A network of meteorological stations for monitoring climate change impacts and adaptation on urban and rural environments

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In the framework of two European Projects, the LIFE URBANPROOF and LIFE TERRACESCAPE, a network of 24 meteorological stations has been installed for recording meteorological parameters and climate indices for the monitoring of impacts of climate change on urban and agricultural areas as well as for the assessment of respective adaptation measures.

Regarding the urban environment, the study aims to estimate the Urban Heat Island (UHI) effect in the Greater Athens’ Municipality of Peristeri, Greece, by analysing data from the meteorological stations installed (since January 2020) in different urban surroundings and investigating relative changes in surface temperatures and perceived thermal discomfort (HUMIDEX) thus identifying hot and cool spots at the local scale. The UHI mapping in the Municipality of Peristeri was designed and implemented in such a way, as to provide accurate information about heat stress conditions across different parts of the city. Fully automated sensors of air temperature and relative humidity were installed at eleven (11) sites throughout the municipality, covering a wide range of urban characteristics, such as densely populated areas, open spaces, municipal parks etc., where local climatic conditions were expected to show a degree of variation.

As regards the rural environment, the study intends to estimate the anticipated changes of the micro-climate in the Aegean island of Andros, Greece after land-use interventions, which are considering the use of drystone terraces as green infrastructures resilient to climate change impacts. To that end, a network of 13 meteorological stations has been installed in selected rural areas of Andros since June 2018 for monitoring purposes. The thirteen meteorological stations, 12 small autonomous stations and 1 automated, currently operating on Andros Island continue (till now days) to generate baseline (micro-) climatic data, providing basic meteorological parameters such as air temperature and relative humidity. In addition, the valuable information, based on observational data from installed network of the meteorological stations, located either at currently abandoned terrace sites (project plots) or cultivated sites of Andros will be used to provide a solid basis for comparisons with changes projected for the future climate, combined with climatic indices which directly or indirectly affect agriculture in the monitoring areas.