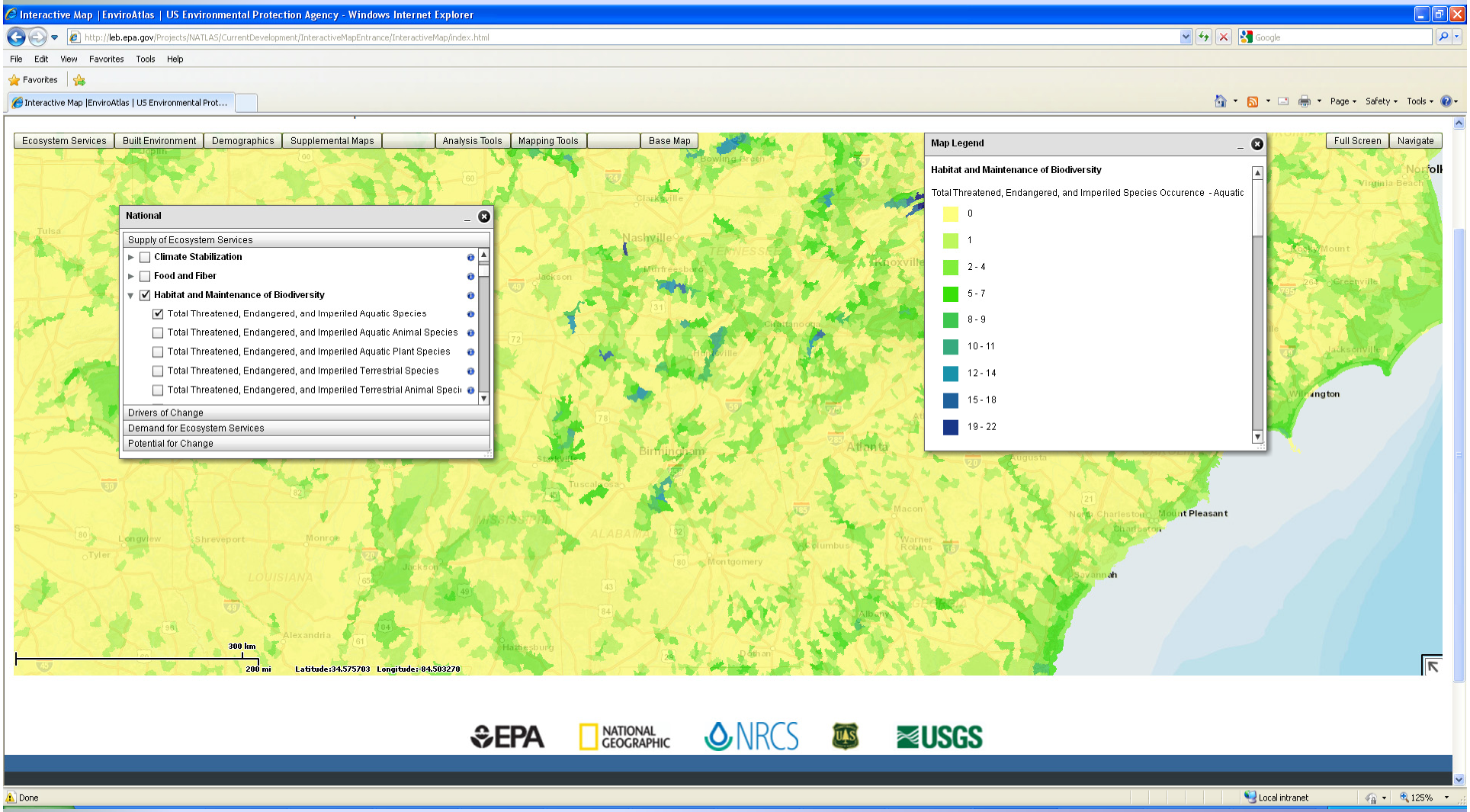


EPA NATIONAL GEOGRAPHIC NRCS USGS

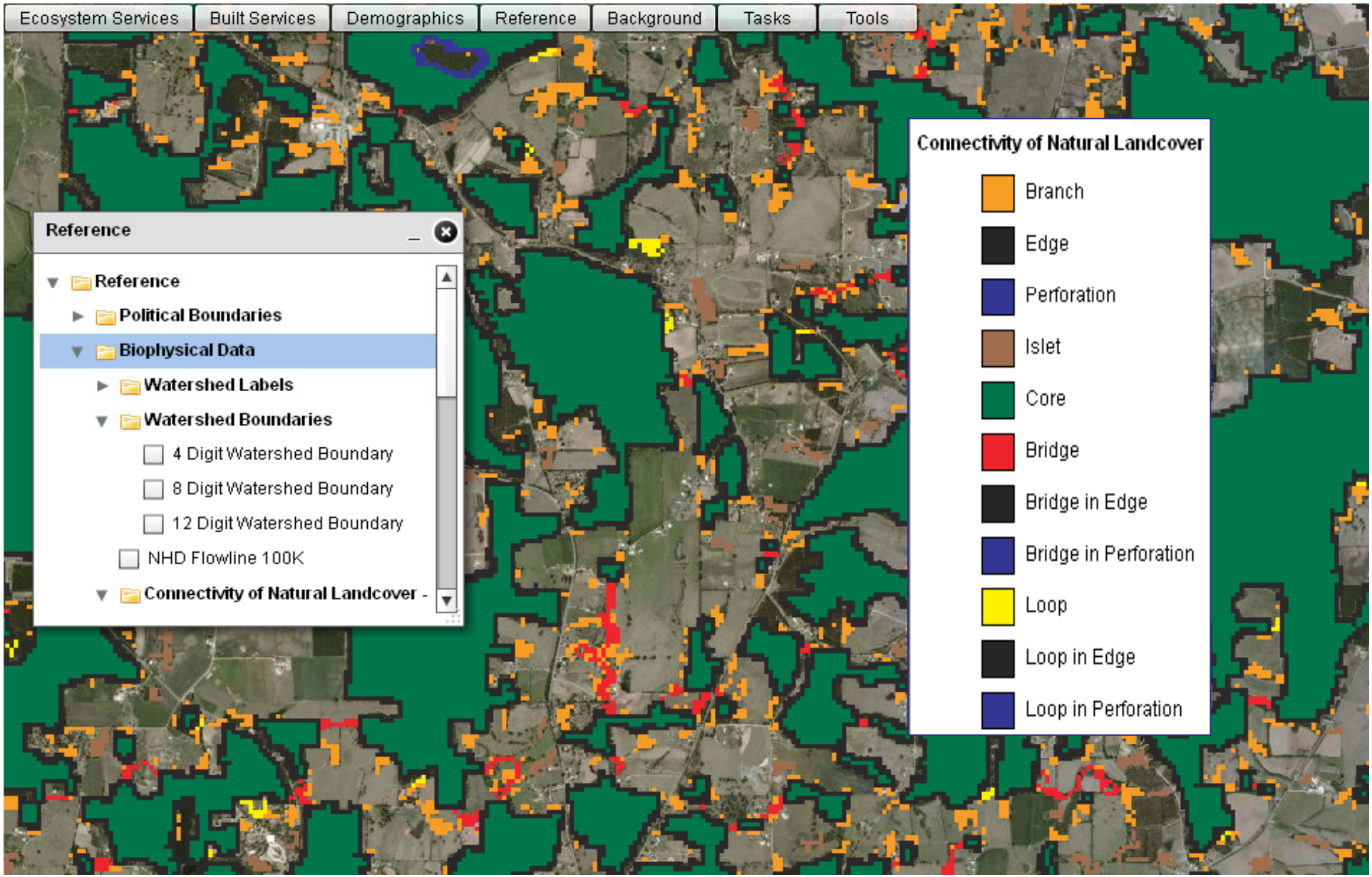
Example National Data Layers



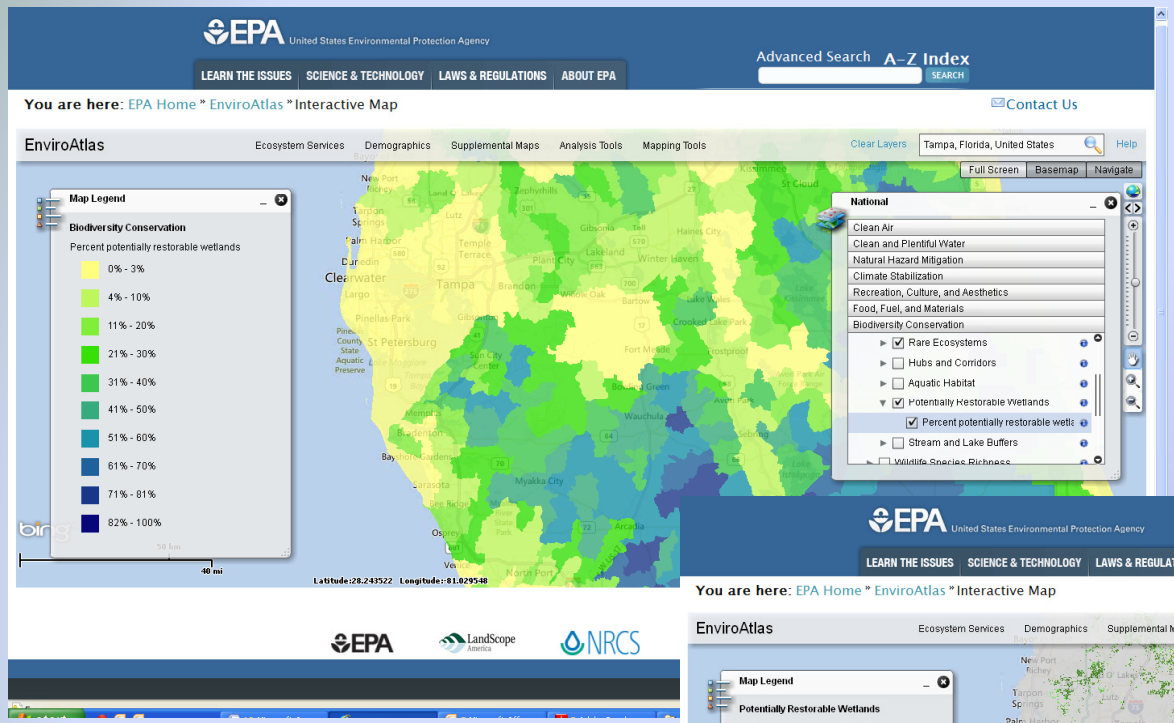
Example National Data Layers



