



USGS Projects and Capabilities

June, 2009

Max Ethridge
Regional Executive, North Central Area

**Presentation to Midwest Association of Fish and
Wildlife Agencies**

Update on regional reorganization

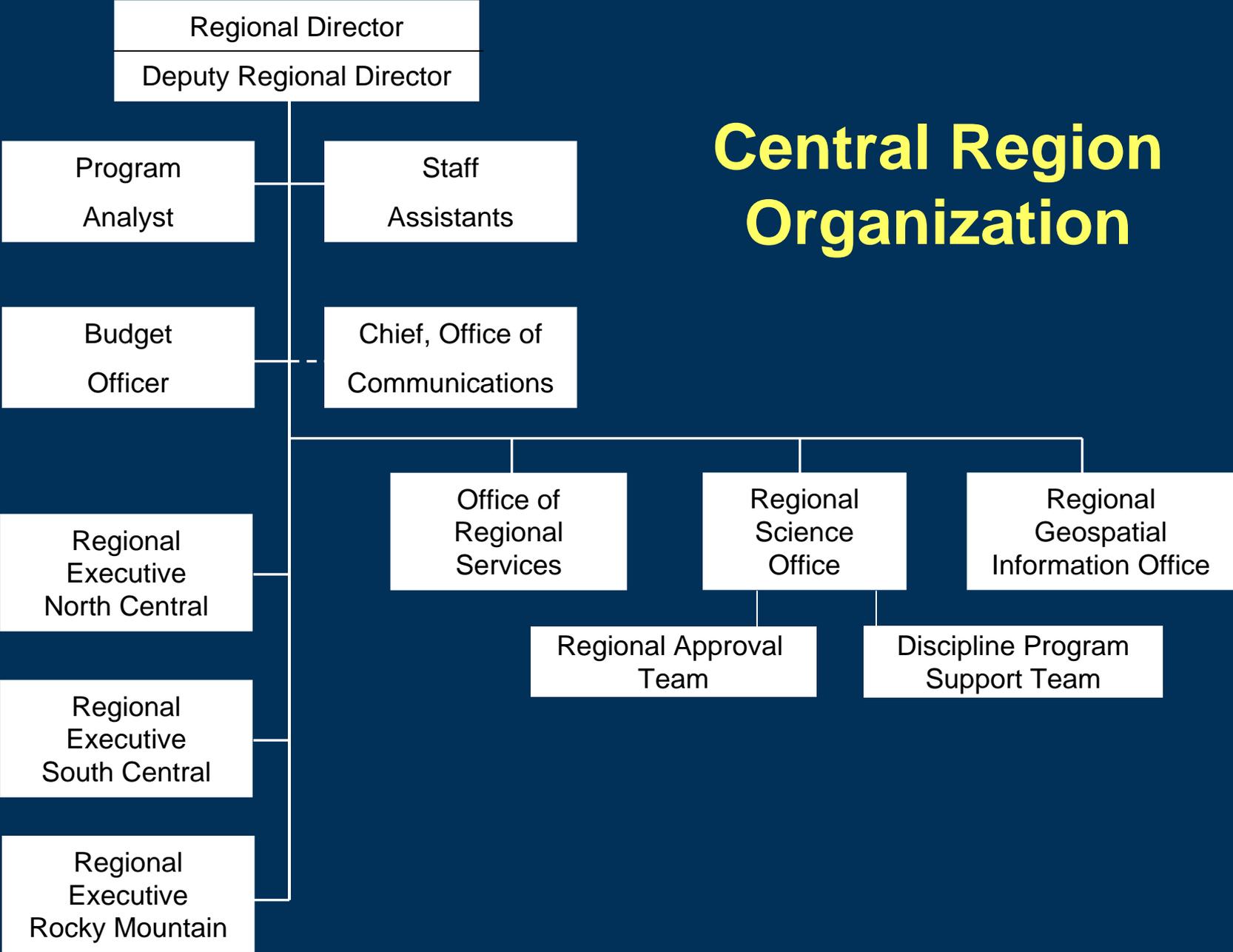
- **New Regional Director**
- **Regional science plan**
- **Regional input on Bureau initiative process**
- **Regional funding—CRISP, DOI on the Landscape, WLCI, CEN**
- **Regional funding components—National Climate Change and Wildlife Science, Quick Response Program (with FWS), National Resource Preservation Program (with NPS)**

