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Scintillometry in the Urban Boundary Layer – in the example of Łódź

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Scintillometer measurements have been proved as a reliable source of information about heat exchange between the surface and overlying air in many natural areas, however, there are only few studies concerning the application of scintillometry in Urban Boundary Layer (UBL). The scintillometry provides an opportunity to obtain the area averaged sensible heat flux (QH) that in case of urban areas could be more representative than the point measurements. The Scintec BLS900 scintillometer was deployed in Łódź in August 2009 and was operating until November 2012. The measurement path was nearly 3.2 km long and traversed over the city centre. The results from nearly 3-year measurements of the QH are discussed here. During that period many technical problems contributed to decrease of the amount of available data, therefore some statistical models of the QH based on additional measurements are presented here as well. The collected and processed data allow obtaining the diurnal and annual course of QH. The heterogeneity of the surface in urban areas could be a challenge in application of the scintillometer measurements in the UBL as a consequence the footprint analysis were performed.