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Observing the Dutch Urban Climate with the Amsterdam Atmospheric Monitoring Supersite

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The urban climate is substantially different from its rural counterpart. Cities are in general warmer and dryer than their rural surroundings. This study monitors the urban climate of Amsterdam. Amsterdam has a unique position in the sense it is located in a delta, and located close to a large lake in the east. Moreover the city is well known for its large amount of water bodies. A network of 30 weather stations has been employed observing temperature, humidity and wind speed at 4 m height across the city. This is complemented by traverse observations using a tricycle equipped with a weather station recording temperature, humidity wind speed, and all radiation components within the urban canyon. This network has recently been extended with flux measurements of turbulent fluxes of heat, moisture, momentum, carbondioxide and methane using eddy covariance observations. The latter are especially relevant for monitoring the greenhouse footprint of the city. In addition a microwave scintillometer has been installed to monitor the sensible and latent heat flux for a footprint over the city as a whole. First results will be presented for the Amsterdam Atmospheric Monitoring Supersite consisting of a spatial behaviour of temperature (urban heat island and urban cool island) and humidity as well as canyon wind speeds. Apart from a clear urban heat island effect, also a substantial urban cool island has been found in the morning hours. In addition, the observations reveal a systematic signal of a moisture island effect too. Preliminary results for the surface energy balance components and trace gases from the flux measurements will be presented.