

Urban expansion has reached massive proportions in recent years. In Europe almost 73% of the population lives in cities and this is expected to surpass 80% by 2050. The combined effect of global climate change and rapid urbanization is expected to make residents of urban areas more vulnerable to a range of urban environmental problems, strongly linked to the so-called **Urban Heat Island** effect (UHI). UHI describes the temperature difference between the warmer urban climate and the surrounding non-urbanized areas.

UHI has substantial impacts on regional economies and environments, e.g. increased energy consumption, deterioration of air quality and stressful bioclimatic conditions. Concerning people's health, both the direct and indirect

effects of heat during extreme events are well-documented: heat cramps and exhaustion, heat stroke.

Epidemiological studies have also shown an increase in ER visits and mortality mostly for cardio-respiratory causes with a short latency to high temperatures. These effects are more pronounced among vulnerable subgroups most at risk (e.g. elderly, infants, chronically ill patients, pregnant women, socially isolated and with inability to adapt).

The problems will become even more significant in future years considering climate change scenarios and the predicted increased frequency and intensity of heat waves. The Mediterranean region is one of the areas most at risk.

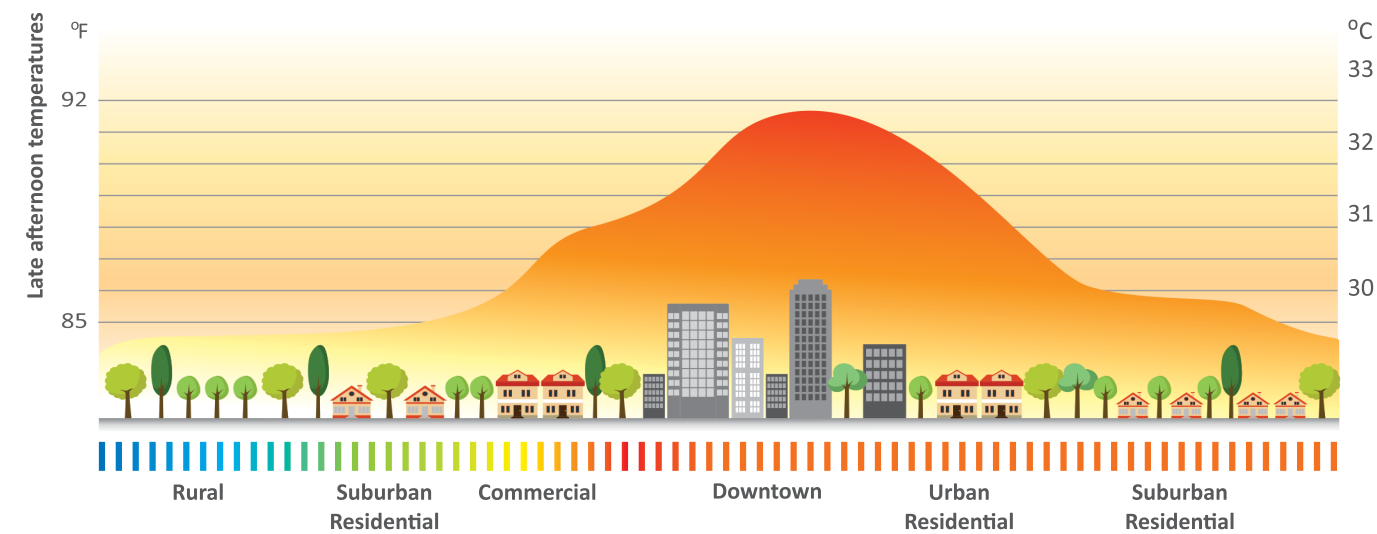


Image by C3headlines

The Urban Heat Island phenomenon



forecASting System for urban heaT Island effect



The project "Implementation of a forecASting System for urban heat Island effect for the development of adaptation strategies - LIFE ASTI" has received funding from the LIFE Programme of the European Union

Project partners



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forecASting
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for urban
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Implementation of a forecASting System for urban heaT Island effect for the development of urban adaptation strategies



What is the LIFE ASTI project

The LIFE ASTI project focuses on the UHI effect and human health by developing and evaluating a system of numerical models that will lead to the short-term forecast and future projection of the UHI phenomenon in two Mediterranean cities: Thessaloniki and Rome.

The LIFE ASTI model system will produce high-quality forecasting products, such as bioclimatic indicators and heating and cooling degree days to assess the energy needs of buildings. In addition, the model system will guide the Heat Health Warning Systems to be implemented in both cities and will aim also at informing the authorities, the general population and the scientific community.

The LIFE ASTI project focuses on producing state-of-the-art scientific methodology that will reach

the general public through modern technological tools (project's website, mobile and web applications, and active social media).

Finally, the project addresses the following EU policy objectives: a) Contribution to the development and demonstration of innovative climate adaptation technologies, suitable for being replicated, b) Improvement of the knowledge for developing, monitoring and assessing effective climate adaptation and mitigation action measures, and c) Facilitation of the development of comprehensive climate adaptation and mitigation strategies at local and national level.



