

MOS-based Information & Warning

HEAT

Citizen Services

MOS-based Heat Warning



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

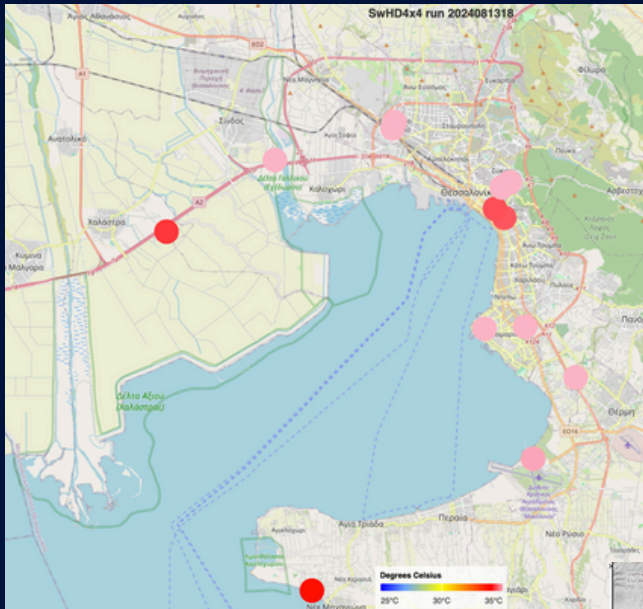
ADVANCED URBAN WEATHER MODEL

ADVANCED URBAN WEATHER MODEL

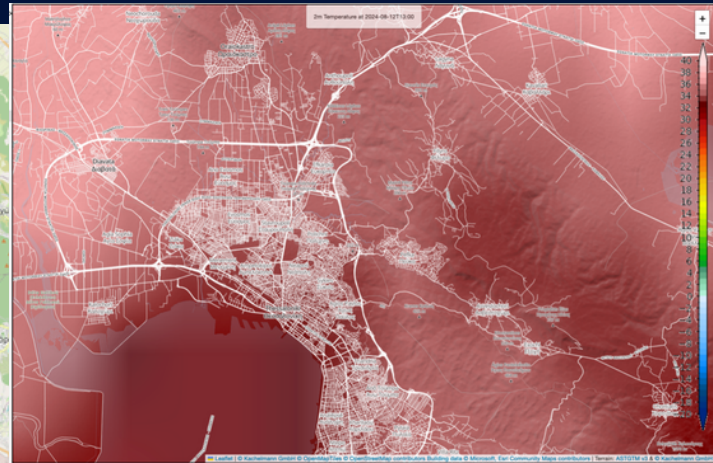


MOS-based Heat Warning

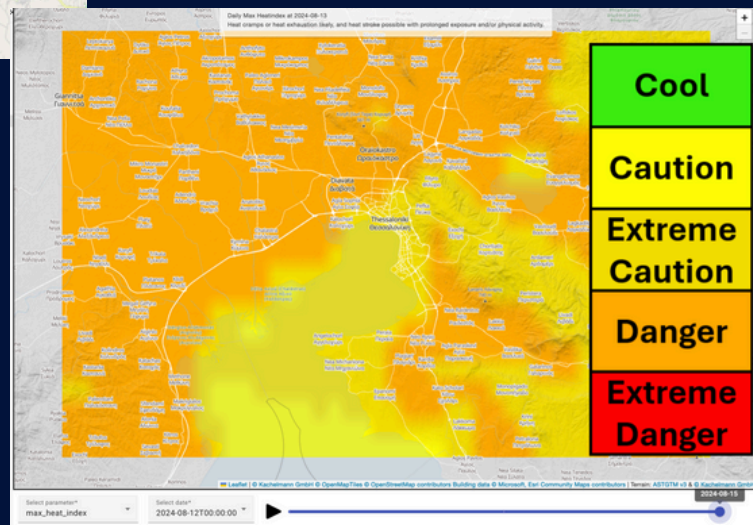
We are able to use locally distributed observations to enhance local weather forecasts. With long enough observations and historical weather model data, one can make high precise weather prediction at heterogeneous surroundings or place with large micro climate impacts. In the CityCLIM project we focused on how to make high precise temperature and humidity forecast for the vicinity of Thessaloniki. In the first plot you can see different temperature forecast on different place throughout the city. Hot place and cooler areas could be detected (see point forecast in figure 1).



MOS model forecast for all stations in the vicinity of Thessaloniki.



2D Forecast map with gridded 2 m temperature to combine 2D area information and individual local weather information.



Heat index distribution on a hot day in Thessaloniki

Key features & benefits

- **Local Weather Forecasting:** Uses MOS-model (Model Output Statistics) to enhance weather predictions.
- **High-Precision Forecasts:** Utilizes long-term observations and historical model data for temperature and humidity accuracy.
- **Microclimate Analysis:** Detects hot and cool areas within Thessaloniki.
- **Combined Forecasting Methods:** Integrates point-based and 2D forecast maps for detailed insights.
- **Heat Index & Warnings:** Generates heat index maps and provides heatwave alerts.

With a high density of measurement points, we can integrate localized forecasts with 2D forecast maps, providing both spatial coverage and precise point-based predictions.

This approach enables a detailed analysis of Thessaloniki's heterogeneous temperature distribution, as illustrated in Figure 2. Additionally, heat index maps (Figure 3) can be generated to support the detection of heatwaves and issuance of targeted warnings.