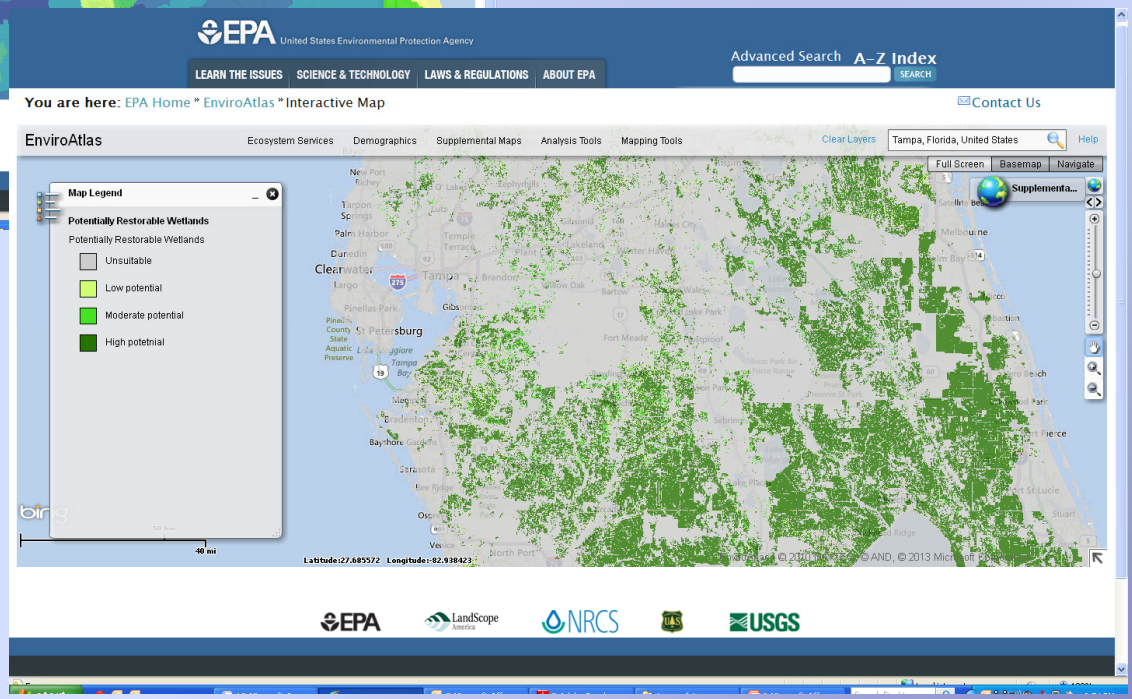
Example National Data Layers



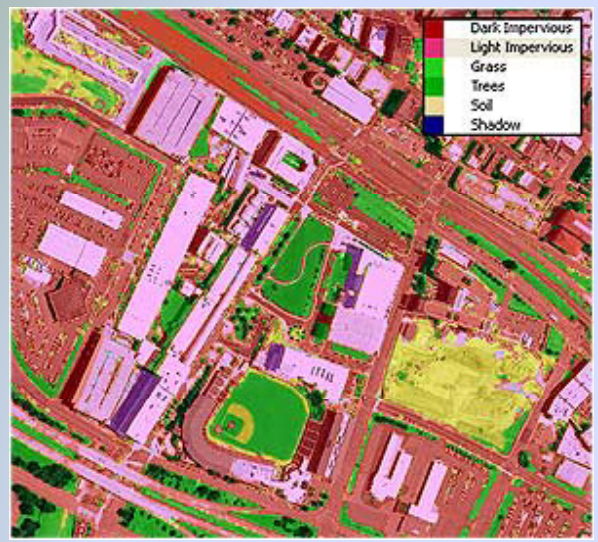
Example National Data Layers



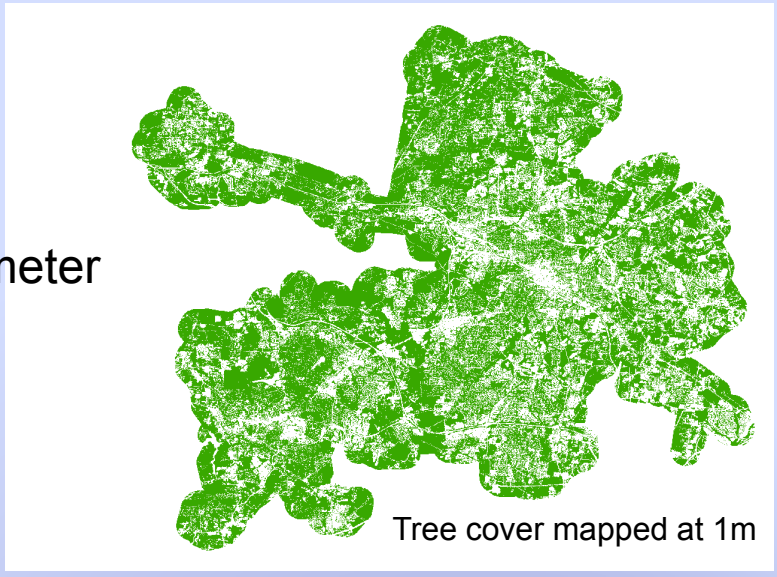
Where are our Potentially Restorable Wetlands?



