Water Research, Inventory & Monitoring in Montana

Presentation to the Legislative
Water Policy Interim Committee

September 13, 2011

MONTANA University System
WATER CENTER

Purpose of the Presentation

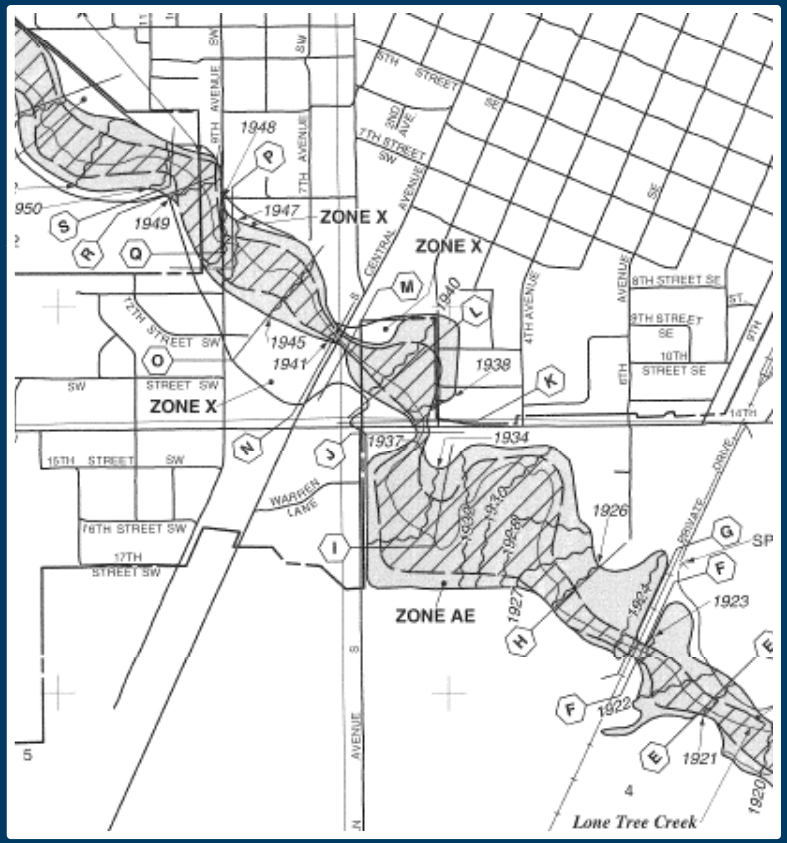
- Summarize water research and data gathering activities
- Identify involved organizations
- Serve as springboard for committee deliberations

Research

Activity that generates new knowledge about the way the world works. Research results are published in peer-reviewed literature and applied both within and outside the boundaries of the state.

Monitoring & Inventory

Activities that measure and project the characteristics of our water resources: amounts, flows, locations and properties – physical, chemical and biological



Principal Water Research Organizations: UM & MSU

The two universities host water research projects with a total value exceeding $15 million each (in a combined $170 M research portfolio). The great majority of the funding is federal.

Water People at UM, MSU

About 100 faculty members & research associates conduct water research;

200 students at the undergraduate & graduate levels acquire direct research experience

Subjects of Research

- Water engineering
- Hydrology
- Snow and ice behavior
- Climate
- Aquatic biology and fisheries

