Updation and metrology of cadastre using high-resolution satellite data

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Abstract: A cadastre or land parcel is an extent of land shown in the Government records associated with a set of ownership rights. In many cases the cadastral maps are quite old which calls for fresh mapping / updating. Cadastral maps of five contiguous villages, in Kanchipuram District of Tamil Nadu state, were selected for the present study. IKONOS 1-m multi-spectral image (merged product) was georectified-using GCPs derived from DGPS survey in WGS-84 datum and UTM projection. RMS error at GCPs (Ground Control Point) was 0.57 m and 0.70 m and at ICPs (Independent Check Point) it was 1.57 m and 1.62 m in easting and northing, respectively. This georeferenced image was used to extract land parcels for updation. The validation of the extracted field boundaries was carried out by comparing the area and length measured using Total Station survey and those from Field Measurement Book (FMB). Percentage difference in area in image vs Total Station measurement and image vs FMB record shows 5% error while percent difference in length is within 2% error is acceptable to the users.

Keywords: Cadastre, High-resolution image, Land parcel, DGPS, Total Station.