

# EXPLORE MONTANA

8 Square Miles at a Time



## MAPS

Imagine—dividing Montana into rectangles measuring about 8 square miles—gathering attributes on up to 250 land and climatic characteristics for each chunk of real estate—then, drawing a map showing all those chunks that share any combination of these characteristics.

That's what MAPS does. MAPS—Montana Agricultural Potentials System—is a geographic information system designed to improve planning and decision-making for people who manage land resources. Nearly 18,000 cells across Montana can display, for example, precipitation, land use, temperature, soils, physiography, potential evapotranspiration, and land ownership attributes. These Albers equal area maps at several scales can provide a useful screening tool for identifying areas where more detailed information is needed. Spatial and temporal relationships can be illustrated.

## MAPS Mailbox

Legal description or latitude/longitude allows MAPS Mailbox to provide Montana land and climate data in a handy interactive computer program on a county-by-county basis. People who make decisions about the use of land and natural resources can easily access data on 150 different attributes for each 8 square mile parcel of land in the state.

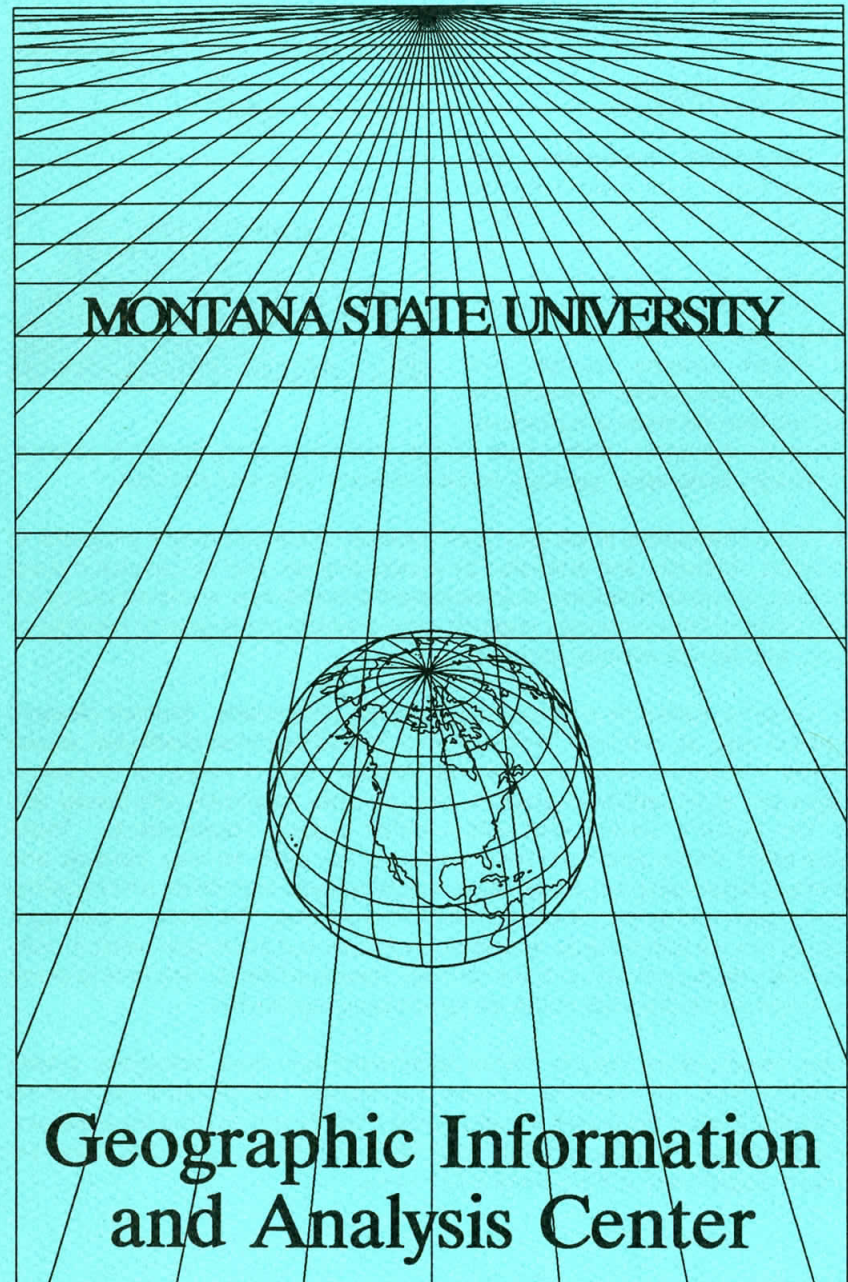
Building professionals, land use planners and consultants, and energy and mining industries, for example, could use the information for site selection, environmental assessment and planning purposes. Agricultural businesses, researchers and producers might use the information to determine the potential for specialty crops, evaluate crop inputs or examine the potential for chemical contamination of groundwater.