Water research

Flathead Lake Biological Station

Understanding Floodplain Dynamics

Water research

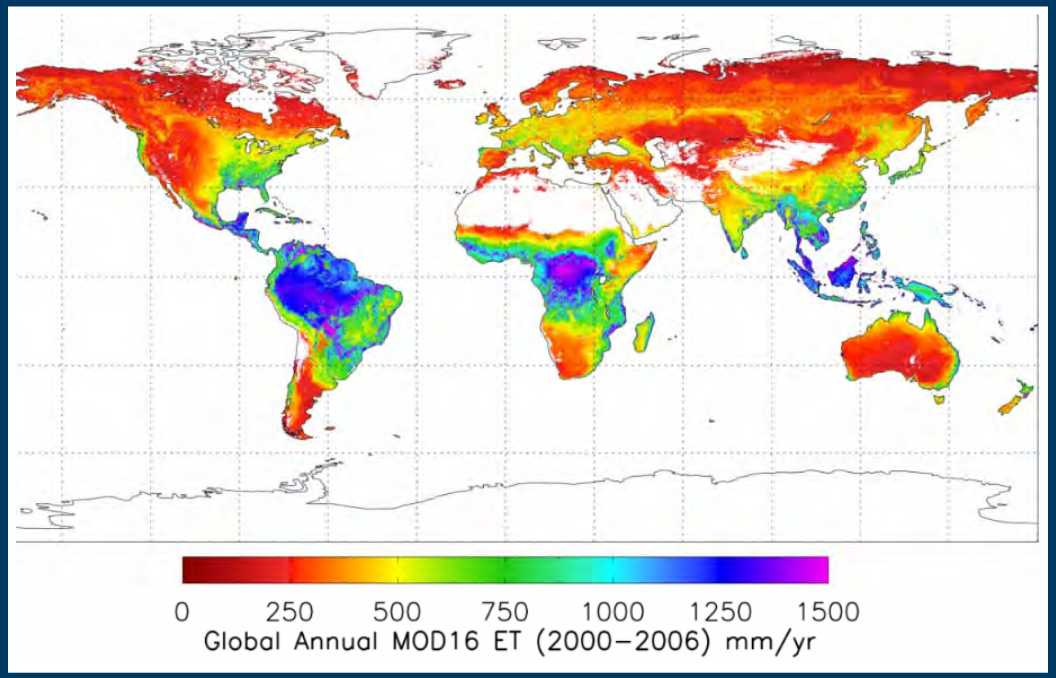
MSU Thermal Biology Institute

Applying the Tools of Thermophiles

Water research

UM Numerical Terradynamic Simulation Group

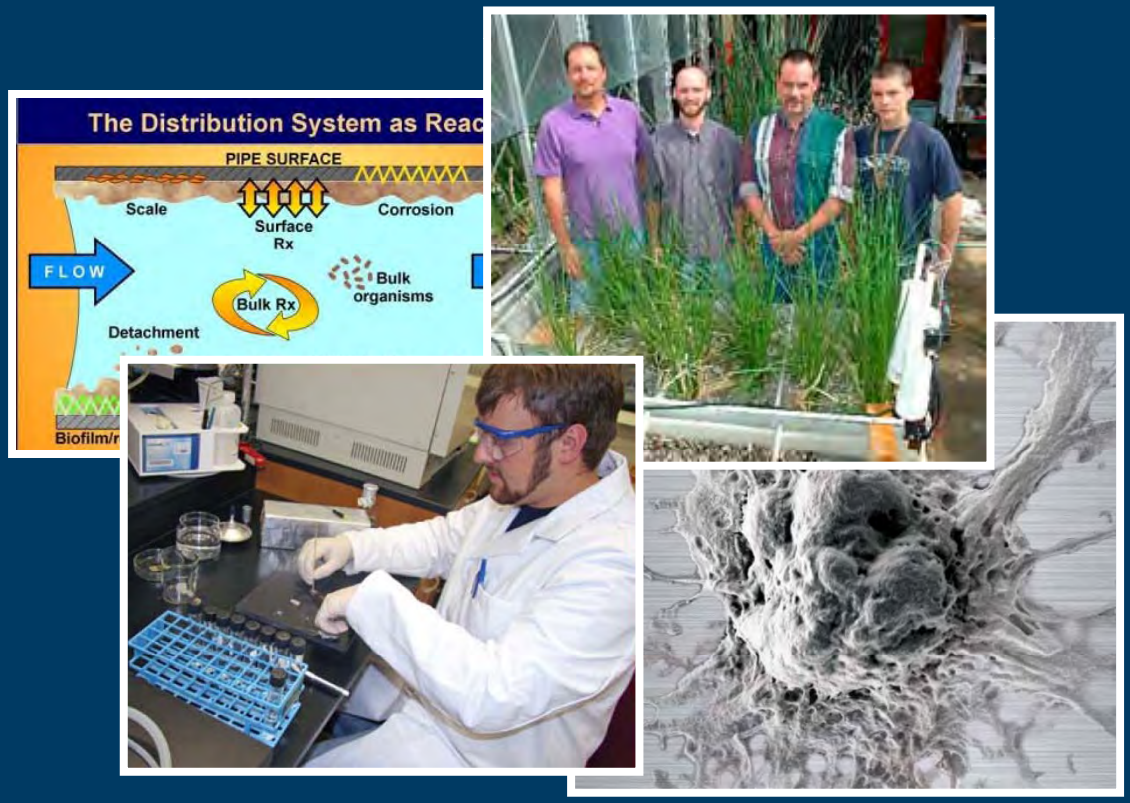
Cutting-edge Computation to Understand Global-scale Processes



