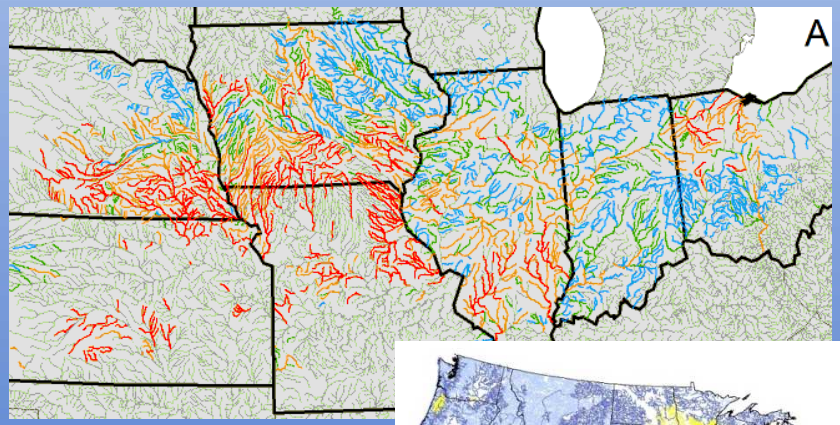
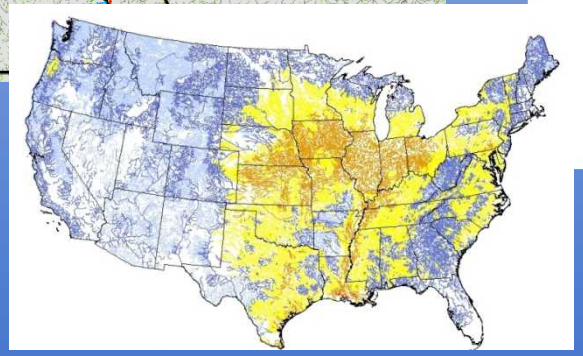
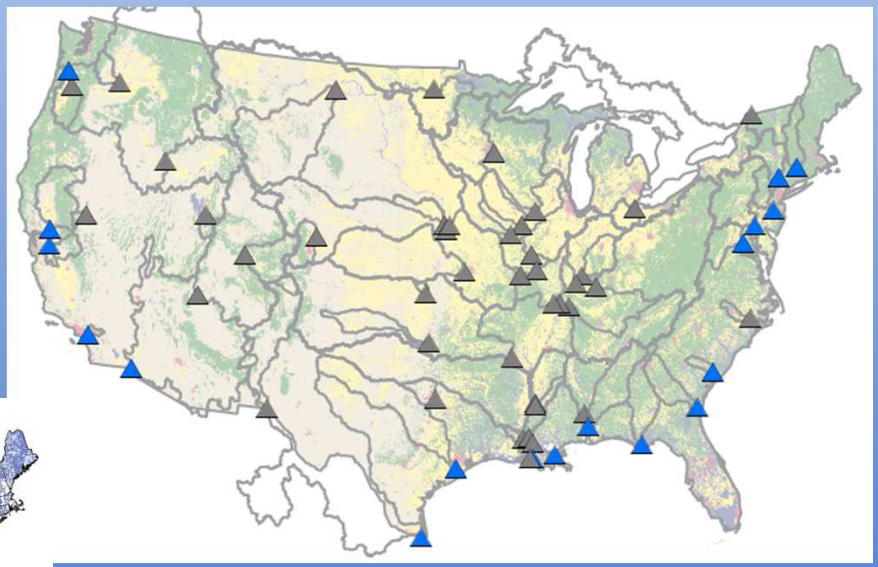
MEETING THE NATION'S NEED FOR WATER-QUALITY INFORMATION IN THE NEXT DECADE: PLANNED CONTRIBUTIONS FROM THE NAWQA PROGRAM

# Surface Water Status and Trends Assessment





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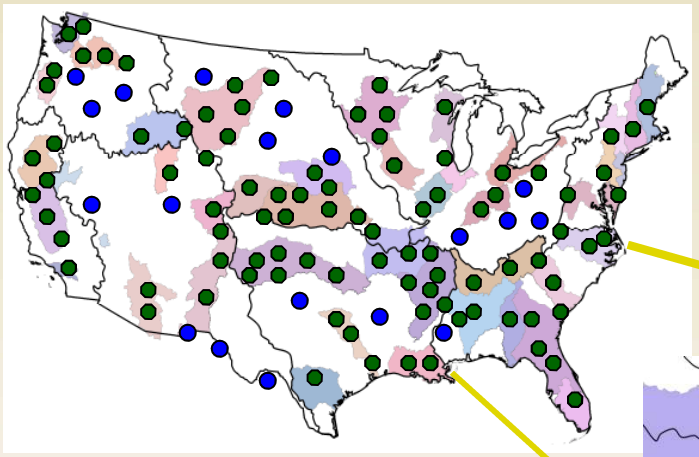
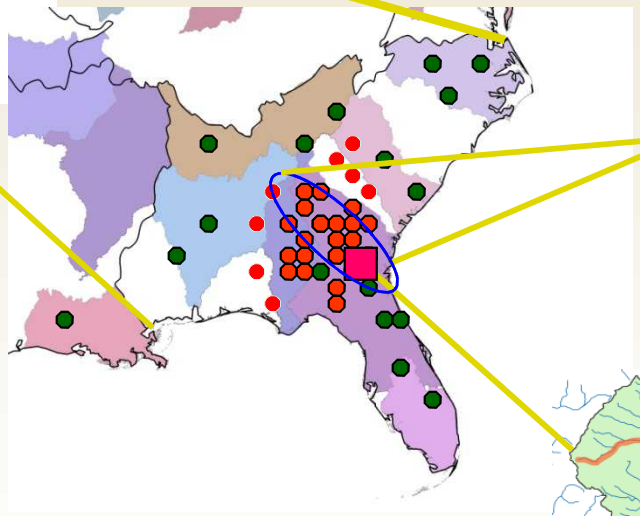
# Scales of Investigation

