The NC CASC: Generating the Science to Help Resource Managers Adapt to a Changing World

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Introduction: The North Central Climate Adaptation Science Center is one of nine regional centers in a national CASC network created to help resource managers prepare for changes due to a warming climate. The center is a unique partnership between the USGS, CU Boulder, and five consortium partners that serve the resource management community in the region that encompasses **Colorado, Wyoming, Montana, North Dakota, South Dakota, Kansas,** and **Nebraska**. In the last five years, the CU Boulder-hosted NC CASC has developed partnerships with regional stakeholders, Tribal nations, and other climate-focused organizations; substantially grown our communication and outreach program to create a community of researchers and managers; and conducted interdisciplinary climate adaptation research and tool development to help resource managers conduct climate-informed activities. We provide climate adaptation science services to our partners such as the US Fish and Wildlife Service and the National Park Service which includes **tool development** through our Climate Science Support Platform and **synthesis activities** such as Rapid Climate Adaptation assessments. NC CASC has provided **climate science support for the Rosebud Lakota Tribe's climate adaptation plan**, more than 15 FWS Species Status Assessments; and Scenario Planning activities for 5 National Parks.

Climate Tools

The North Central Climate Adaptation Science Center (NC CASC) has released a new R package, *Climate Futures Toolbox*, with the goal to provide easy access to downscaled climate projections data (MACA) to support climate change analysis and scenario planning.

Wind Cave National Park, CCSM4, RCP 8.5
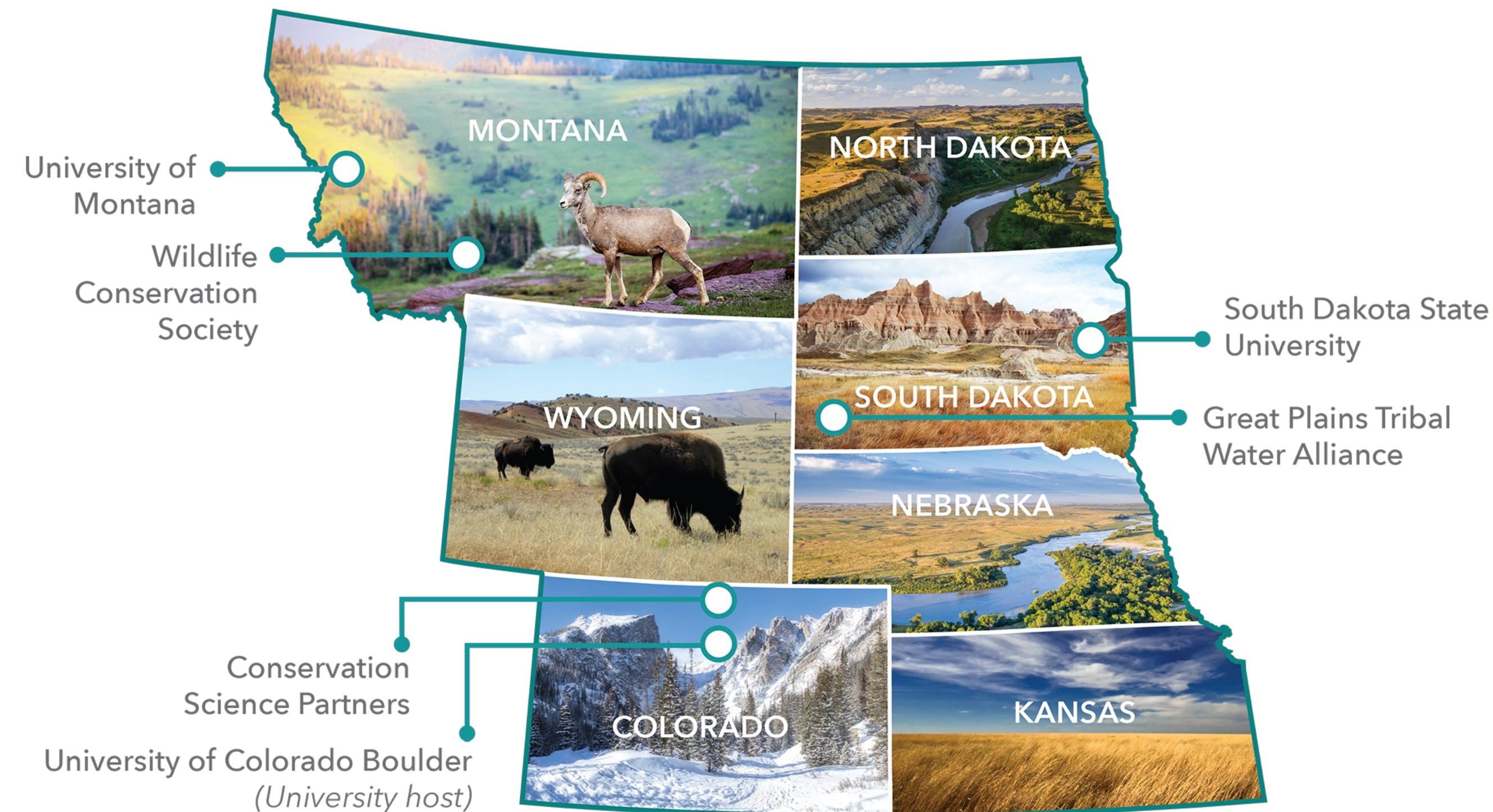
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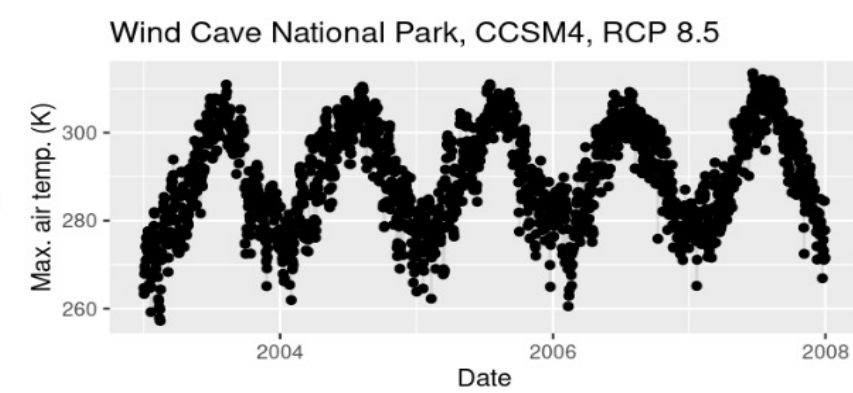
Try the tools here.