Water research

MSU Center for Biofilm Engineering

How Microbes Colonize Surfaces



Water research

NSF EPSCoR

Building Montana's Research Capacity

VOEIS

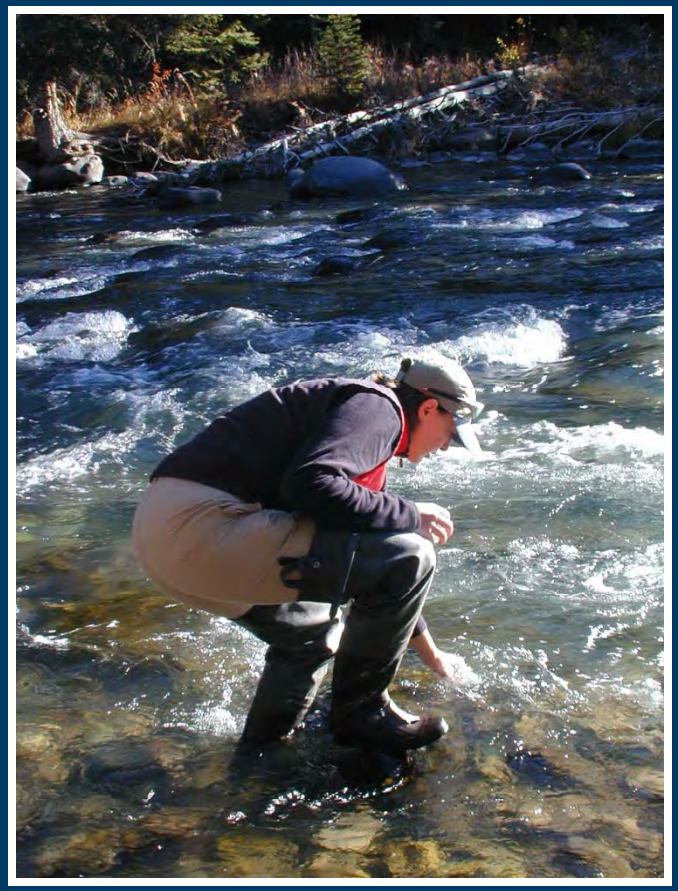
The Virtual Observatory and Ecological Informatics System

Additional Research

- Montana Tech – hydrology, water quality, remediation
- USGS – salinity, SAR methods development
- USGS – how do wetlands respond when land goes out of CRP?
- Montana DEQ – projects to support rule-making

Water Inventory & Monitoring

- Conducted by state and federal agencies
- To answer immediate questions
- To serve long-term forecasting and research data needs
- To characterize particular water resources or situations

