

The method described in the ISPRS journal special issue paper improves and extends the work of Yang *et al.* (2013 GRSL paper). The proposed method aims to detect buildings from large urban scenes with an unknown number of buildings of various sizes and shapes. The main difference from the work of Yang *et al.* (2013 GRSL paper) is the calculation of the data-coherence energy term $U_d(X)$. The proposed method does not use the average elevation, but the lowest elevation of points in the cuboid to calculate the standard deviations of the inside and neighboring regions of the cuboid. Simultaneously, the façade points are excluded from the calculation of the data-coherence energy term $U_d(X)$. Hence, the distinguishability of low buildings from their surroundings is significantly improved, resulting in better building-detection performance, particularly in areas of buildings with small sizes and lower height. On the other hand, the performance (e.g., completeness) of building extraction is improved by a filtering and merging operation.