USGS Central Region Reorganization into 3 Areas

- National Capabilities remain as they are
- Science/Cost Centers report to Rex

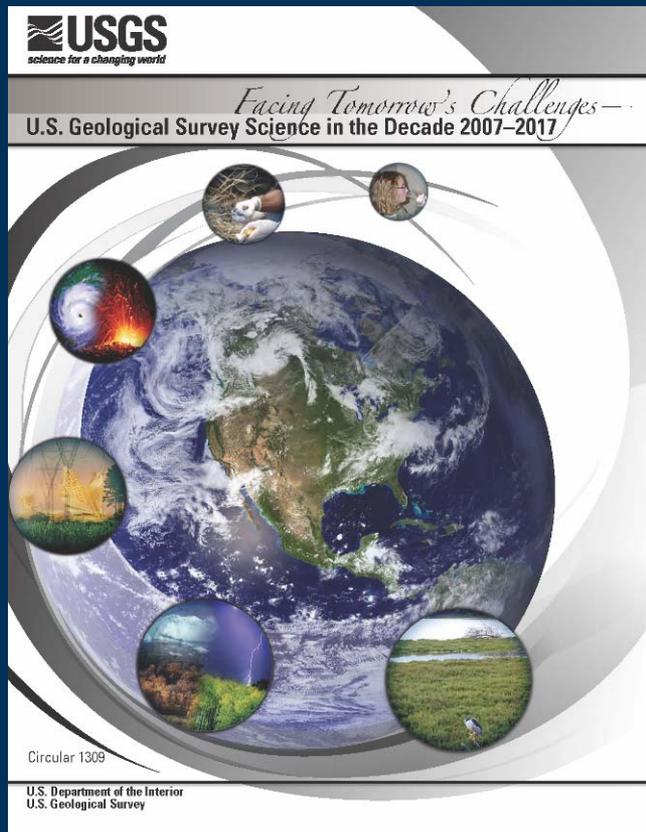


Central Region Organization



USGS Science Disciplines

- **Biology**
- **Geology**
- **Geography**
- **Water**
- **Geospatial Information**



Science Strategy 2007-2017

- **Ecosystems**
- **Global Change**
- **Energy and Minerals**
- **Hazards**
- **Human Health**
- **Water Census**
- **Data Integration**

Assets USGS Brings

- Long-term monitoring, assessment, and research infrastructure for collaborative study
- Interdisciplinary expertise and capability nationwide and internationally
- Collaborations
 - Scientist to scientist
 - Program to program
 - Regional/National

