

# Key Challenges in the Southeastern US

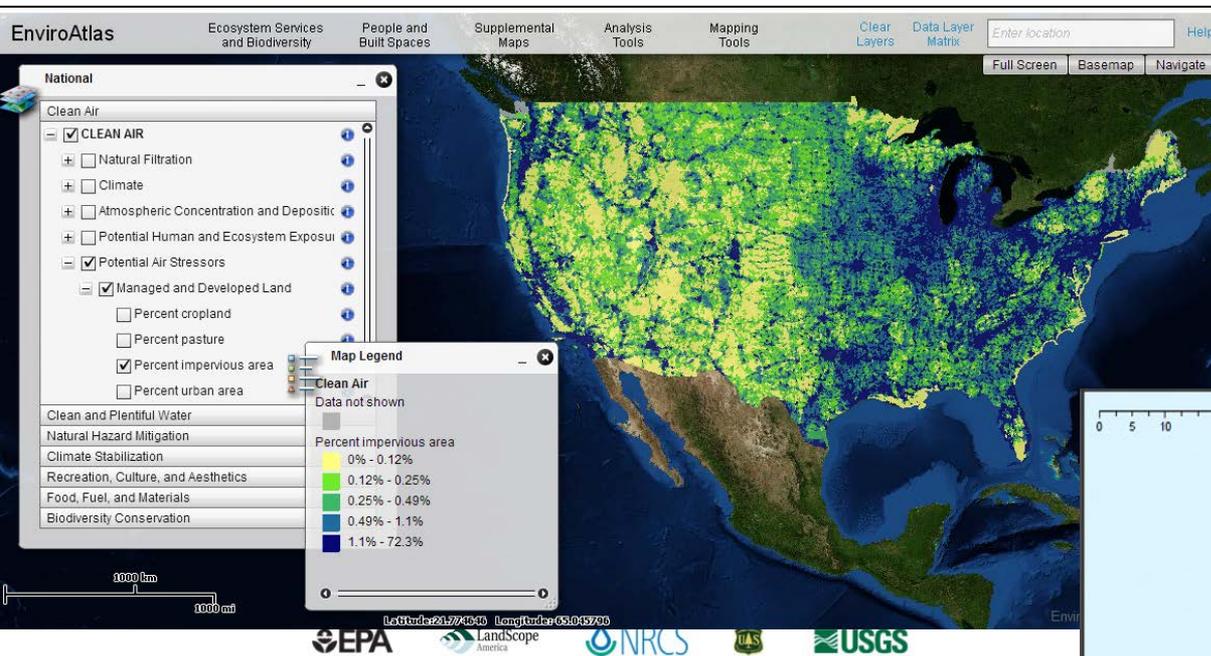
Incorporating Bioenergy into Sustainable Landscape Designs



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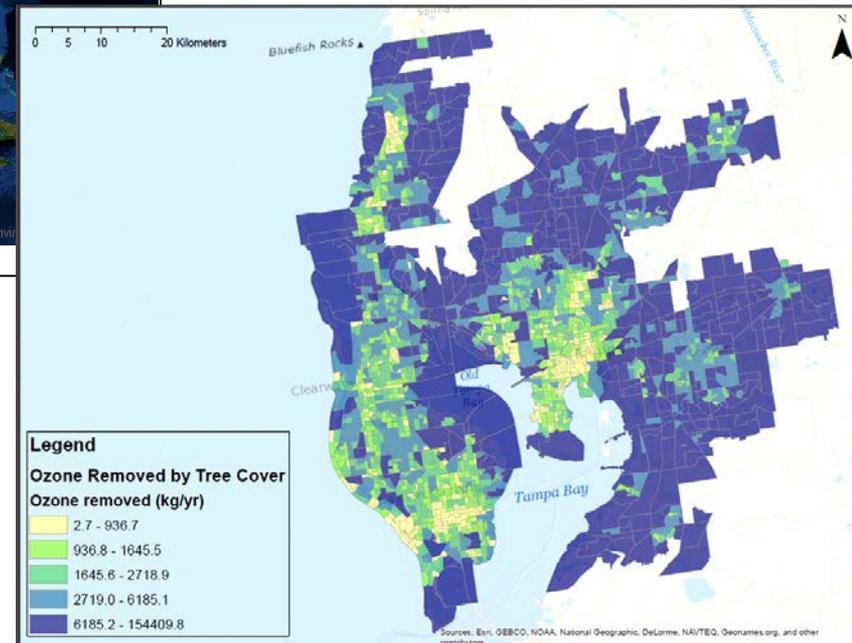
# What is EnviroAtlas?

A collection of tools and resources that provides data, research, and analysis on the relationships between nature, people, health, and the economy.

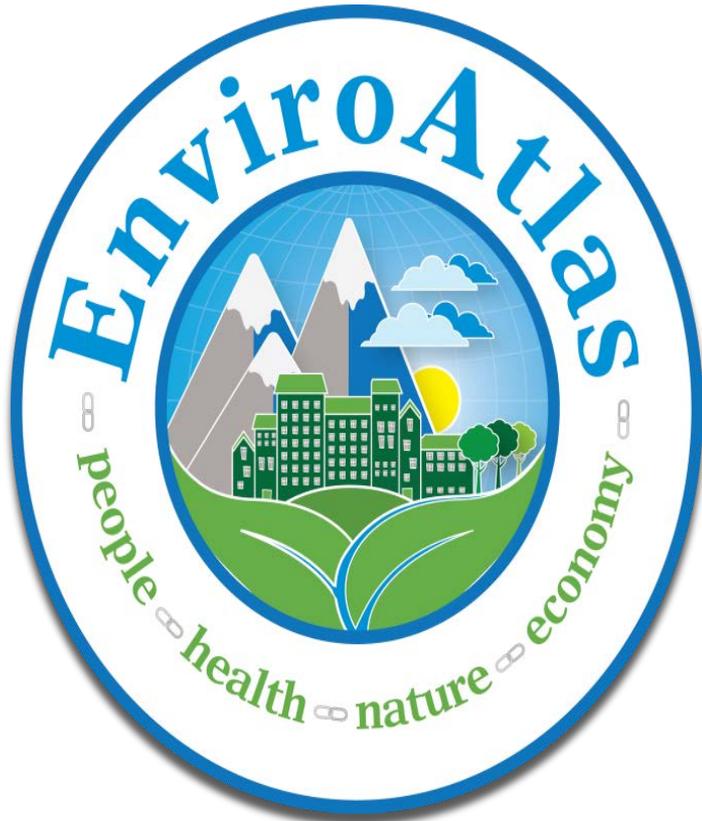


National: Wall-to-wall coverage for conterminous US; summarized by subwatershed (12 digit HUCs)

