

# CREATING MAPS OF VOCs ODORS IN URBAN AREAS BY CYCLING WITH A PORTABLE E-NOSE

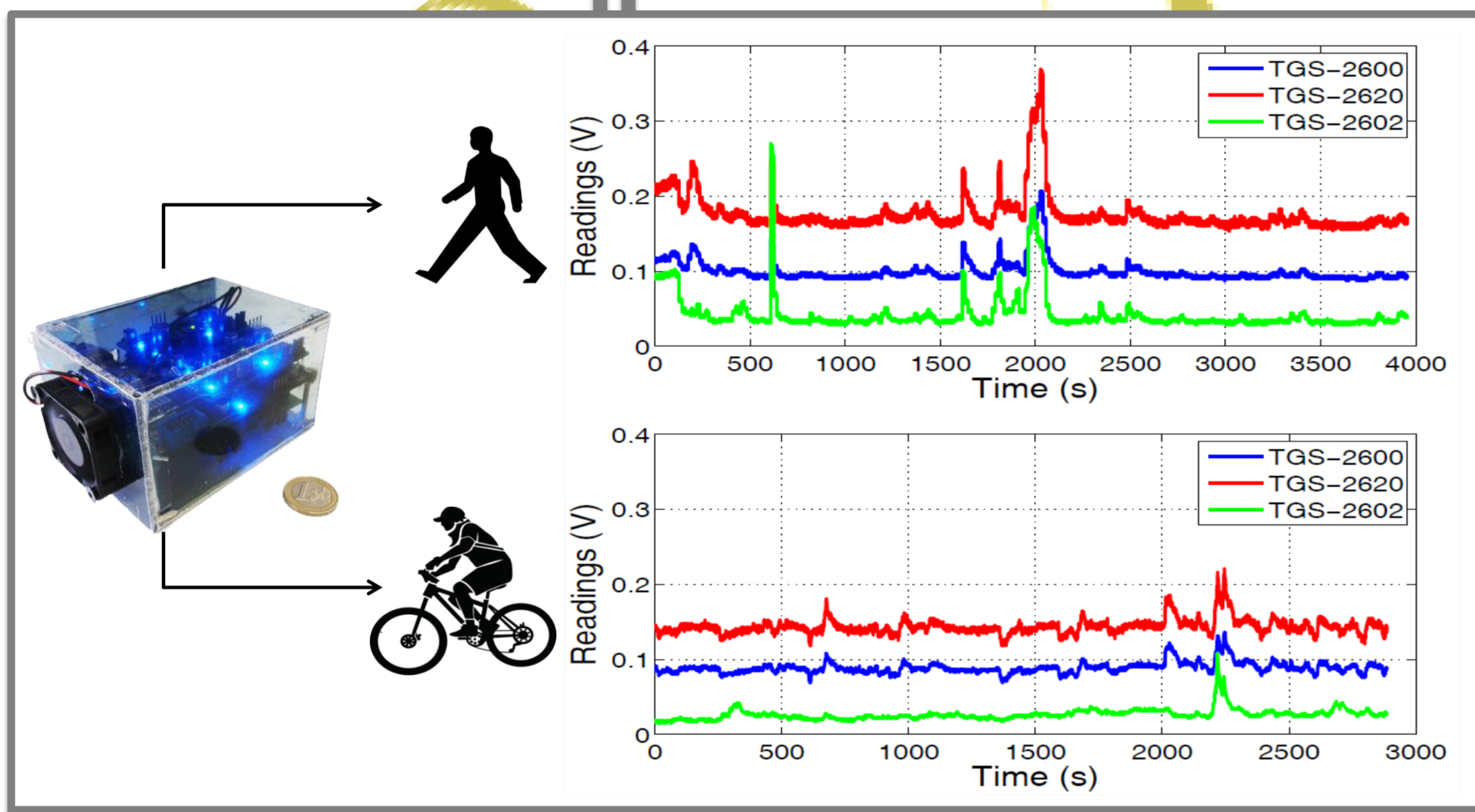
