



Towards a network of Urban Forest Eddy Covariance stations: a unique case study in Naples

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Urban forests are by definition integrated in highly human-made areas, and interact with different components of our cities. Thanks to those interactions, urban forests provide to people and to the urban environment a number of ecosystem services, including the absorption of CO₂ and air pollutants thus influencing the local air quality. Moreover, in urban areas a relevant role is played by the photochemical pollution which is strongly influenced by the interactions between volatile organic compounds (VOC) and nitrogen oxides (NO_x). In several cities, a high percentage of VOC is of biogenic origin mainly emitted from the urban trees. Despite their importance, experimental sites monitoring fluxes of trace gases fluxes in urban forest ecosystems are still scarce.

Here we show the preliminary results of an innovative experimental site located in the Royal Park of Capodimonte within the city of Naples (40°51'N-14°15'E, 130 m above sea level). The site is mainly characterised by *Quercus ilex* with some patches of *Pinus pinea* and equipped with an eddy-covariance tower measuring the exchange of CO₂, H₂O, N₂O, CH₄, O₃, PM, VOCs and NO_x using state-of-the art instrumentations; it is running since the end of 2014 and it is part of the large infrastructural I-AMICA project.

We suggest that the experience gained with research networks such as Fluxnet and ICOS should be duplicated for urban forests. This is crucial for carbon as there is now the ambition to include urban forests in the carbon stocks accounting system. This is even more important to understand the difficult interactions between anthropogenic and biogenic sources that often have negative implications for urban air quality. Urban environment can thus become an extraordinary case study and a network of such kind of stations might represent an important strategy both from the scientific and the applicative point of view.