Community: High resolution for selected population places; summarized by census block group

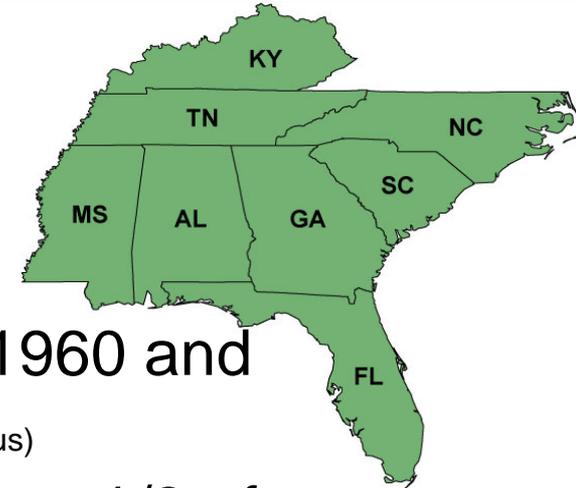


# EnviroAtlas can be used to consider multiple factors in a systems framework



- Identify areas with multiple environmental assets
- Determine priority areas
- Look at current land cover types
- Consider environmental stressors
- Plan for the future

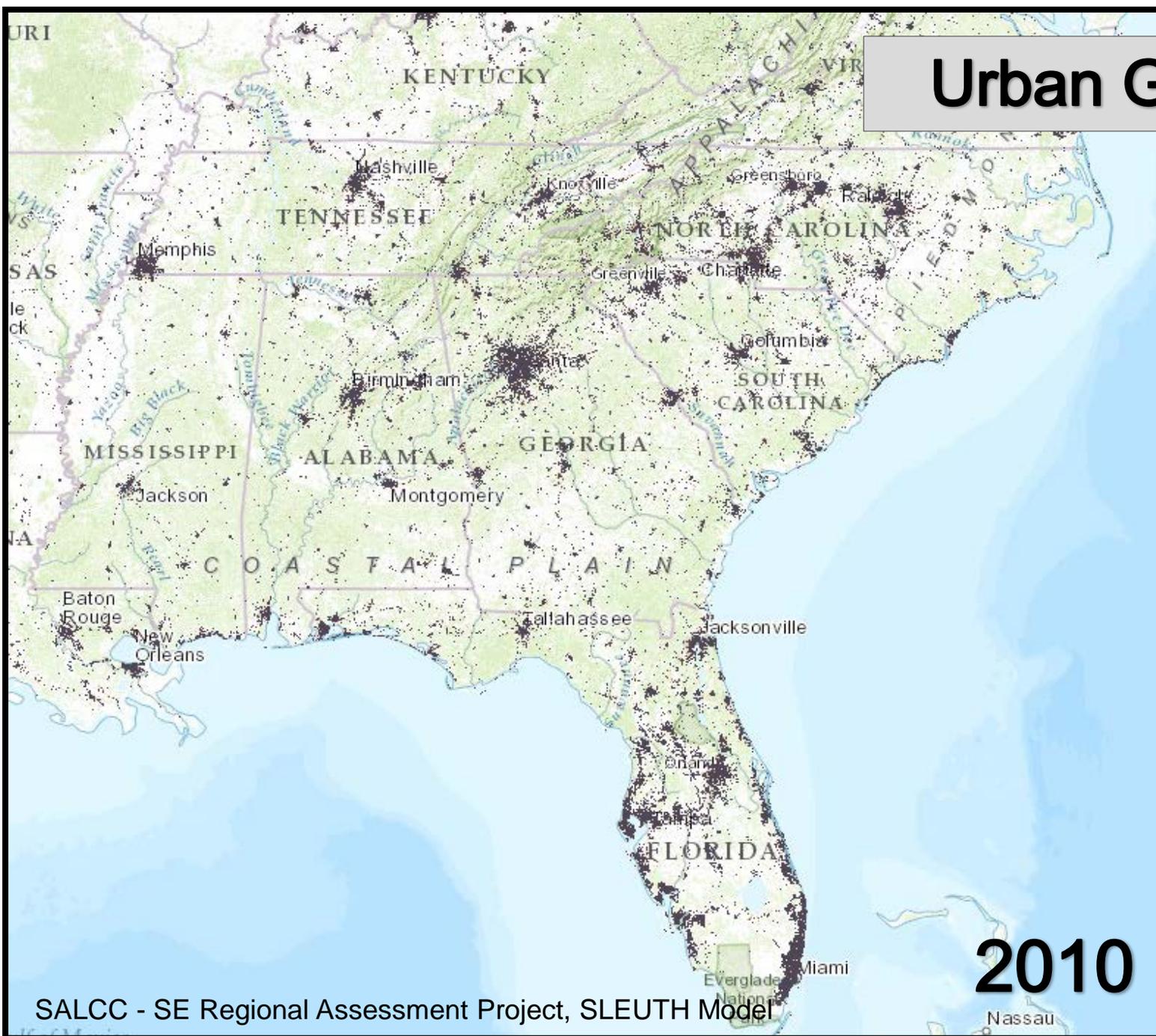
# Southeast



- **More than 70 million people** - Between 1960 and 2000, the population almost doubled (US Census)
- Has 1/3 of the remaining wetlands as well as 1/3 of the nation's coastline in the lower 48 states
- Coastal resources provide habitat for 98% of the U.S.'s commercial marine species
- Houses 2% of the world's forest cover and produces 25% of the world's pulpwood and 18% of its industrial timber (USFS Timber Products Output database and report, 2007)

Growth and land use changes, Fragmentation, Impacts on biodiversity, Effects on air and water resources

