

# **The Features of the Coordinate Transformation from the Geodetic System WGS84 with the Mercator Projection for Low Latitudes Conditions**

**Mohammad Abboud, Jad Youness, Hiba Moussa and Mohamad Nasrullah (Lebanon)**

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## **SUMMARY**

This work presents the computation procedures of a rectangular plan coordinates using data obtained through satellite observations when creating geodetic networks. The peculiarity of these works is in the coordinate conversion to the Mercator projection. The selection of the projection of coordinates is necessary for each condition, which significantly differs from a place to another in different localities on the surface of the Earth. When using the technology of global navigation satellite system, this task is relevant for any point (area) of the Earth due to a fundamental different approaches in determining the coordinates. The fact that satellites determination is more precise than the ground coordination methods (i.e. triangulation). In addition, the conversion to the zonal coordinate system is associated with errors; the value at present can prove to be completely critical. Moreover, the conversion into zonal coordinate system is associated with errors, the value of which at present can prove to be completely curtail. The proposed methodology was conducted over the Lebanese territory. The expediency of using the Mercator projection in the topographic and geodetic works production at low latitudes is shown numerically on the basis of model calculations. To convert the coordinates from the geodetic system with the Mercator projection, a programming algorithm which is widely used in surveying has been adopted. Results showed that that the difference between coordinates in the proposed transformation method is within an order of 0.04 m. Accordingly, the modified algorithm can be successfully used to convert geodetic coordinates to plane rectangular coordinates.

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