EPFL
ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

Turbulence characterisation in an urban setup

Projet N°8750

Catégorie de projet : GM

Type de projet : Projet de Master (PDM) GM

Responsable : Mauree Dasaraden

Descriptif du projet

The efficient planning of future buildings and districts will only be possible if urban planners have the appropriate tools and information at their disposition. For example, the future development of the EPFL campus shows the need to densify the existing building stock, but the question still remains on its design in order to reduce the energy consumption while at the same time increasing the liveability of the outdoor environment. It is necessary to represent influence of obstacles on the urban climate and what are the effects when evaluating building energy use, air pollutant dispersion and renewable energy potential in urban planning scenarios. For this reason, equipment has been installed over the EPFL campus and will study the impact of urban areas / buildings on the micro-climate of the campus with the measurement of the meteorological profiles and also a quantification of the energy consumption and the outdoor human comfort. A long-term monitoring of various meteorological variables like wind speed, air temperature, turbulence and humidity are currently undertaken by the use of meteorological instruments. Objectives * Understand physical processes involved in urban climate * Format data obtained from the measurements * Use the data captured to define patterns in vertical wind and temperature profiles (using deterministic methods or data-driven approaches such as machine learning) * Transform these patterns into parameterizations used in urban modelling tools. * Determine the most relevant parameters impacting building energy use

Commentaires projet

Profile looking for We are looking for a highly motivated Master student having a strong background in environmental engineering / fluid mechanics, physics or mathematics and willing to work on a measurement campaign and its link to modelling tools. Knowledge of programming is highly appreciated. The candidate will thrive in an exciting international research environment at the LESO-PB, where researchers work on various topics related to building physics and solar energy from the urban to the nano scale. This work will also be part of the SCCER FEEB&D (www.sccer-feebd.ch/) For further inquiry please contact: Dr. Dasaraden Mauree, dasaraden.mauree@epfl.ch. If interested, please send your curriculum vitae to dasaraden.mauree@epfl.ch.

Caractéristiques du projet

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Enseignant Principal I   Mauree Dasaraden
(valide le projet)