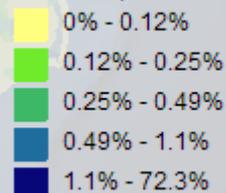
# Urban Growth



2010

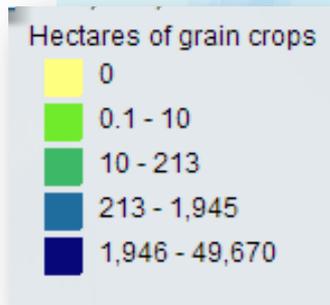
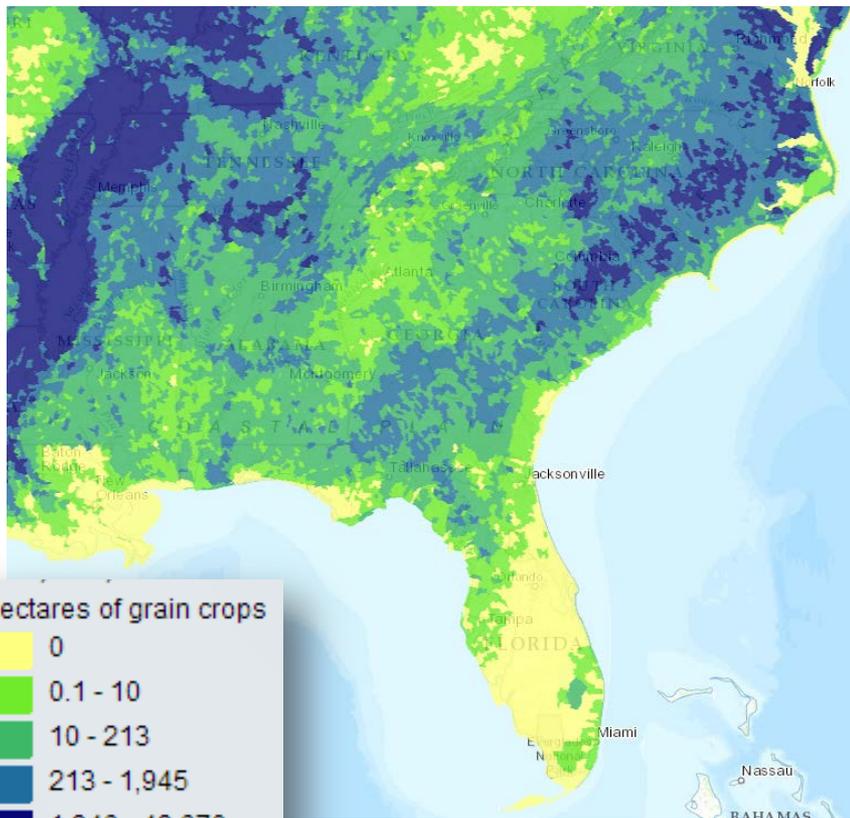
# Percent Impervious Area

Percent impervious area

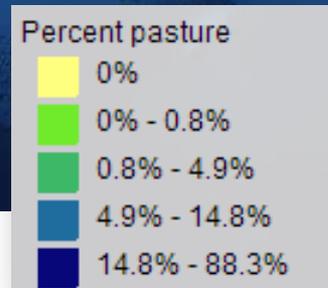
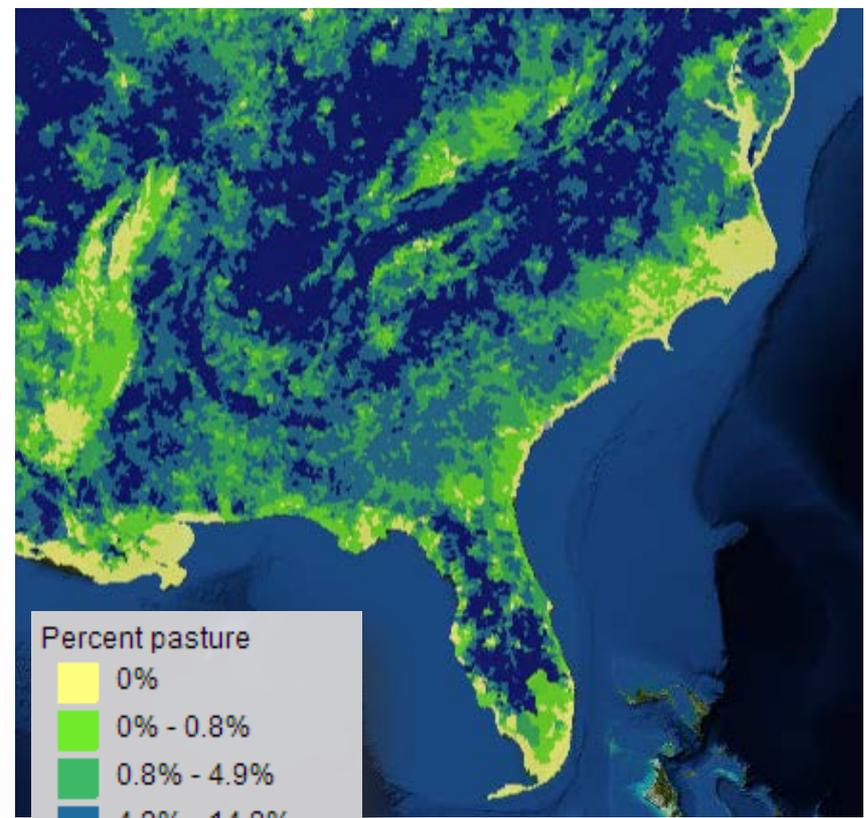


