

The problem: the Missouri River Basin is subject to extreme variability in hydroclimatic conditions

- Spatial variability:
 - Large gradient in climatic regimes in moving downstream from mountain headwaters
- Temporal variability:
 - Dramatic swings in climatic conditions
 - Extended droughts
 - Floods

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The need: improved hydroclimatic information would aid in water resource management

- Main-stem reservoir reach, where storage capacity is large
- Also in downstream reaches, where storage is much smaller, and management is somewhat more reactive

The vision: coordinated, basin-wide, multi-agency approaches for filling information gaps relevant to water resource management

- Multiple agencies bringing resources to bear
- Coordinated approaches among water agencies, water managers, researchers, and practitioners

The conceptual approach:

- 1 – Comprehensive compilation and characterization of observed climatic and streamflow records
 - Include “naturalization” of flow records by accounting for withdrawals, storage, and etc.
 - Provides an important foundation for many purposes such as record extensions, modeling, and etc.
- 2 – Extending hydroclimatic records beyond the observed records using paleoclimatic and paleohydrologic approaches
 - Focusing primarily on hydroclimatic extremes of either droughts or floods and extended wet cycles
- 3 – Hydroclimatic modeling (many relevant approaches that can improve our knowledge base and management capabilities)

Workshop outcome:

- Multi-agency team will work together to develop a more advanced white paper
 - White paper will provide more details regarding potential future directions
- Various separate proposals for specific future activities will be prepared
 - Example: paleoclimate research team is working towards a proposal to NSF