

Integration of Surface Water and Groundwater Modeling & Monitoring Data in Pesticide Ecological Risk Assessments

NWQMC Meeting
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Pesticide Program Mission

- ▶ Complete best possible regulatory decisions to protect public health, non-target species, and the environment
 - ▶ Pesticide Re-evaluation -- Ensure that all registered pesticides continue to meet the statutory standard of no unreasonable adverse effects on human health or the environment
 - ▶ Effectively assess, manage and mitigate risks based on best available science, involving stakeholders and the public
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Federal Pesticide Laws – FIFRA

- ▶ Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)
 - Registration of new pesticide products and uses
 - Periodic re-evaluation of registered pesticides
 - Risk/benefit balancing
 - Label is the law -- states are the primary enforcer

Registration Review Program

- ▶ Requires periodic review (15-year cycle) of each pesticide's registration; by Oct. 1, 2022
- ▶ Covers all pesticides; currently 1,166 pesticide active ingredients
- ▶ Flexible, transparent, open process includes opportunities for public participation
- ▶ Ensures continuity in protecting human health and the environment

Water Quality Data Outreach

- ▶ Re-evaluation cycle is opportunity to reassess licensing decisions for unintended impacts on water resources
 - ▶ Objective is to address water quality issues attributed to pesticides and reduce potential for future issues
 - ▶ Completed revisions to public process for submission of water monitoring data – useful feedback incorporated from EPA Regions and States
 - ▶ Coordinating with EPA Office of Water, USGS, Federal Partners, & States to locate data
 - ▶ Collaboration with stakeholders
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What's in the Guidance for Submission of WQ Data

- ▶ Critical data elements
 - Date, sample ID, location, media sampled, concentration, analytical method, LOD/LOQ
 - ▶ Other useful information:
 - Purpose of study, QA/QC, timing of sample, sample method
 - Land use, pesticide usage, environmental conditions
 - Quantitative vs. Qualitative use
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Information on EPA's Website

- ▶ **Registration Review Program**

<http://www2.epa.gov/pesticide-reevaluation/registration-review-process>

- ▶ **Chemical Search** – For documents and other information about specific pesticides:

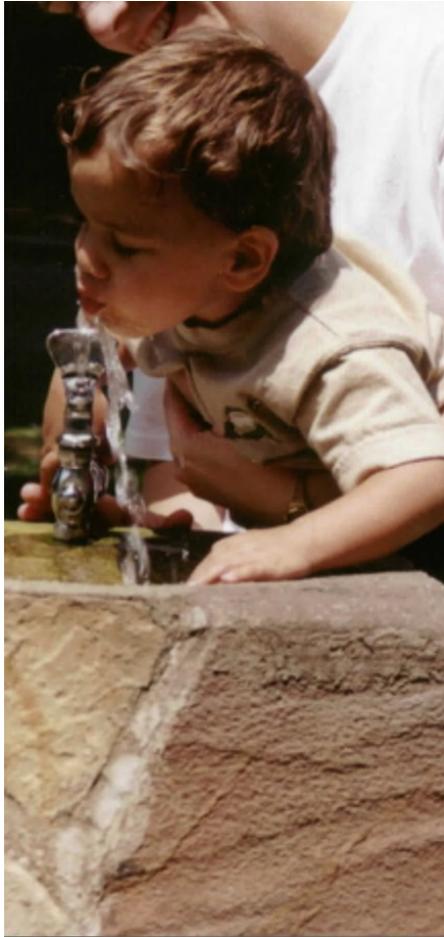
http://iaspub.epa.gov/apex/pesticides/f?p=chemical_search:1

- ▶ **Guidance for submission of water quality data**

http://www.epa.gov/oppsrrd1/registration_review/water_quality_sop.htm

Aquatic Exposure Assessment

- Estimate pesticide levels in water
 - What are the risks?
 - Who or what is exposed to what, how much, where, how long?
- Screen out unlikely concerns
- Account for variability in
 - Location (water source, pesticide use, environmental factors)
 - Time (daily, seasonal, yearly)

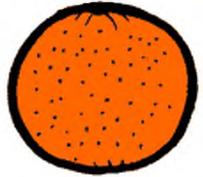


Where Do Monitoring Data Fit In?

