

Final Report

The Wyoming Climate Atlas

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Problem and Research Objectives:

As with all data that is continuously being accumulated, statistics, changing user requirements, and changing technology to display and interpret these data create an ever present challenge. With the attention focused on issues of global warming and the impacts of climate change, the importance for accurate and timely climate data becomes all the more critical. The research objectives of this grant has been to provide an objective assessment of climate trends for Wyoming and to assemble the most comprehensive and complete dataset of Wyoming climate.

Methodology:

Weather and its associated historical record (climate data) is comprised of several elements including; surface temperature, precipitation, snowfall, wind, pressure, humidity, evaporation, drought, severe weather, clouds, solar radiation, air quality, and upper air climatology. While some weather stations collect only temperature and precipitation, other data is acquired remotely by radar and satellite, and still some data is derived or interpolated. Through the use of model data, such as **PRISM (Parameter-elevation Regressions on Independent Slopes Model)** (<http://www.ocs.orst.edu/prism/docs/>), data is represented at a 1 mi² resolution.

Principle Findings and Significance:

- (1) Climate change in a rural state such as Wyoming as been insignificant since the climate record has not been contaminated by major land use changes over the decades.
- (2) Model data such as PRISM can achieve accurate climate data where large spatial gaps between weather stations exist.
- (3) Water vapor, perhaps the most important green house gas, can be accurately measured using GPS signal delay measurements:
http://www.gpsmet.noaa.gov/labreview/2002/2002-GPSMET-TECH_REVIEW.pdf).

Student Support:

During the last year of this study, geography and art major Kate Grimes, now a graduate of the University of Wyoming provided invaluable technical assistance and was made co-author of this atlas. Throughout the process, she was instrumental in developing the atlas format, GIS PRISM maps, and other graphic reformatting.

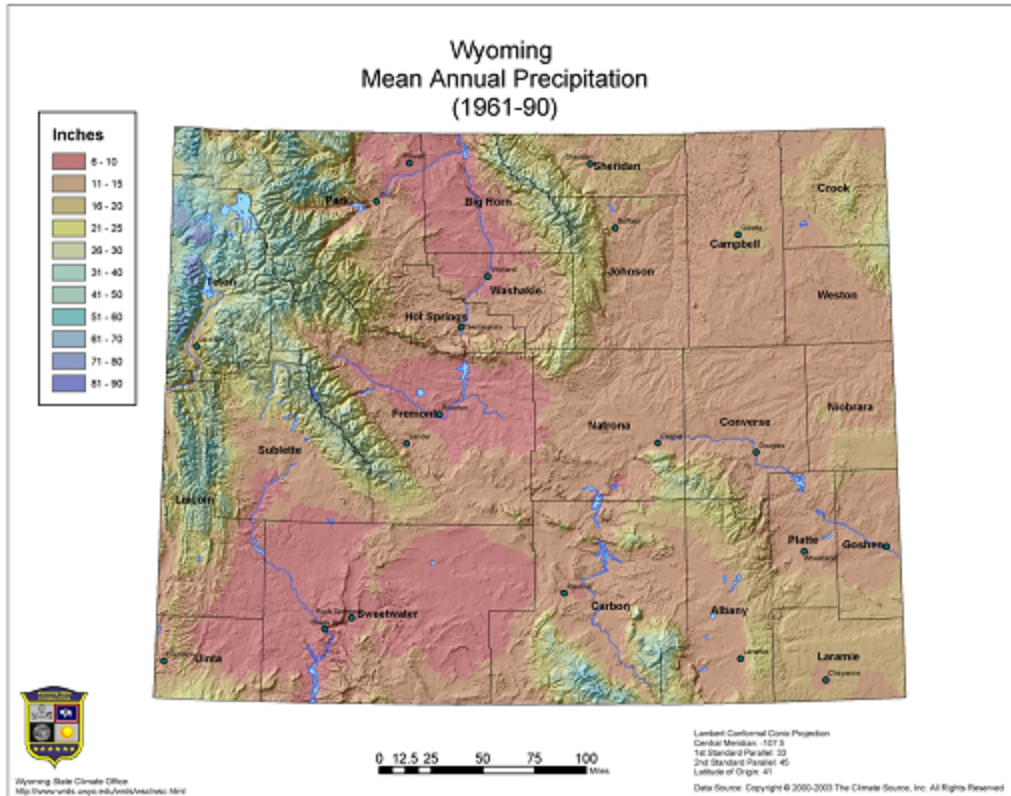
Publication:

Wyoming Climate Atlas by Jan Curtis and Kate Grimes (1,500 copies, soft cover, 328 pp. plus data CD). Also, available on-line at:
http://www.wrds.uwyo.edu/wrds/wsc/climateatlas/title_page.html

References:

Wyoming Climate Atlas: On-Line version:

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PRISM(1961-1990) showing Wyoming mean annual precipitation