

UltraHD City Services

Pollution

Administration Services

Pollution Simulation & Mitigation



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

ADVANCED URBAN
WEATHER MODEL

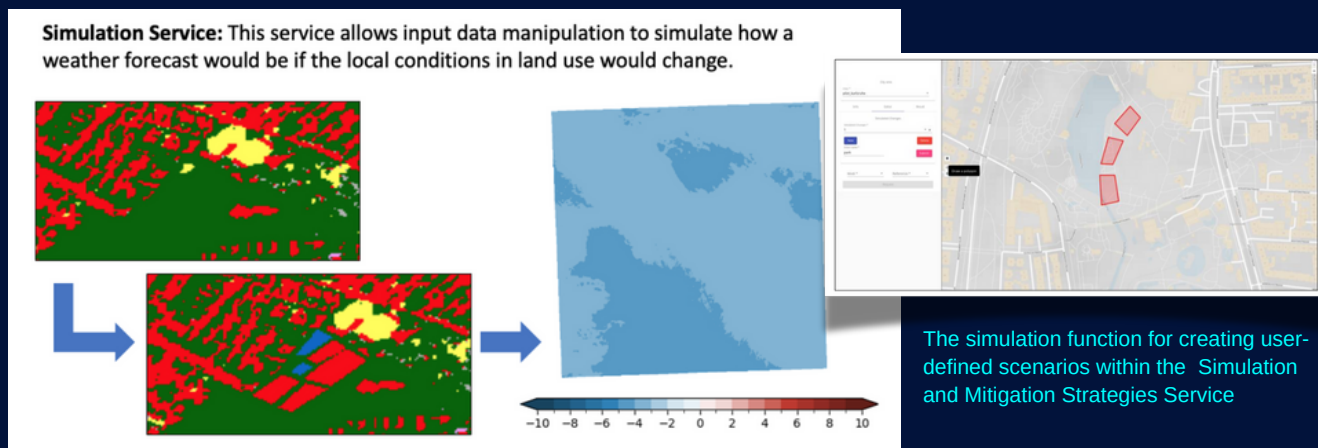


Pollution Mitigation & Simulation

The Pollution Simulation and Mitigation Strategies Service is providing the capacity to investigate the impact of simulated local urban changes to landcover with focus on the city air flow parameters like wind speed and direction enhanced by additional tracers for atmospheric gases and compounds like aerosols. This service is based on UltraHD model runs and moreover depends on simulated changes to urban characteristics made by the user. These changes can be submitted by the user using a separate web-based graphical user interface, called the Simulation Editor, and following model input data will be manipulated accordingly.

The main service result of the Pollution Simulation and Mitigation Strategies Service is then an analysis of the impact of the simulated changes. More precisely, an UltraHD run is reinitialize with manipulated input data and comparison of this manipulated run with the corresponding model run with non-manipulated input data is performed. The comparison analysis is presented in a visual and numerical manner on a web-based graphical user interface. This service is available only to the pilot Valencia since it requires in-situ pollution networks as mandatory input.

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.

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 only in Valencia, as it requires in-situ pollution networks for accurate data input.
- **Analyzes Urban Changes:** Assesses the impact of modified land cover on airflow, wind speed, and pollution dispersion.
- **Uses UltraHD Model Runs:** Simulates and compares different urban scenarios.
- **User-Controlled Simulations:** Users modify land cover and elevation via the Simulation Editor by drawing polygons on a map.
- **Automated Data Processing:** Changes are saved, reviewed, and used to generate manipulated EO data.