- ▶ How monitoring data are used depends upon the nature of the data
 - Variety of sources
 - Data varies tremendously in quality
- ▶ Context information helps us interpret monitoring results
- ▶ Monitoring and modeling generally complement each other, strengthen assessment
- ▶ Monitoring generally more useful as a lower bound or for longer-term exposure estimates



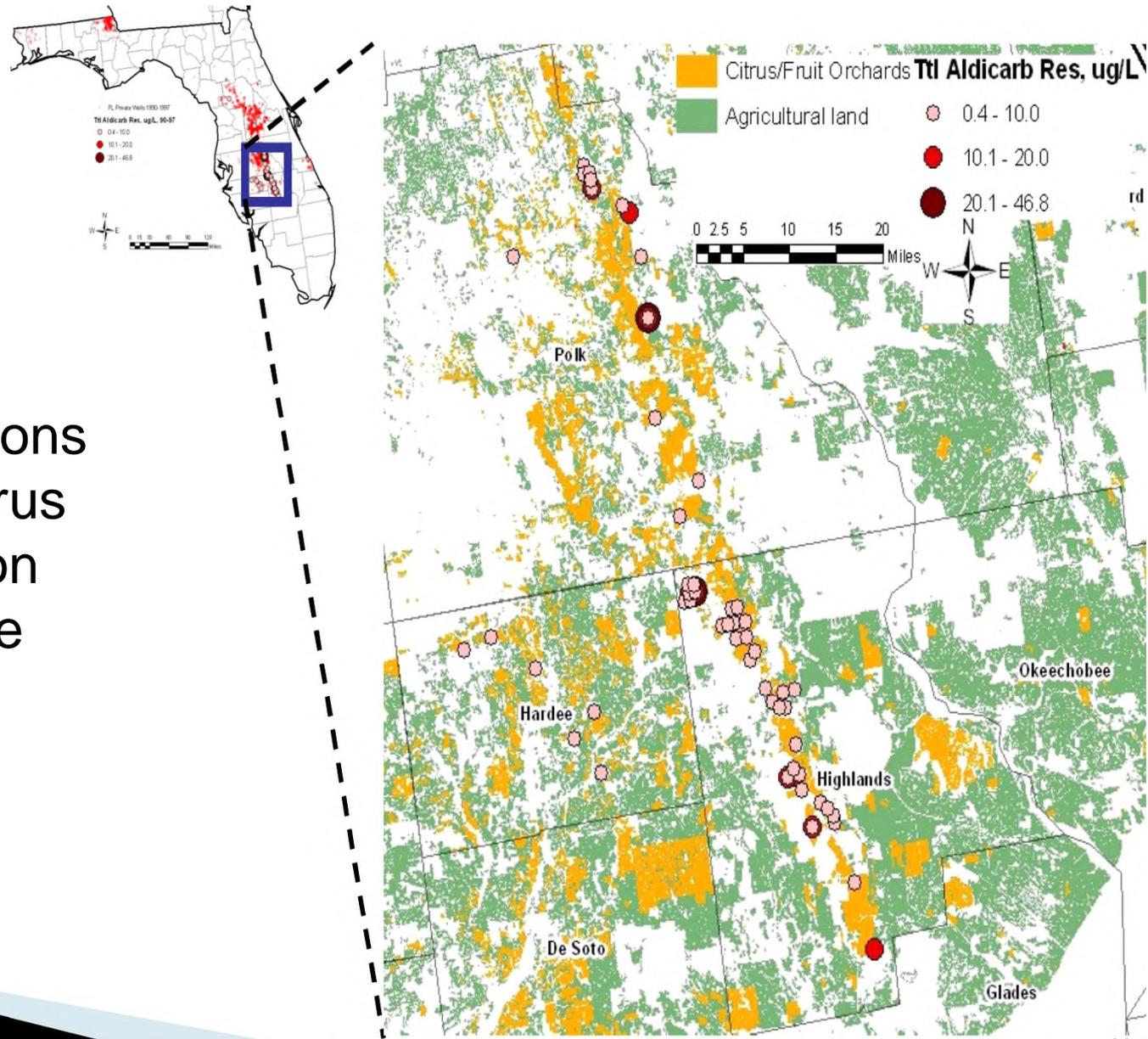
Monitoring vs. Modeling



- ▶ Different sampling frequencies (few days per year vs. daily distributions)
- ▶ Different weather patterns (limited weather variability in samples vs. 30-yr range in weather)
- ▶ Different water bodies (flowing water vs. static)
- ▶ Different use patterns (range in intensity vs. high-use, high-ag)
- ▶ Different purposes (nontargeted vs. targeted screening estimates)

Carbamate cumulative Analysis & characterization

Relationship of aldicarb detections (red/pink) in citrus area (orange) on the central ridge



