

Topographic Mapping Using Unmanned Aerial Vehicle (UAV) Technology-Photogrammetry Method

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SUMMARY

Photogrammetric mapping survey technology has evolved both in terms of data collection and in data processing, especially on data collection techniques using Unmanned Aerial Vehicle (UAV). This mapping survey uses UAV-Photogrammetry method which is equipped with a non-metric digital camera. This UAV-Photogrammetry method is a combination of photogrammetric methods and terrestrial methods because in some locations there are buildings and tall trees that obstruct the object so it can not be seen in aerial photographs. The terrestrial survey is used Total Station instrument for height (elevation) measurement and situation measurement in the required location. Ground Control Point (GCP) surveys using a Global Positioning System (GPS) / Global Navigation Satellite System (GNSS) type geodetic receiver and Aerial Triangulation data processing (AT) using bundle block adjustment method. Independent Check Point (ICP) which is a ground control checkpoint located between GCP and used for quality control of topographic mapping process. ICP is not involved in the Aerial Triangulation (AT) data processing, but ICP coordinates of GPS/GNSS survey are compared with ICP coordinates on the resulting topographic map product. The resulting product is Orthophoto, Digital Terrain Model (DTM), land cover, Digital Surface Model (DSM) and contour as derived product from DTM. Geometric accuracy based on American Society for Photogrammetry and Remote Sensing (ASPRS) 2014 Positional Accuracy Standard for Digital Geospatial Data. The result of map product, horizontally meets the needs of a 1: 1000 scale topographic map, and vertically meet the needs of a 1: 2000 scale topographic map.

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