Expected results

- Pilot UHI forecasting systems in two cities (Thessaloniki and Rome) providing high-resolution (250 m) UHI-related products.
- Heat Health Warning systems providing alerts for Thessaloniki and Rome including the potential effects on health.
- Assessment of the impact of future climate change scenarios on UHI.
- Sensitivity studies for assessing the impact of adaptation strategies, leading to the development of UHI Adaptation Actions Plans Portfolios for each city and Good Practice Guidebook for combating UHI and increasing resilience to heat.
- Web-based open access portal and mobile application to disseminate the forecasting products to authorities, stakeholders and the general public.
- Communication and dissemination actions to raise awareness of general public, to increase knowledge, skills and competences of policy makers and to contribute to the scientific community research activities.

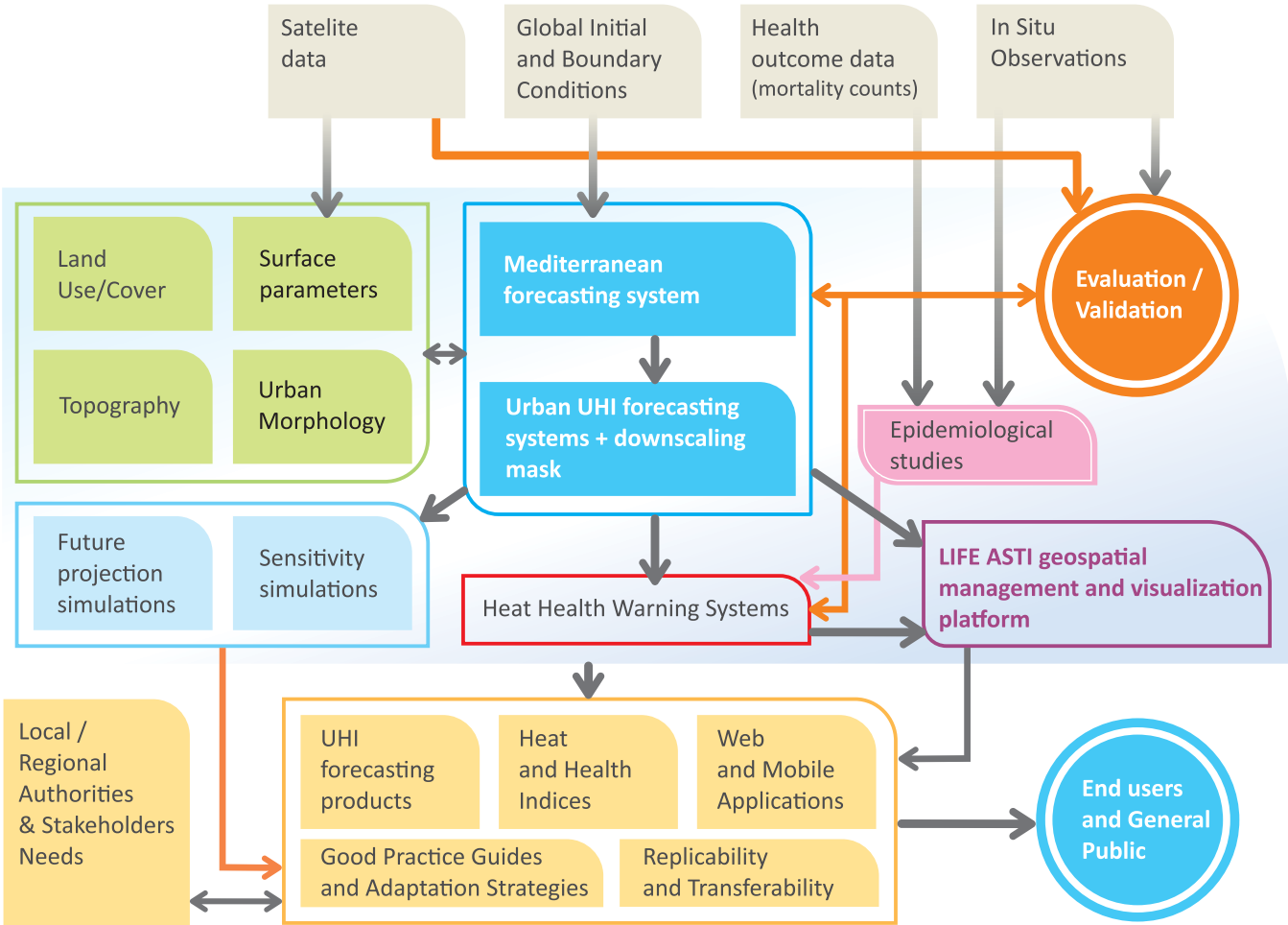


Image by AUTH

Schematic of the pilot operational UHI forecasting systems