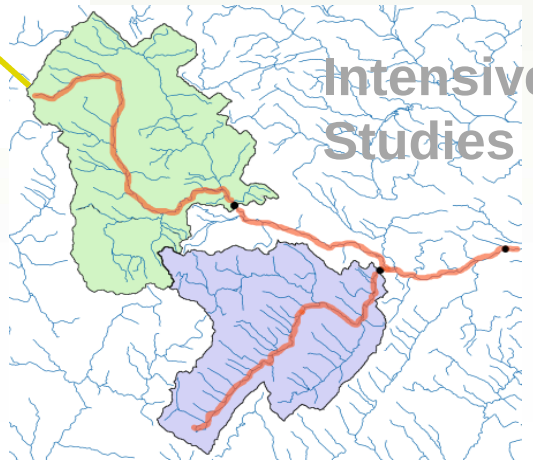


National Fixed Site Network (NFSN)

Regional Synoptic Studies



Integrated Watershed Assessments



Intensive Studies

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# Components of Surface-Water Status and Trends Assessment

NAWQA Cycle 3
Surface-Water Assessment

| National Monitoring and Status Assessment | Trend Analysis | SPARROW and WARP Modeling | Regional Synoptic Studies |
|---|---|---|---|
| National Fixed Site Network and associated data analysis<br>•Annual and periodic reports | Analysis of data from NFSN and suitable data from partner programs<br>•Topical analyses<br>•National and regional | National and Regional models based on data from NAWQA and other programs | Regional scale, limited duration, stressor distribution studies |
| $13 M/yr ($11.2 for NFSN) | $1.1 M/yr | $1.6 M/yr | $4-7 M/yr during first half of Cycle |

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# National Fixed Site Network
# Science Plan *vs* Current Funding

| National Fixed Site Network Design Element | Science Plan Scenario | Current Funding Scenario |
|---|---|---|
| **Target for NFSN Data Collection** | **$49.5 M/yr** | **$11.2 M/yr** |
| Large River Inland Sites | 62 | 42 |
| Large River Coastal Sites | 56 | 19 |
| Wadeable Urban Sites | 31 | 10 |
| Wadeable Agricultural Sites | 36 | 10 |
| Reference Sites | 58 | 19 |
| Stream or River DW Intake Sites | 20 | 0 |
| Lake or Reservoir DW Intake Sites | 50 | 0 |
| Real-Time QW Monitoring Sites | 50% | 5% |
| **Total Sites** | **313** | **100** |

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# Key Changes from Cycle 2 to Cycle 3

- Sampling at all sites increased to every year rather than the rotational schedule used in Cycle 2
- Improved coverage of large river and coastal sites, including those in the NASQAN and the National Monitoring Network.
- Expanded chemical analyses at NAWQA, NASQAN, and NMN sites
- Addition of real-time monitoring at a small subset of sites.

- Reduced number of wadeable stream sites in urban, agricultural, and reference watersheds.

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# Objectives of the Current-Funding Version of the Fixed Site Monitoring Network

1) Status and trends in contaminants, nutrients, and sediment in the Nation's large rivers, including loads to selected estuaries.
2) Trends in contaminants, nutrients, and sediment for case-study streams in selected land-use and environmental settings.
3) Trends in ecological condition in relation to stressor trends for the case-study streams.
4) Support other study components with consistent monitoring at key sites.