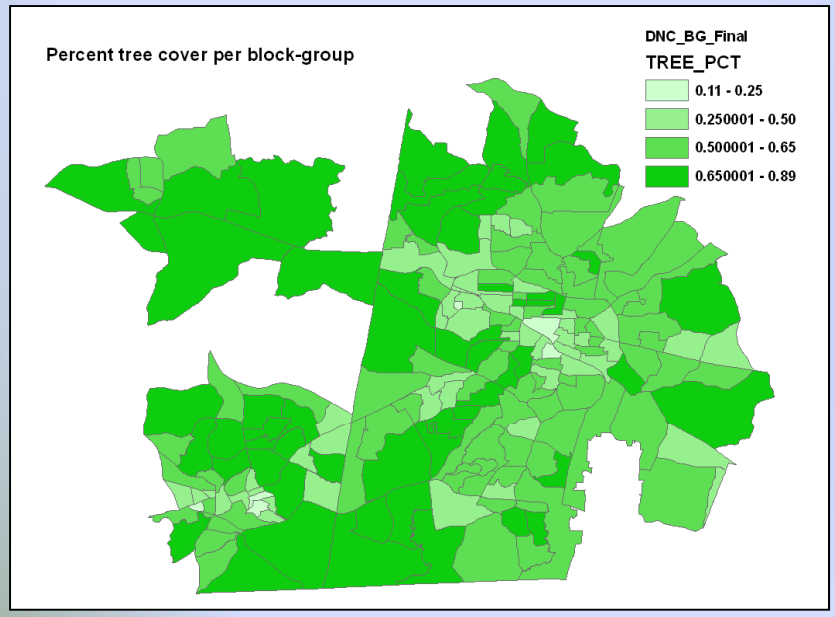
First Pilot Community: Durham, NC

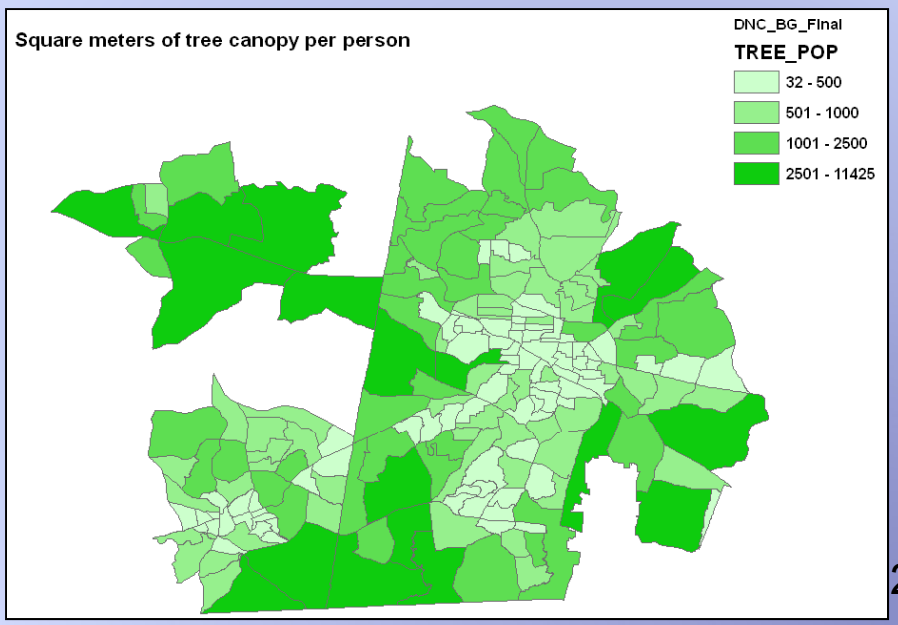


Begins with 1 meter land cover classification

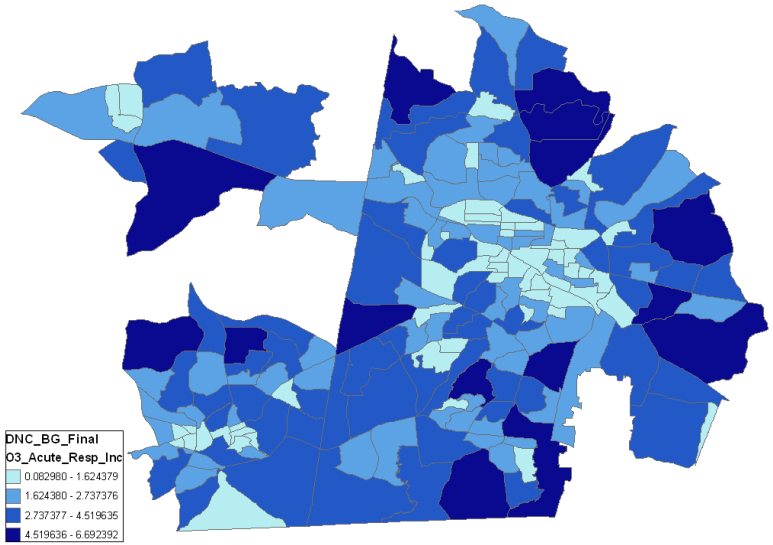


Tree cover mapped at 1m

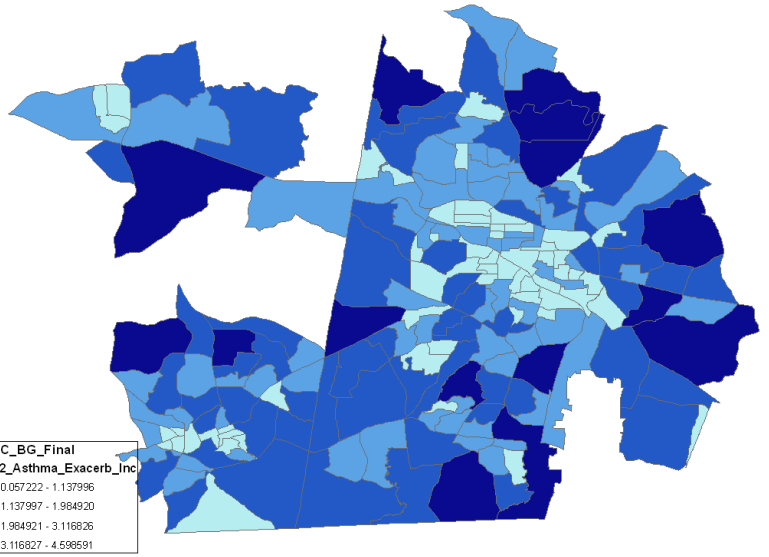