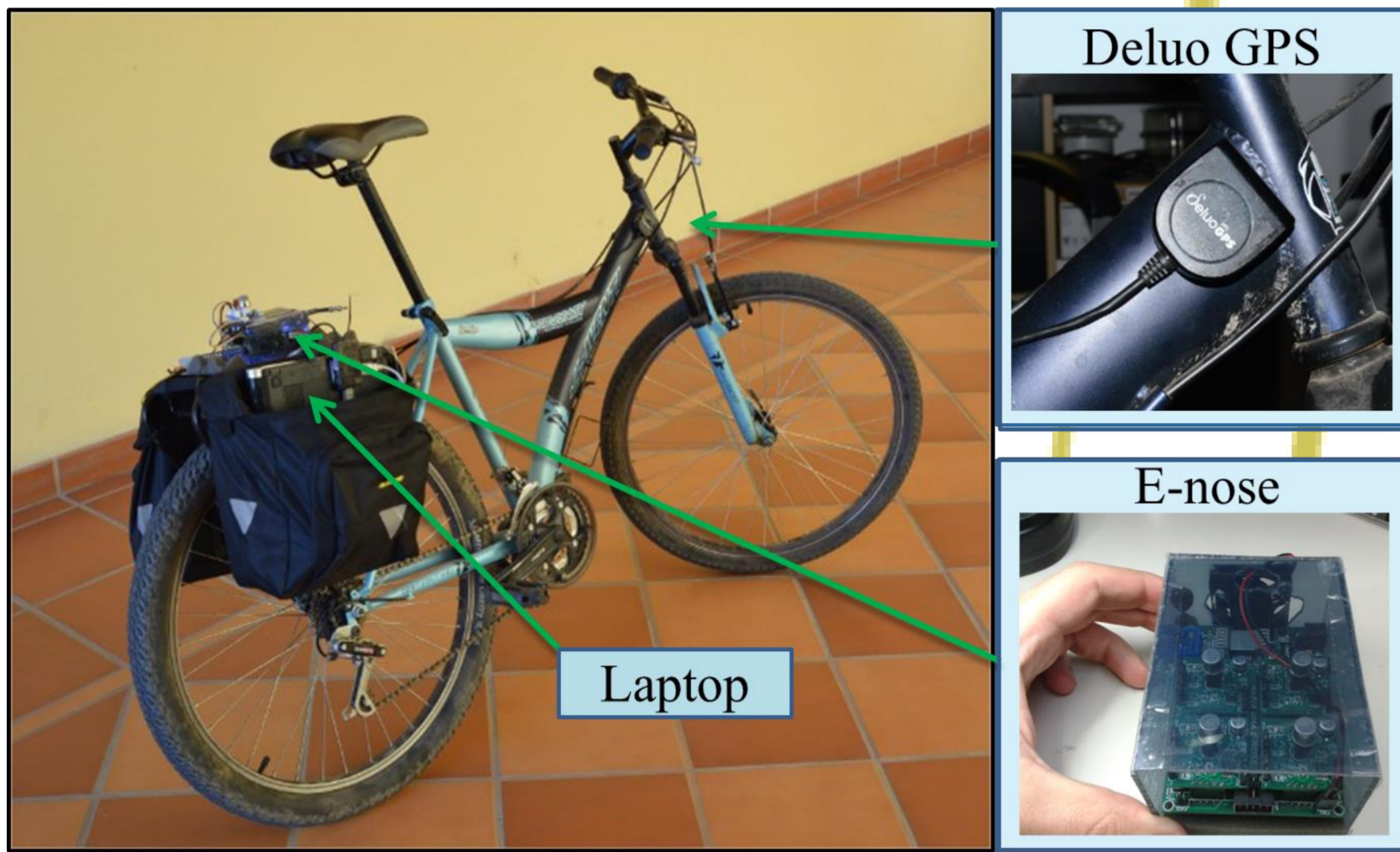
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## MOTIVATION