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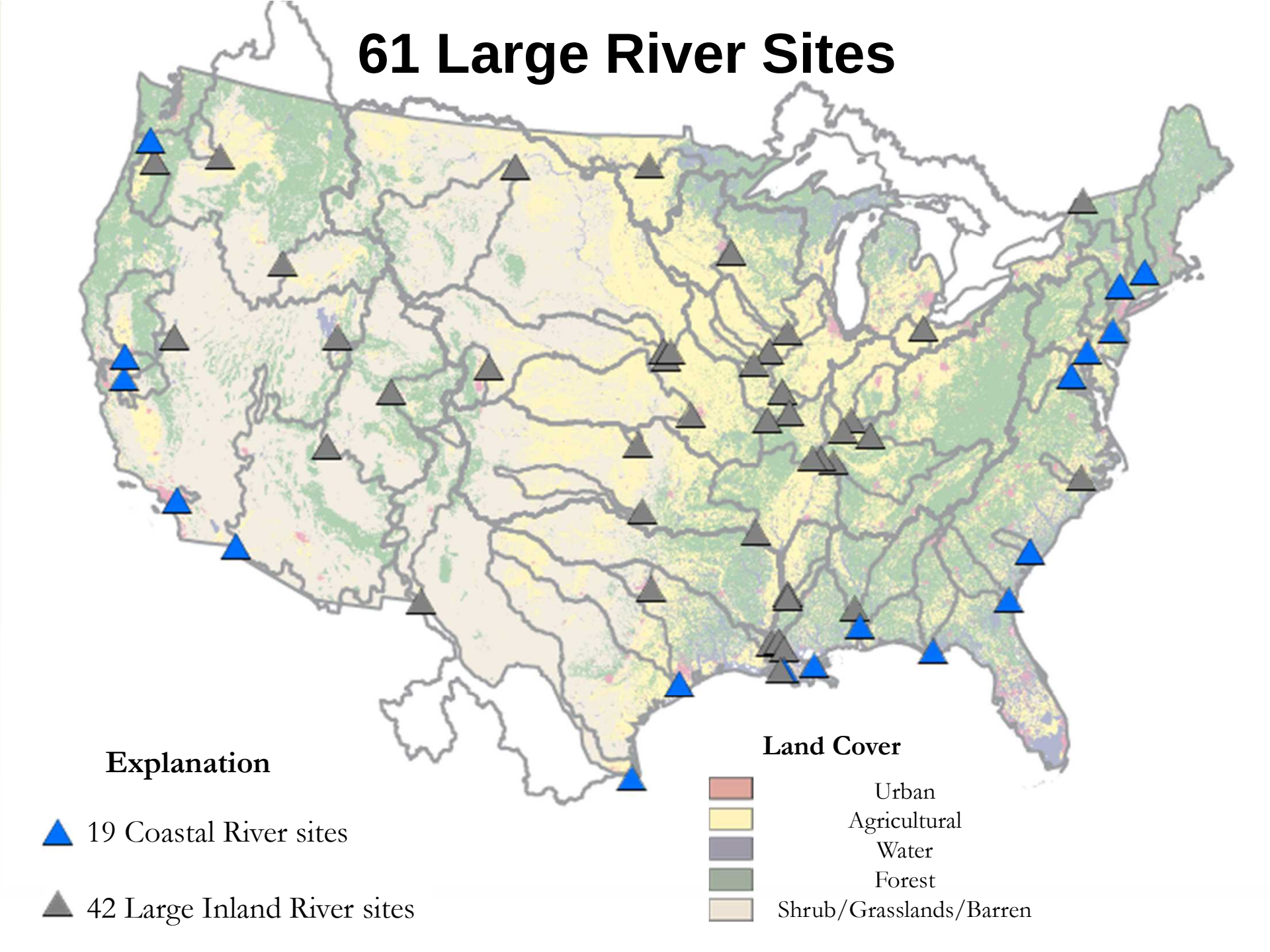
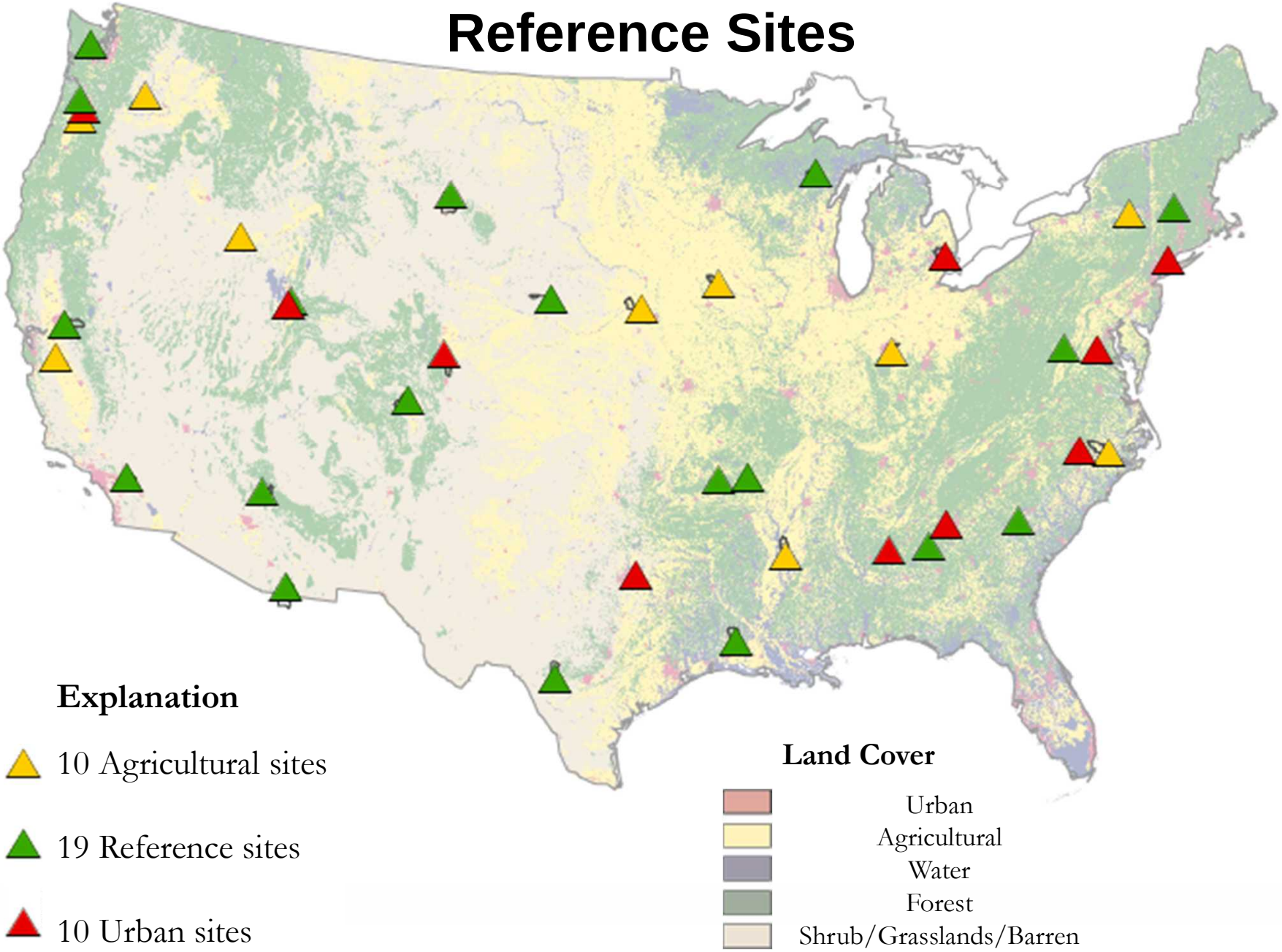
# 61 Large River Sites



