

UltraHD City Services

Heat

Administration Services

Heat Island Simulation & Mitigation Strategies



What is CityClim?

CityCLIM is a European Union-funded project designed to develop an open platform for climate information and mitigation services. It integrates data from Earth observation sources, ground measurements, and urban weather prediction models to provide detailed weather forecasts for various European cities. The project acknowledges the significant impact of climate change on urban life, particularly the Urban Heat Island (UHI) effect, and addresses these challenges through mitigation and adaptation strategies.

Generic City Climate Platform (GCCP)

The Generic City Climate Platform (GCCP) is a Software-as-a-Service (SaaS) solution developed as part of the CityCLIM project to provide climate adaptation and mitigation services for cities. It **integrates diverse climate data sources, including ground measurements, airborne and satellite data, to offer an advanced urban weather model.** The platform serves as a one-stop shop for City Climate Services, helping both city administrations and citizens understand, predict, and respond to climate-related challenges.

- Services**
- **Citizen Climate Knowledge Services (CCKS):** A public service that informs, warns, and engages citizens on climate change and extreme weather events, encouraging awareness and adaptation.
 - **City Administration Services:** A decision-support tool for city planners and policymakers to analyze, simulate, and implement sustainable urban climate strategies.

INFORM CITIZENS ON CLIMATE CHANGE

WARN CITIZENS ON ARISING HAZARDS

ONE-STOP SHOP FOR CITY CLIMATE SERVICES

SUPPORT MITIGATION & ADAPTATION STRATEGIES

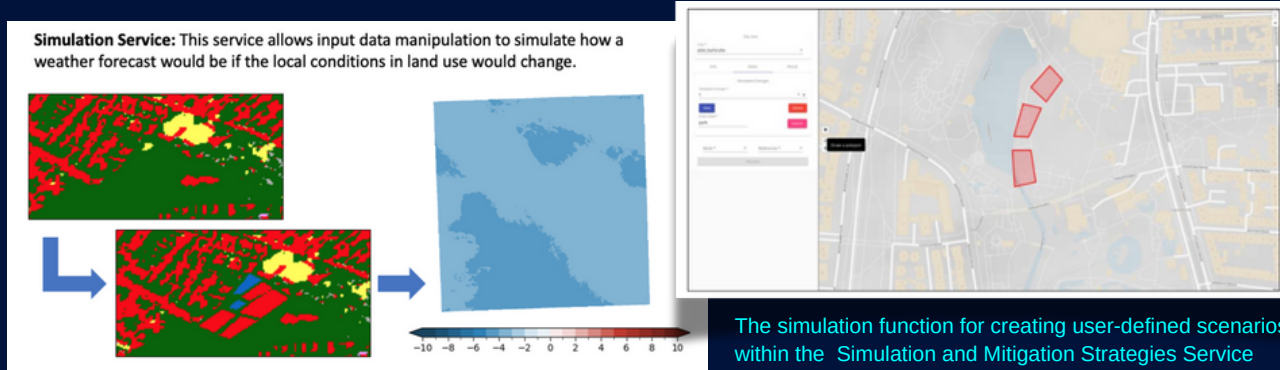
ADVANCED URBAN WEATHER MODEL

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Heat Island Simulation & Mitigation Strategies

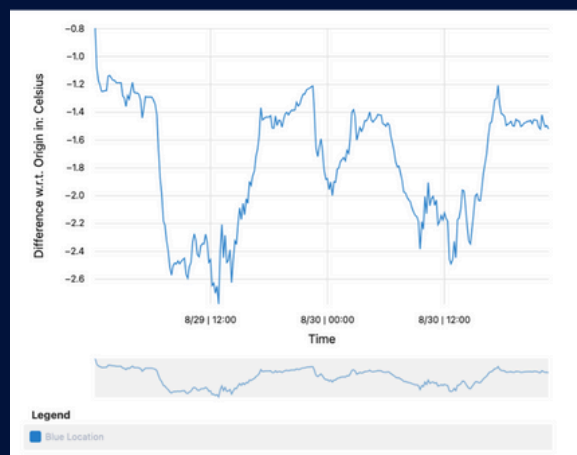
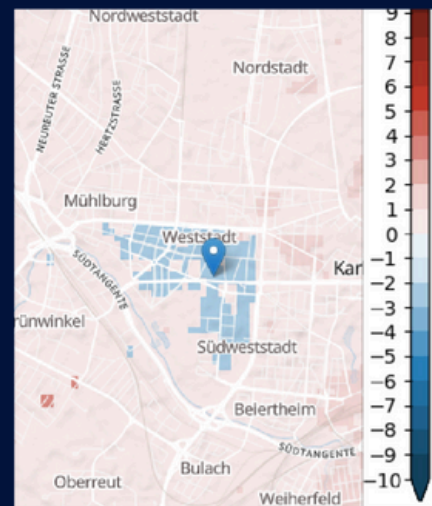
The CityCLIM solution features a Simulation Editor that enables users to simulate urban characteristics by modifying land cover types and elevation. Users can create simulations by drawing colored polygons on a map, which represent different land cover types, and adding elevation data. All changes are automatically saved and can be reviewed or continued. Users can also request simulated runs for a specified reference period, triggering a simulation engine to generate manipulated EO data. The service calculates differences in parameters across model runs and produces maps to analyze the impact of land use or elevation changes.



Schematic overview of the Simulation Service process: It modifies input data (e.g., land use, roughness, elevation) to simulate changes. Future updates will include default scenarios like green roofs. User-defined changes are shown as a difference map.

The Heat Island Simulation and Mitigation Strategies Service is providing the capacity to investigate the impact of simulated local urban changes to landcover or the digital elevation model with respect to heat-related parameters. These changes can be submitted by the user using a web-based graphical user interface, called the Simulation Editor, and following model input data will be manipulated accordingly.

The main service result of the Heat Island Simulation and Mitigation Strategies Service is then an analysis of the impact of the simulated changes. More precisely, an UltraHD run is reinitialized with manipulated input data and comparison of this manipulated run with the corresponding model run with non-manipulated input data is performed with respect to heat-related parameters. The comparison analysis is presented in a visual and numerical manner on a web-based graphical user interface.



Key facts

- **Comparative Analysis:** Reinitializes the UltraHD model with new inputs and compares results with original conditions.
- **Visual & Numerical Outputs:** Results are displayed in an interactive web interface for easy interpretation.
- **Pilot Region:** Currently available in all Pilot regions, where an UltraHD nest is run.

Visualisation of temperature difference between the original model run and the edited model run as a time series for a city park example in Karlsruhe.