



Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Institute of Environmental Engineering

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Management

SEMINAR

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Tree water use dynamics in remnant urban reserves

Abstract:

During the expansion of urban areas, small natural reserves have often been left intact within the built environment as central elements of biodiversity conservation, ecological connectivity, and landscape sustainability. Consequently, the surrounding urbanized landscape may exert negative impacts on these ecosystems, by imposing changes in the radiation and energy budget, the hydrologic regime, and ecosystem composition and structure. Results from a two-year study of the hydrological regime in three small urban reserves (between 2 and 15 ha) hosting remnant native vegetation in Melbourne, Australia, will be presented. The estimated water-budget components show that despite urbanization and natural climate variability, enough water is available to sustain vegetation growth and health. In two of the three reserves, groundwater was pivotal in sustaining transpiration rates; specifically, groundwater was estimated to contribute about 30-40% of the total transpiration amount during the driest periods of the year. Groundwater also played an essential role during heat waves, helping trees to retain their hydraulic functions. During nights with temperatures above 25°C, night-time water use ranged from 3 to 16% of the daily water use. These results demonstrate the importance of understanding the water regime of each urban reserve in order to government environmental authorities in preserving these ecosystems.

SHORT bio

Valentina completed her M. Sc. Degree in Civil Engineering at the University of Perugia (Italy) in 2009. Afterwards, she worked in engineering consultancy until 2013, when she joined CERIS research group at Instituto Superior Técnico (IST), University of Lisbon (Portugal). In 2016 Valentina joined Monash Uni as a PhD student under the supervision of Dr. Edoardo Daly, Prof. Nigel James Tapper, and Prof. Jeff Walker.

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