# Agriculture

## Hectares of Grain Crops

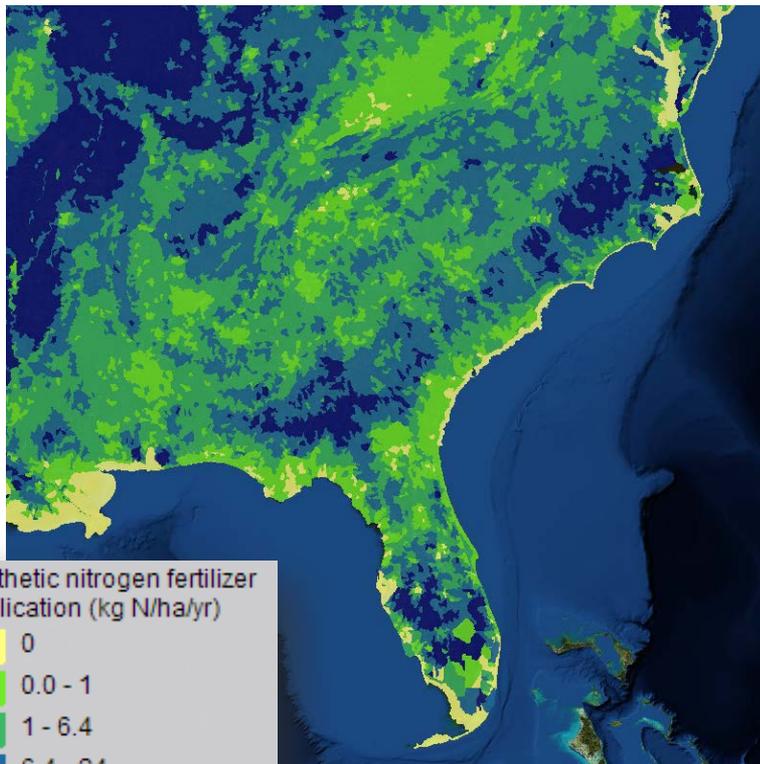


## Percent Pasture

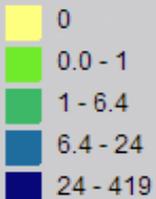


# Water Quality

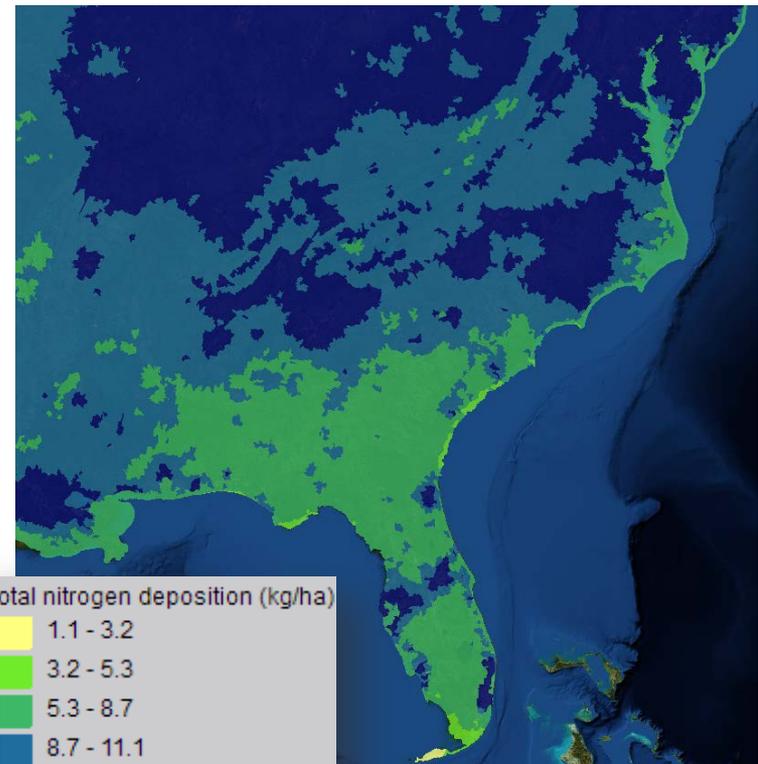
## Synthetic Nitrogen Fertilizer Application



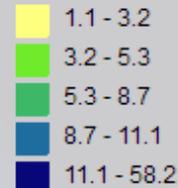
Synthetic nitrogen fertilizer application (kg N/ha/yr)



## Total Atmospheric Nitrogen Deposition



Total nitrogen deposition (kg/ha)

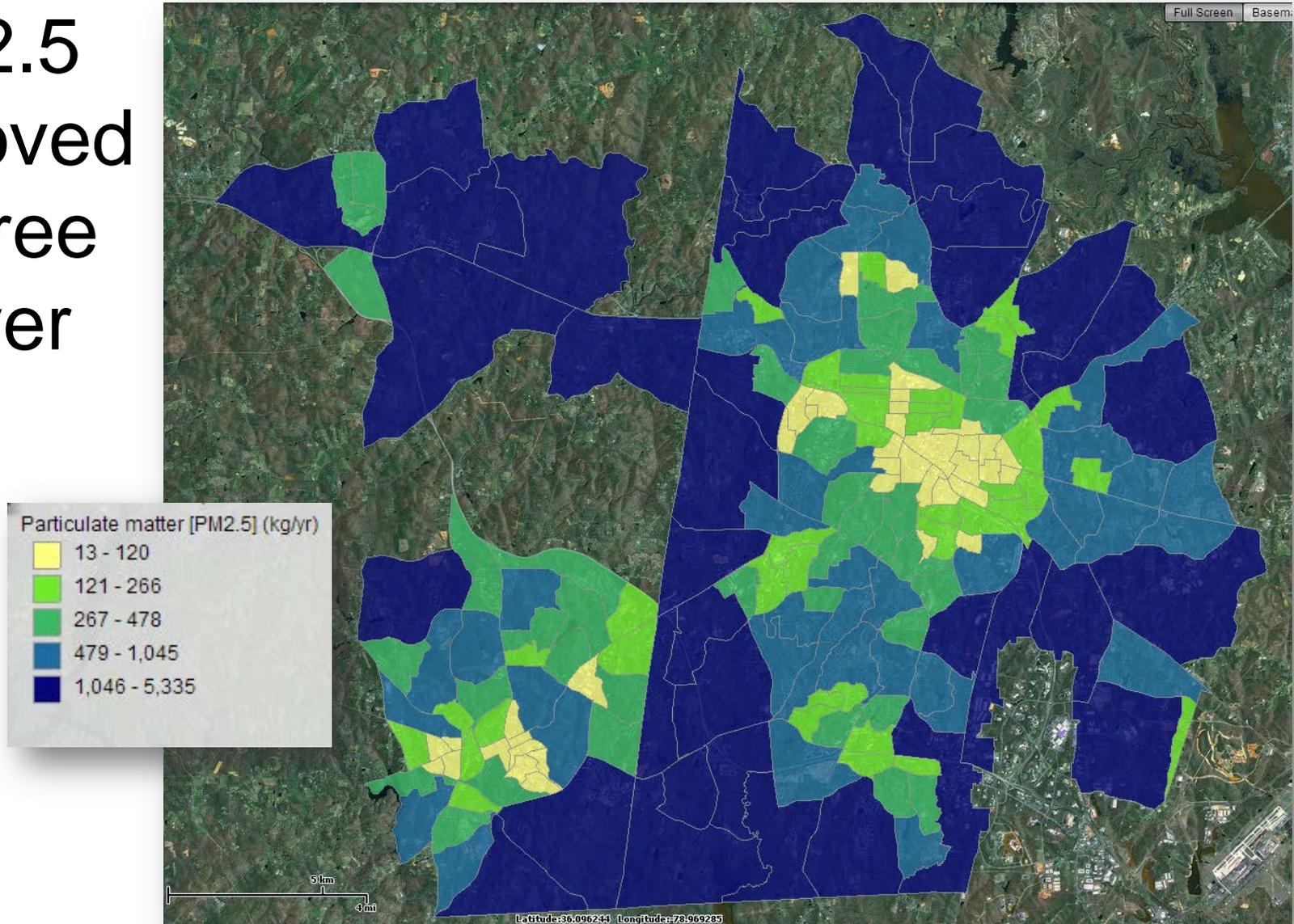


# Air Quality

- Travel in the Southeast accounts for 21% of the nation's total vehicle miles traveled
- More than 20 million people in the Southeast are affected by air quality nonattainment for ozone and PM2.5 standards
- Air pollution contributes to health issues like asthma, COPD, and other illnesses
- Air pollutants (e.g., ground level ozone, nitrogen, sulfur) damage vegetation



