



THE GNSS NETWORK REPUBLIC OF TUNISIA

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I.Introduction

The Topographic and Cadastre Office of Tunisia (TCO) has established a GNSS Network covering the Tunisian Territory as follow:

During the year 2005, the TCO has installed three GNSS stations at Tunis, Monastir and Sfax.

During 2010 and 2011 the TCO has installed 20 GNSS stations.

As showen to this joined Map



three GNSS stations at Tunis, Monastir and Sfax.







2010-2011

On this map are reported the twenty three existing stations .







III. GNSS Network Of The Republic Of Tunisia

The GNSS Network of the republic of Tunisia is composed by of twenty three (23) permanents stations covering the northern ,central and a part of the southern areas of the territory of Tunisia.





GNSS MAP

This is a map of all the GNSS stations installed on the Tunisian territory (2010-2012)





Each station is equipped with:

- A radio transmission module
- A GSM transmission module
- A weather sensor (Temperature and pressure)
- A tilt sensor (tilt meter)

These stations record daily files of 30 seconds and one second.











III.Technical Specifications

The coordinates are calculated daily on stations connected to IGS network (ANKR, EBRE, GRAS, MATE, RABT and SFER). These calculations have permitted to obtain the precise coordinates of those twenty three stations.

The reliability of Permanent GPS stations is proven. However, a statically analysis was performed to confirm the accuracy provided by the use of technology GNSS permanent stations.







The Geocentric Coordinates of Tunis's station

- X = 50300<u>53.2451</u> m
- Y = 9048<u>28.1546</u> m
- Z = 38031<u>30.3654</u> m

We took a sample of 67 days of observations from GPS week 1342 to GPS week 1351.



GAUSS curve for the station of Tunis

X_Tunis	y(X)
53.2195	0.05167287
53.2302	5.36320129
53.2318	8.70023058
53.2371	29.2221647
53.2376	31.7604966
53.2378	32.7874179
53.2382	34.8524045
53.2382	34.8524045
53.2383	35.3697488
53.2394	41.0104618
53.2394	41.0104618
53.2394	41.0104618
53.2396	42.0118289
53.2402	44.9338577
53.2412	49.4100171
53.2414	50.2283521







Straight Regression of Observed values







The project will be extended to cover the whole country (by 30 GNSS Stations) during the year 2012.

 All stations will be installed according to the IGS specifications.

Working under the strict rules of international standards (RTCM, RINEX, NMEA).





Adoption of a scalable architecture for the network to take into account the constant changes that knows the field of spatial positioning.

Responding to the growing needs of users for more interoperability, reliability and accuracy.

Track changes and update the regulations of the RGPT (GNSS Permanent Tunisien Network).





Ensure data Quality control.

Choosing a real-time network, at least in areas of high urban density and this means using all existing transmission: Radio (UHF), GSM / GPRS.

To ensure the transmission of data in real time or posttreatment (post data on a website dedicated to RGPT).





V. Conclusion

The main purpose of the GNSS Network of Tunisia is:

Providing all information on network status, available data, conversion utilities and quality control to users according to protocols OTC - users.

Having adopted a terrestrial reference only, make the gradual transition to this new datum reference (it is possible to have two systems provided to make available forms of transition between two completely reversible).





Updating the technology in the field of Cadastre and Land Registration by developing the use of real time GPS/RTK surveying methods.

The TCO of Tunisia will provide new services for the various users on the fields of Topography, Mapping and localization.





Thanks for your Attention