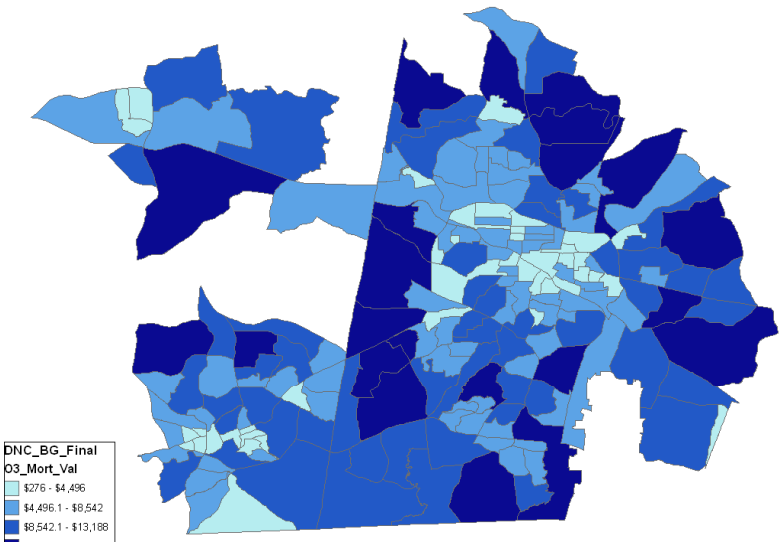
Estimated acute respiratory incidents from Ozone avoided per year due to tree cover



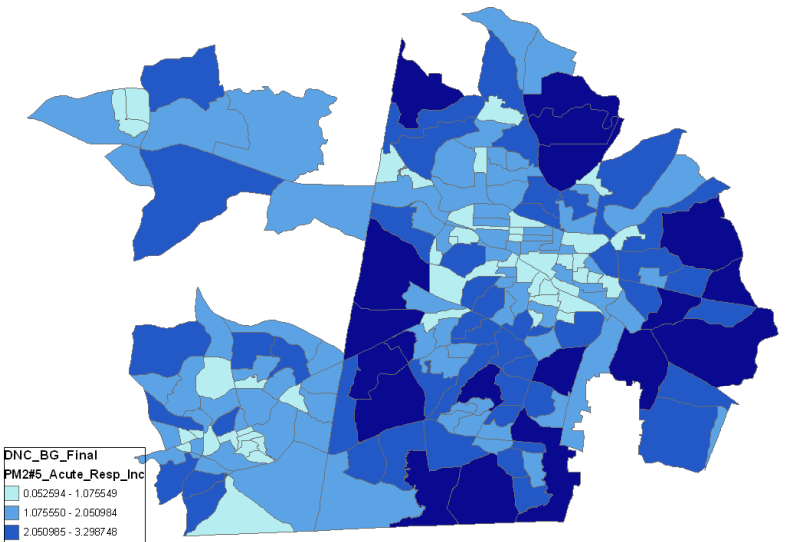
Estimated incidents of asthma exacerbation from NO2 avoided per year due to tree cover



