Spatial Analysis Facilities

The Desert Research Institute is a recognized leader in combining geographic information systems (GIS) and remote sensing to address biological, ecological and hydrological problems both nationally and internationally. A large number of DRI investigators use aerospace remote sensing and GIS to map, monitor, and model earth surface processes in a diverse range of applications including hydrology, air quality studies, ecosystem and human health, and agricultural productivity.

The spatial analysis facilities at DRI are equipped with a wide range of hardware and software tools for addressing these applications. Computations are conducted on a wide variety of x86-based systems, which range from large shared/distributed memory systems down to the desktop workstation. DRI has approximately 100 Terabytes that are currently in use by the Spatial Analysis Facilities. Critical data is backed up to tape and disk as needed. Scientists also make use of a wide variety of high resolution printers and plotters. DRI maintains a system-wide license of ESRI GIS software packages, including ArcGIS and extensions, ArcOnline, ArcServer, and other ESRI products and databases. DRI maintains a system-wide license of Exelis image processing and programming software packages, including ENVI, IDL, Noesys, and VIP. The Institute also maintains a system-wide license of Intergraph Imagine geospatial image processing tools and Google Earth Pro. Global Mapper and MAtlas are also available at DRI.

DRI has Trimble real-time differential map-grade global positioning system (GPS) units, two survey-grade GPS units from Trimble and Ashtech, as well as many Garmin hand-held GPS systems. A full range field spectrometer (PANalytical FieldSpec 3 Max) is available for performing detailed spectral analysis of field samples. A ground penetrating radar (GPR) system is available for subsurface remote sensing. The Institute has a Leica ScanStation 2 portable LiDAR system with associated Cyclone software for high resolution LiDAR modeling, and a high resolution thermal imaging camera for detailed analysis of terrestial thermal properties. The Institute maintains an archive of over 5000 raster data sets from over 30 different imaging systems covering Nevada and selected study areas from five continents. DRI also maintains an archive of 10 meter digital elevation model (DEM) data for the entire conterminous United States.

DRI maintains a teaching laboratory where university level classes and hands-on short courses in image processing, remote sensing, and GIS are taught using industry standard software packages such as ArcGIS, ENVI and Imagine.

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