Urban Mapping using Satellite Time Series

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Abstract

When we analyze the development of urban areas, it becomes clear that satellite image time series are highly valuable data sources that can be exploited to describe - besides vegetation cycles and land use changes - the dynamics of urban settlements and their infrastructure. Modern high resolution optical and SAR sensors with good signal-to-noise characteristics open new perspectives for local image classification and quantitative change analysis, while low resolution sensor data are often available over many years and provide more insight into long-term processes. Advanced analysis algorithms allow the identification of typical pixel changes and their confidence levels. Finally, data fusion represents a new perspective for urban mapping.

Test Data Set

- Multitemporal satellite image time series: Analysis of urban development in and around Bucharest, Romania using Landsat data
- Data analytics for rapid mapping: Effects of the 2011 tsunami in Japan using very high resolution TerraSAR-X data
- Automatic change analysis in satellite images: Binary descriptors and Lloyd-Max quantization
- An Earth Observation spatio-temporal data mining system

References