Estimated dollar value of deaths from Ozone avoided per year due to tree cover

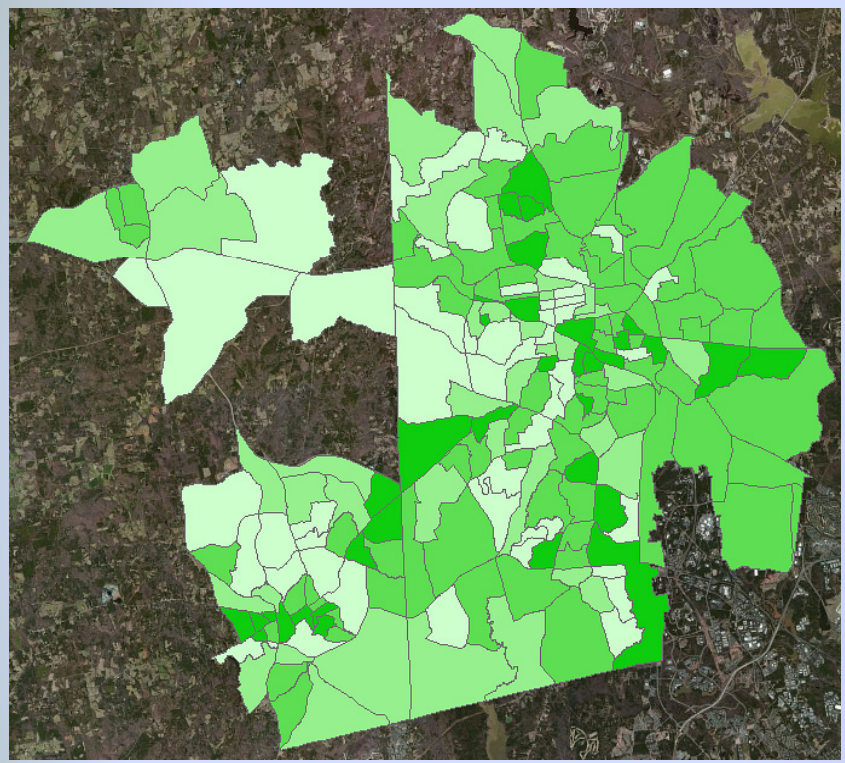


Estimated acute respiratory incidents from PM2.5 avoided per year due to tree cover



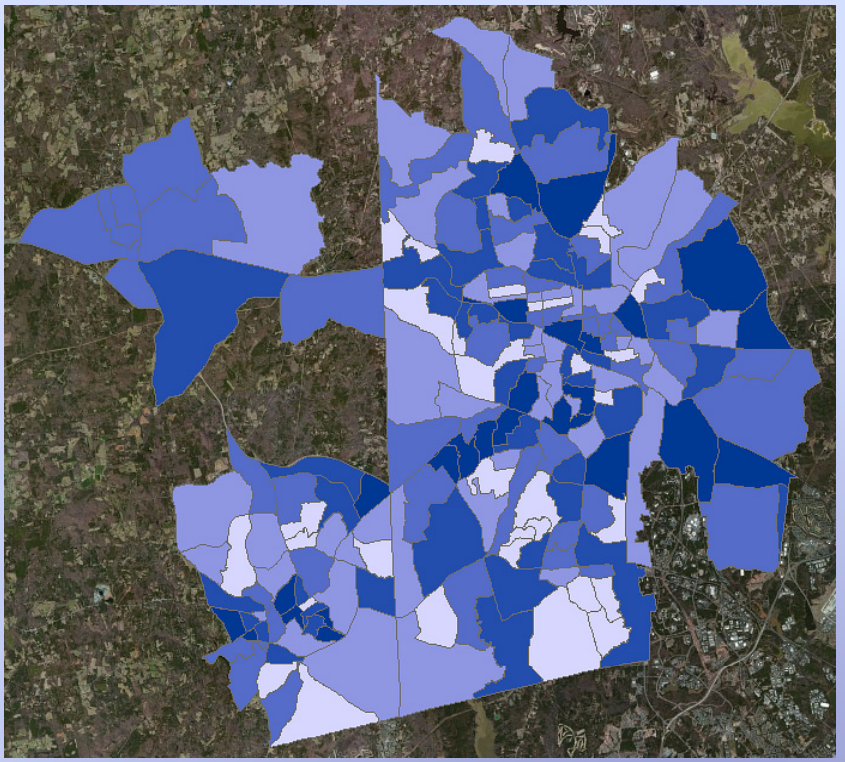
First Pilot Community: Durham, NC

Percent of road km, in each direction, with < 25% tree cover w/in 26m of road edge.