This poster presents an application for monitoring volatile organic compounds (VOCs) in urban areas, likely coming from residential waste or the public sewage system. The objective is to obtain a spatial and temporal representation of such odors by means of a gas distribution map, from which valuable information such as the location, or the time-intervals of maximum strength of the nuisance odors can be inferred. The necessary data (chemical, temporal and spatial) are provided by a GPS and a specific e-nose mounted on a bicycle. The e-nose, developed by the research team, accommodate seven metal oxide (MOX) gas sensors specific for the application.



C. Sanchez-Garrido, J.G. Monroy, J. Gonzalez-Jimenez, A Configurable Smart E-Nose For Spatio-Temporal Olfactory Analysis, IEEE Sensors, 2014.

## DATA COLLECTION

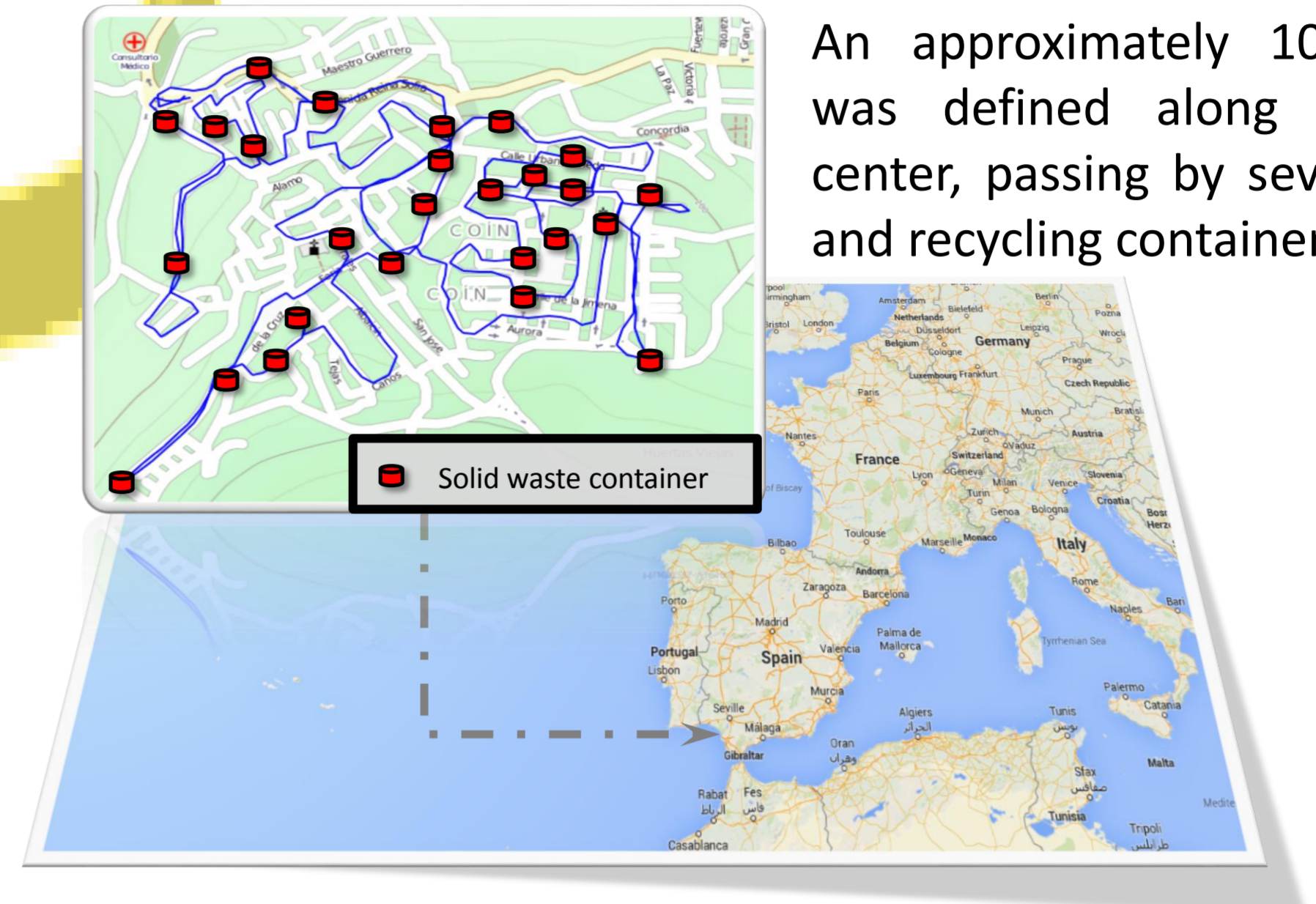
The bicycle (a conventional mountain bike) has been equipped with an e-nose based on an array of seven MOX gas sensors, an external GPS (DeluoGPS) for extra localization accuracy, and a laptop to record the data and provide synchronization. Samples from all gas sensors together with the GPS location are taken at 1Hz and transmitted to the computer with time-stamps, which records such information in a log file.



