

Permanent GPS sites over Crete for precise geodynamics applications

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The Aegean and its surrounding area is one of the most active seismic regions in the Mediterranean and West Eurasia. This area lies on the collision zone between the Eurasian and the African lithospheric plates.

Admittedly, the level of our knowledge about the geological structure of the region and its tectonic deformation remains limited as a result of the lack of geodetic measurements of high quality.

Since 1997, the Technical University of Crete (TUC), Chania, Crete, Greece, has been operating a permanent GPS station, i.e., TUC1. The station has been the southernmost European permanent GPS site. Its data are useful for geodynamical studies of the southern fringe of the European plate and its interactions with African plate.

In 2004, a second station, named TUC2, was installed in the TUC campus next to TUC1. After a period of testing, the station has been accepted for inclusion in the EUREF. The hourly data feed and meteorological data upstream have been established. TUC2 is collocated with the specially equipped pad for satellite laser ranging measurements. The measurement campaign with the French Transportable Laser Ranging Station had been carried out in 2004, and new campaigns are planned for the future.

Another permanent GPS site, named GVD0, has been installed by TUC on the island of Gavdos, about 80 km south of Chania. The GVD0 is collocated with the DORIS beacon.

These permanent GPS sites have provided a wealth of precise data for a number of research activities, such as the Establishment of a European radar altimeter calibration and sea-level monitoring site for JASON, ENVISAT and Euro-GLOSS, the development of statistical quality control algorithms, and the monitoring of the "silent and slow earthquakes" happening in the boundary zone.

We present the main results derived from the permanent GPS measurements carried out by TUC and our plans for extending our array over other parts of Crete.