

Technical Background of CityCLIM

In-Situ Data Processor

Technical Details

In-Situ Data Processor Prototype



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



In-Situ Data Processor Prototype

The In-Situ Data Processor acts to establish the communication between the In-Situ Sensors and the Generic City Climate Platform. To accomplish that the Processor accesses the data from the sensors through REST API requests, processes the data in a unified format and stores the resulting information in the Data Warehouse of the Generic City Climate Platform. From there the data is made available for building the weather model but also made freely accessible for the Pilot Cities.

The workflow of the In Situ Data Processor is as follows:

- Access the Data from the Sensors (via REST)
- Structure the Data in the script
- Storing of the Data

There are three sources from which the In-Situ Data Processor gathers the sensor data:

- **MeteoTrackers**, through the various citizen recording campaigns organized in the pilot cities.
- **Barani Stationary Sensors**, which were also distributed to the pilot cities to be mounted e.g. on schools and public buildings
- **Valencia's FIWARE network of sensors**, which was already functioning prior to the development of CityCLIM. The In-Situ Data Processor has managed to integrate sensor data coming from all types of sensors installed, which include Pollution Sensors, Bus-mounted Sensors, but traditional Weather Stations.



Meteo Tracker - mobile weather sensors



Barani weather stations installed in the Pilot cities: Luxembourg, Thessaloniki, Karlsruhe and Valencia

Key Features of the In-Situ Data Processor

Purpose:

- Bridges communication between in-situ sensors and the Generic City Climate Platform.

Workflow:

- Accesses sensor data via REST API requests.
- Structures data into a unified format.
- Stores data in the Data Warehouse for model integration and public access.

Data Sources:

- **MeteoTrackers:** Citizen-recorded climate data from pilot cities.
- **Barani Stationary Sensors:** Installed on public buildings like schools.
- **Valencia's FIWARE Sensor Network:** Integrates pollution, bus-mounted, and weather station data.
- **Usage:** Supports weather model development and provides open data access for pilot cities.