## A CASE OF STUDY

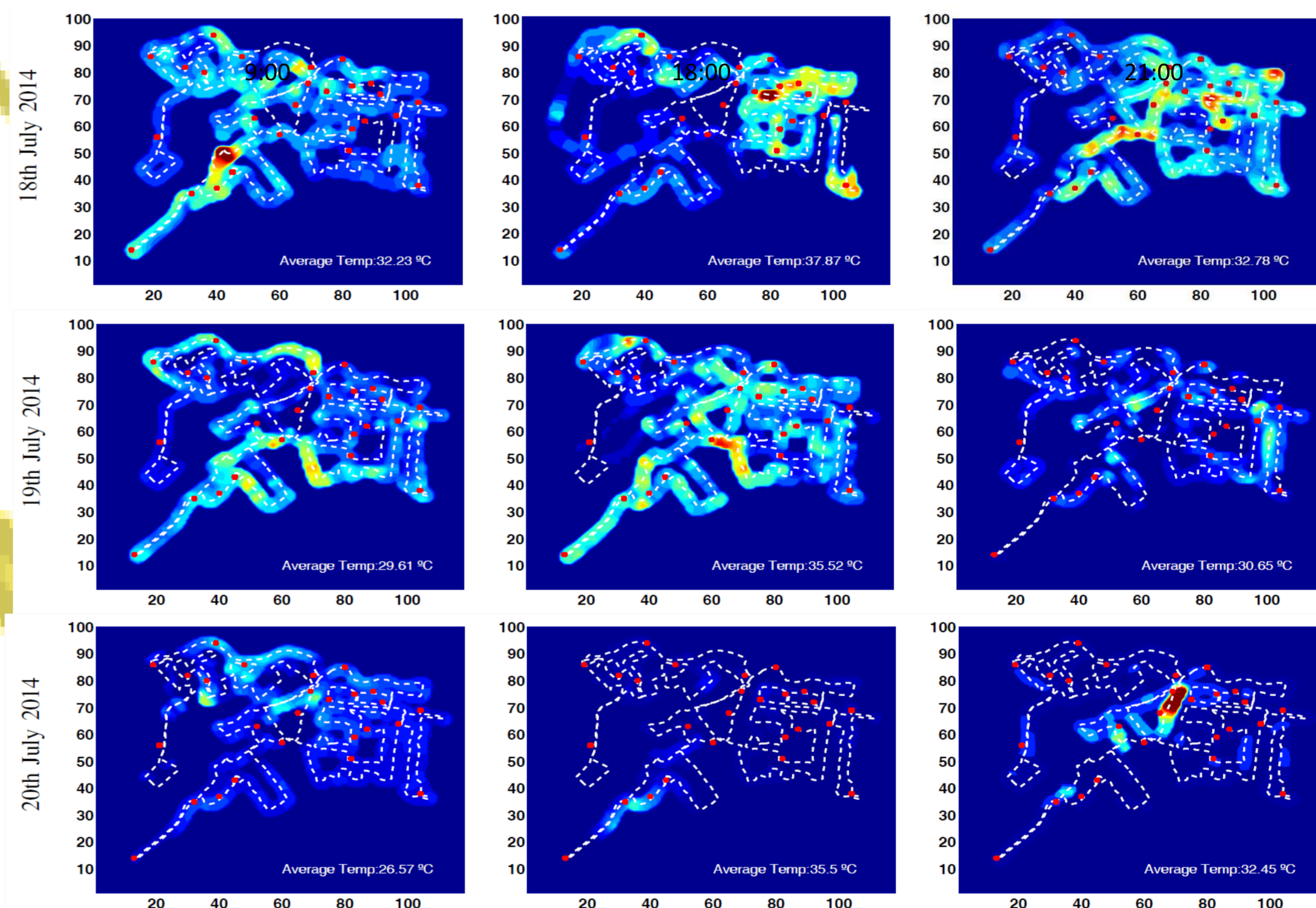
An study of waste odors was carried out in Coin, a town in the province of Málaga, southern Spain.

An approximately 10Km route was defined along the town center, passing by several waste and recycling containers.



## CREATING GAS DISTRIBUTION MAPS

Gas Distribution Maps are generated using the kernelDM+V method, which consists of the convolution of the sensor readings with a Gaussian kernel.



## SPATIO-TEMPORAL ANALISYS

Most of the "odorous spots" can be related to the presence of close containers, usually found in the most populated areas of the town. Referring to the temporal variability of the maps, in general, higher concentrations were measured for the late hours of the day.

