

## SIZE-RESOLVED AEROSOL PARTICLE DEPOSITION TO EUROPEAN BROADLEAVED FORESTS

### Background and motivation

Airborne particulate matter (PM) is a subject of major concern in Europe because it has been attributed to the most severe health effects. Vegetation is likely to play an important role in mitigating this source of air pollution because of the large surface area offered by leaves to filter PM out of the air. Many studies aimed at quantifying the dry deposition of PM to vegetation, particularly in forests. However, the characterization of the exchange processes are still incomplete. PM deposited on leaves, for example, can be re-suspended in air, while the only process that represents the ultimate removal of PM from the atmosphere is the washing off by precipitation dripping from leaves to the soil. Up to now only a couple of models attempted to include the above-mentioned processes in their formulation, but their description is far from truly mechanistic and should be still validated. The aim of this PhD project is the micrometeorological characterization of the size-resolved PM deposition and resuspension processes to European broadleaved forests under different climatic conditions with related possible physiological interactions. The research will consist of a combination of experimental and observational work both in the field (eddy covariance) and in the Lab (wind tunnel or growth chambers) with the aim to improve the actual deposition models.

### Profile

- Diploma: Master's degree or comparable qualification in physics, with a strong background in environmental physics and ecology. Degrees in environmental science, forest or plant science are welcome too, provided a sound preparation in environmental physics are presented. The title must be obtained before OCTOBER 31<sup>ST</sup> 2018.
- A solid background in atmospheric physics and micrometeorology is required electronics, as well as skills in electronics, programming and modelling.
- Experience in Knowledge of ecology and plant physiology will be considered as an advantage. Applicants should love experimental work in open-air and should not deny the practical work, such as wiring, cabling and installing probes, mounting masts and supports, programming and running new instrumentation.
- Good knowledge of the English language, both spoken and written, is essential.
- Strong commitment, ability to work in a team, and eager for international mobility is desired.

### Opportunities

- Perform experimental research in an interdisciplinary research environment and actively participate to the international collaboration between research groups in with the aim of achieving a doctorate diploma under the joint supervision by UCSC and KU Leuven. The candidate will have the opportunity to work in a fully instrumented Eddy Covariance site in Italy and in a similar site in Belgium where micro-meteorological towers have been installed. At the same time he/she will have access to different labs where particular topics could be investigated.
- Gain didactical experience by being involved in teaching duties for a limited amount of time (e.g., guiding Bachelor and Master students with their experiments and research).

### Supervisors

Prof. Giacomo Al. Gerosa: tel + 39 030 2406724

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### Info

Applications will appear [HERE](#)

Pre-applications available at <http://scuoledidottorato.unicatt.it/phdschools/science-home>

Application deadline: September 28<sup>th</sup>, 2018

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