



Optimization of sky view factor calculations within R, considering parameter settings and computation time

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The sky view factor is an important parameter for urban heat island studies, as it is a proxy of radiation fluxes. Our goal is to determine optimal parameter settings for the sky view factor calculations, considering computational time. Within R the *1.5TB* point-cloud data of the Netherlands is projected on a regular grid. The sky view factor is computed from the regular-grid using a radius and n-number of directions. In order to determine the sensitivity of the calculations, variations in grid-resolution, search radius and number of directions are considered. First results of the test $70km^2$ area indicate that the sensitivity depends on the land-use, i.e., open field areas are less sensitive to parameter changes than forest and urban areas. Moreover, there is a high sensitivity to grid-resolution, i.e., with a higher resolution smaller objects are observed which resulted in a overall lower sky view factor. The calculations are less sensitive for search radius and number of directions, though the latter mainly increases the accuracy. Based on our first results it is recommended to tune the parameters for different land-use areas in order to save computation time. Currently, the sky view factor for the Netherlands is computed at a $1m$ resolution with a search radius of $100m$ and 16 directions on the Amazon AWS Cloud.