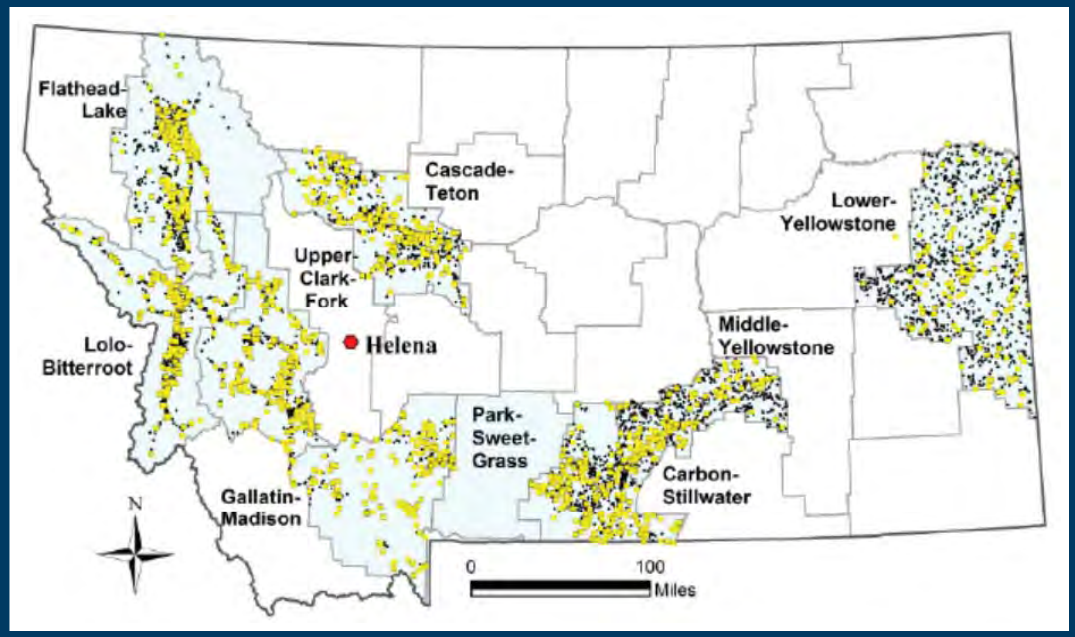


Ground Water Assessment Program

- Created by the 1991 Legislature
- Operated by the MT Bureau of Mines & Geology
- Maps the distribution and documents the water quality and physical properties of Montana's major aquifers
- To date, 42 maps have been published

Ground Water Assessment Program

- Nearly 9000 wells have been visited
- Well information is available via GWIC, the Ground Water Information Center

