

ALGORITHM OF TRANSFORMING COORDINATES FROM A GEOCENTRIC SYSTEM TO A TOPOCENTRIC SYSTEM AND ITS APPLICATION IN CONSTRUCTION IN VIETNAM

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Geodesic and cartographic works in Vietnam are performed in the state reference coordinate system VN-2000. The use of satellite methods implies coordinate determinations in a spatial geocentric coordinate system. This process is the consequence of complex multi-stage transformations between coordinates systems, which is followed by an accuracy decrease of the results of satellite observations in various territories of Vietnam. This article proposes to perform a transformation from a geocentric to a local topocentric rectangular horizontal coordinate system. Its advantage is an easier algorithm, which allows to determine the position of points on the earth's surface by satellite method without reducing accuracy. The transformation algorithm has been tested when creating geodetic control network in the process of construction in Ki Son area, HoaBinh Province, Vietnam. There are also two questions which were considered in this article: a projection for the object construction and a comparative analysis of the satellite observations results with those of ground observations, which were performed with the use of total stations.

Key words: projection, geocentric coordinate system, topocentric coordinate system, VN-2000 coordinate system, satellite definitions, transition parameters, total station, correction.

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