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New Directions in Seismic Hazard Assessment through Focused Earth Observation in the Marmara Supersite

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[Long-term monitoring experiment in geologically active regions of Europe prone to natural hazards: the Supersite concept]

D5.1
Upgrade of 16 GPS Stations

Project Start Date	1 November 2012
Project Duration	36 months
Project Coordinator /Organization	Nurcan Meral Özel / KOERI
Work Package Number	5
Deliverable Name/ Number	Upgrade of 16 GPS Stations /D5.1
Due Date Of Deliverable	31.October.2014
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Dissemination Level		
PU	Public	
PP	Restricted to other programme participants (including the Commission)	
RE	Restricted to a group specified by the consortium (including the Commission)	
CO	Confidential, only for members of the consortium (including the Commission)	

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1 INTRODUCTION

The deliverable D5.1 is the one of the main outputs of WP5 "Real- and quasi-real-time earthquake and tsunami hazard monitoring" in which an integrated approach by harmonizing geodetic and seismic data to be used in early warning applications is implemented.

The objectives of this deliverable are to update 16 GPS stations in order to establish real time data transmission and installation of strong ground motion instruments in WP5-Task 1 named as "Establishment of appropriate infrastructure (particularly for GPS and strong motion stations in Marmara Region) to obtain real time data".

This report summarizes the details of the process in Task 1.

2 UPDATED CGPS of MAGNET

The Continuous GPS stations in Marmara Region are shown (with red & purple squares) in **Error! Reference source not found.** (Table 1).

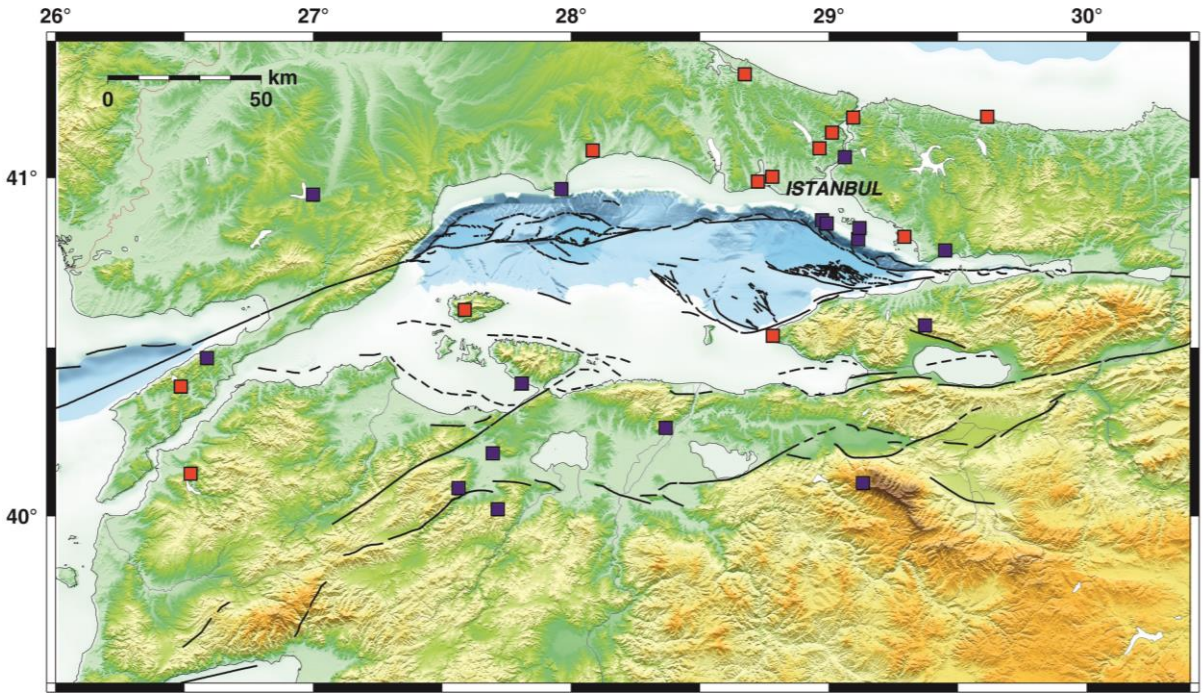

Figure 1. Continuous GPS stations (MAGNET) in the Marmara Region.

