PRECISIONHAWK

# UAS AND PRECISION AGRICULTURE: SAFE, SCALABLE, SMARTER

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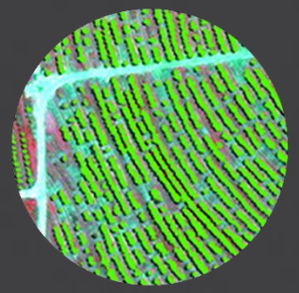
# THE FOCUS IS INFORMATION

The platform is the means, not the end goal

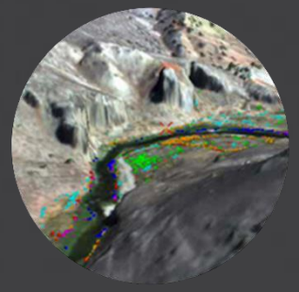
- Complete analytics platform at an accessible price point
- Compliments existing workflows by integrating with the new intelligent farm equipment.
- The goal is a single step for the farmer, from the drone flight to the next farm management action.

# APPLICATIONS OF AERIAL DATA ANALYSIS



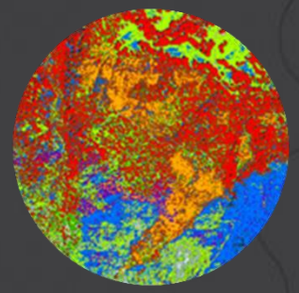
### AGRICULTURE

+ Crop health indices
+ Plant height
+ Canopy cover
+ Weed detection
+ Season monitoring



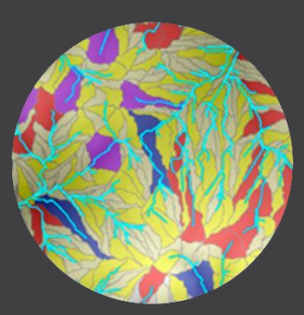
### OIL & GAS

+ Oil spill tracking
+ Pipeline monitoring
+ Environmental assessment



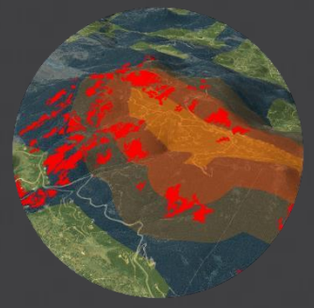
### ENVIRONMENT & CLIMATE

+ Land cover mapping
+ Carbon capping
+ Renewable energy



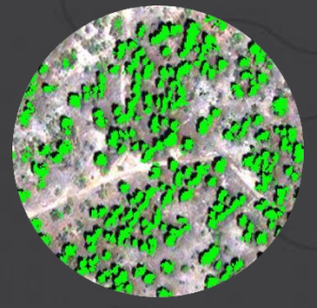
### WATER

+ Irrigated land mapping
+ Impervious surface mapping
+ Watershed planning



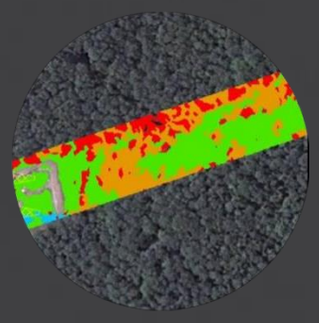
### DISASTER RESPONSE

+ Wildfire
+ Flooding
+ Damage assessment
+ Rapid response



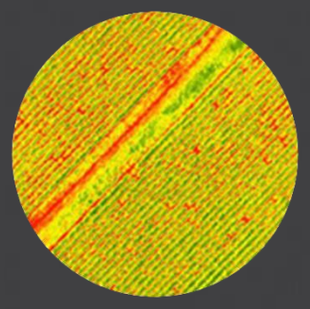
### FORESTRY

+ Biomass
+ Forest health
+ Disease detection



### UTILITIES

+ Vegetation management
+ NERC ROW monitoring
+ Asset verification



### INSURANCE

+ Crop claims assessment
+ Structural damage assessment
+ Underwriting and reinsurance validation

...but how do we enable all these applications?

# MIND THE GAP

How does the current regulatory environment impact agricultural use?

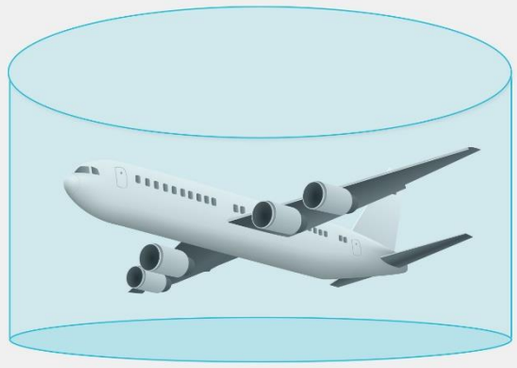
| Current | Needed |
|---|---|
| Visual Line-of-Sight Operations Only | Beyond Visual Line-of-Sight with option to transit between fields |
| 2 Person (Minimum) Team | Solo Pilot in Command |
| FAA Sport Pilot License (minimum) and FAA Medical | Minimal training with no formal manned aircraft certification |
| Lengthy approval processes | Streamlined regulatory compliance, “routine use” |