Examples of USGS Capabilities

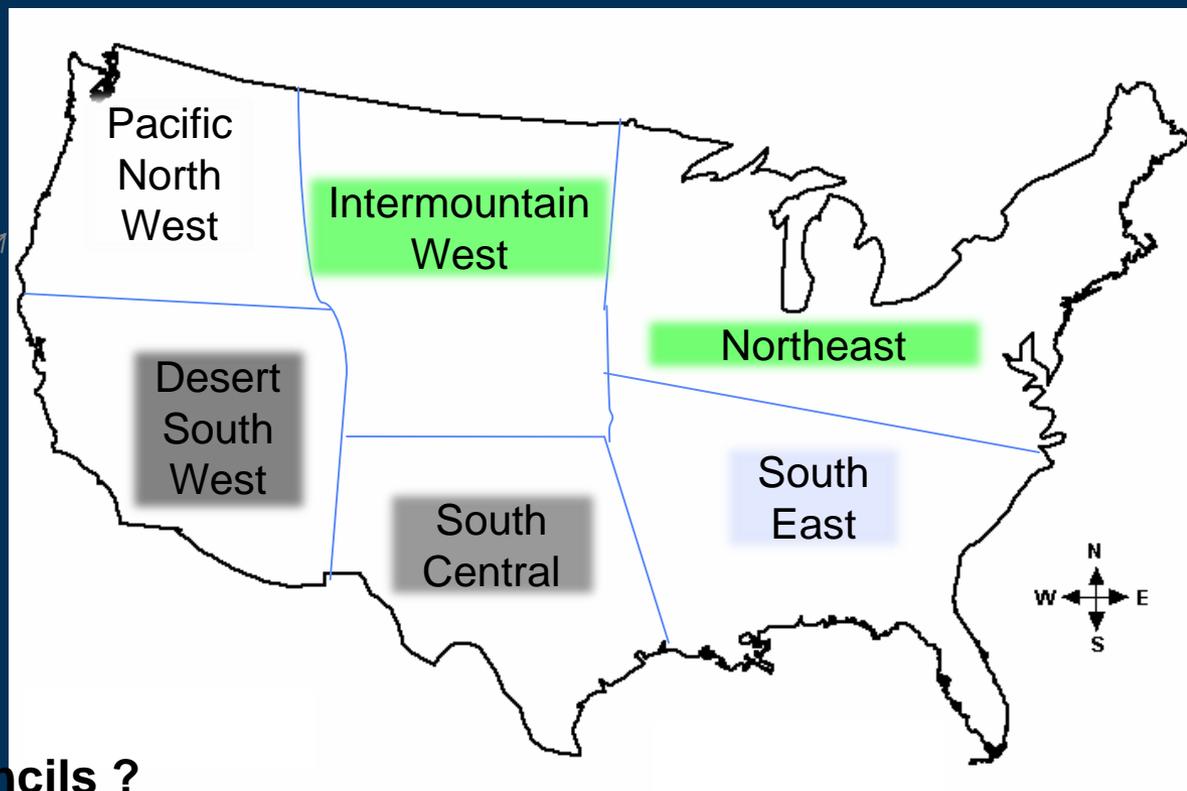
- Remote sensing research and applications
- Environmental toxicology and chemistry
- Chemical, genetic, and molecular tools
- Isotope geochemistry and geochronology
- Early warning and environmental monitoring of hazards
- Geochemistry, biogeochemistry
- Geophysics
- Geologic mapping
- NAWQA
- Forecasting, early detection, and rapid response to invasive species
- Socioeconomics

Central Region priorities

■ Short-term

- Carbon sequestration—biological and geological
- National Climate Change and Wildlife Science Center
- Lower Mississippi Valley
- Greater Platte River Basin