# PM2.5 Removed by Tree Cover



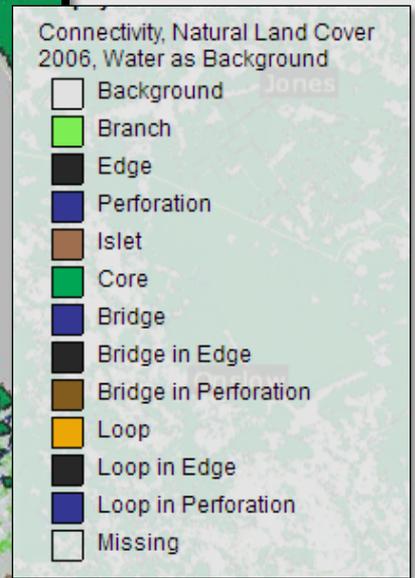
# Land Conversion & Fragmentation

- 2,450 acres of open space are lost in the US every day (USFS)
- Impacts on species and diversity
  - Habitat loss
  - Degraded habitats, invasive species
- Wildfire
- Effects on water quality, water flow, air quality

# Connectivity & Fragmentation

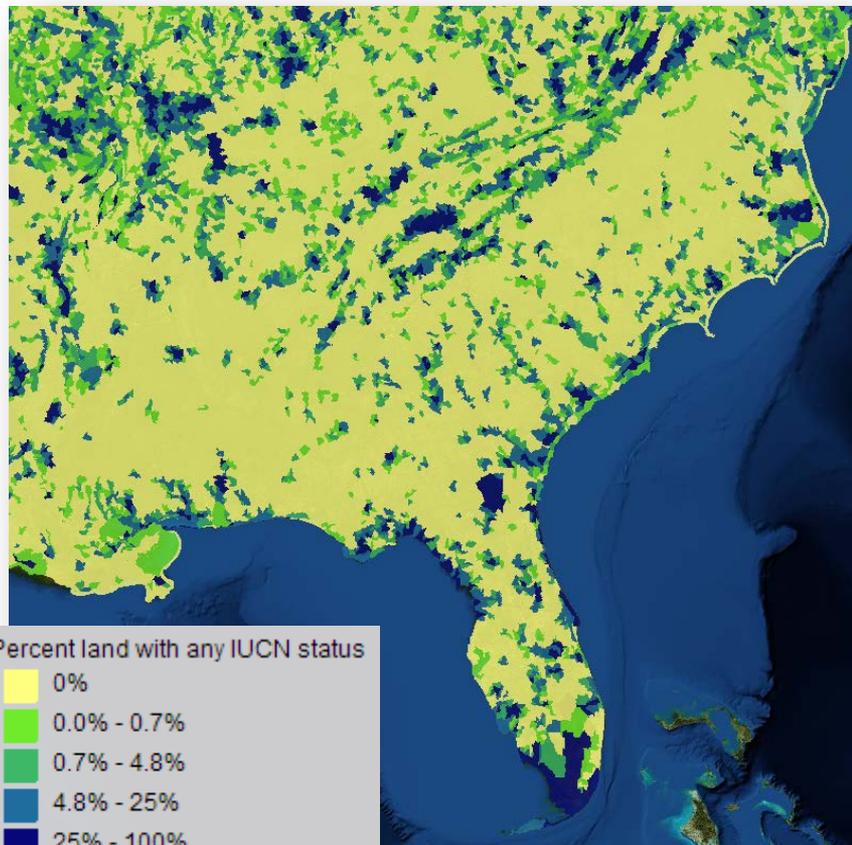


New Bern, NC

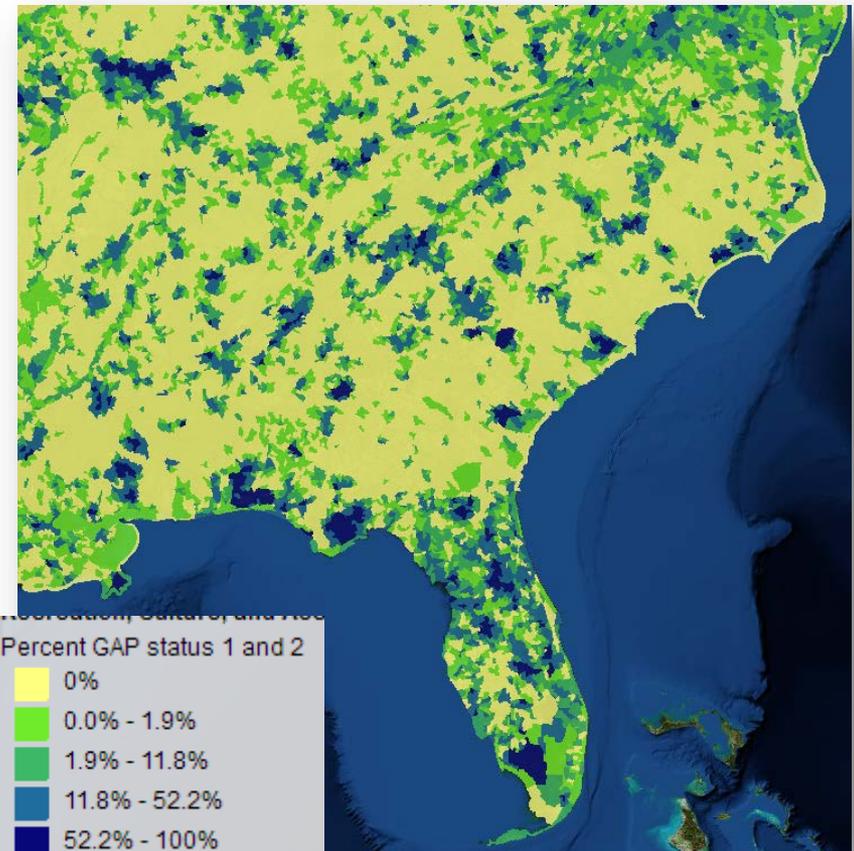