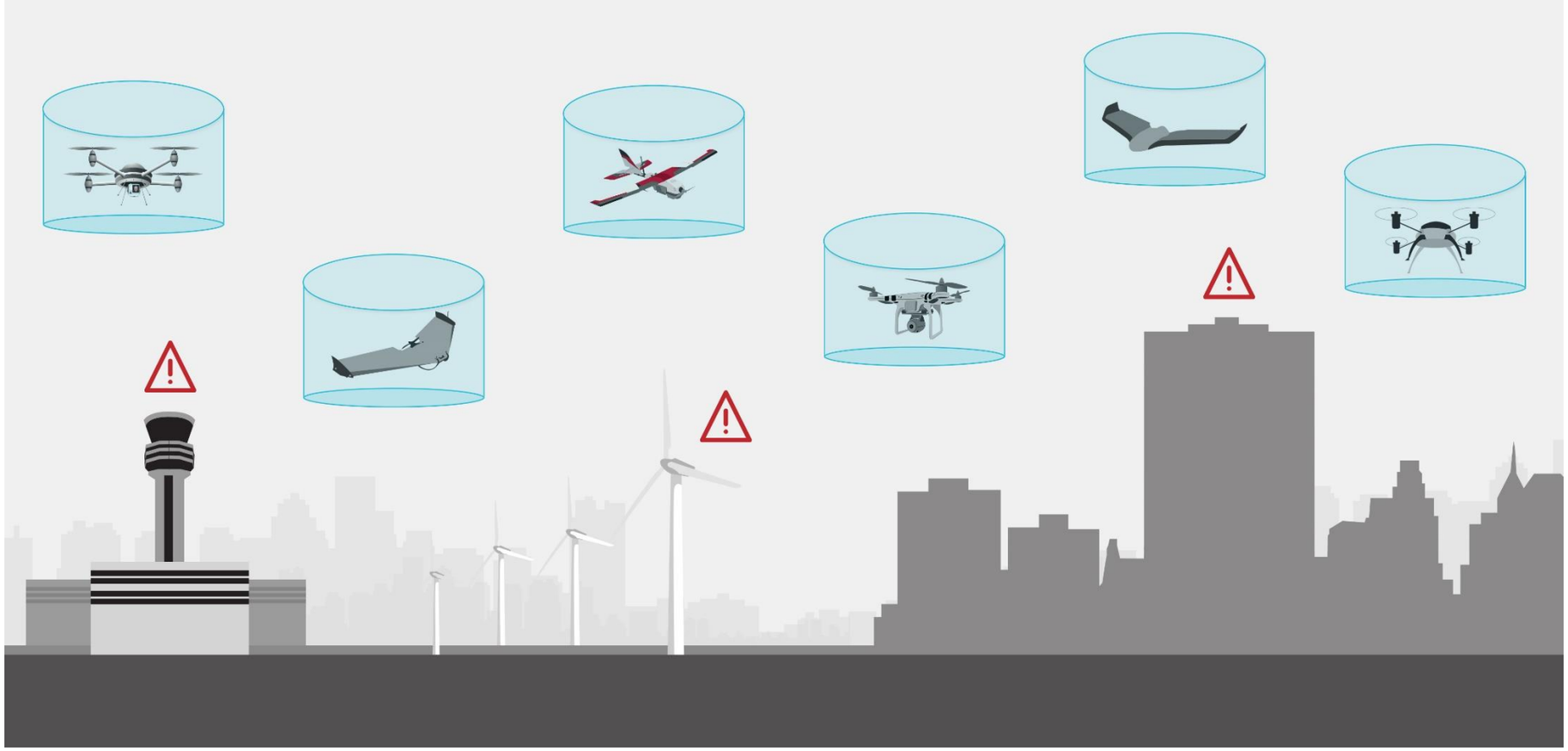
Where are the roadblocks and how can we resolve them?

THE PARADOX

# SAFETY AND SCALABILITY

Equally important for system design…and NOT necessarily in opposition!





**The system must accommodate rising demand**

# TECHNOLOGY AS A SOLUTION

We need to rely on systems that allow us to optimize safety AND scalability

**Integrating new technologies into the NAS**

# WE NEED BETTER DATA

- How do these new technologies change the risk profile on nationwide scale?

- Highly localized experiments to date not sufficiently answering the questions we have

- *The paradox: we can't operate at a nationwide scale without data to make the safety case, but we can't get the data we need unless we operate at nationwide scale*

- Whitepaper available at:

  http://www.precisionhawk.com/UAS-Integration-Whitepaper.pdf

# BREAKING THE PARADOX

Drive creation of concept of operations for subsection of Class G

**Current small scale operations to understand risk:**

- Pathfinder
- UAS test sites
- ASSURE
- Extensive research and simulation

**Operating on a National Level**

- Directly address primary, commercial use cases as defined by market research: precision ag, critical infrastructure surveillance
- Assessing how technologies can operate on national scale