## FARMS

Farmers often use information from the research center geographically closest to them, not realizing the research center may have different environmental conditions. Crop and soil recommendations from that research center may then prove unsatisfactory. FARMS, a specialized interactive program, contains data matching 13 environmental factors to 48 research centers for 25 crops.

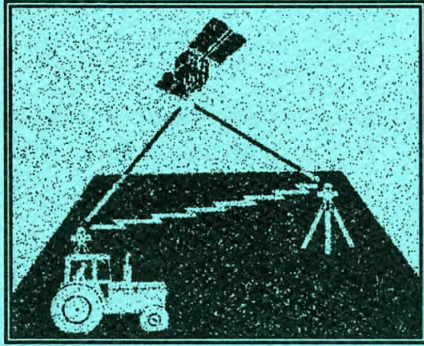
Given correct input data, FARMS usually can match any farm with the most similar research center in Montana, North Dakota, South Dakota, Wyoming, Idaho, British Columbia, Alberta and Saskatchewan. The program then identifies research centers to farmers with similar environments.

*For details about MAPS, MAPS Mailbox and FARMS contact Joe Caprio, Jerry Nielsen, Diana Cooksey or Jeff Jacobsen: Department of Plant and Soil Science, Montana State University, Bozeman, MT 59717, 406-994-4601.*



## About the Center:

The **Geographic Information and Analysis Center** was created by the Montana Board of Regents in March, 1989 and is responsible for the acquisition and operation of the geographic information systems and remote sensing facilities on campus. The Center crosses college and department boundaries drawing its expertise from the areas of agricultural engineering, agronomy, architecture, biology, civil engineering, computer science, entomology, geography, geology, political science, soils and statistics.



The Center contributes, in the land grant tradition, to the university's programs of instruction, research, and extension by conducting on- and off-campus training programs, providing direct technical assistance to Montanans, and conducting joint government-industry-university research using a variety of geographic information system and remote sensing packages.

The Center is staffed by a director and two GIS technicians. Student research assistants help as needed. There are four GIS laboratories distributed across campus. Undergraduates and graduate students from a variety of disciplines analyze and solve problems supplied through direct interaction with faculty and with the Center's private and public sector agency collaborators. These collaborative efforts teach students important job skills as they develop and implement digital geographic databases, spatial analysis techniques and modeling technologies used by private and public sector agencies. The Center encourages students to work with industry, scientists, engineers and each other using a multi-disciplinary team approach to solve complex spatial problems. Students take this knowledge and experience to the workplace upon graduation.

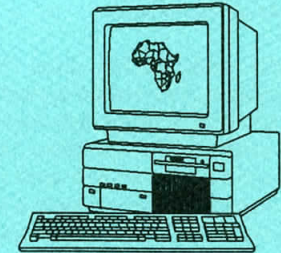
Recent collaborators include private landowners and land managers, private consulting firms, the National Science Foundation, the Montana Agricultural Experiment Station, the Bureau of Indian Affairs, the Bureau of Land Management, the Soil Conservation Service, the Montana Department of Agriculture and the Montana Department of Fish, Wildlife and Parks.

## Facilities:

The equipment listed below is distributed between four GIS laboratories connected via the campus computer network:

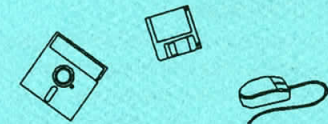
## Hardware:

Digital 3100, 5000 workstations  
Digital and Zenith 386 PCs  
Calcomp and Summagraphics digitizers  
Eikonix and Houston Instrument scanners  
Calcomp and Hewlett-Packard pen plotters  
Digital laser and line printers  
RasterGraphics and Tektronix plotters



## Software:

ARC/INFO (5 copies)  
ERDAS ((5 copies)  
IDRISI (19 copies)  
PC ARC/INFO (16 copies)  
Soil Survey Information System (1 copy)  
C, DBASE , FORTRAN, PASCAL, etc.



## For further information:

For details about collaborative research opportunities, student employment and internships, technical assistance programs and GIS short course and workshop scheduling, contact Dr. John P. Wilson, Director, Geographic Information and Analysis Center, Montana State University, Bozeman, MT 59717-0348, 406/994-6907 (phone), 406/994-6923 (fax).