# 39 Agricultural, Urban, and Reference Sites



# Monitoring Strategy

| Site Type | Samples per year | Sampling Approach |
|---|---|---|
| Large Rivers | 14 - 18 | 6 at bimonthly fixed intervals and 8-12 at seasonally weighted fixed intervals during periods of high variability in concentration and load |
| Urban and Agricultural Streams | 24 | 12 monthly fixed intervals and 12 at seasonally weighted fixed intervals during periods of (1) high variability in concentration and (2) fertilizer and pesticide application |
| Reference Streams | 6 | 6 bimonthly samples |

**Real-Time Monitoring at approximately 5% of sites.**
**(including nitrate, turbidity, conductivity, DO, and temperature)**

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# Water Samples will be Analyzed for:

- **Suspended sediment**
- **Nutrients and organic carbon**
- **Pesticides (new method with more than 200 pesticides)**
- **Major ions and trace elements**
- **Inorganic carbon and UV absorbing organics**
- **Field parameters**

Ecological data will be collected at the 10 urban, 10 agricultural, and 19 reference sites.

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# Overview of Products Based on NFSN data and similar data from other programs and agencies

## Status Assessment

- Standardized Annual Reporting
- Periodic Status Assessments

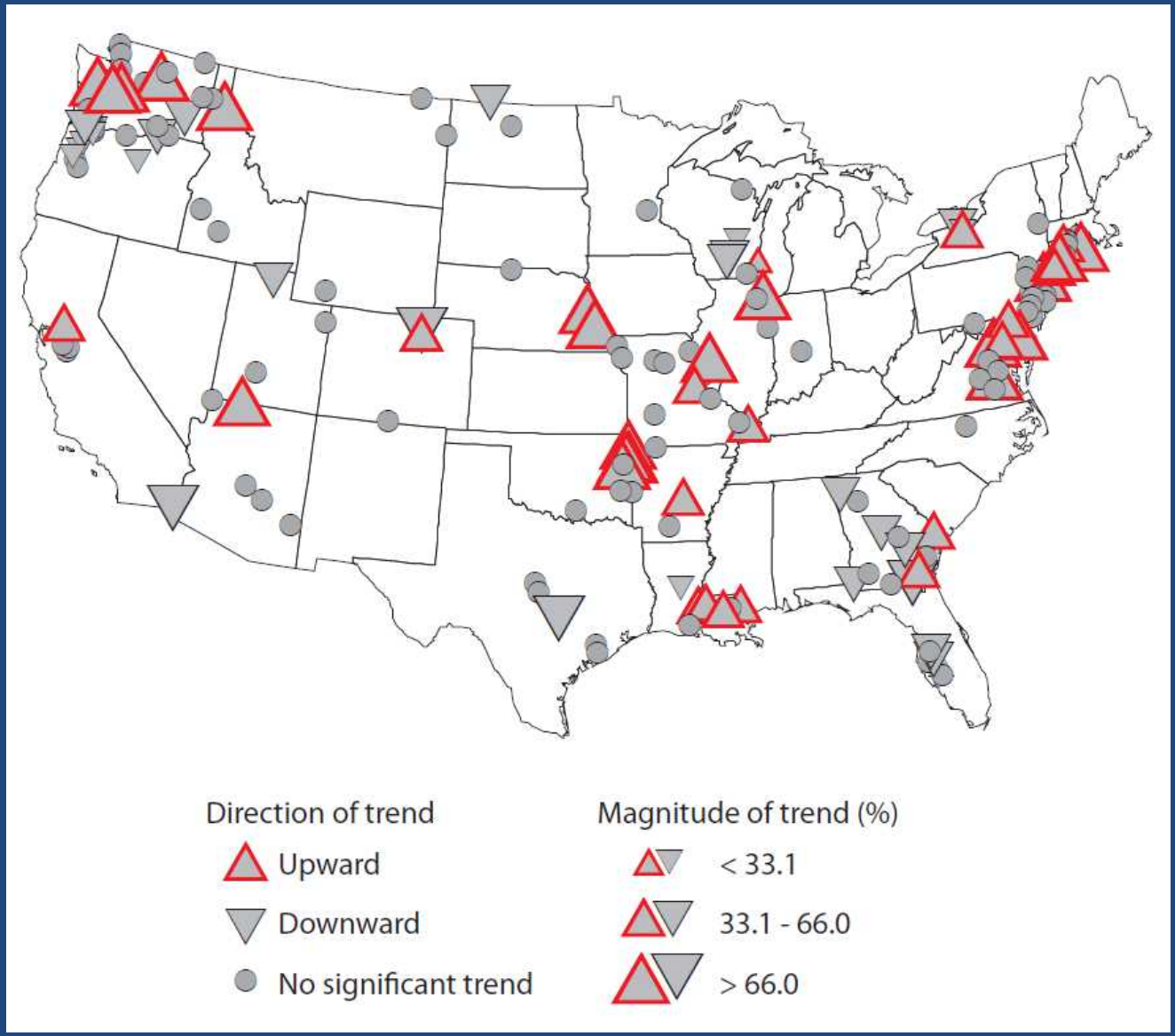
## Trend Assessment

- Periodic and Topical Trends Assessments

## SPARROW and WARP Model Analyses

- National and Regional Models

# Trends in total phosphorus concentration 1993 to 2003

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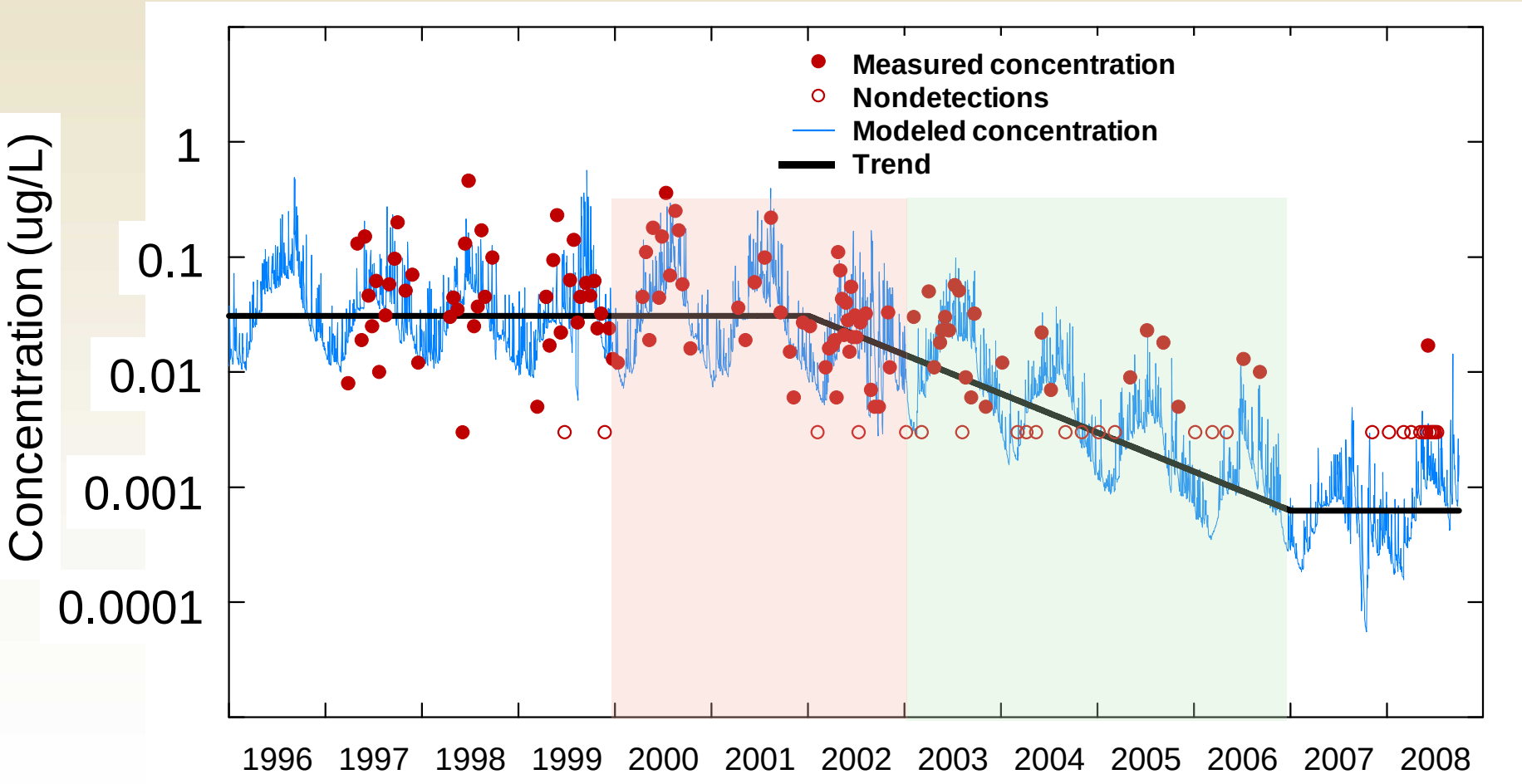
# New Time-Series Trend Models: Diazinon Example