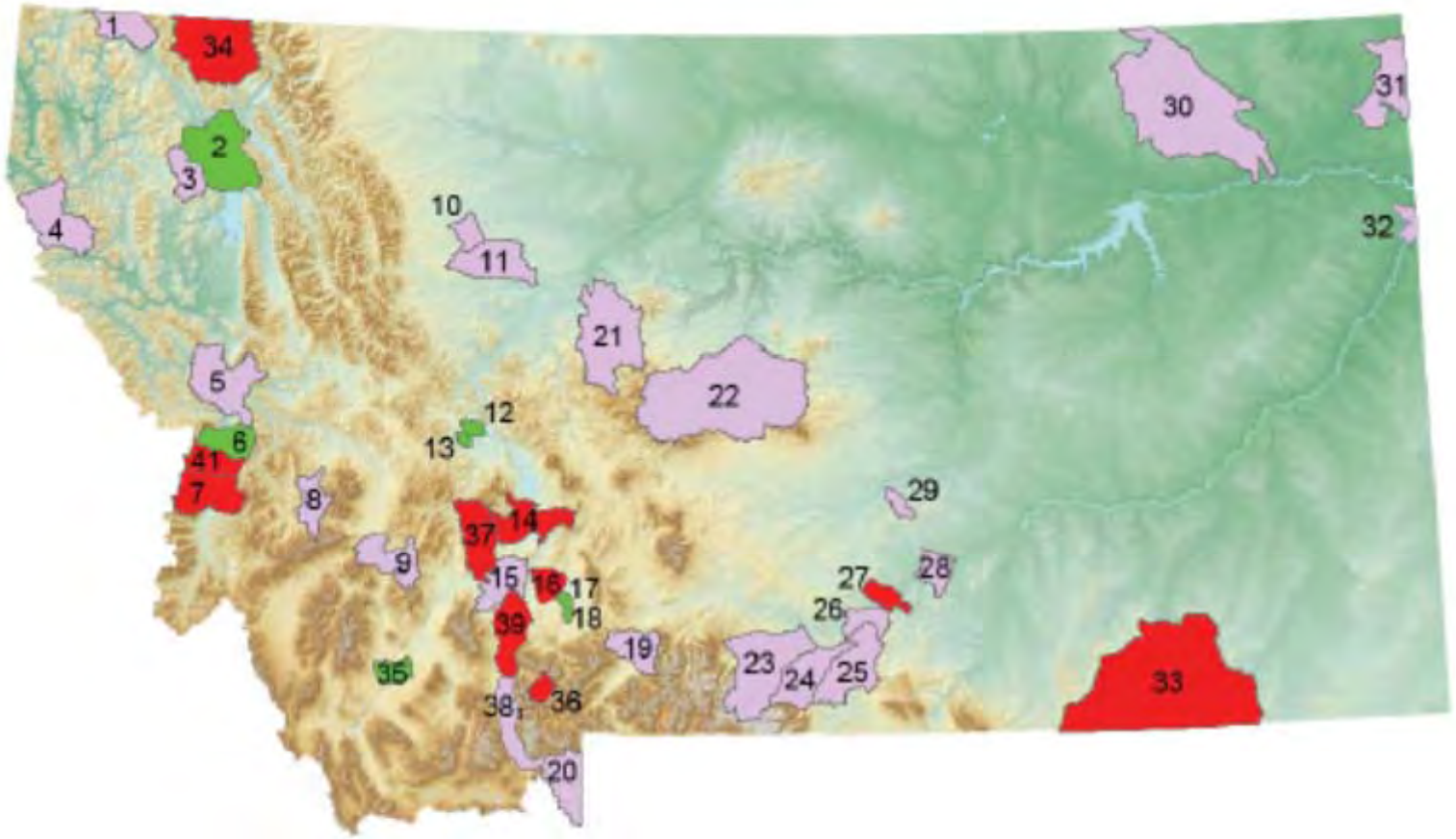


Ground Water Investigation Program

- Established by 2009 Legislative action
- Detailed studies focusing on problem areas
- Areas deserving study can be nominated by any citizen
- Seven studies completed 2009-2011, nine more nominated for 2011-2013

MAP OF PROJECT AREAS:

Green, projects for 2009–2011
Red, planned projects for 2011–2013;
Pink, proposed future GWIP projects.



Other Special Studies

- Salinity monitoring in the Tongue River – USGS
- Site assessment prior to remediation – Natural Resource Damage Assessment Program, Montana Department of Justice
- Hazardous-waste site assessments – responsible parties, contractors and regulatory agencies

Other Special Studies

- Wetland mapping and amphibian surveys – Montana Natural Heritage Program
- Floodplain re-mapping – Federal Emergency Management Agency, with the DNRC
- Water quality characterization for establishing TMDLs and assessing Clean Water Act “use attainment” – Montana DEQ
- Groundwater pesticide testing – Montana Department of Agriculture

