



## **Effect of green roofs on air temperature; measurement study of well-watered and dry conditions**

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Rapid urbanization and increasing number and duration of heat waves poses a need for understanding urban climate and ways to mitigate extremely high temperatures. One of repeatedly suggested and often investigated methods to moderate the so called urban heat island are green roofs. This study investigates several extensive green roofs in Utrecht (NL) and their effect on air temperature right above the roof surface. Air temperature was measured 15 and 30 cm above the roof surface and also in the substrate. We show that under normal condition is air above green roof, compared to white gravel roof, colder at night and warmer during day. This suggest that green roofs might help decrease air temperatures at night, when the urban heat island is strongest, but possibly contribute to high temperatures during daytime. We also measured situation when the green roofs wilted and dried out. Under such conditions green roof exhibits more similar behavior to conventional white gravel roof. Interestingly, pattern of soil temperature remains almost the same for both dry and well-prospering green roof, colder during day and warmer at night. As such, green roof works as a buffer of diurnal temperature changes.