

# **Developing Raster Datasets for Length Differences Between Topography, Geoid, Ellipsoid and Map Projection for Macedonian Territory**

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## **SUMMARY**

Procedure of reducing lengths from topography surface up to map projection (plan coordinate system), through geoid and ellipsoid undulations and approximations, by using digital technology, give us an advantages for more deeply and faster computes-analyses in this field. The only thing which is necessary for performing this kind of analyses is owning of quality data. Till now, all analyses within the coordinate systems have been carried out separately, between the different approximations, i.e. reduction from topography surface to geoid, than undulation from geoid to earth ellipsoid, and in the end projection from earth ellipsoid to map projection. Within previous scientific analyses, only length differences between the earth ellipsoid and any map projection can be recognized, without taking into account both another approximations from topography surface to earth ellipsoid jointly. In this paper, results of some analyses of real length differences between topography surface and map projection will be shown. Analyses have been realized in the state territory of Macedonia, by using some most appropriate map projections for its territory, WGS84, SRTM DEM and EGM08, based on grid with 1km spatial resolution in total with 25635 points. From generated data, as outputs were compiled maps with iso-lines of the length differences between topography and map projection, statistical results from basic statistical analyses, and some conclusions. Conclusions from research represent a gateway for further analyses in this field, which are planned to be done next years!