**BUILD ON RESULTS TO DEFINE RISK PROFILE ON NATIONAL SCALE**

PROPOSAL

# PRECISIONHAWK PLAN

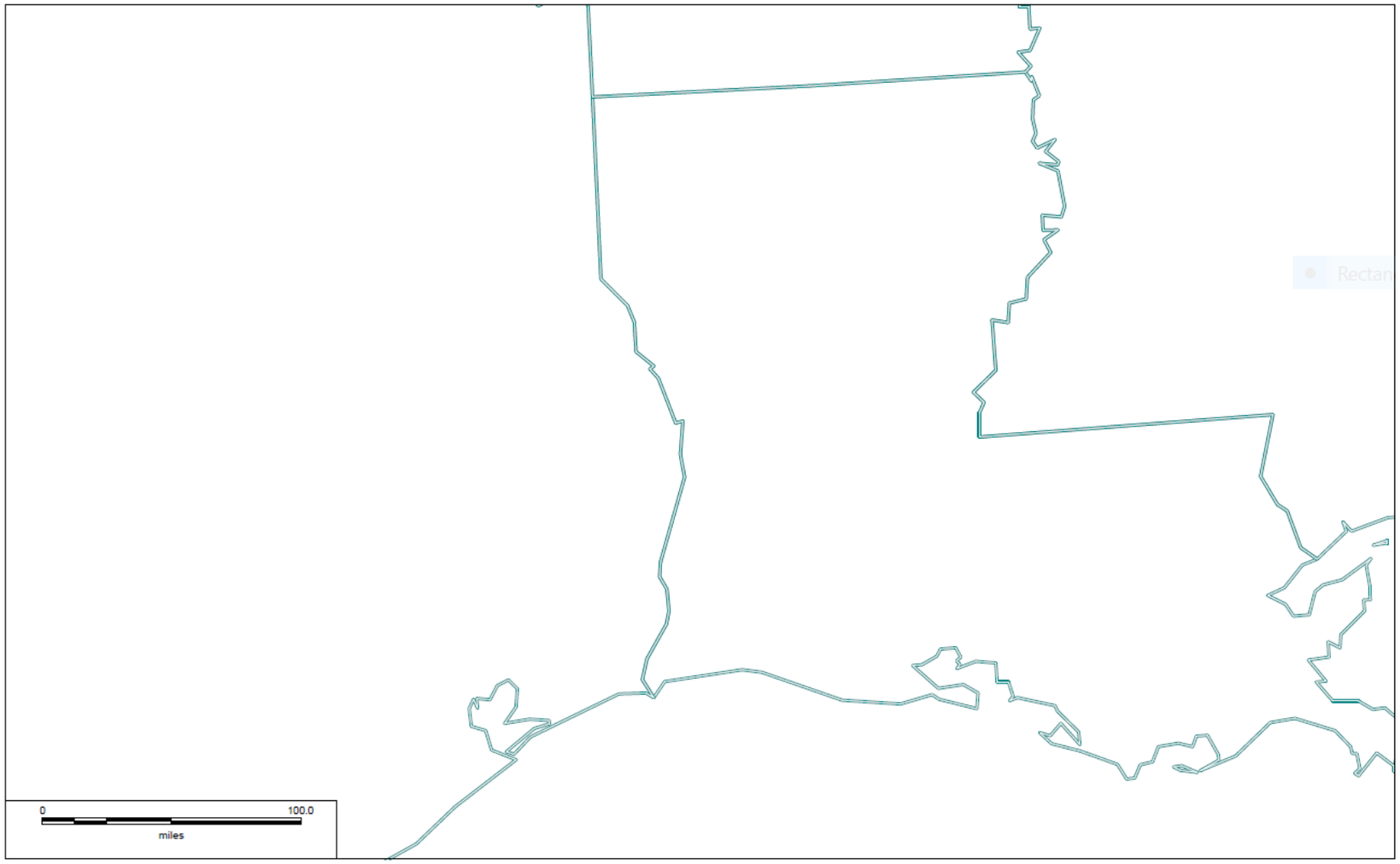
Realizing the vision while mitigating unknown risk

**Define UAS Service Volume (USV):**

- Class G
- Low population density
- Land designated for agriculture or critical infrastructure use