Long-Term Monitoring

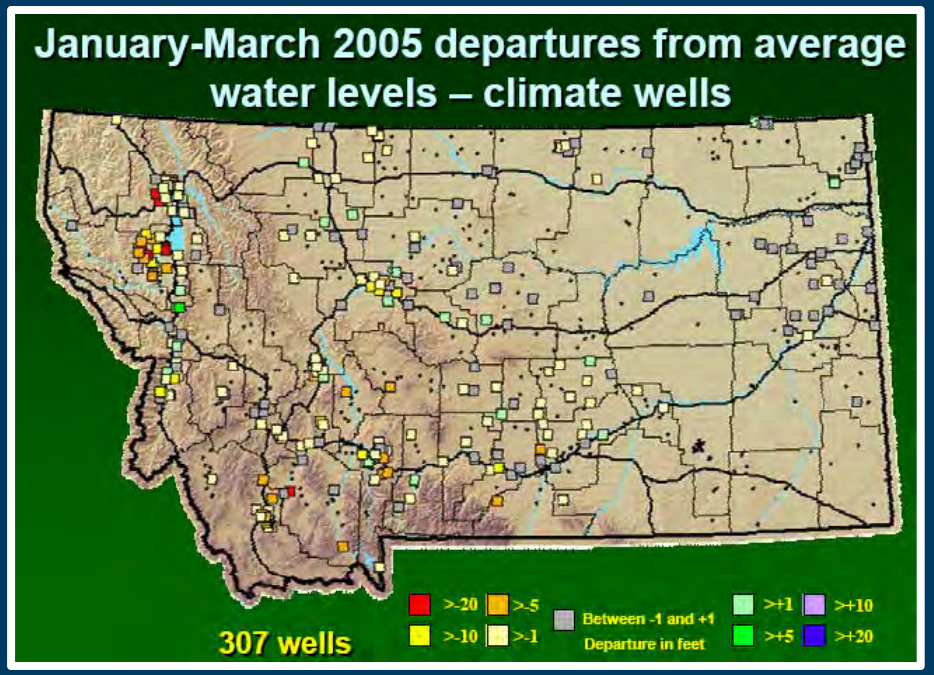
USGS Stream Gaging

- 125 Montana sites report daily
- Data available online
- Small number of sites reporting continuously, in real time
- Very little water quality information

Long-Term Monitoring

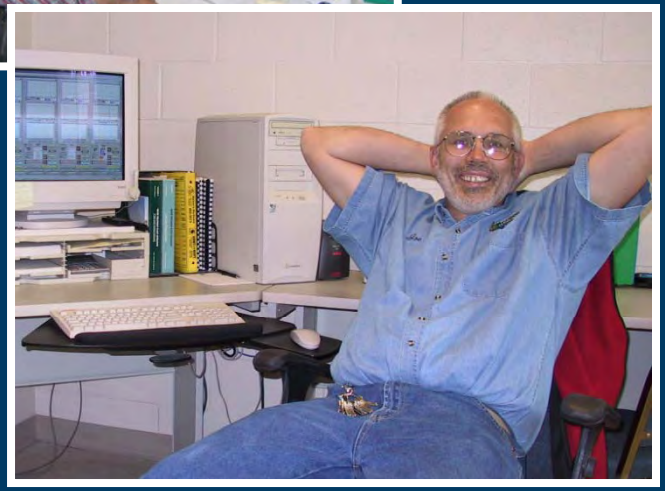
MBMG Ground Water Monitoring

- Water table elevations from 900 wells, visited on a 5-7 year rotation
- Some water quality data
- Available at no cost through Ground Water Information Center



Long-Term Monitoring

- Public water and wastewater utilities must monitor the characteristics of their treated water/ wastewater
- Public water systems (~2000) must report to their customers every year



Long-Term Monitoring

- National Weather Service – weather data and forecasting
- USDA Natural Resources Conservation Service – snowpack data, drought and streamflow forecasting
- USDI Bureau of Reclamation – AgriMet and reservoir data
- Montana DNRC – status of state-owned reservoirs
- Local water quality districts – monitoring of water-table elevations
- Northwest Power & Conservation Council – projection and analysis of water power resources in the Columbia Basin

Questions & Comments?

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