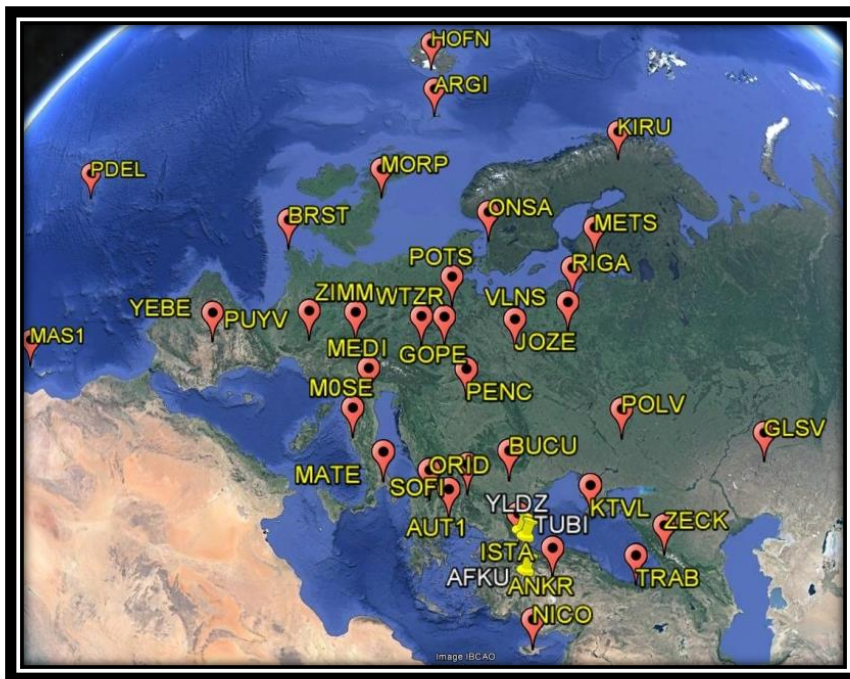


# Recent Developments in TRAB GNSS Station and Trop-NET System at KTU Analysis Center

This report presents the new Analysis Center (AC) under WG1 at the Department of Geomatics Engineering at KTU and its future visions in terms of possible contributions to COST Action ES1206. The GNSS derived Zenith Tropospheric Delays (ZTDs) play an important role in meteorological studies, by using ZTDs at GNSS sites into numerical weather prediction models. The Trop-NET system (reference) developed at the Geodetic Observatory Pecny (GOP, RIGTC) in order to facilitate near real-time troposphere monitoring using ground-based GNSS data (based on the Bernese GNSS Software) has been installed and been routinely used in KTU AC since September 2014 (URL 1). KTU AC was established in cooperation with GOP within the COSTES1206 Action (GNSS4SWEC, WG1).

About 33 sites from IGS and EUREF permanent networks in entire Europe have been selected for an initial setting and testing (Douša 2010). Currently Trop-NET analysis at the KTU AC includes two IGS sites, ANKR(Ankara) and ISTA(İstanbul), from Turkey and we intend to increase the number of Turkish GNSS stations in analysis. The first attempt for this task is to include TRAB which was active only during 1047-1456 GPS weeks (2000-2007) as IGS network station. In this study, TRAB reference GNSS station which was established in Karadeniz Technical University, Department of Geomatic Engineering are explained. Apart from this, YLDZ and AFKU reference GNSS stations established in Yıldız Technical University (İstanbul), and Afyon Kocatepe University(Afyon) at Department of Geomatic Engineering will be presented as candidate stations to be included in Trop-NET system at KTU AC.



TRAB GNSS Reference Station was active between 030/200 (GPSweek 1047) and 336/2007(GPSweek 1456). The station was reactivated with Spectra Precision Ashtech Proflex 800 GNSS receiver since February 2015 as GNSS reference station and is a candidate to be the part of EPN network. The online archive of GNSS data available through the TRAB site was changed from 15-min to 1 hour latency at a 30-second sampling rate for real time analysis purposes.

KTU AC met with some misfortune. We had some technical problems about the hard drivers. We had to change all hard drivers. We cope with technical problems and we take some extra precaution for a possible in our server. The Trop-NET system was re-installed.

Reference stations at Yildiz Technical University in Istanbul (YLDZ) and Afyon Kocatepe University in Afyon (AFKU) were established in 2012 as new reference stations of GNSS Geo Sensor Network (GGNTR) in South West of Turkey (Gulal et al.2014).

TUBI is a continuously Operating GPS Station of Tubitak in Gebze Since 220/1999 (GPSweek No 1022).

GNSS Reference stations at Çanakkale 18 Mart University (Çanakkale, URL 4) and Sivas Cumhuriyet University (Sivas, URL 5) are on the list of stations to be included Trop-NET analysis software.





## Turkish CORS Network (TUSAGA-Aktif)



[http://cors-tr.iku.edu.tr/en\\_corstr\\_projeozetigenel.html](http://cors-tr.iku.edu.tr/en_corstr_projeozetigenel.html)

## Precipitable Water Vapor Estimation Project of General Command of Mapping, Turkey.

The purpose is to determine the variation of precipitable water vapor (PWV) in troposphere by using the observations collected at TNPNG-Active Permanent GPS Stations. 1 hour-delayed PWV values derived from GPS RINEX observations are used as an input for weather forecasting studies by DMI(General Directorate of State Meteorological Services) (URL 3).

**CORS-TR Stations and Trop-NET System:** The network processed by the Trop-NET system at KTU AC consists of stations primarily located at the central or Eastern Europe. We intend to include more stations from Turkey. We have thus concentrated to establish stations for that purpose. After initiating Trop-NET analysis at KTU AC, we established a GNSS reference station (TRAB) to be included in Trop-NET analysis. Since the current online data archive for CORS-TR stations is not suitable for Trop-NET analysis software, other GNSS reference stations, especially operated by universities will be included to Trop-NET at KTU AC(Tanır Kayıkçı, E., 2015).

## References

Tanır Kayıkçı, E. (2015) *TRAB GNSS Station and Its Inclusion to Trop-NET System at KTU Analysis Center*, COST ES1206 Workshop, 11-14 May 2015.

Gülal E.et al (2015). *Analysis and Management of GNSS Reference Station Data*, Tehnički Vjesnik 22, 2(2015), 407-414, DOI: 10.17559/TV-20140717125413.

URL 1: <http://www.pecny.cz/gop/index.php/trop-net>

URL 2: GOP's Trop-NET system documentation,  
<http://www.pecny.cz/TropNET/documents/TropNET-Documentation.pdf>

URL 3: <http://www.hgk.msb.gov.tr/english/p-8-precipitable-water-vapor-estimation.html>

URL 4: <http://geomatik.comu.edu.tr/>

URL 5: <http://geomatik.cumhuriyet.edu.tr/>