Table 1. Updated 16 Continuous GPS stations of MAGNET

Station ID	Station Name	Location	Coordinate (WGS84)		
			Long °	Lat °	Up (m)
YENT	Yeniköy	Çanakkale Gelibolu	26.58727012	40.46833405	302.9550
KRDT	Karaiğdemir	Tekirdağ Malkara	26.99850520	40.95072905	180.0202
ATCT	Atıcıoba	Balıkesir Gönen	27.56330556	40.08302355	327.1198
ALAT	Alaattin	Balıkesir Gönen	27.69579844	40.18643674	104.4632
CHMT	Çobanhamidiye	Balıkesir Gönen	27.71496430	40.01985331	496.4170
ERDT	Erdek	Balıkesir	27.80794911	40.39322336	92.1755
MER1	Marmara Ereğlisi	Tekirdağ	27.96174890	40.96693379	91.7447
KART	Karacabey	Bursa	28.33256626	40.26525876	485.6161
SVRT	Sivriada	İstanbul P. Islands	28.97351098	40.87471369	57.4326
YSST	Yassıada	İstanbul P. Islands	28.99086717	40.86577765	75.3325
KANT	Kandilli	İstanbul Üsküdar	29.06143119	41.06080795	155.0009
YANT	Yandros	İstanbul P. Islands	29.11271904	40.81972387	63.9704
BAD1	Büyükada	İstanbul P. Islands	29.11789697	40.85211710	239.1318
ULUT	Uludağ	Bursa	29.13144549	40.09754875	2088.8951
DUM2	Dumanlı	Bursa Orhangazi	29.37189633	40.56552512	930.3721
TUBI	TUBITAK	Kocaeli Gebze	29.45068361	40.78672512	221.6744

Within the WP5 the technical structures including electricity, communication and data transfer, renovation of the other critical components of the Continuous GPS stations of MAGNET (Figure 1) has been updated since the beginning of the project.

And finally in October, 2014, 16 Continuous GPS stations with purple squares (Figure 1) are updated to real time data transmission according to the power and data transmission tests previously done. For this purpose the power systems for cGPS stations operating with electricity and stations without electricity were improved and 3G GPRS modems were got into use for high-rate data transmission.

Processing of High Rate GPS data (1Hz) has been studied with Professor Semih Ergintav. And an algorithm using TRACK/TRACKRT software as a part of routine daily GPS processing with GAMIT/GLOBK is developed and tested with 1s GPS data sets of Van eq (Mw7.2), 2011. Figure 2 shows NS component of 1Hz -GPS time series, as a function of distance to the epicenter location.

From now on the algorithms will be tested with real time GPS data within the project and setup for data process will be completed.

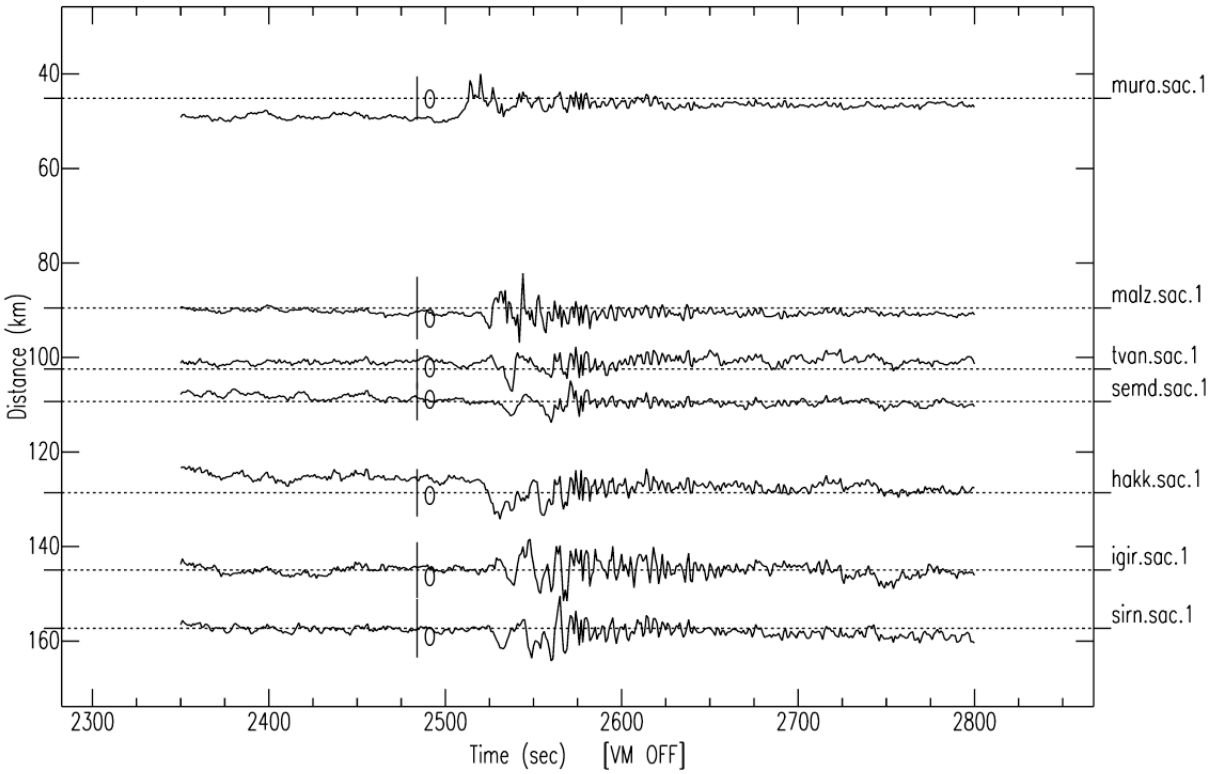

Figure 2. NS component of 1Hz -GPS time series for Van eq (Mw7.2), 2011 as a function of distance to the epicenter location.