

# USE OF BIG DATA IN ENVIRONMENTAL AND OCCUPATIONAL EPIDEMIOLOGY: THE BEEP PROJECT



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## INTRODUCTION

One of the biggest challenge of modern environmental epidemiology is being able to collect and link, in a complex way, **large amounts of geographical, environmental and health data**, to obtain comprehensive information otherwise not available from individual sources. The BEEP project (**Big data in Environmental and occupational EPidemiology**) started in June 2017 for a duration of two years.

## OBJECTIVES

**General objective:** using Big Data methodology to estimate the health effects of air pollution, noise and meteorological parameters on the Italian general population. In particular, the focus is on the relationships between the different environmental exposures and the risks of hospitalization and mortality, occupational injuries and commuting accidents.

NATIONAL LEVEL

REGIONAL LEVEL

METROPOLITAN LEVEL

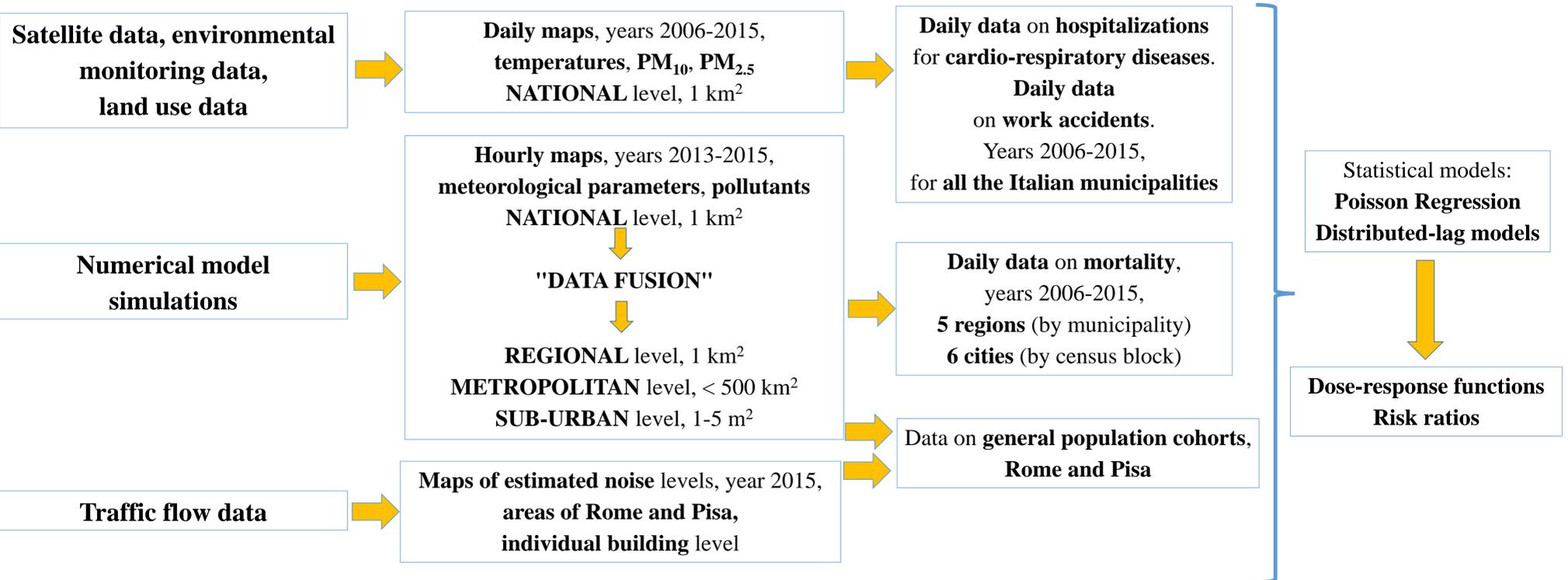
SUB-URBAN LEVEL

### Specific objectives:

to estimate health risk models at increasingly higher spatial resolution:



## METHODS



## RESULTS

Estimation of **air pollution** and **meteorological parameters** at **national and regional level** and assessment of their **health effects** were the activities carried out in the first year of the project.

In particular, among the project results there are:

- **concentration maps** of particulate matter (PM<sub>10</sub>, PM<sub>2.5</sub>) and other pollutants, at a spatial resolution of 1 km<sup>2</sup> and daily time resolution, for the years 2006-2015 at national level;
- **maps of air temperature** and other meteorological parameters, with the same spatio-temporal resolution;
- **estimates of association** among **air pollution, temperatures** and **mortality and acute hospitalizations**;
- **estimates of association** among **air pollution, temperatures** and **work accidents**.

## CONCLUSIONS

The results yielded by the BEEP project, beyond stimulating new scientific developments, will provide useful information for public decision-makers in the field of air quality, planning of urban environments and public health protection.