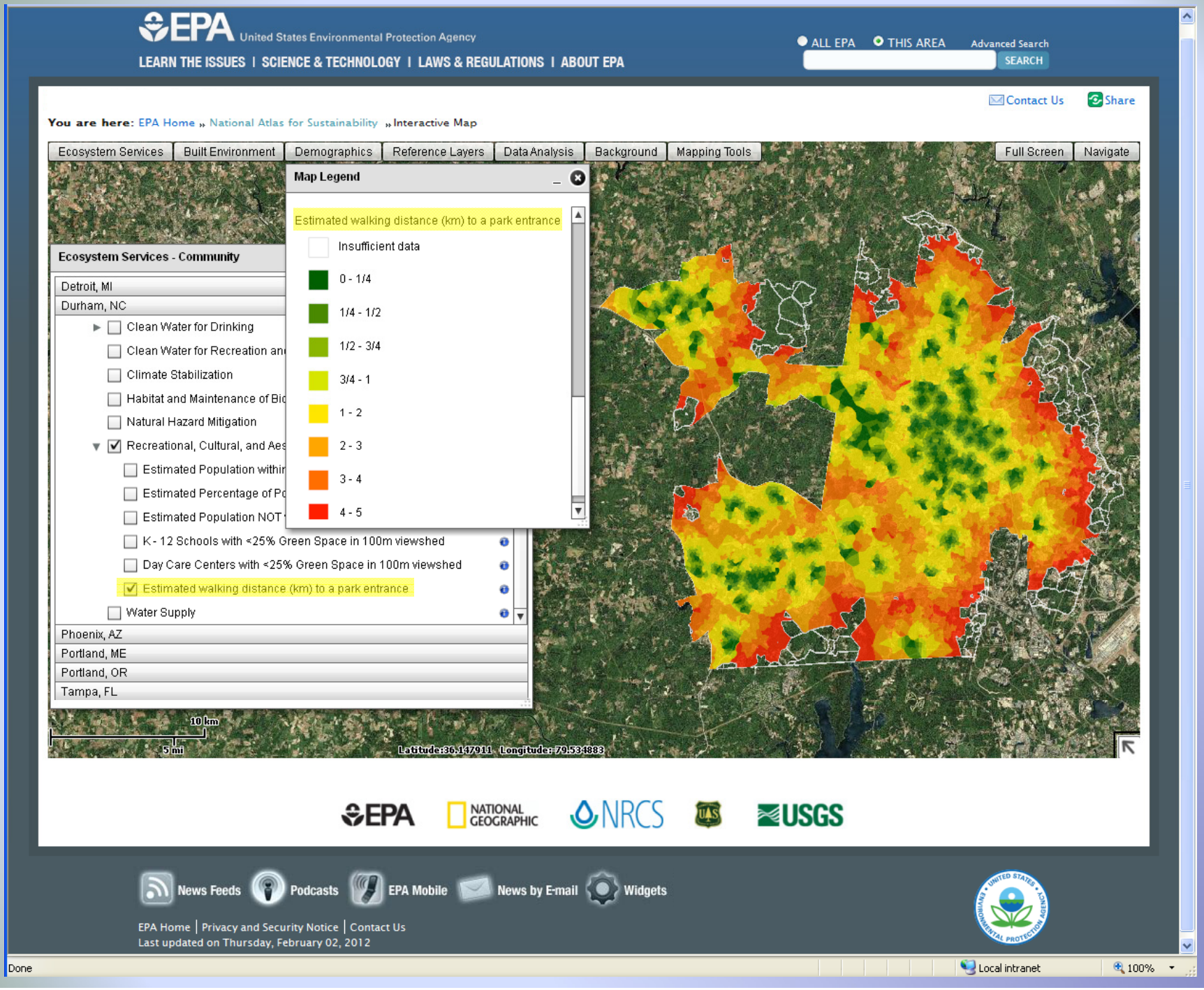


Symbol	Range	Label
	0.000000 - 30.000000	0 - 30
	30.000001 - 40.000000	30.01 - 40
	40.000001 - 60.000000	40.01 - 60
	60.000001 - 100.000000	60.01 - 100

Estimated population that is w/in 300m of a busy road without sufficient tree buffer.



