

# Cite Descartes Paris – Campus Extension

The project focused on a new development of buildings in the Cité Descartes area located approximately 20 km east of the center of Paris.

A cluster of new buildings was planned as an extension of the existing campus of the University Paris-Est Marne-la-Vallée. The ENVI-met team helped to reveal how changes in thermal comfort would arise from the construction of new buildings and suggested improvements to the proposed design.

The planned extension of the University Paris-Est Marne-la-Vallée consisted of several new buildings and removal of green areas of the campus. The plan as initially proposed would have resulted in a 3 K increase in air temperature in large portions of the campus open space area due to changes in ventilation and the decrease of green infrastructure, according to ENVI-met simulations.

Several passive nature-based solutions (NBS) were proposed by the ENVI-met team to mitigate these negative effects including additional tree planting, usage of larger trees, replacement of impermeable surfaces with natural soil and the application of water along the main street. In addition, it was suggested to elevate two parts of the new buildings to allow an air interchange with the nearby Parc de la Butte Verte. Through the application of the suggested NBS, ENVI-met showed the impact of the planned development on air temperature could be reduced by approximately 1.5 K, approximately halving the negative impact created by the initially proposed plan.

In addition, the microclimate simulation accounted for the interaction of the proposed buildings with both the surrounding environment and other neighboring buildings. This provided site-specific weather data for subsequent building energy models, enabling a more detailed calculation of the energy demands and potential costs.

## FACTS

### Client

Centre Efficacité énergétique des Systèmes – Center for Energy efficiency of Systems MINES ParisTech, Paris

### Implementation period

07/2016-07/2017

### Used Features

ENVI-met holistic microclimate model; different nature-based mitigation solutions