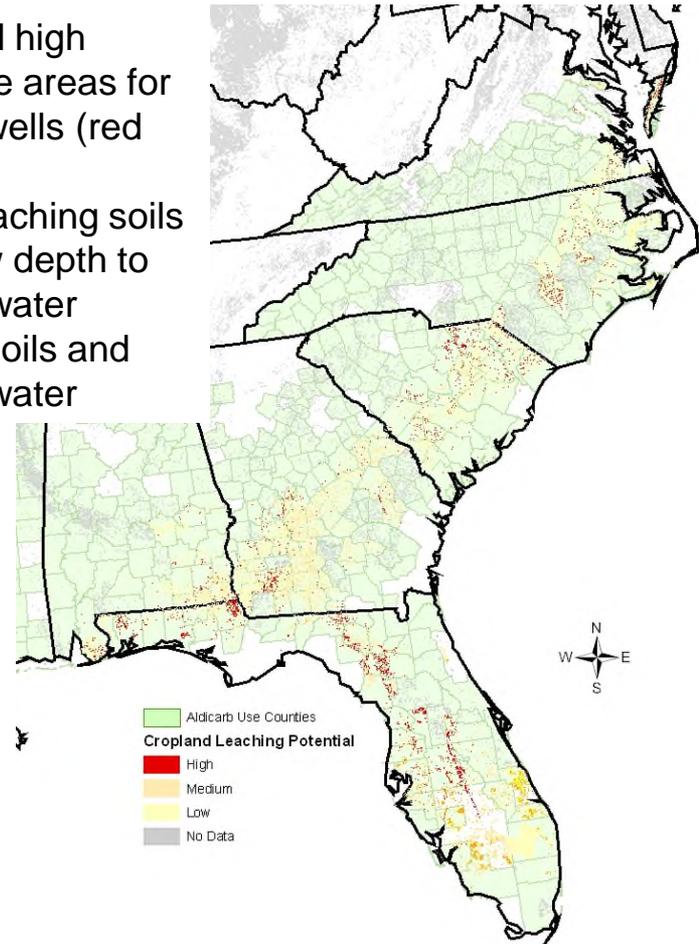
From monitoring to spatial extent

Extrapolating to broader extent

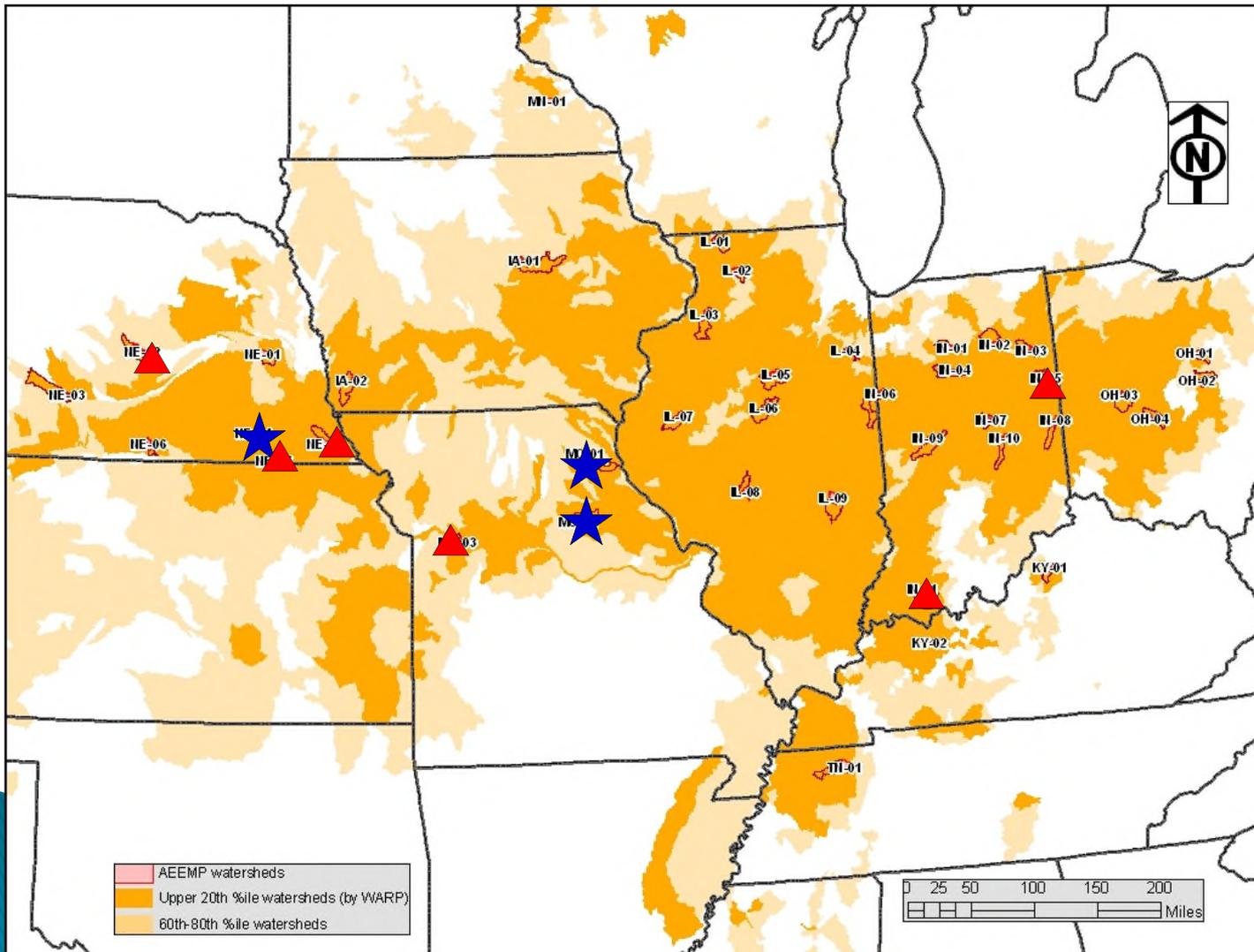
- Lack of monitoring in other use areas
- Linked monitoring to soil and hydrologic characteristics
- Identified similar soil and hydrologic conditions elsewhere
- Limited by available data (soil, hydrology, land cover, monitoring)

Potential high exposure areas for private wells (red areas):

- High leaching soils
- Shallow depth to ground water
- Acidic soils and ground water