**What does this look like?**

- Consider an area covering Louisiana and part of Texas

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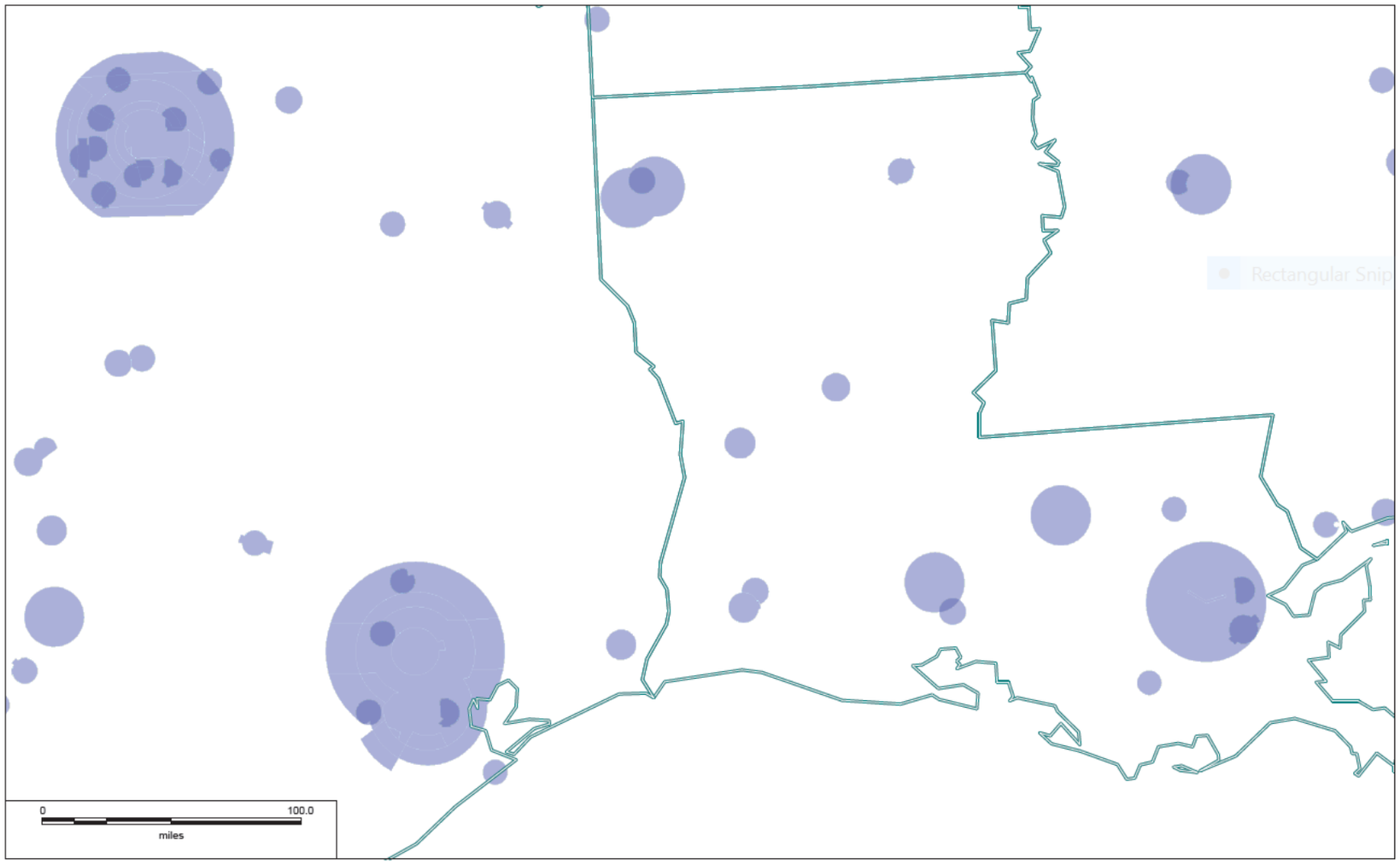


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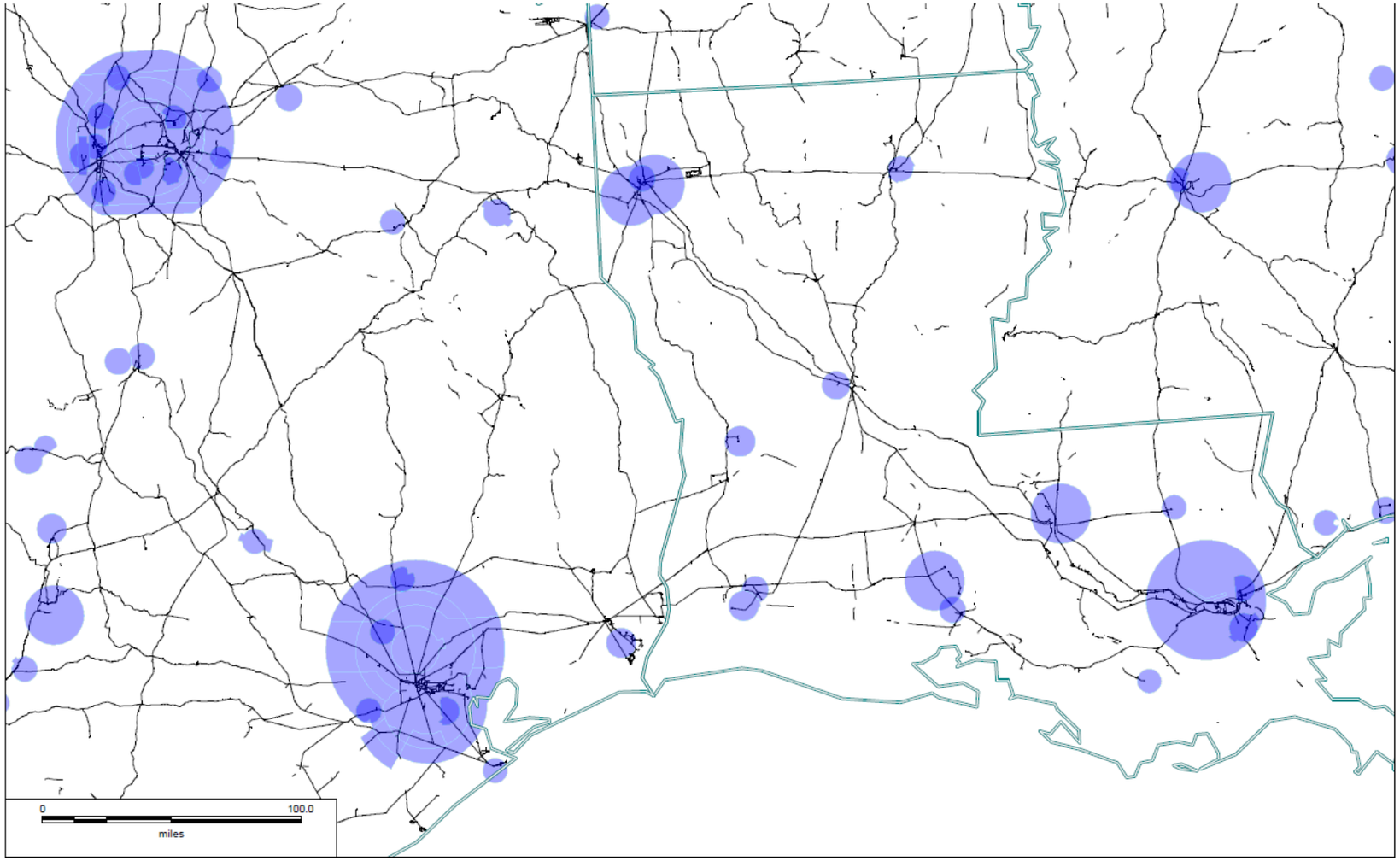