# Protected Lands

## Percent land with any IUCN Status



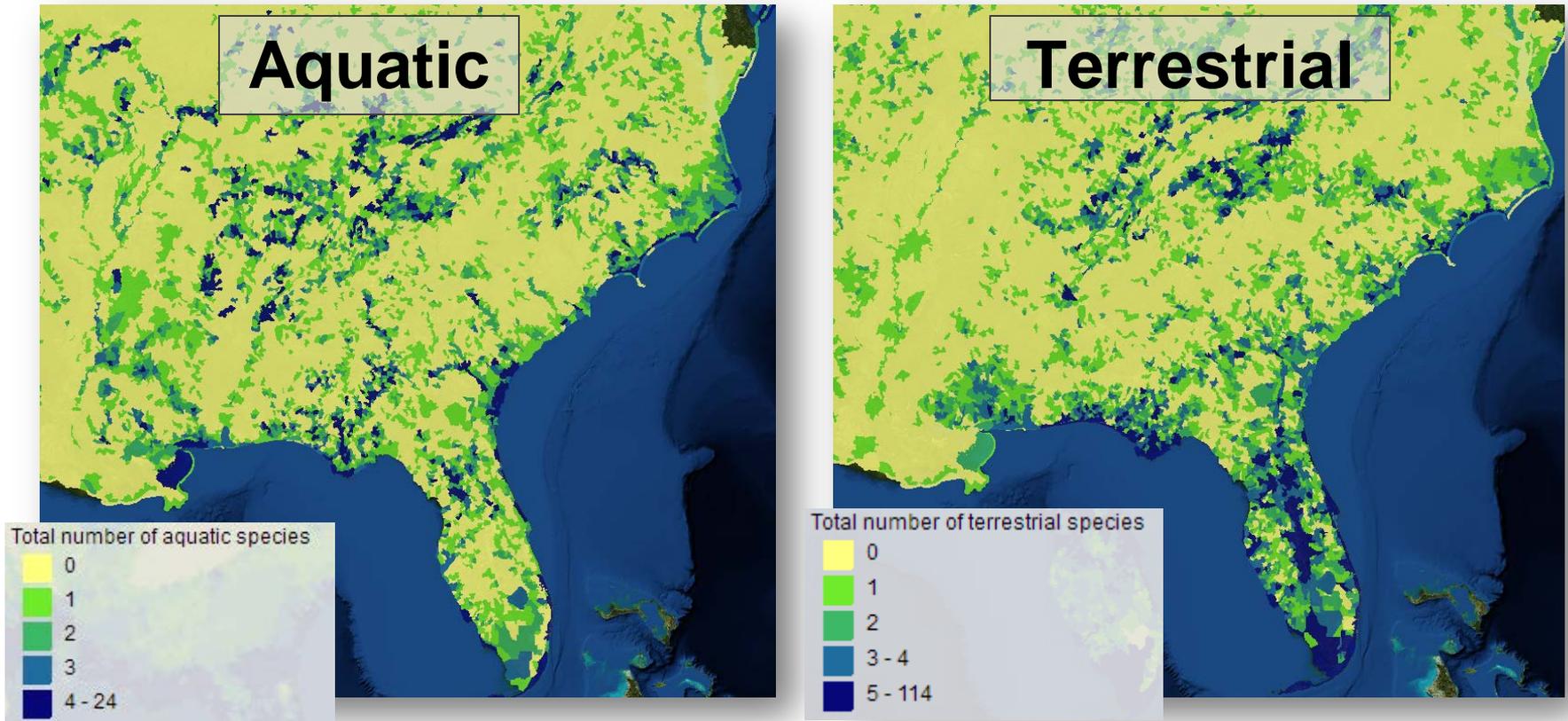
## Percent GAP status 1 & 2



# Biodiversity

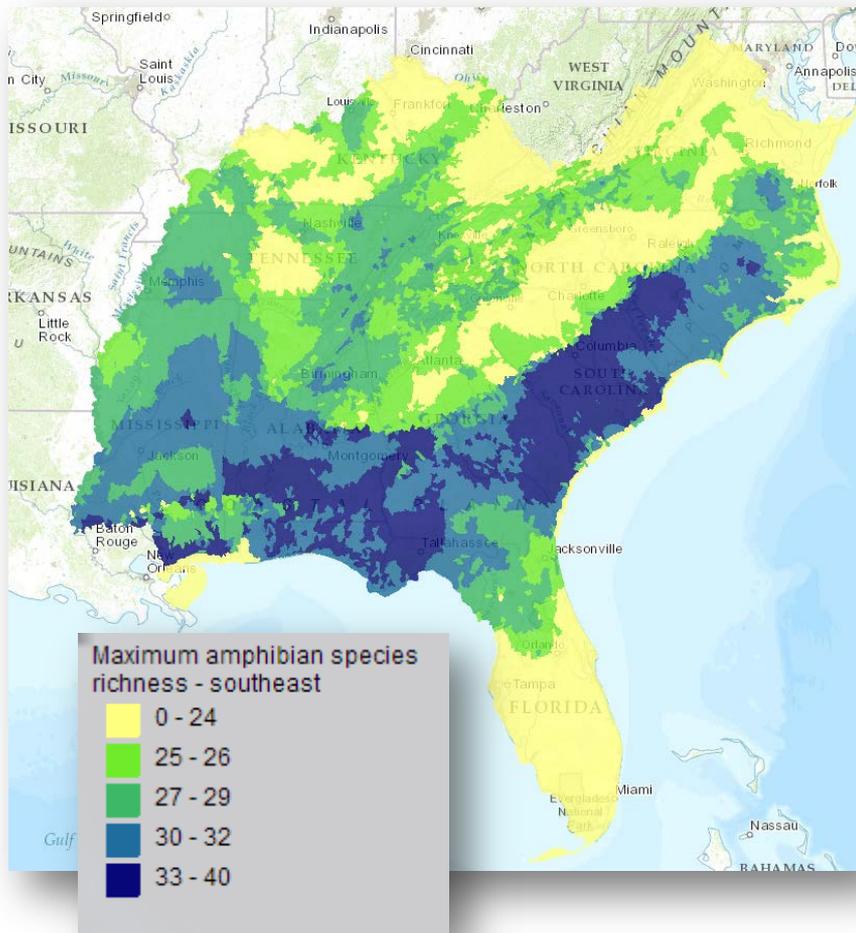
Over the next 25 years, development will continue to increase and threaten many species, including those that are imperiled

- Miami – Fort Lauderdale, FL – to lose 60% of remaining natural land, home to 68 imperiled species (Ewing and Kostyack 2005)
- Charlotte, NC – to lose 35% of remaining natural land, home to 13 imperiled species