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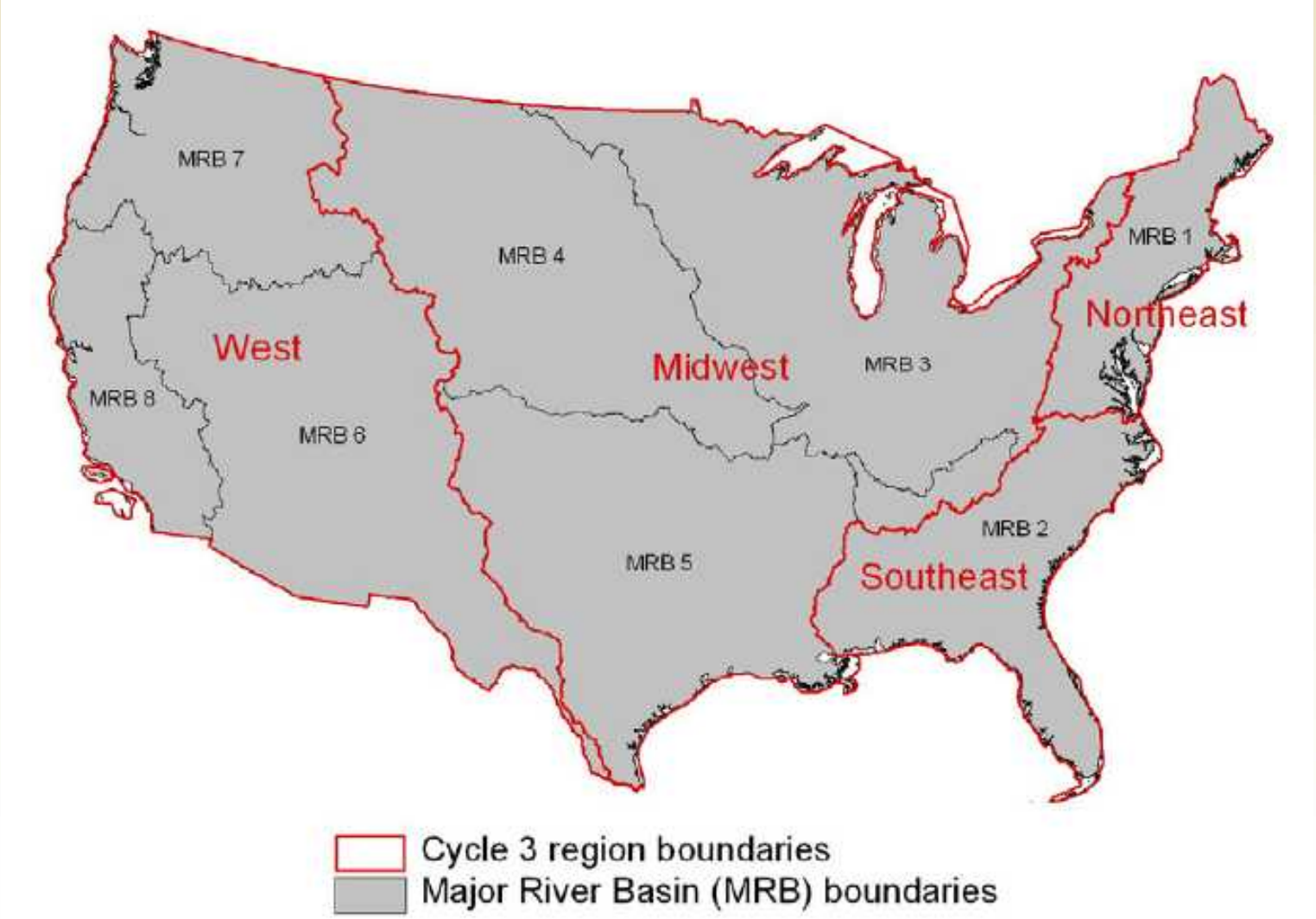
# Cycle 3 SPARROW Models for 2012 and 2017 base years