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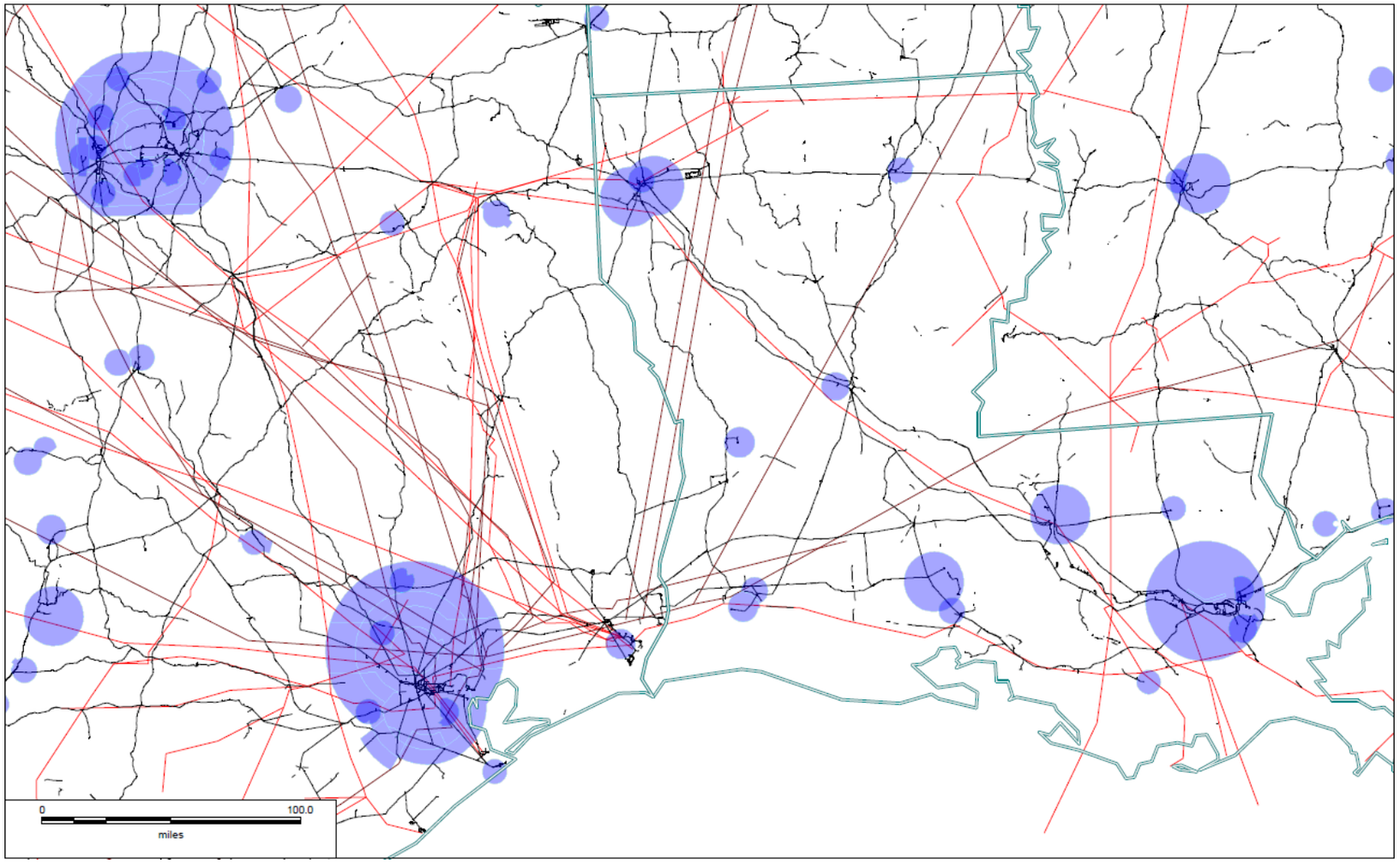