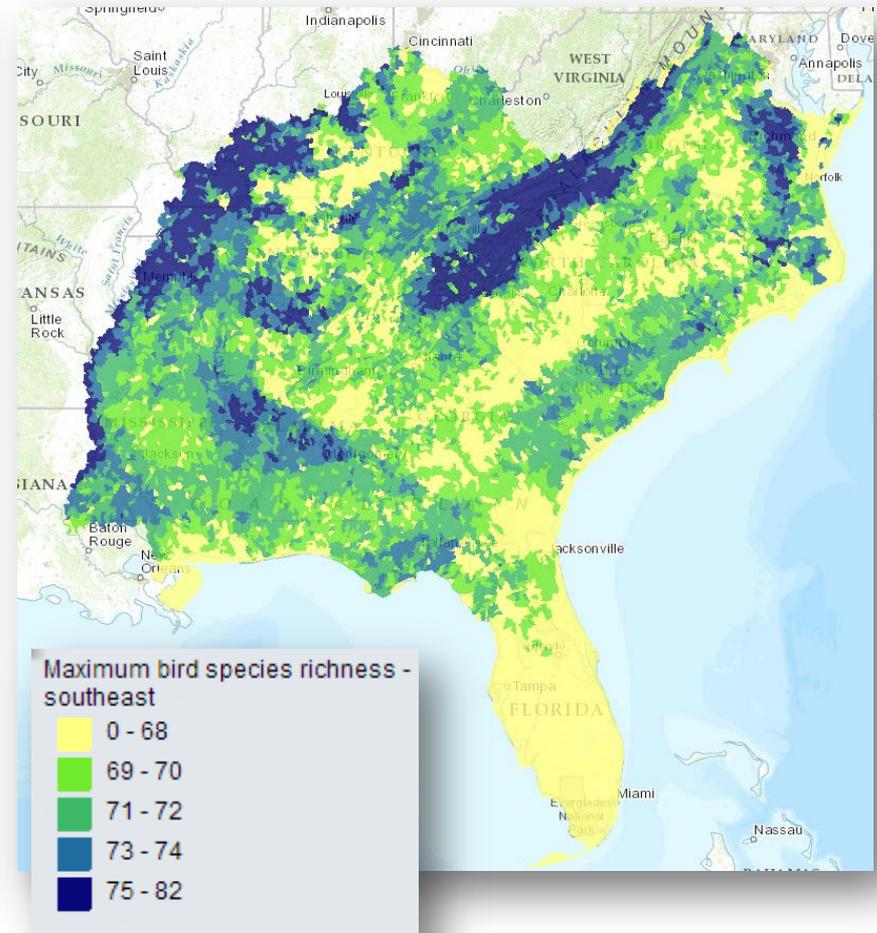


# Species Richness

## Max Amphibian



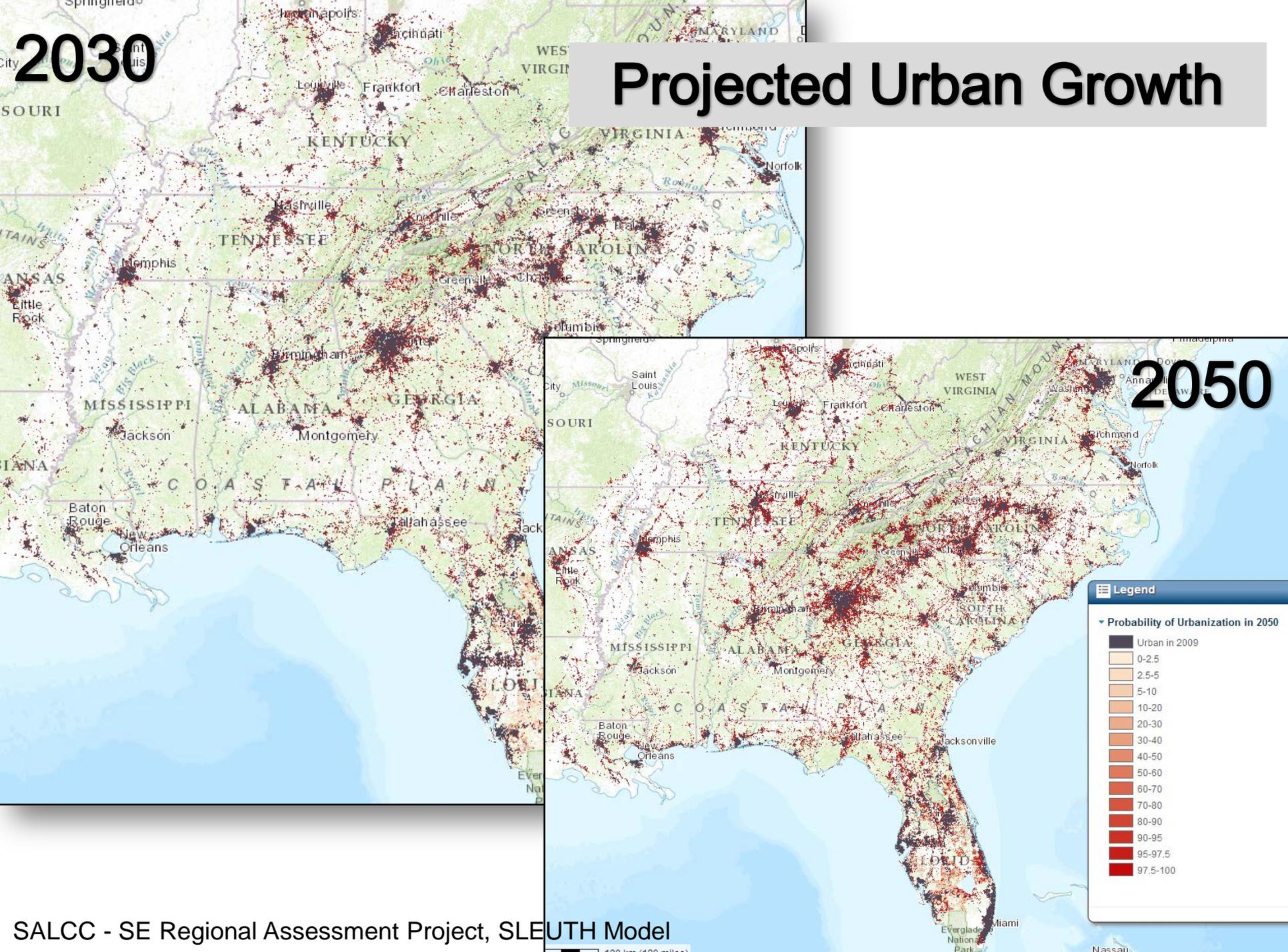
## Max Bird



# Climate Change

## Potential Impacts:

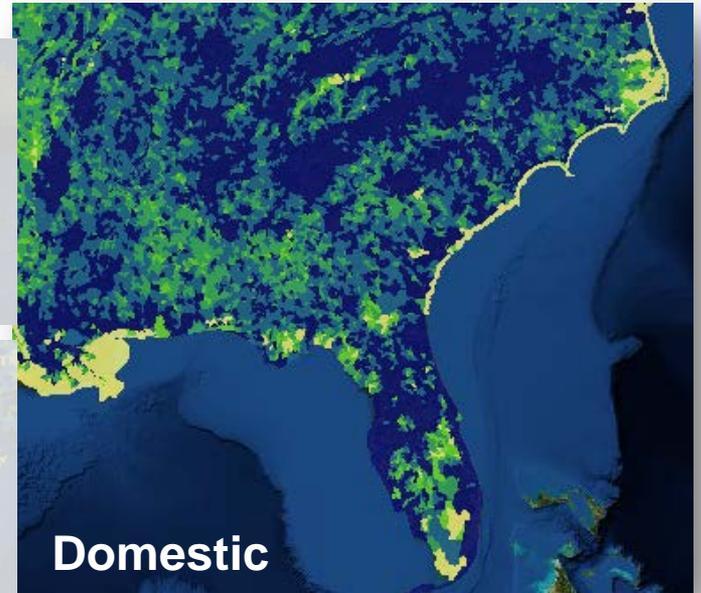
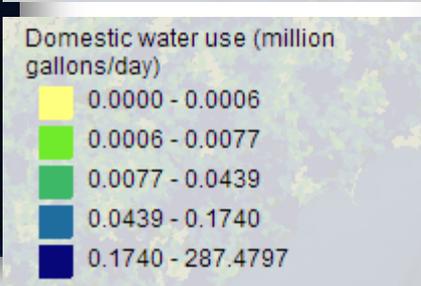
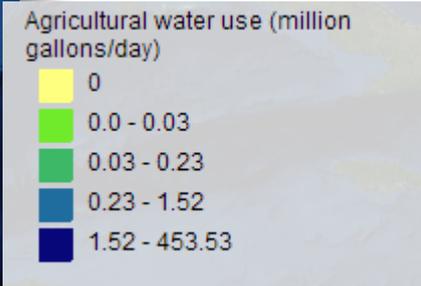
- Avg annual temperature (4 to 9° ↑ by 2080)
- Flooding, drought (~13% ↑ since 1970)
- Human health
- Ecosystem health
- Storm severity and frequency
- Water resources



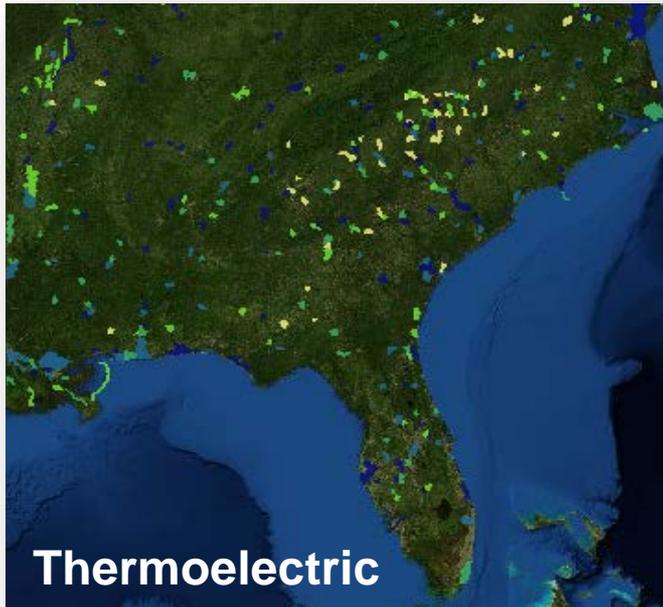