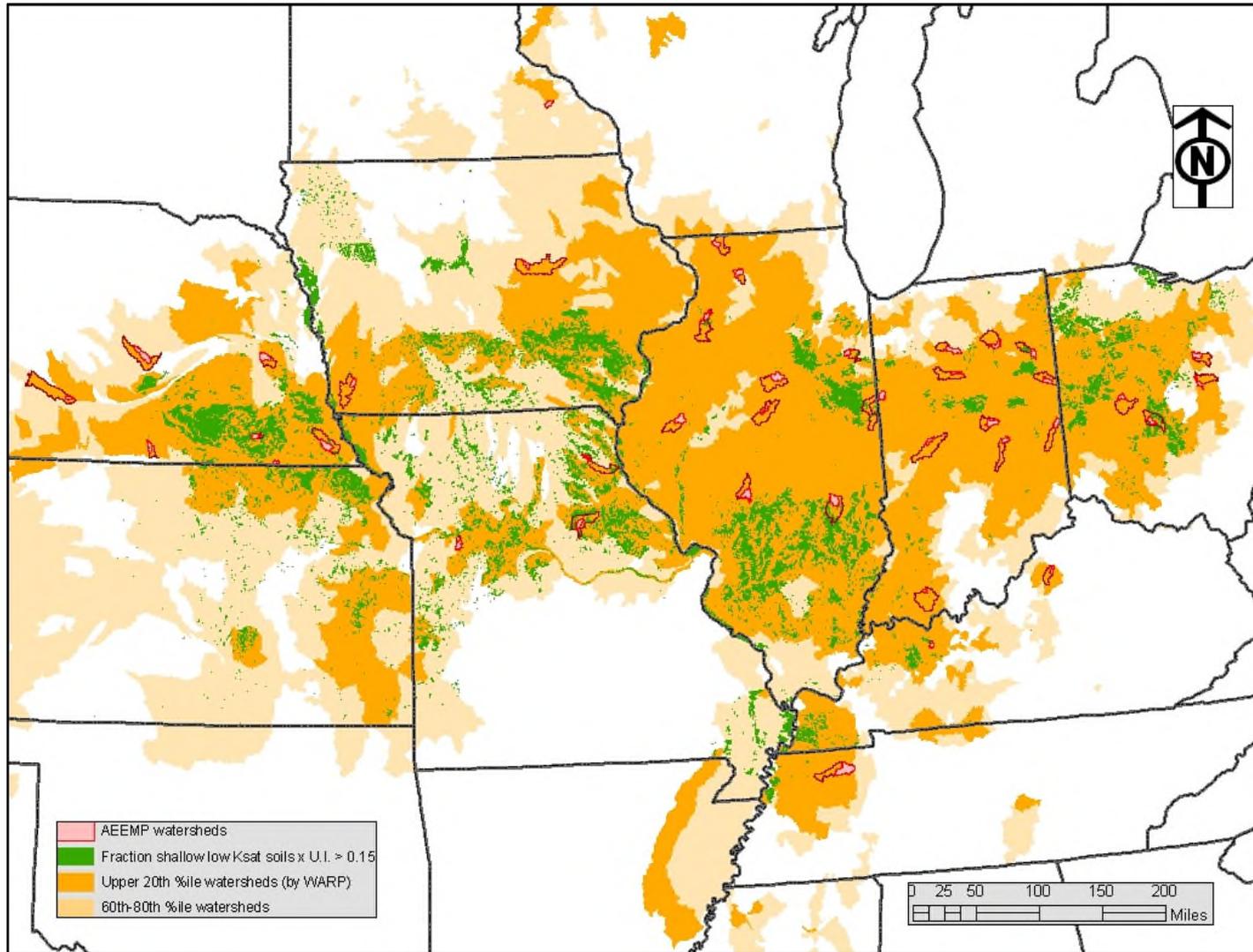
Locations of Sites that Exceeded the LOC



Key

- ★ Sites exceed LOC in 2 or more years
- ▲ Sites exceed LOC 1 year only

Areas with Conditions of Concern



Distribution of Additional Monitoring Data

