WYOMING GEOGRAPHIC INFORMATION SCIENCE CENTER

MAPPING • ANALYZING • VISUALIZING • APPLYING GEOGRAPHIC INFORMATION
ABOUT WyGISC

The Wyoming Geographic Information Science Center (WyGISC) is an interdisciplinary research institute at the University of Wyoming focused on the development of geospatial information and technologies and their applications in science, education, government and business.

WyGISC’s mission is to advance the knowledge and application of geographic information science and technology through research, education, and service. WyGISC aspires to become a premiere interdisciplinary academic center in geographic information science research and education, while strengthening our unique leadership role in service and outreach to the university, state and region.

CONTACT INFORMATION

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EXPERTISE AND CAPABILITIES

Disciplinary specializations among WyGISC personnel include geography and urban planning, ecology, geology, hydrology and natural resource management. Technical expertise includes spatial database design and development, remote sensing and image processing, geographic analysis and modeling, application programming, and GIS program management.

WyGISC’s research and development activities are broad, ranging from geospatial data collection and spatial database design and development, to environmental modeling and Web-based geographic query and visualization implementations.
GEOGRAPHIC INFORMATION SCIENCE (GISci)

GISci is a growing, transdisciplinary research field that has emerged from spatial technologies such as geographic information systems, remote sensing and Global Positioning Systems. It also embraces more specialized research in disciplines such as computer science, statistics, mathematics, and psychology. WyGISC seeks partnerships with other University departments to pursue research in the field of GISci.

GEOGRAPHIC INFORMATION SYSTEMS (GIS)

GIS is a technology for creating, displaying and analyzing data in a map format. GIS maps are linked to information in a database, and can also be used to create visualizations such as graphs and 3-D displays. GIS can tell you how many wells are within a mile of a new road, the most suitable location to build a new facility, or the best route from an accident to the nearest emergency facility. GIS is also used to identify spatial patterns, such as crime locations in a city or migration routes of big game animals.

WYOMING GOVERNOR’S SAGE GROUSE CONSERVATION INITIATIVE: HABITAT MAPPING PROJECT

WyGISC combined extensive field sampling, statistical models, remote sensing and GIS to map the distribution of sagebrush species in Wyoming. This information was developed into a Sage Grouse Habitat Database for decision makers, managers and the science community.
REMOTE SENSING

Remote sensing is the science and art of acquiring spatial data from aircraft or satellites and digitally processing the data to interpret spatial heterogeneity.

The WyomingView program at WyGISC aims at expanding remote sensing education and research activities in the state of Wyoming, including making databases of digital aerial photography and satellite images available to the state. WyomingView is part of the AmericaView program, funded by the US Geological Survey (USGS).

SPATIAL MODELING

Linking the power of GIS to models in hydrology, ecology, and resource allocation adds a much-needed spatial component to many types of research and applications. For example, we work with UW hydrologists to use AGWA, a GIS-based program that utilizes spatially distributed models for estimating runoff, erosion and other factors, helping resource managers address issues across different scales.

SPATIAL DATA DEVELOPMENT

GIS is a powerful tool for viewing, mapping and analyzing, but all these functions are dependent on the existence of good quality spatial data. WyGISC has been creating, enhancing, and serving spatial data to the public since its inception. Currently we are assisting the Wyoming Department of Transportation (WyDOT) with the creation of a statewide roads feature dataset for Wyoming. These data will be used internally by WyDOT for various planning, modeling, safety, and reporting applications and will be available to the public for use.

Another project involves working with University of Wyoming’s Division of Administration developing a GIS database for use by Real Estate Operations (REO) and other administrative units. This GIS will help to organize and track the university’s real property transactions and provide access to the data by other administrative units.
Computerized decision support tools reduce turn-around time for a variety of management decisions affecting Wyoming’s economic and natural resources. WyGISC has developed GIS-based decision support tools for city and county planning applications and National Environmental Protection Act (NEPA) assessments.

GIS ON THE INTERNET

► Wyoming Geolibrary: Search, browse, publish and maintain metadata and geospatial data in a distributed environment

► Wyoming Data Server: Internet map viewer for displaying, querying, and making maps on-line, along with a “clip and zip” tool for downloading data for specific areas.

► ArcServer Technology: WyGISC has developed a suite of Internet-based mapping and decision support tools, including an application for Wyoming Travel and Tourism, hunt area and sage grouse management mapping websites for the Wyoming Game and Fish Dept. (WGFD), a Real Estate Viewer for the University of Wyoming, and a Cultural Assessment Resource Locator for the Natural Resources Conservation Service (NRCS).