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REGINA

GNSS NETWORK FOR IGS AND NAVIGATION

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GNSS Network for IGS and Navigation

The Centre National d'Études Spatiales (CNES), in partnership with the Institut National de l'Information Géographique et Forestière (IGN), develops its monitoring infrastructure of GNSS systems in order to generate data and products for scientific uses and contributes to improvements of navigation techniques.

This infrastructure is named **REGINA** and is composed of about forty GNSS stations which provide a homogeneous worldwide coverage and the multi-visibility of GNSS satellites. It is also composed of two mission centers located in CNES and IGN premises. The main purpose of REGINA is to contribute to scientific community through International GNSS Service (IGS) centers.



REGINA Global Network

»» HOSTING SITES

The hosting sites of REGINA stations are selected to represent a network that provides a homogeneous coverage of the Earth. These sites are chosen for their geographic situation, the reduction of geometric masks and the presence of others measurement techniques (DORIS, Laser, VLBI, etc.). Agreements are established with local organisms to assure the exploitation of stations and the availability of the services. Our long-standing relationships with most of the hosting sites secure the network durability over time which is very much appreciated. The global repartition of REGINA stations ensures a visibility of each satellite by at least 6 stations (DoC > 6).

»» OBJECTIVES

The purpose of REGINA is to provide data and products free of charge to scientific community to realize the following objectives:

- > Development of scientific applications under IGS for many areas: navigation, geodesy, geodynamic, altimetry, reflectometry, meteorology, etc.
- > Development of PPP (Precise Point Positioning technique) taking advantage of orbit and clock corrections provided in real time.
- > Improvement of the realization of International Terrestrial Reference Frame (ITRF) via the colocation with other measurement techniques like DORIS, VLBI, SLR.
- > Evaluation of GNSS systems performances.

»» MISSION CENTER

Mission Centers are located in CNES, Toulouse and IGN, Saint-Mandé, and are operational centers of IGS. They allow:

- > Stations network monitoring.
- > Configuration of receivers.
- > Collect, use, control and broadcast of delayed and real time data.
- > Storage and archiving of delayed time data.

»» STATIONS

REGINA stations are composed of high precision receivers which allow the acquisition of signals from all GNSS constellations (GPS, GLONASS, GALILEO, BEIDOU, QZSS, IRNSS) and SBAS in visibility (EGNOS, WAAS, GAGAN, MSAS,

NSAS, SDCM, BDSBAS, KASS, GATBP). REGINA has a full Galileo E6 signal capability. Collected data are transmitted in real time (1 Hz) and in delayed time to mission centers which take care of the broadcasting.

»» TWO NEW REGINA STATIONS : GAVDOS AND GADANKI

These two stations will soon be proposed to IGS.



GVDG

GDKG



»» REAL TIME APPLICATIONS

- REGINA has full real-time capability with RTCM 3.3 MSM7 fluxes
- > Used by CNES for IGS products flux CLK91 and flux CLK93
- > Used for Precise Point Positioning studies like instantaneous convergence with precision around 20 cm.

