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X.URBE: RADAR BASIC EXAMINATION AND AI BASED MODEL TO SUPPORT URBAN HEALTH & WELLBEING

Abstract

The need to monitor and evaluate the impact of natural phenomena on structures, infrastructures and on the natural environment, in recent years, plays a role of considerable importance for society and for public administrations to obtain relevant and reliable indications regarding the presence of common urban anomalies in the territory. Innovation and research have allowed a profound change in the data acquisition and methodology coming to develop increasingly complex and innovative technologies. From an application point of view, remote sensing gives the possibility to easily manage the layer information which is indispensable for the best characterization of the environment from a numerical and chemical-physical point of view. NeMeA Sistemi srl, observant to the environment and its protection for years, began to study it using RADAR/SAR data thanks to the opportunity to use in the best way the data acquired by COSMO-SkyMed satellites. Moreover in the last years we use and process also optical data. The idea is to discovery the best open data sources coming from satellite with adequate freshness, update timing and spatial granularity to enable detection of relevant assets/events and related changes. The aim of the project is to qualify a digital tool to support public administrations, as end users, aimed at remotely recognizing the most significant land change through massive acquisition and processing that enable objective assessment and economy of scale. To this end, the project includes a processing model and a decision support system (DSS) user interface that aim to indicates the best decision to take by the interested public administration. The developed models will be roll out in at least 2 cities in 2 different countries to estimate accuracy and validate the solution. As test area we choose a city in southern Italy and a city in Brasil. All maps generate as output in the project will be visualized in a webGIS. The downloaded remotely sensed data will be elaborated to solve the following use cases based on assets/events detection and change of status alerting: • Environmental indexes and parameters, like NDVI, LST • City Waste, detecting presence of anomalous amount of waste in urban area • Parking, statistical analysis about parking congestions, anomalies, and violations with evidence related to specific time spatial patterns • Detection of abusive buildings, like illegal land usage/occupation comparing output with public land registry • Anomalous Settlements • Damages due to natural events (fires, flooding) - pre/post event analysis.