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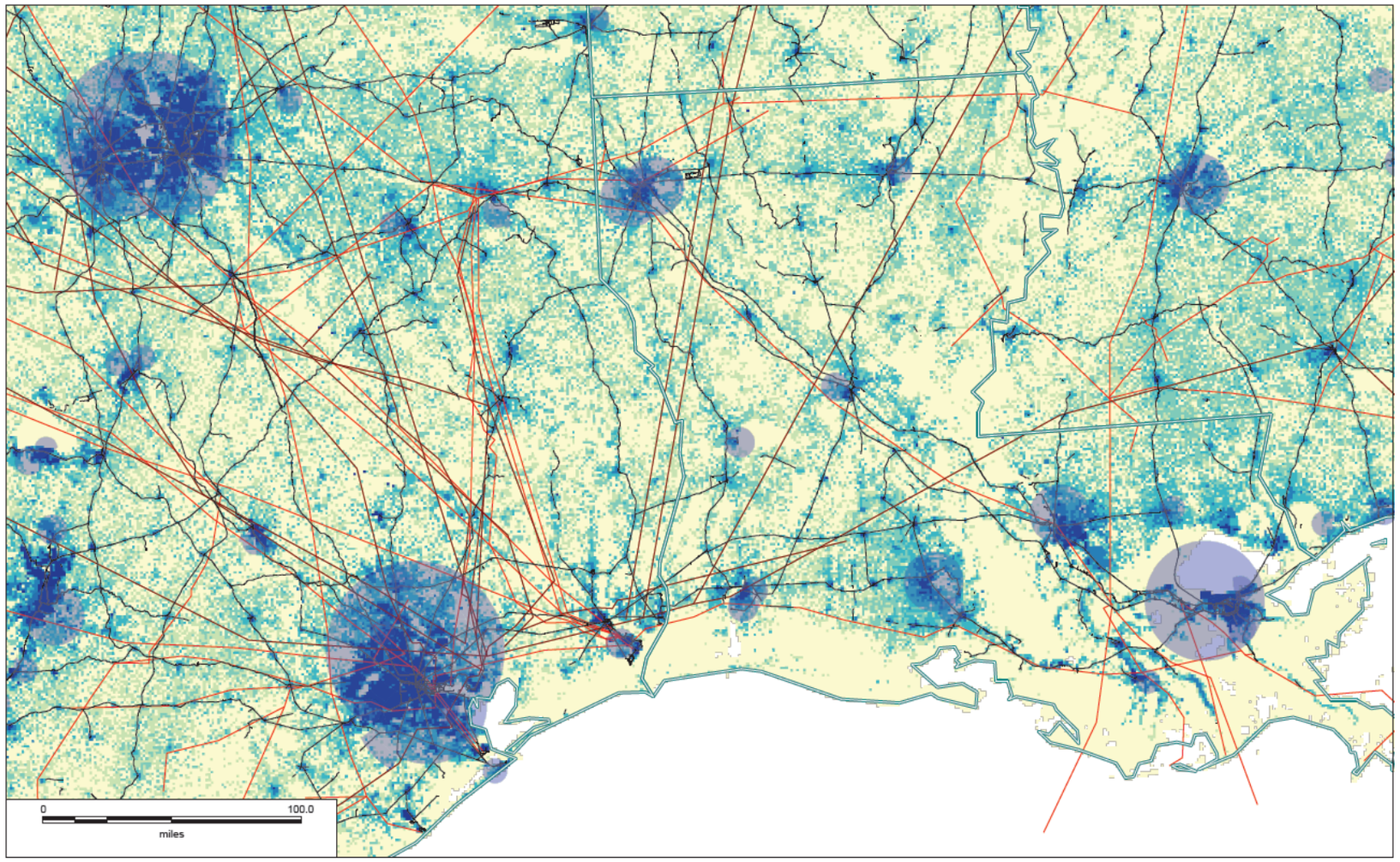