# Water Demand



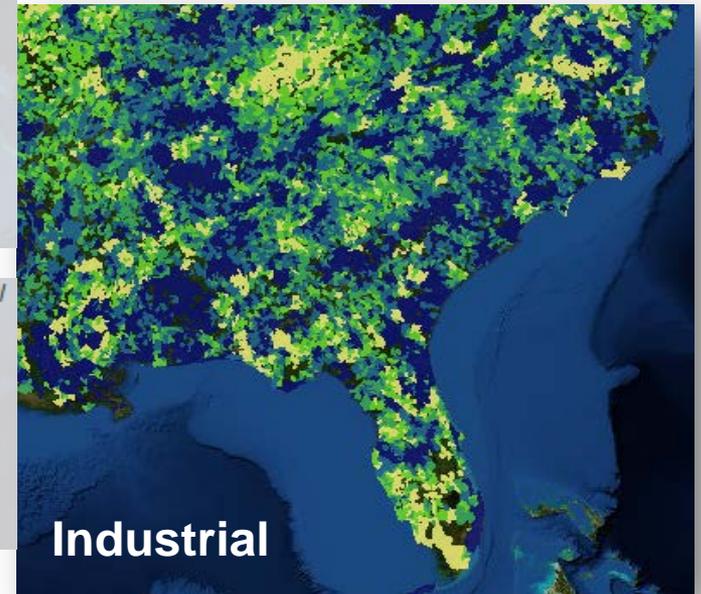
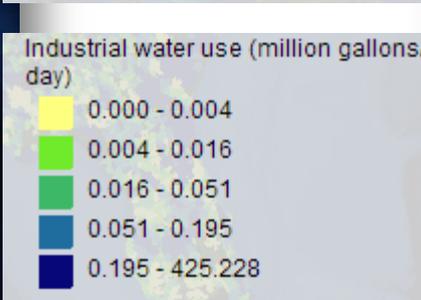
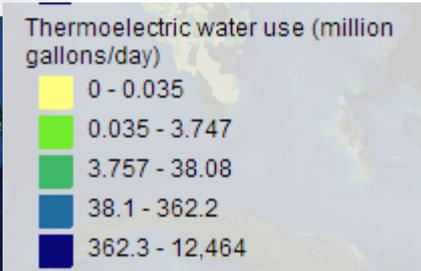
**Agricultural**



**Domestic**



**Thermoelectric**



**Industrial**

# Thank You

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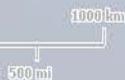
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*Access the website*

<http://enviroatlas.epa.gov/enviroatlas>

User id: EnviroAtlas Password:ESD132



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