R-Shiny Apps to Plot and Extract Observed & Future Projections Data
- Grassland Productivity and Climate - Observations & Future Projections
- Vapor Pressure Deficit (VPD) Extremes - Observations & Future Projections
- Evaporative Demand (PET) Extremes - Observations
- Climate Future Toolbox (CFT) - Future Projections
- Standardized Precipitation Index (SPI) - Observations & Future Projections
- Standardized Precipitation Evapotranspiration Index (SPEI) - Observations & Future Projections
- Snowfall and Rainfall Projections

Who We Are

NORTH CENTRAL CLIMATE ADAPTATION SCIENCE CENTER REGION

University of Montana

Wildlife Conservation Society

MONTANA

NORTH DAKOTA

WYOMING

SOUTH DAKOTA

NEBRASKA

COLORADO

KANSAS

South Dakota State University

Great Plains Tribal Water Alliance

Conservation Science Partners

University of Colorado Boulder *(University host)*

The Grasslands Synthesis Project

Understanding how climate change and variability will impact grassland ecosystems is crucial for successful grasslands management in the future. Towards that goal, the NC CASC began the "Grasslands Synthesis Project" in 2020 to compile baseline information on broadly shared grassland management goals and challenges in the North Central region. The project worked to synthesize the existing climate and ecological data that can help grasslands managers to meet their goals. The reports will be of interest to grassland managers across the region. Scan below to access the reports.

Volume 1:
Grassland Management Priorities for the North Central Region

Volume 2:
Synthesis of Climate and Ecological Science to Support Grassland Management Priorities in the North Central Region

Connect With Us

 @NC_CASC

 North Central Climate Adaptation Science Center

 Youtube.com/NorthCentralCASC

 nccasc@colorado.edu

What We Do

Science: Interdisciplinary research, synthesis, datasets, and tool development are informed by collaboration with stakeholders to provide usable science that is applicable for climate-informed resource management.

Partnerships: Partnerships with regional stakeholders, Tribal Nations, and other organizations enable us to respond to high-priority natural and cultural resource management challenges and foster substantive, sustained engagement between scientists and managers.

Capacity Building: Builds a community of researchers and managers and fosters their leadership in science-based resource management.
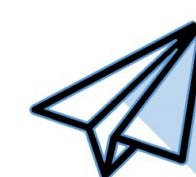
Communication and Outreach: Communication and outreach are embedded in all aspects of the NC CASC's work and are integral to fostering our core values of equity, trust, communication and accessibility.

Climate Science Support Platform

- Guidance on the application of climate science and data for specific use cases
- Provide data, synthesis, and customized climate change information for adaptation planning
- Development of open-source tools for managers to access climate data; developing workflows to access climate data
- Assess science, data, and training needs for stakeholders to create useful, accessible information to support resource managers
- Synthesize project-specific climate information (e.g., climate summaries produced for US FWS species assessments)
- Develop resource briefs and regional summaries