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title
PM10 removal by urban green infrastructures in the valley of Po riverine (Northern Italy)

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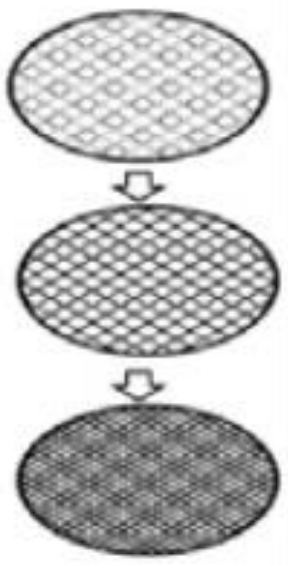
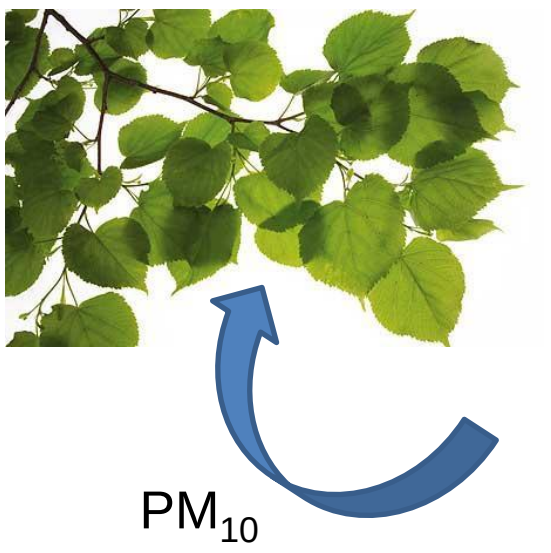
Background

The cities of Po valley (Northern Italy) suffer for poor air quality status, which affects health of local population. Particulate Matter (PM) concentrations exceed the limits fixed by National and European legislations, also causing economic costs to local administrations. Urban green infrastructures, such as urban trees, offer the opportunity to regulate air quality in urban environment by removing suspended PM, thus providing a relevant ecosystem service.

Ongoing research activities

The preliminary results of ongoing research activities are presented.
This study aims to assess the contribution of urban green to air quality improvement by the quantification of PM10 depositions on the tree vegetation of the city of Ferrara (Northern Italy). *Tilia cordata,* a common native species, was selected as model.
Leaves of twelve trees were sampled on three sites selected along an urban-periurban transect. PM10 deposition on leaves was quantified by means of leaf washing and filtration, with the aim to quantify the PM10 removed by urban trees and test possible variations along urban gradient.