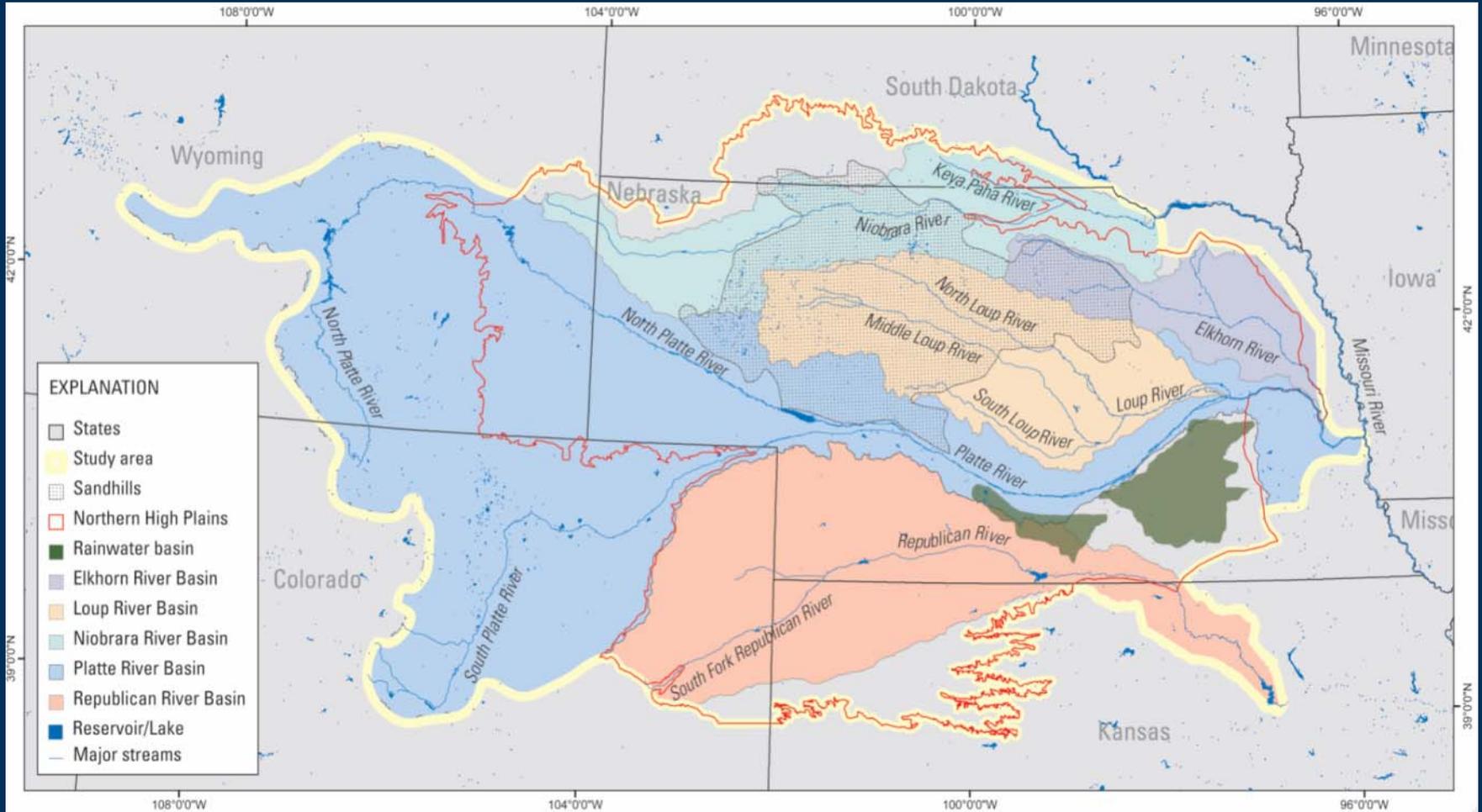
Regional Climate Science Hubs



Advisory Councils ?