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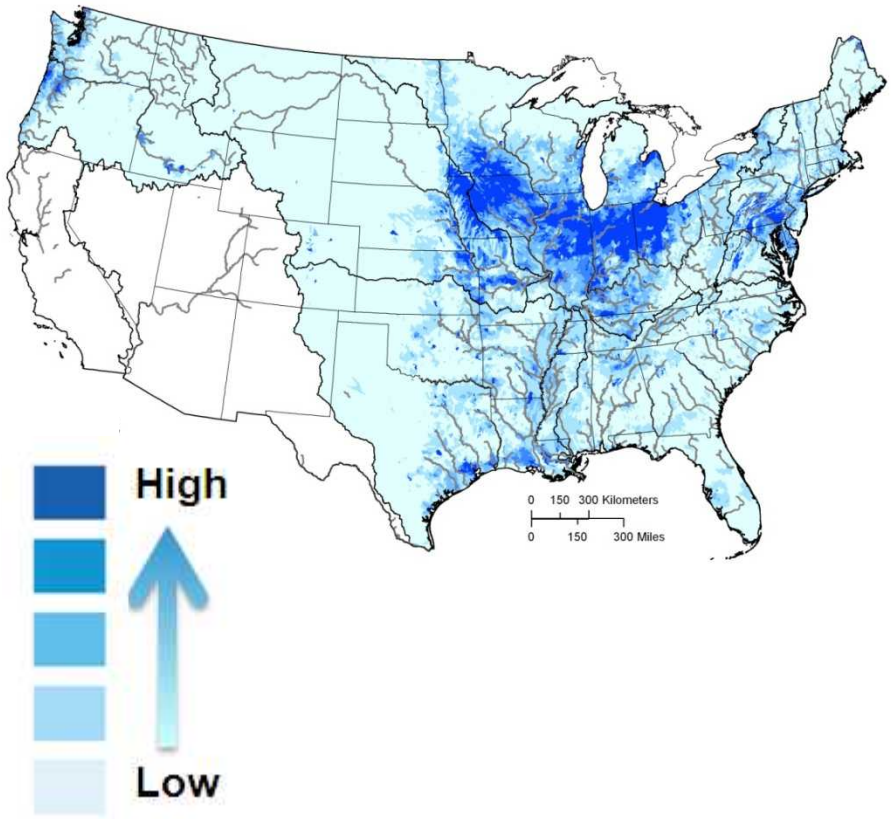
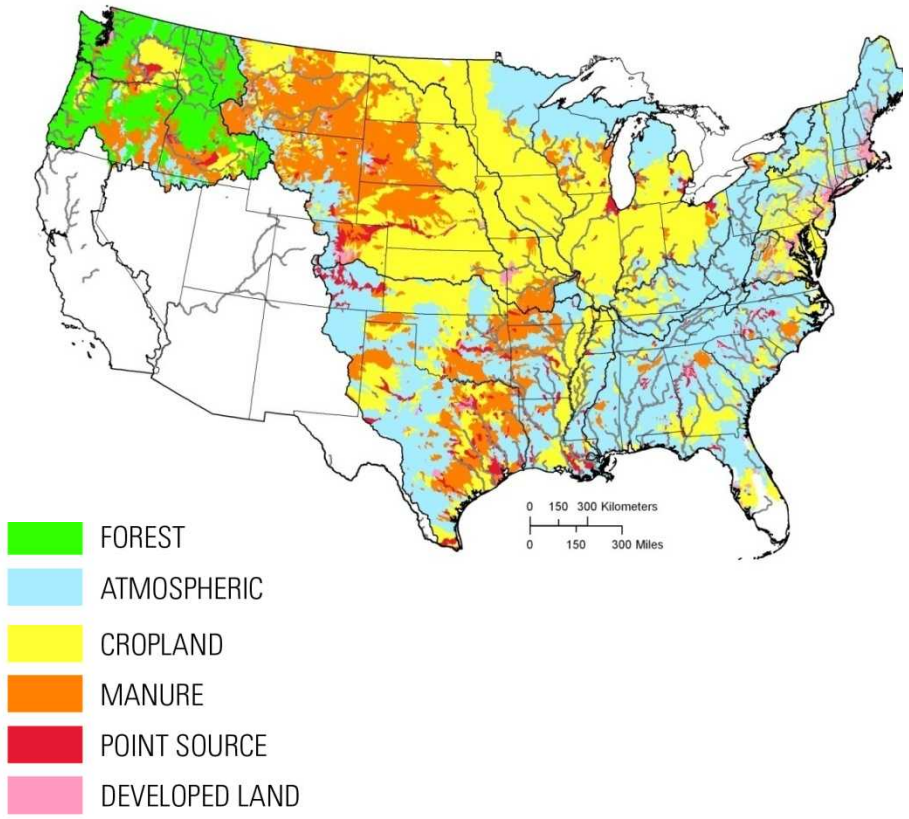
# Total Nitrogen Yields and Sources

