Geophysical Research Abstracts
Vol. 21, EGU2019-11256, 2019
EGU General Assembly 2019

Urban Thematic Exploitation Platform (UTEP) for SDG monitoring

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Urbanization and climate change, representing two of the most relevant global trends related to the human presence on the planet, challenge our environmental, societal and economic development. Detailed and reliable information on global human settlements can directly contribute to the monitoring and decision-making regarding the 2030 Agenda for Sustainable Development. Here, the provision of relevant data for the Sustainable Development Goals (SDG), specifically SDG 11, as well as for other global and national policy frameworks is of particular interest. Scientists, analysts, planners and decision makers need capabilities to effectively and efficiently access, process, and jointly analyze the constantly increasing, but often heterogeneous and large-volume data collections on the built environment.

The Urban Thematic Exploitation Platform (U-TEP) is developed to provide end-to-end and ready-to-use solutions for the above mentioned users. Key components of the system are an open, web-based portal connected to distributed high-level computing infrastructures and providing key functionalities for i) high-performance data access and processing, ii) modular and generic state-of-the art pre-processing, analysis, and visualization, iii) customized development and sharing of algorithms, products and services, and iv) networking and communication. In addition, it provides access to earth observation (EO) data (Landsat and Copernicus archives) and a heterogeneous ensemble of ready-to-use products from various providers and sources, like geotagged tweets, TimeScan layer, WorldPop population distribution layer, Global Urban Footprint (GUF) and World Settlement Footprint (WSF) products.

The Visualization and Analysis Tool (VISAT) on U-TEP allows experts and non-experts to conduct geospatial analyses and queries. Users can create their individual compositions of data, related analysis and visualization functionalities (scopes). In order to allow for the calculation and provision of SDG 11.3.1 ratio of land consumption rate to population growth rate, a dedicated scope was prepared and demonstrated for the region of SE-Asia. The WSF Evolution product, which delineates the development of urban settlements from 1985 to 2015 (derived from advanced Landsat-based analysis), as well as annual population data for four SE-Asian countries were used to track and compare their development path. All countries show an unbalanced development, demonstrated by a higher increase of land up-taken by urban settlement compared to an increase in population. The population of Cambodia doubled in the period of 1985 to 2015, while the settlement area is five times the area of 1985. In Thailand, the settlement area doubled, but the population grew only by 32 %. All results can be combined with other EO-based products or statistical values and can be visualized using several types of multi-temporal graph/chart modes.

The demonstration study exemplifies that U-TEP is a powerful tool that can be utilized by administration practitioners and analysts in monitoring and reporting for selected SDG targets with supporting indicators such as the SDG 11.3.1. The presentation of the platform will include a live demonstration of the capabilities to analyze urban information relevant for the SDGs with the above-mentioned examples.