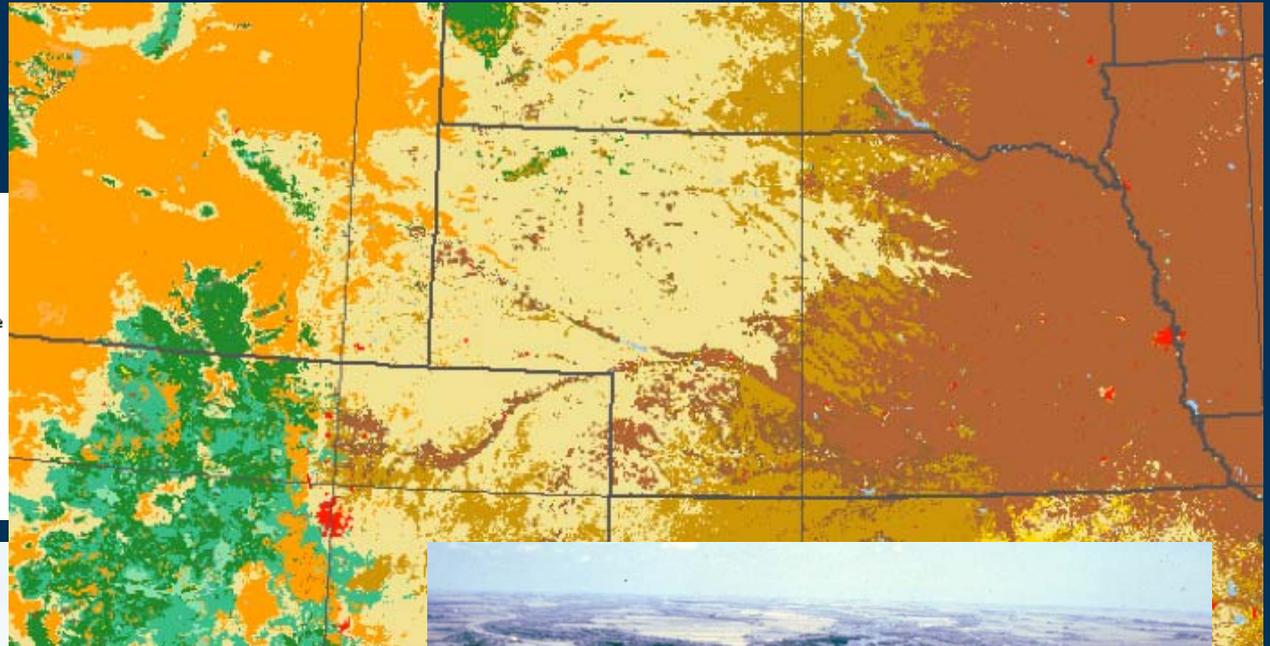
Greater Platte River Basins study area



Greater Platte River Basins

■ A Gradient of Contrasts

- Urban and Built-Up Land
- Dryland Cropland and Pasture
- Irrigated Cropland and Pasture
- Mixed Dryland/Irrigated Cropland and Pasture
- Cropland/Grassland Mosaic
- Cropland/Woodland Mosaic
- Grassland
- Shrubland
- Mixed Shrubland/Grassland



Central Region priorities

- **Long-term---developing a plan to identify capabilities, ongoing activities, programs, ongoing and potential partnerships, goals**
 - **Ecosystems**
 - **Climate change**
 - **Hazards and energy**
 - **Water Census**
 - **Health**
 - **Data management**

Science Highlights

■ Climate change

- Greater Platte River Basin—developing a science plan that identifies science questions, research and monitoring needs; possible link to CEN
- Northern Rockies NCCWSC hub
- Carbon sequestration—funding to Energy program for geological targets, funding to Ecosystems Program for biological targets
- Pine beetle impacts—land use, economics, nutrient fluxes, wildlife habitat, water quality, flood and debris flow hazards

