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Thermo-hydric assessment of Nature-based adaptation Solutions in urban environments

Pierre-Antoine Versini

Ecole des Ponts ParisTech, HM&Co, Champs-sur-Marne, France (pierre-antoine.versini@enpc.fr)

Nature-based adaptation Solutions (NbaS) have become central elements for action on climate. With a wide range of forms across different ecosystems, NBaS are now recognized to mitigate the intensity and frequency of climate-related events, to buffer heat stress and to regulate altered hydrological cycles for instance.

The LIFE ARTISAN project (Achieving Resiliency by Triggering Implementation of nature-based Solutions for climate Adaptation at a National scale) aims to promote the implementation of NbaS throughout the French territory (www.life-artisan.fr) in the framework of the National Plan for Climate Change Adaptation. For this purpose, many actions are carried out to facilitate the design, use, assessment and maintenance of NbaS: development of tools, trainings, grid of indicators, taking benefit from 10 pilot sites.

This communication is particularly focused on the way in which the naturation of the urban environment can attenuate heat islands. It presents the thermo-hydric coupling carried out between the Multi-Hydro and Solène-Microclimate models. This new platform is able to simulate both water balance and energy budget to assess the performance of NbaS in stormwater management and microclimate mitigation at the urban project scale. This coupling, based on the evapotranspiration process, was validated by using observed data collected during the ANR EVNATURB project (<https://hmco.enpc.fr/portfolio-archive/evnaturb/>).

Perspectives are proposed concerning schoolyards. These locations, often highly impervious, appear very relevant for setting up NbaS in order to create cooling islands, while having an educational aim.