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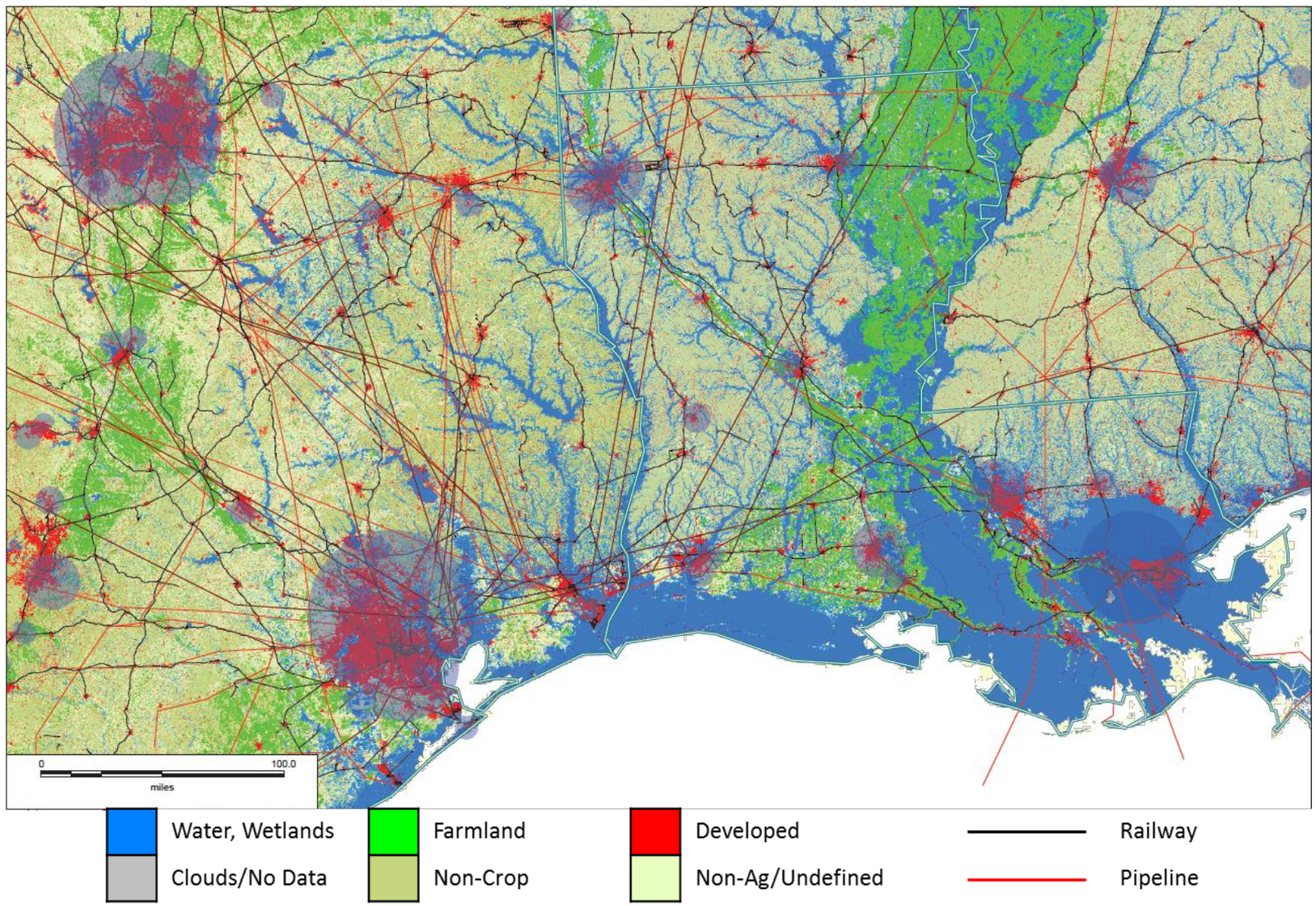


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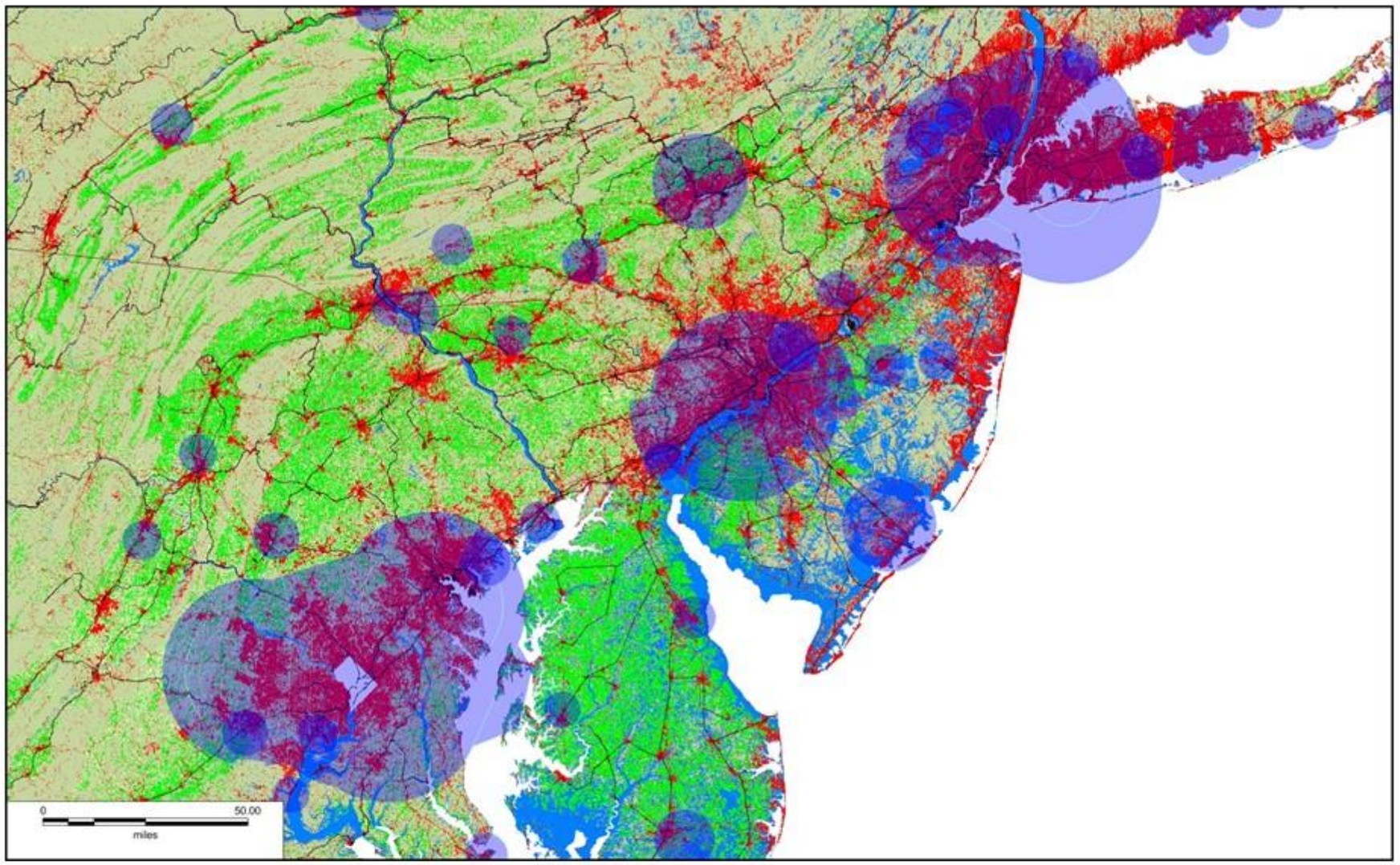


