

# Promoting Urban Resilience in Europe through Earth Observation: The CURE Project

Nektarios Chrysoulakis<sup>1</sup>, Giorgos Somarakis<sup>2</sup>, Zina Mitraka<sup>3</sup>, Mattia Marconcini<sup>4</sup>, David Ludlow<sup>5</sup>, Zaheer Khan<sup>6</sup>, et al.

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[zedd2@iacm.forth.gr](mailto:zedd2@iacm.forth.gr), [somarage@iacm.forth.gr](mailto:somarage@iacm.forth.gr), [mitraka@iacm.forth.gr](mailto:mitraka@iacm.forth.gr), [Mattia.Marconcini@dlr.de](mailto:Mattia.Marconcini@dlr.de), [David.Ludlow@uwe.ac.uk](mailto:David.Ludlow@uwe.ac.uk), [Zaheer2.Khan@uwe.ac.uk](mailto:Zaheer2.Khan@uwe.ac.uk)

<sup>1,2,3</sup> Foundation for Research and Technology Hellas (FORTH), Institute of Applied and Computational Mathematics, Remote Sensing Lab, Greece  
<sup>4</sup> DLR, Deutsches Zentrum für Luft- und Raumfahrt, Germany  
<sup>5,6</sup> University of the West of England, Bristol, UK

## Abstract

Urban areas are exceptionally vulnerable to climate change and their vulnerability is increasing over time. Hence, resilience has become an important necessity for cities, in order to properly preserve their functions and to adapt or transform their systems in the face of climate change. Therefore, city administrations and spatial planning community are prompted to embed climate change mitigation and adaptation in both urban planning and development. However, they should be supported with spatially disaggregated environmental information at neighbourhood and city scales. Such information can be provided through innovative Earth Observation (EO) methodologies deploying satellite and in-situ measurements. Plenty of EO datasets are available from Copernicus (European Union's Earth Observation Programme) and its Core Services can constitute the main data sources for these methodologies.

In this context, the CURE (Copernicus for Urban Resilience in Europe) project, funded by Horizon 2020, will provide the means to cope with the EO data in the domain of sustainable and resilient urbanization, by combining products of both Copernicus and third-party data. Specifically, CURE will develop a system, consisting of individual cross-cutting applications for climate change adaptation and mitigation, energy and economy, as well as healthy cities and social environments. Moreover, these applications will be tested in several European cities of different magnitude and typologies towards validating their utility. Focusing on Copernicus, CURE deploys four Copernicus Core Services: Land Monitoring Service (CLMS), the Atmosphere Monitoring Service (CAMS), the Climate Change Service (C3S) and the Emergency Management Service (EMS), while the system will be developed in Copernicus Data and Information Access Services (DIAS). Consequently, CURE aims to contribute to the scientific and operational exploitation of the existing and upcoming European space infrastructure, by providing novel ideas on how Copernicus can promote valuable information for urban resilience, considering both urban form and function through a multidisciplinary perspective.

**Keywords:** Urban resilience and sustainability, Earth observation, Copernicus earth services, Climate change adaptation and mitigation, Energy and economy, Health cities and social environments