

Reinventing the City

25 January - 18 February 2022

stevinweg 1, delft

Submission ID : RTC-93

Lesson learnt from the Amsterdam Atmospheric Monitoring Supersite: a survey of five years microclimate observations in Amsterdam.

Submission Status : Accepted

Author Name : Gert-Jan Steeneveld ^{1*}

Username : gert-jan.steeneveld@wur.nl, **Email** : gert-jan.steeneveld@wur.nl, **Status** : Published

Author Name : Bert Heusinkveld ²

Username : Bert.heusinkveld@wur.nl, **Email** : Bert.heusinkveld@wur.nl, **Status** : Published

Author Name : Oscar Hartogenesis ³

Username : oscar.hartogenesis@wur.nl, **Email** : oscar.hartogenesis@wur.nl, **Status** : Published

Submission Summary : Cities have a distinct different weather and climate than the countryside, best known as the urban heat island effect which can have negative effects on the human health, labour productivity, and energy demand. In addition, cities are vulnerable to flooding after peak-showers, and are major sources of greenhouse gasses. This presentation is a journey along five years of field observations in Amsterdam Atmospheric Monitoring Supersite which contains 24 weather stations across Amsterdam and a research tower measuring solar and thermal radiation, evapotranspiration (by eddy covariance and scintillometer) and carbon dioxide fluxes. These observations are complemented by traverse (bicycle) heatstress observations, sodar and balloon sounding observations during hot summer days. Results show neighborhoods in Amsterdam have their characteristic temperature dynamics, with high temperatures in the relatively open neighborhoods during the day, and relatively high temperatures in the city center at night. In addition, a climatology of rainfall radar observations reveal an enhanced precipitation in Amsterdam with respect to its surroundings. Also, we learnt the mobility restrictions due to the covid-19 pandemic lowered the city's CO2 emission by 40%. Moreover we show results from hectometer-scale numerical weather prediction model results for Amsterdam, which can be used as instrument to study Amsterdam's forthcoming climate and contribute to its sustainable future.