Water, Wetlands
Clouds/No Data
Farmland
Non-Crop
Developed
Non-Ag/Undefined
Railway
Pipeline

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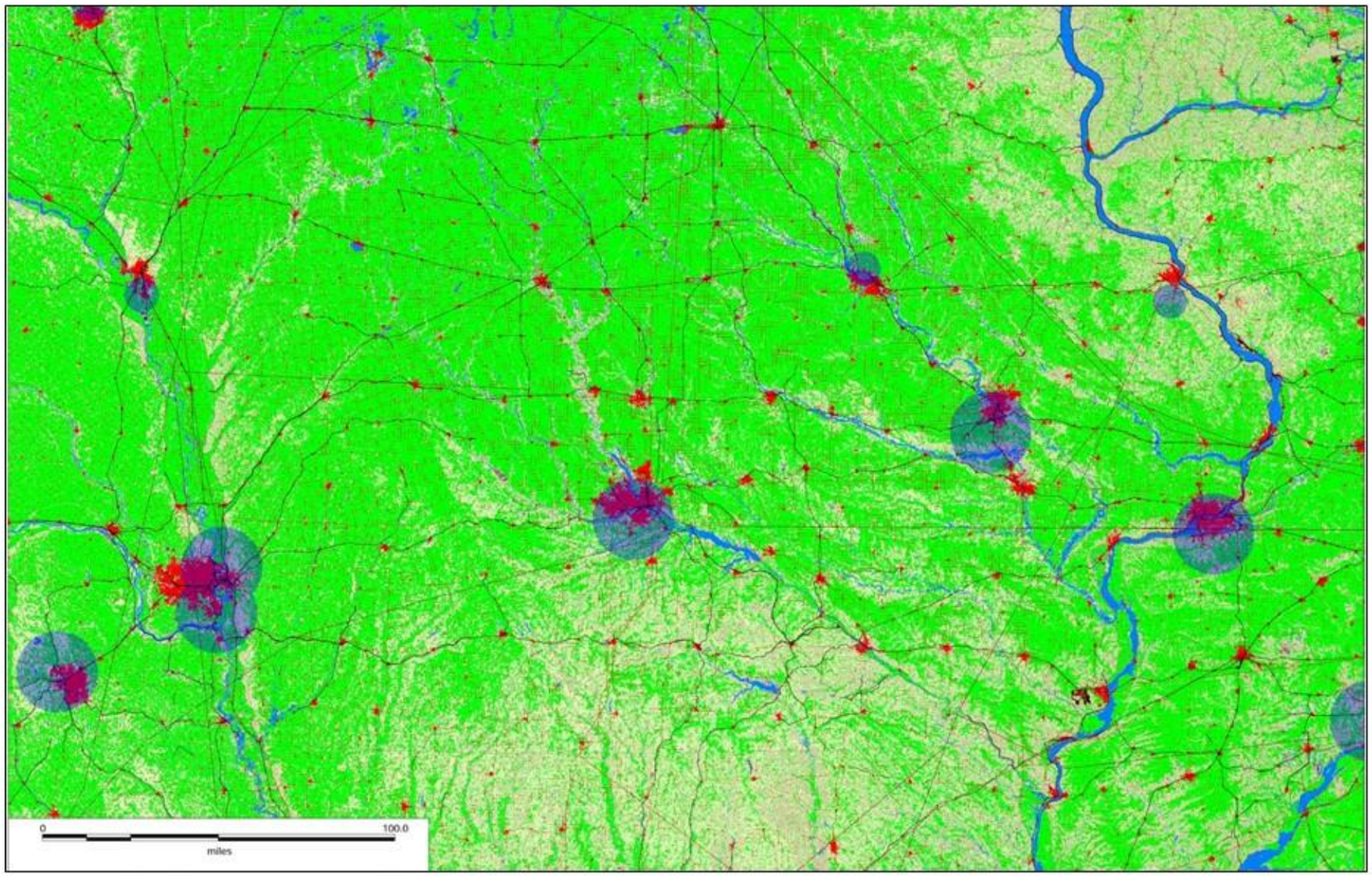


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