



The LIFE ASTI project to forecast Urban Heat Island effect

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Urban expansion takes massive proportions in recent years, and the global proportion of urban population is expected to reach 60% by 2030. The combined effect of global climate change and rapid urbanization can make the residents of urban areas more vulnerable to a range of urban environmental problems, including high air pollution levels, inability to manage energy consumption, overburdened thermal bioclimate and heat-related deaths. These problems are strongly connected with the Urban Heat Island (UHI) effect, a phenomenon that is considered to be one of the most representative and well-documented manifestation of climate modifications due to urbanization. The area of heat associated with cities is referred to as the UHI, and its effect produces notable impacts on human health, regional economies and environments.

Strengthening our capacity to adapt to climate change impacts would require to address such issues, but despite the previous efforts, the challenge of implementing an operational UHI forecasting system and the effective dissemination of focused information through a heat health warning system tool remains still open.

The 3-year long LIFE ASTI project (Implementation of a forecAsting System for urban heaT Island effect for assisting the development of urban adaptation strategies) started in 2018 and is aimed at designing, implementing, and validating a forecasting system combined with a heat health warning tool for the short-term prediction of the UHI especially during heat waves, to assess and reduce their impact on health in two Mediterranean cities, namely Thessaloniki and Rome. The system will be validated with a dense network of WMO standard compliant ground based sensor measuring a number of meteorological parameters (such as temperature, relative humidity, pressure, rainfall and rain rate, as well as wind speed and direction) installed in both these cities, in synergy with satellite observations - whenever possible. In addition, to evidence the UHI circulation and further support forecasting evaluation, specific in-situ campaigns including micrometeorological and SODAR measurements will be performed in Rome, both within and to the border of the city.

The results obtained in the LIFE ASTI framework will also be used to further investigate the UHI climate change impact over Thessaloniki and Rome, as well as to perform sensitivity studies for quantifying, assessing and promoting mitigation plans to reduce UHI risks.