



Analysis of ISTA-IGS station using geodetic and non-geodetic techniques

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International GPS Service (IGS) is an organization that collects, archives GPS observation data sets continuously from 338 active IGS reference stations, distributed all over the world. Also these data sets are processed to generate or improve GPS satellite ephemerides, Earth rotation parameters, IGS tracking station coordinates and velocities, GPS satellite and IGS tracking station clock information and International Terrestrial Reference System (ITRS). These archived data sets and products are used for wide range of scientific studies and engineering applications.

The subject of this paper is on ISTA, an IGS reference station in Istanbul, Turkey. This study has been inspired by the need of investigating ISTA IGS reference station movements. ISTA station was founded as a pillar in 1.20 m height at the top of a 40 m height faculty building. Because of this reason, it is needed to monitor and analyse probable effects of the building on the movements of the pillar.

The movements of ISTA were monitored continuously using two milliradian accuracy level dual-axis digital inclination sensors in long term periods in March, April 2000 and February, March 2002. Also, for the same periods, the baseline solution between ISTA and KANT continuous reference stations will be used for analysis. The both station are on the same plate that is north side of NAF (North Anatolian Fault). KANT, founded on ground, is a one of continuous reference station of MAGNET (Marmara Continuous GPS Network) project and organized by Earth & Marine Sciences Research Institute, Marmara Research Center, TUBITAK (The Scientific and Technological Research Council of Turkey).

The inclination sensors data and baseline solutions for two periods will be analysed with Least Squares Spectral Analysis (LSSA) and Wavelet Analysis techniques. These

two different analysis techniques results for one period and for two periods will be compared and interpreted. The similarities between two different period analysis results and two different analysis techniques results will be observed. The movements and behaviors of the ISTA- IGS reference pillar station will be observed according to building movements, weather conditions, atmospheric effects and earthquakes for the measurement periods.