



**HAL**  
open science

**The mini climatic city a dedicated space for  
technological innovations devoted to Sustainable City**  
François Derkx, Bérengère Lebental, Erick Merliot, Jean Dumoulin, Frédéric  
Bourquin

► **To cite this version:**

François Derkx, Bérengère Lebental, Erick Merliot, Jean Dumoulin, Frédéric Bourquin. The mini climatic city a dedicated space for technological innovations devoted to Sustainable City. EGU General Assembly 2015, Apr 2015, Vienne, Austria. hal-01237148

**HAL Id: hal-01237148**

**<https://inria.hal.science/hal-01237148>**

Submitted on 2 Dec 2015

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



## **The mini climatic city a dedicated space for technological innovations devoted to Sustainable City**

François Derkx, Bérengère Lebental, Erick Merliot, Jean Dumoulin, and Frédéric Bourquin  
Université Paris Est, Ifsttar, Cosys

Our cities, from megalopolis to rural commune, are systems of an extraordinary technological and human complexity. Their balance is threatened by the growing population and rarefaction of resources. Massive urbanization endanges the environment, while global climate change, through natural hazards generated (climatic, hydrological and geological), threatens people and goods.

Connect the city, that is to say, design and spread systems able to route, between multiple actors, a very large amount of heterogeneous information natures and analyzed for various purposes, is at the heart of the hopes to make our cities more sustainable: climate-resilient, energy efficient and actresses of the energy transition, attractive to individuals and companies, health and environment friendly.

If multiple players are already aware of this need, progress is slow because, beyond the only connectivity, it is the urban intelligence that will create the sustainable city, through coordinated capabilities of Perception, Decision and Action: to measure phenomena; to analyze their impact on urban sustainability in order to define strategies for improvement; to effectively act on the cause of the phenomenon.

In this very active context with a strong societal impact, the Sense-City project aims to accelerate research and innovation in the field of sustainable city, particularly in the field of micro and nanosensors. The project is centered around a "mini climatic City", a unique mobile environmental chamber in Europe of 400m<sup>2</sup> that can accommodate realistic models of city main components, namely buildings, infrastructures, distribution networks or basements.

This R&D test place, available in draft form from January 2015 and in finalized version in 2016, will allow to validate, in realistic conditions, innovative technologies performances for the sustainable city, especially micro- and nano-sensors, at the end of their development laboratory and upstream of industrialization. R & D platform located in the heart of the Cité Descartes in Paris Est and open to both academic as industrial and communities, Sense-City participates in the positioning of the Cité Descartes as a flagship tertiary center for the city of the future. The areas of interest cover the energy performance of buildings and neighborhoods, the sanitary quality of the frame (indoor air pollution), the quality and sustainability of urban networks (transport, fluid), the quality of outdoor air, soil and water, control of waste storage areas, sustainability and infrastructure security.

In the framework of this project, a first outdoor test bed was designed and built in 2014. Various sensing capacity have been implemented and first experimentations started in 2015.

The project partners, IFSTTAR, ESIEE-CCIP LPICM (UMR CNRS Ecole Polytechnique), CSTB, INRIA and UPEM, controls the entire value chain for the development of innovative products for the sustainable city, nano or prototyping microsensors up to validation in real conditions, not to mention the steps of integration, packaging and deployment of the sensors or the processing steps, modeling and representation of information.