Science Highlights

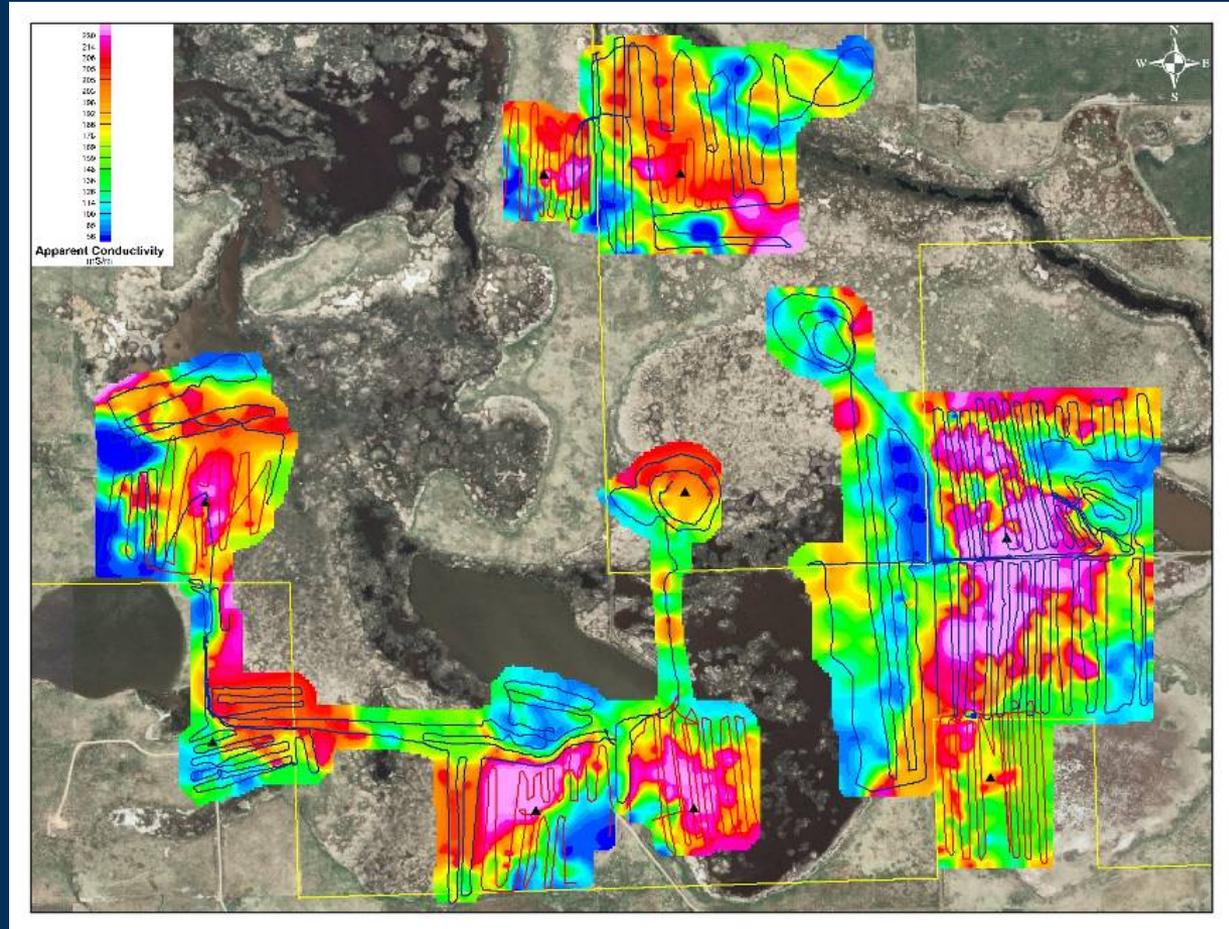
- **Partnerships**

- **NEON through the National Phenology Network, Eros Data Center, NAWQA protocols**
- **NEON headquarters in Boulder**