Symbol	Range	Label
	0.000000 - 200.000000	0 - 200
	200.000001 - 400.000000	201 - 400
	400.000001 - 600.000000	401 - 600
	600.000001 - 1000.000000	601 - 1000
	1000.000001 - 2353.500000	1001 - 2354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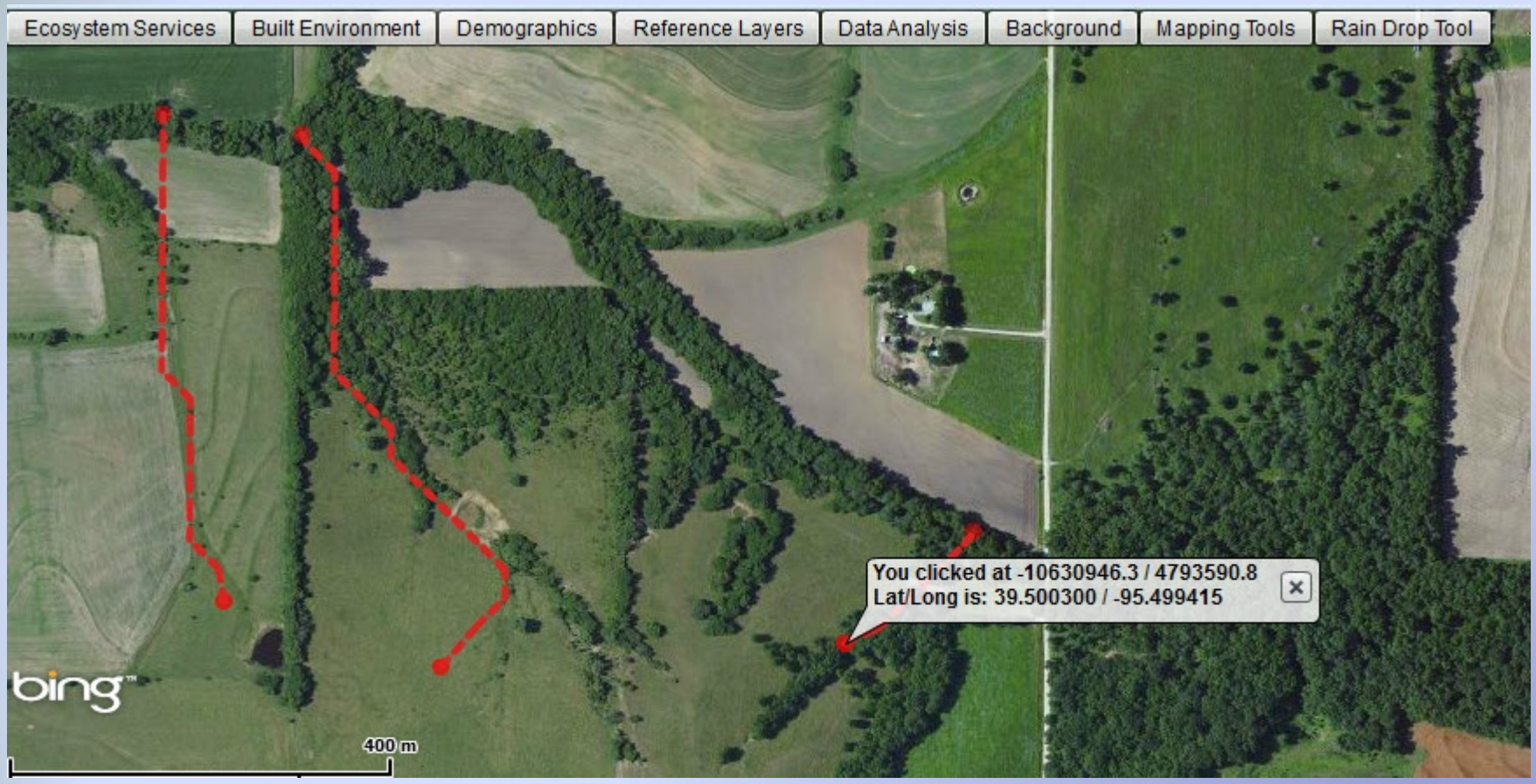
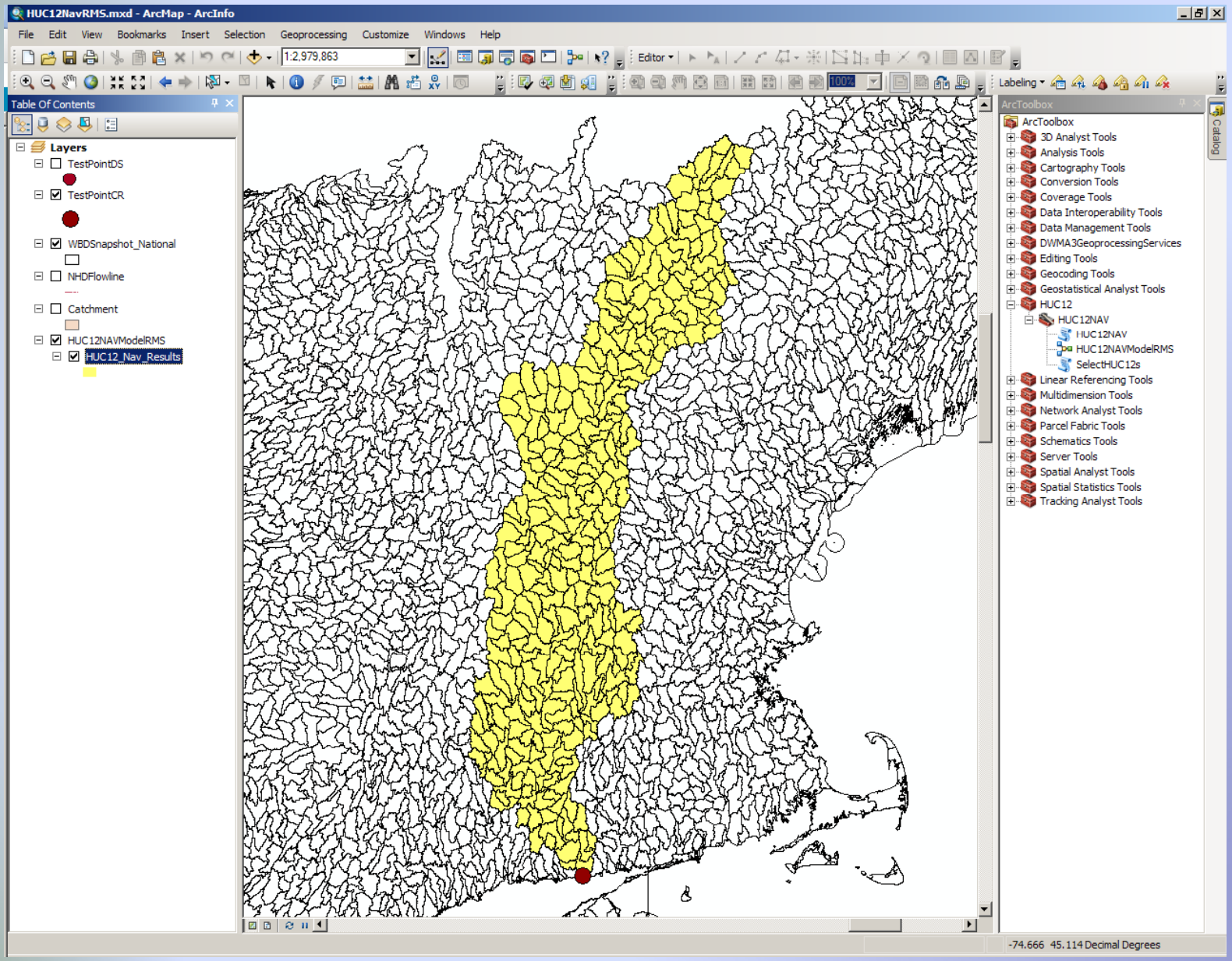
Built Environment
Demographics
Reference Layers
Data Analysis
Background
Mapping Tools
Full Screen
Navigate
Map Legend
Estimated walking distance (km) to a park entrance
Insufficient data
0 - 1/4
1/4 - 1/2
1/2 - 3/4
3/4 - 1
1 - 2
2 - 3
3 - 4
4 - 5
Ecosystem Services - Community
Detroit, MI
Durham, NC
Clean Water for Drinking
Climate Stabilization
Natural Hazard Mitigation
Recreational, Cultural, and Aes
K - 12 Schools with <25% Green Space in 100m viewshed
Day Care Centers with <25% Green Space in 100m viewshed
Estimated walking distance (km) to a park entrance
Water Supply
Phoenix, AZ
Portland, ME
Portland, OR
Tampa, FL
10 km
5 mi
Latitude:36.147911 Longitude:-79.534883
EPA
NATIONAL GEOGRAPHIC
NRCS
USGS
News Feeds
Podcasts
EPA Mobile
News by E-mail
Widgets
EPA Home | Privacy and Security Notice | Contact Us
Last updated on Thursday, February 02, 2012
Done
Local intranet
100%