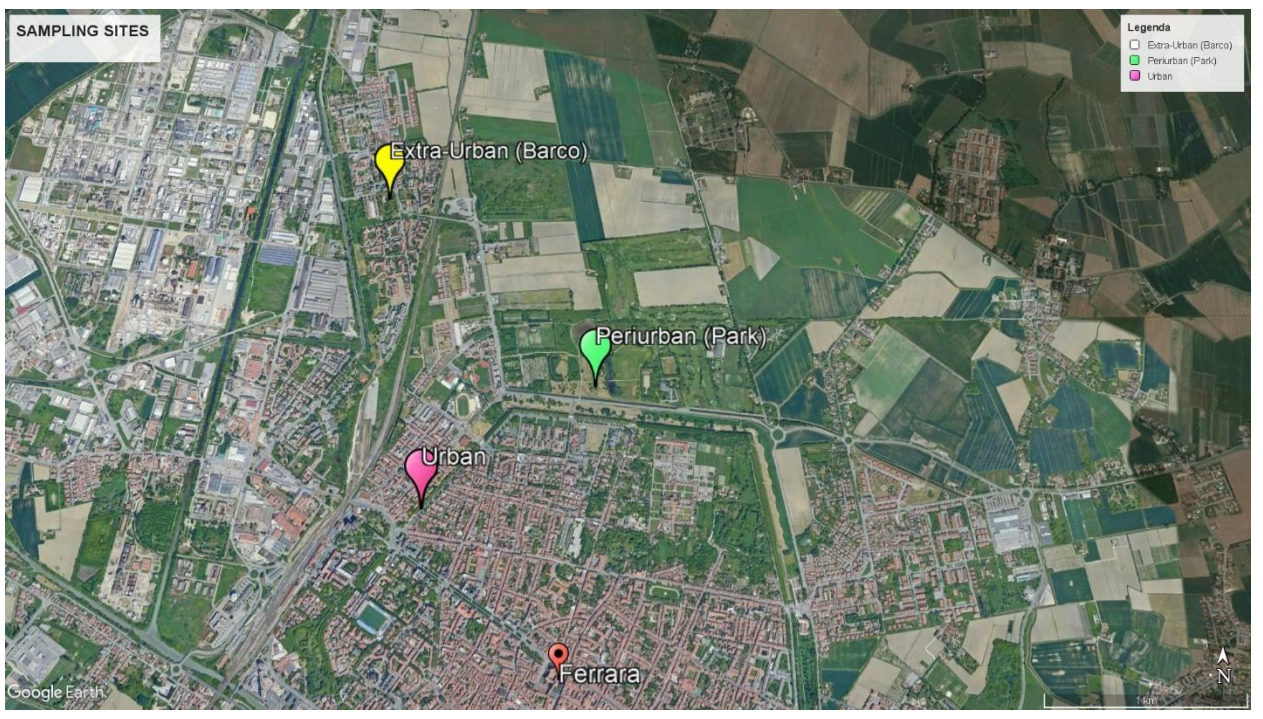


Fig.1: The three sampling stations in Ferrara municipality

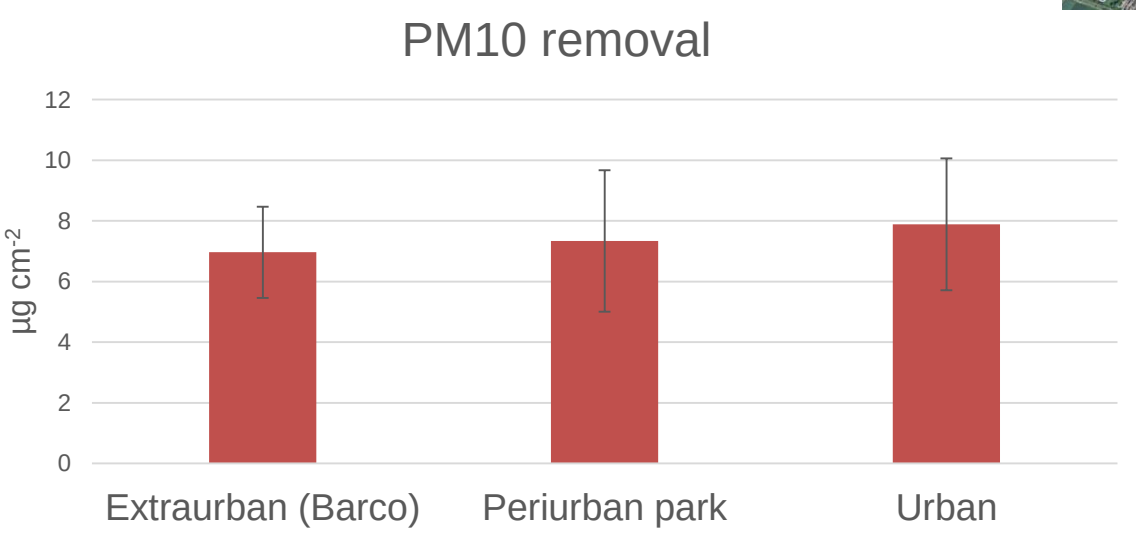


Fig.2: Mean PM10 removal (µg/cm2) observed in *T.cordata* leaves in the three sampling sites

June 2018	Extra-urban	Peri-urban	Urban
14-Jun	11	9	11
15-Jun	14	14	14
16-Jun	18	18	19
17-Jun	20	21	20
18-Jun	22	22	21
19-Jun	19	19	19
20-Jun	21	21	22
Daily mean (µg/m³)	17.86	17.71	18.00

Tab.1: Daily mean PM10 concentration (µg/m³) during the seven days before sampling in three monitoring stations along urban gradient (Source: ARPAe)

Findings

Mean PM10 removal was 7.40 ±1.14 µg cm^{-2}.
No statistical differences were observed along urban-periurban gradient.

Take home message

Under a diffuse air pollution background, as in the case of Po valley, there are no differences in PM10 removal performances along urban-periurban gradient. Urban planners should promote an even distribution of green infrastructures in order to improve air quality standards.

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