## SPARROW Model Results

### Yields




### Largest Sources

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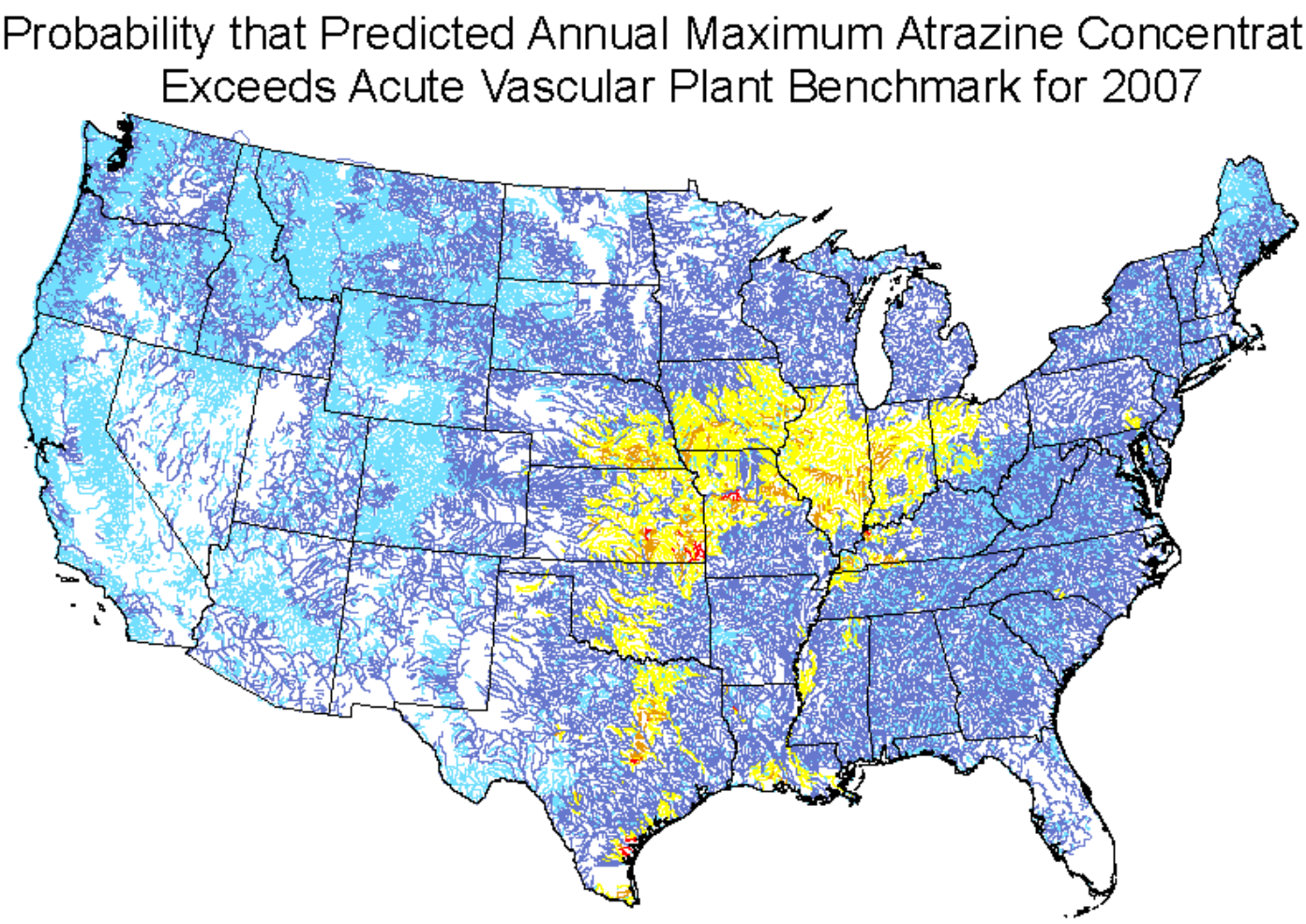
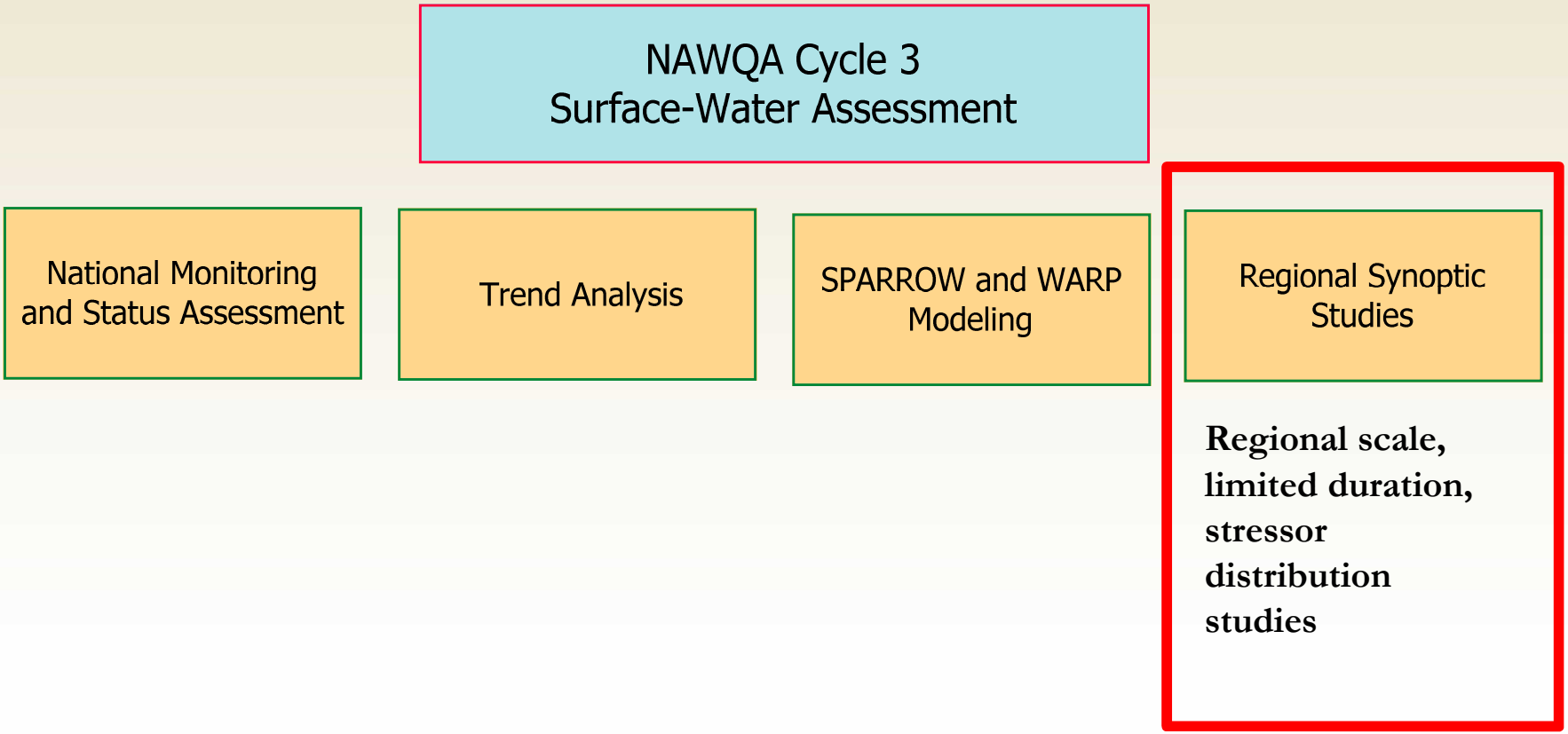
# National WARP Models for Pesticides



# Components of Surface-Water Status and Trends Assessment

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# Cycle 3 Regional Synoptic Studies

| | Stressor Distribution Regional Synoptics | | Stressor-Ecologic Effects Regional Synoptics |
|---|---|---|---|
| Year | Contaminants | Multiple Stressor and Ecologic Effects Studies Combined | MS-Streamflow Alteration |
| 2013 | | Temperate Plains: NAWQA/NARS | Streamflow |
| 2014 | Drinking Water Synoptic | Urban Streams | Streamflow |
| 2015 | | Agricultural Streams | |
| 2016 | | | |
| 2017 | | Urban Streams | |
| 2018 | | | |
| 2019 | | | Streamflow |
| 2020 | | | |
| 2021 | | | |

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