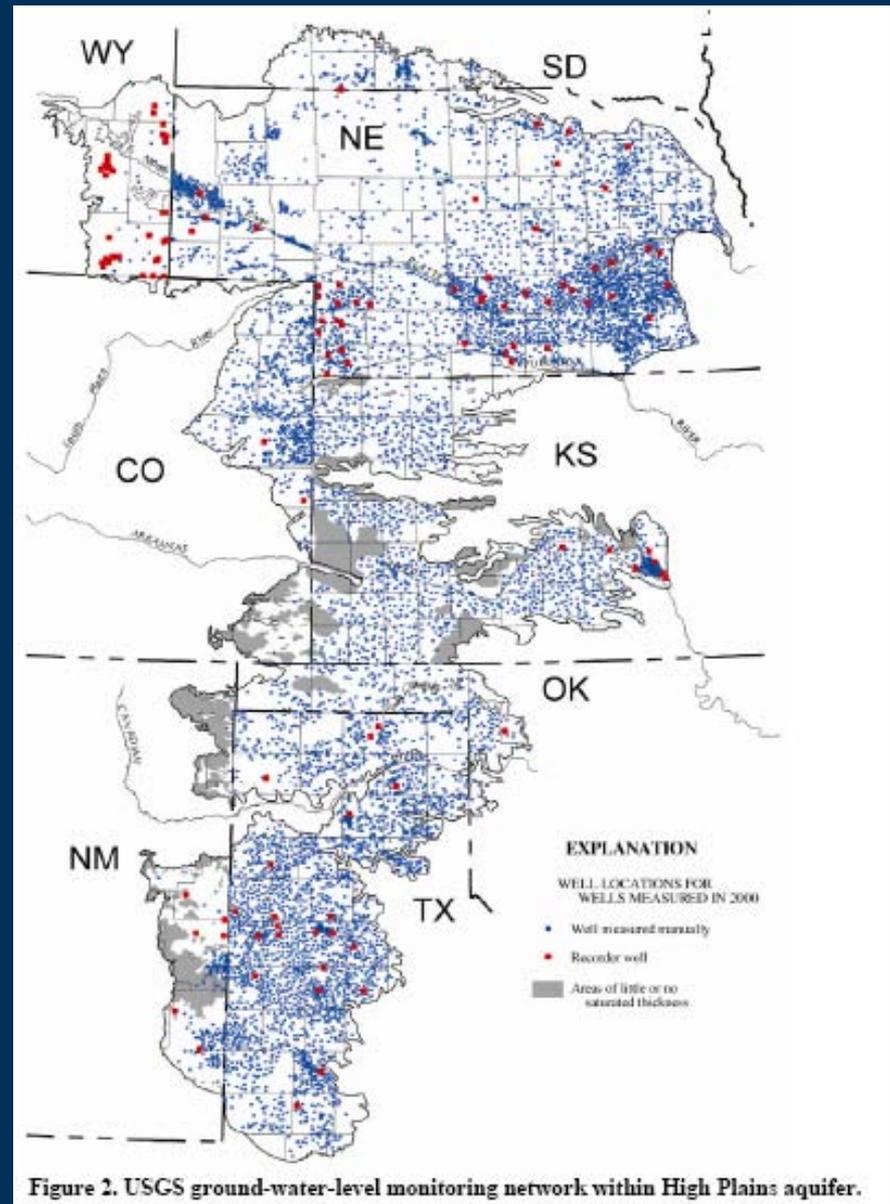
Science Highlights

- **Water quantity and quality**
 - **New geophysical techniques being used for groundwater studies**
 - **Emerging contaminants**
 - **Flood events 2009—partnerships being developed, funding for new instrumentation**
 - **High Plains water availability study beginning in 2009**

Beaver Lake Wildlife Protection Area (FWS), Burke Co., ND (Prairie Pothole region, Williston Basin energy field). The figure shows an application of a geophysical technique, ground conductivity. The map shows areas of saline ground water related to drilling for oil and gas.



- High Plains Water Availability Study
- USGS National Program of Regional Aquifer Assessments (Office of Ground Water)
- High Plains aquifer study beginning in FY09



Science Highlights

- **Environmental effects of agricultural practices**
 - **Pathogens and bacteria in ground- and surface-water from manure and wastewater**
 - **Nutrients in surface water**
 - **Constructed wetlands to mitigate nitrogen and phosphorus additions to surface water**

USGS Research Interests related to agriculture

- Evaluating effects on terrestrial and aquatic ecosystems
- Watershed, reservoir, aquifer, and wetland assessments
- Chemical and microbial contaminants (nutrients, pesticides, emerging contaminants, pathogens)
- Trends in land and water use
- Carbon cycling
- Sedimentation and geochemistry of soils and stream sediments
- Invasive species and GMOs
- Stream and lake eutrophication and coastal hypoxia

Constructed Wetlands for Wastewater Treatment and Reuse

Designed and tested for water
quality improvement and
Wildlife habitat enhancement



Science Highlights

- **Alternative energy**
 - Wind energy impacts on wildlife
 - Biofuels—examination of water use needs, land use changes



Science Highlights

■ John Wesley Powell Institute

- Recommendation of the USGS Science Strategy
- An interdisciplinary institute for resource and commodity analysis
- Modernize and enhance the mineral commodity information activities of USGS
- Understand the linkages among energy, mineral, soil, water, and ecosystem resources
- Conduct integrated multi-resource assessment in a global geologic economic and environmental context
- Increase our understanding, information gathering, and assessments of offshore energy, mineral and other resources
- Maintain state-of-the-art resource research, data gathering, and technology development

Science Highlights

- Invasive species
 - Early detection, rapid response
 - Remotely sensed methods to identify invasions
 - Genetic studies of invasives

Leafy spurge