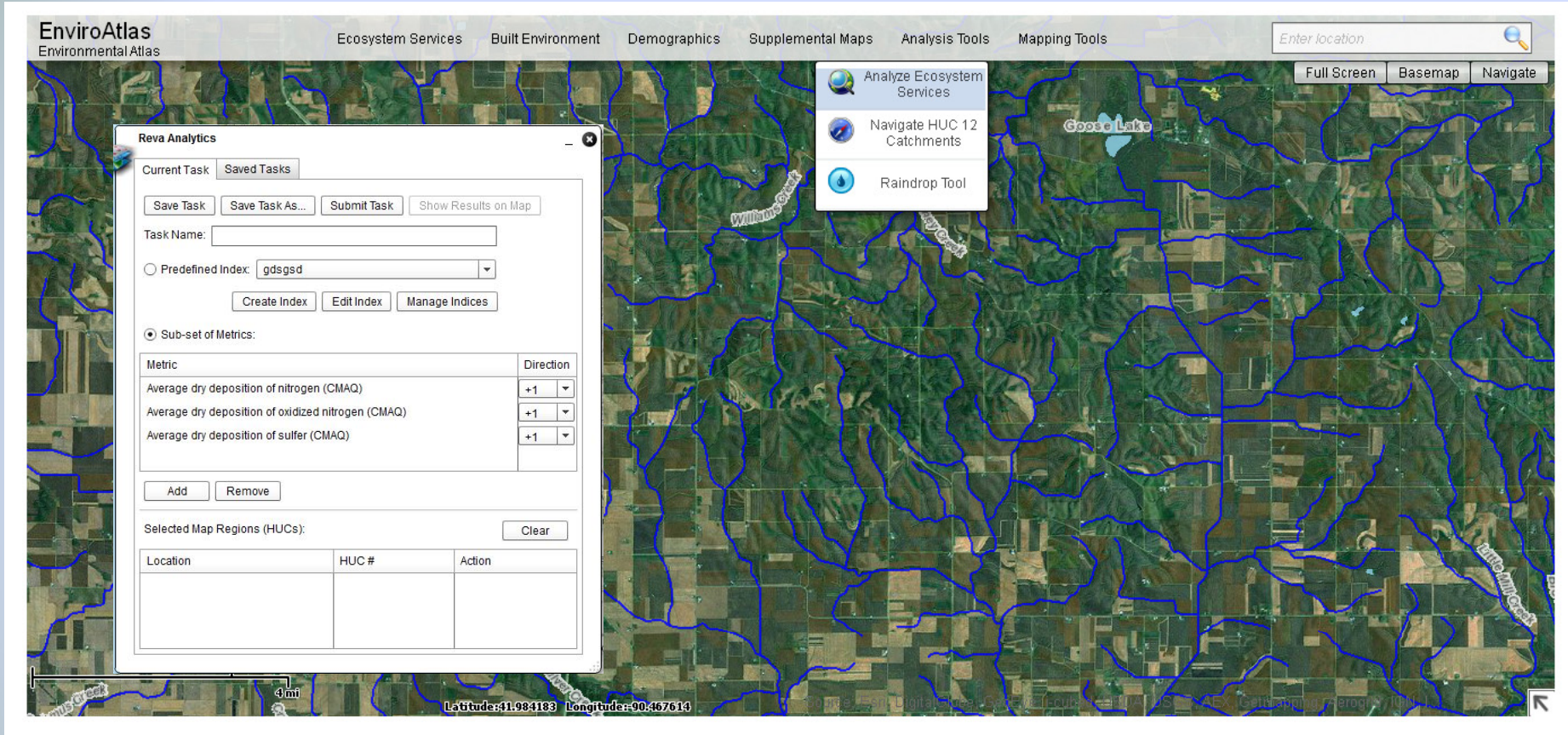
Example of Tools: Rain Drop Tool



Example of Tools: HUC Navigation Tool

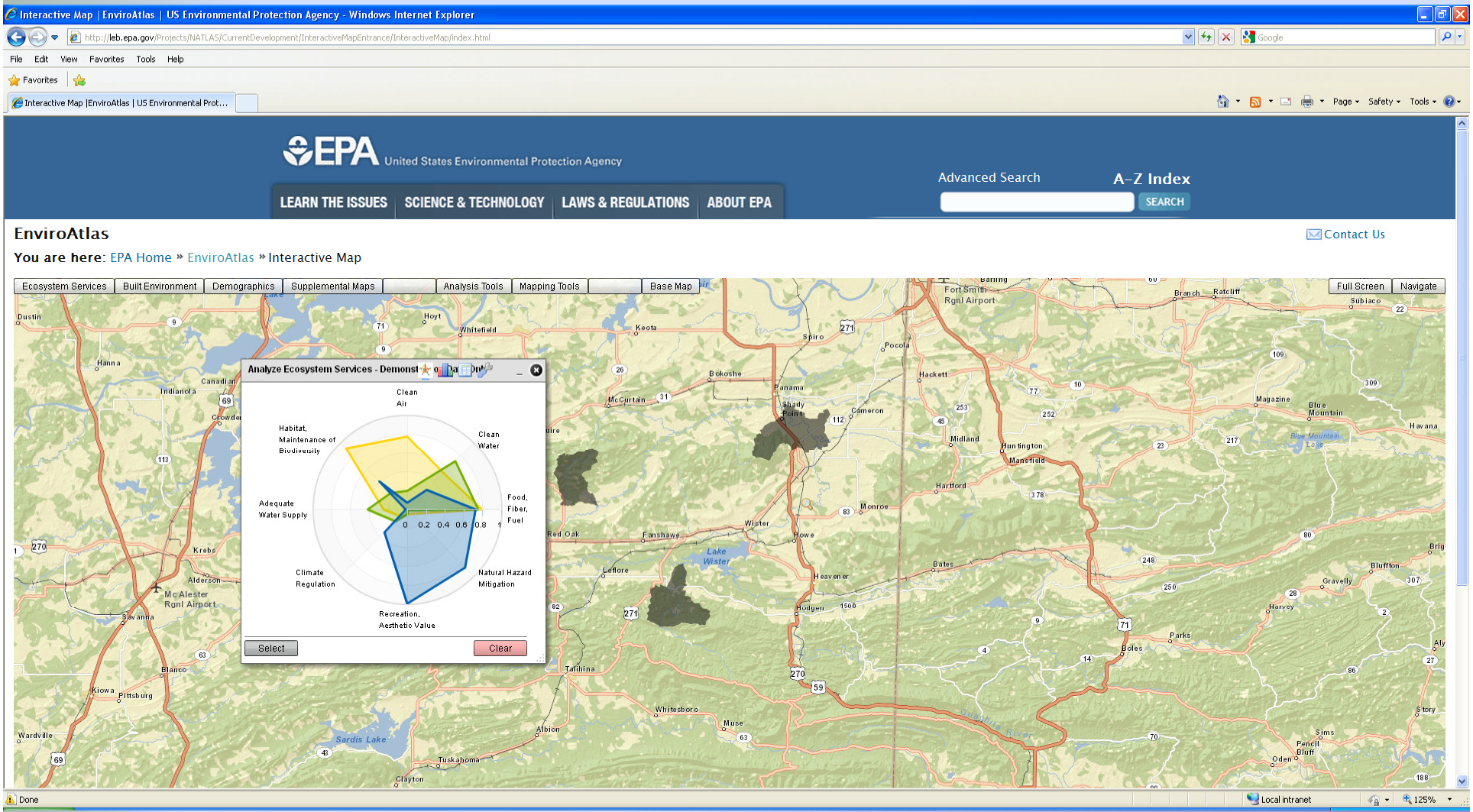


Example of Tools: Index Builder (ReVA Analytics)



EnviroAtlas --- OEI GeoPlatform --- OSIM R Server

Example of Tools: Ecosystem Services Analyzer



*Beta-test at www.epa.gov/**research/enviroatlas/index.htm***