The Italian Space Agency completes the New National GNSS Frame Network

The new network was built by e-GEOS (Telespazio/ASI) and is set to provide up-to-date, high-precision geodetic information through the signals generated by the satellite navigation systems

Rome, XX November 2021 - Construction of the New National GNSS (Global Navigation Satellite System) Frame Network of the Italian Space Agency (ASI) has been completed. This infrastructure is of vital importance in providing up-to-date, accurate geodetic information for the scientific community and professional and entrepreneurial operators. The new network was built by e-GEOS, a company belonging to Telespazio (80%) and an investee of ASI (20%).

Through the use of latest-generation technologies, 46 stations distributed evenly across the Italian peninsula will enable the acquisition of signals generated by all the global satellite navigation systems, such as the US GPS, the Russian GLONASS, the Chinese Beidou and, above all, Europe's Galileo.

ASI's GNSS network, which was designed and developed to provide indispensable support for the global geodetic networks (such as the International GNSS Service IGS and the EUropean REference Frame EUREF), will produce data for the management of the International Terrestrial Reference Frame (ITRF). What's more, it will make a variety of products and services possible: from determining the orbits of GNSS satellites (with an accuracy to the nearest centimetre) to time-synchronising them (better than one nanosecond), useful both for applications on-site as well as to support satellites equipped with GNSS receivers.

The new network will enable ASI and e-GEOS to intensify and fine-tune the joint scientific and operational development under way for the last 25 years at the ASI Space Centre in Matera in the field of meteorology, as well as the study of climate change and space weather. Specifically, the network will enable the provision to the national supply chain - from research centres to SMEs, universities and major corporations - of products and services that are useful for developing innovative, high-precision positioning applications, which can be implemented in a wide variety of sectors: from professional applications to those in the field of precision farming.

In order to contribute to scientific activities, some stations in the new GNSS network have been installed in particularly significant locations where purpose-designed structures are already present. These include, for instance: the ASI Space Centre in Matera, home to the Matera Laser Ranging Observatory MLRO and a VLBI (Very Long Baseline Interferometry) antenna whose data are used for accurate space geodesy measurements; ASI's new SDSA (Sardinia Deep Space Antenna) operations base in San Basilio (Cagliari), where the Sardinia Radio Telescope SRT built by INAF can be found - a versatile instrument for radio astronomy, geodynamic studies and space science; the European Gravitational Observatory EGO in Cascina (Pisa), which plays host to the large VIRGO interferometer built to detect gravitational waves; as well as several Italian Air Force bases, home to weather stations.

According to **Giuseppe Bianco**, ASI's project manager, "Construction of the New National GNSS Frame Network is the result not just of the major effort on the part of ASI and e-GEOS to implement it, but also of the extensive contributions of all the bodies and institutions which today host the new GNSS stations. The entire programme will make it possible to provide innovative information in the Geodesy sector, which sees the Matera Space Centre as the focal point".

Some stations are located, among others, at the Air Force General Staff HQ, INAF, EGO - VIRGO Centre in Cascina (Pisa), the Municipality of Castelgrande (Potenza) and the Municipality of Isnello (Palermo), the Consorzio per la Bonifica della Capitanata (Land Reclamation Consortium), the Sardinian Water Board and the Autonomous Region of Sardinia, the Libero Consorzio Comunale (Municipal Free Consortium) of Agrigento, the Astronomical Observatory of the Autonomous Region of the Aosta Valley and the Clément Fillietroz-ONLUS Foundation, the Lilio di Savelli Astronomy Park (Crotone), the Autonomous Province of Trento and Trento University, the University of Molise and Sannio University.

All the data acquired by the "New National GNSS Frame Network" will be received, processed and stored at ASI Space Centre in Matera and provided to all interested users.

For further information

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