

PRECISE GEODETIC POSITIONING, GEOREFERENCING AND GIS SYSTEMS (REF. 2008-003)

Description

- Precise absolute geodetic positioning.
- Design and development of geodetic GNSS networks.
- Georeferencing cartographic products.
- Design and development of Geographical Information Systems.

Resources and capabilities

The Astronomy, Geodesy and Cartography Laboratory (LAGC) they are located the infrastructure and the human resources belonging to the University of Cadiz, integrated into the Research Group RNM314 Geodesy and Geophysical Cadiz, in the Natural Resources and Environment Area, which is financed by the Adalusian Government.

It has permanent GNSS satellites tracking stations, mobile latest GNSS satellites receivers, licenses of scientific and technical software for GNSS data processing: Bernese 5.0 (University of Berna), GIPSY (NASA-JPL), Leica Geoffice and Trimble Geomatic Office, design and development GIS software, real-time management GNSS networks software and high-precision topographic instruments.

GEODETIC AND TOPOGRAPHIC INSTRUMENTS

- GPS permanent station, located at Faculty of Science in the University of Cádiz, composed of a Leica GRX1200 Pro receiver and a Leica AT504 Choke-Ring antenna, with semi-spherical dome. This station is integrated in the Andalusian Positioning Network (RAP).
- Base and rover GPS stations Trimble 5700 with Trimble Zephyr Geodetic antenna capable to DGPS and RTK operations. One of these stations is installed in Icod de los Vinos (Tenerife Island) for monitoring the geodetic deformation.
- Three Leica GX1230 GPS receivers with Leica AX1202 geodetic antenna, with capabilities to DGPS and RTK operations.
- Trimble 4700 SSI rover station with Trimble TRM33429.00-GP geodetic antenna, with capabilities to DGPS and RTK operations.
- Leica TC407 total station with laser distancemeter.
- Leica NA2 optical level and Leica DNA03 automatic optical level for vertical deformation measurements.
- Fujitsu-Siemens Primergy TX200 S3 server and Fujitsu-Siemens Primergy Econel 200 S2 server, which constitute the control centre of the RAP network.
- HP Proliant ML150 G5 server, designated to processing GNSS data and hosting LAGC site and geodetic and quality control RAP site.

SOFTWARE LICENSES

- Bernese 5.0 and GIPSY: scientific software to processing GNSS data.
- ArcGIS 9.2: Geographical Information System developed by ESRI.
- ERDAS Imagine: software developed by Leica for processing and analysis of pictures obtained by remote sensors.

- Leica Geo Office and Trimble Geomatic Office: topography and civil engineering software.
- Leica Spider 3.0: integrated suite of software for centrally controlling and operating single reference stations or networks of GNSS stations.

Additional information

The Astronomy, Geodesy and Cartography Laboratory members work in the following technological activities:

- Operative and geodetic control of the Andalusian Positioning Network belongs to the Andalusian Cartographic Institute. The RAP network is formed by 22 permanent stations distributed homogeneously all over Andalusia, and is considered to be the geodetic reference frame for Andalusia. This network offers RINEX files to precise relative position and broadcast differential corrections to real-time positioning.
- Administration and maintenance control centre of the RAP network.
- Operative and geodetic control of the GNSS permanent station located in Atmospheric Observatory of Izaña belonging to CSIC, for monitoring geodynamical deformation of Tenerife Island.
- Design, development and maintenance of the Geographic Information System of University of Cadiz (SIGUCA) and Multidisciplinary Scientific Information Support System (SIMAC) for Deception Island (Antarctica).
- Establishment and maintenance of RGAE and REGID geodetic networks in the South Shetland Islands and Deception Island (Antarctica).
- Development of cartography products in collaboration with the Spanish Army Geographical Centre.

Responsible

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