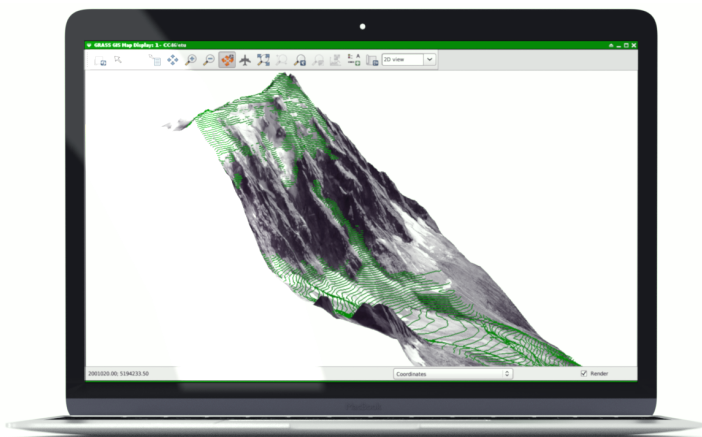# GRASS GIS

Bringing advanced geospatial technologies to the world

A mature spatial analysis suite

GRASS GIS is a powerful free and open source software for performing spatial analysis. It consists of more than 500 modules (plus hundreds of user add-ons which extend its functionality) for processing vector, raster, voxel and temporal data. Many interfaces to other programs in related domains like geostatistics, databases, web map services and also other GIS software exist. It can serve as a desktop GIS, with a modern graphical user interface, as well as the backbone of a GIS infrastructure.

Features

▶ GRASS GIS supports nearly all common GIS file formats through the use of the GDAL/OGR library
▶ **Raster analysis:** map algebra, interpolation, masking, correlation/covariance analysis...
▶ **3D raster (voxel) analysis:** 3D map algebra, 3D interpolation, 3D visualization...
▶ **Image processing:** aerial, UAV and satellite data, supervised/unsupervised/object classification...
▶ **DTM analysis:** contour/surface generation, cost-path and slope-aspect analysis, hydrologic tools
▶ **Vector analysis:** buffer, overlays, network analysis...
▶ **Temporal (4D) framework:** support for time series management and analysis, big spatio-temporal environmental data
▶ **Point cloud analysis:** LiDAR, interpolation...
▶ **Spatial statistics**: correlation/covariance analysis, regression, zonal statistics...
▶ **Geocoding:** raster and vector maps
▶ **SQL:** database interfaces to PostgreSQL, SQLite,

Interfaces

GRASS GIS can be used through different interfaces:

▶ the simplest for new users is the **Graphical User Interface (GUI) with numerous powerful tools**
▶ power users use the **text-based command line interface (CLI)**
▶ **C API for programming**
▶ for **Python** language there is a **scripting library** and an **object-oriented python API**
▶ web interface through **WPS servers**
▶ **QGIS** has two different ways to run GRASS GIS modules
▶ **R** provides a statistical interface to GRASS GIS called **rgrass7**

A long term endeavour

GRASS GIS was born more than 30 years ago... and the latest change is probably just few hours old! Many people have contributed to develop the software. Its strength and success rely on an active development team and the feedback of a wide contributor community; both combine their efforts to make GRASS GIS easier, more useful and powerful to everybody.

Where is GRASS GIS used?

GRASS GIS is used in scientific applications, business, and by public authorities all over the world. The software has shown strong potential for solving geospatial problems in numerous situations worldwide.

GRASS GIS

grass.osgeo.org