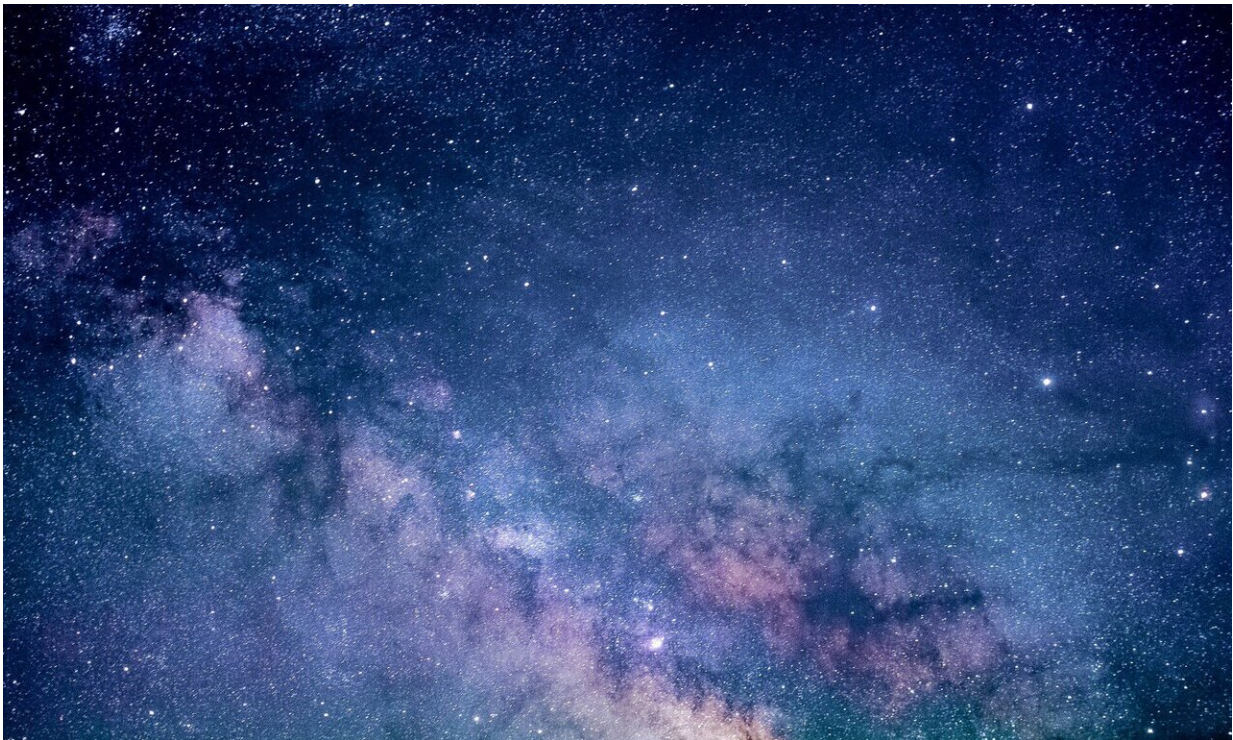


# Researchers review methods for sky view factor estimation

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The sky view factor (SVF) is a geometric concept that refers to the ratio of the radiation received by a planar surface to the radiation emitted by the entire hemispheric environment. These dimensionless values are used to quantify the proportion of the visible sky or open canyon space in urban street canyons. SVF is a key factor affecting urban surface heat

balance, micro-scale air circulation, and diffusion of atmospheric pollutants. There are various methods for estimating SVF. To date, however, no study systematically summarized the estimation principles, accuracy, calculation efficiency, and application scope of these methods.

In view of this, Miao Chunping and Chen Wei from the urban ecology research group at the Institute of Applied Ecology (IAE) of the Chinese Academy of Sciences compared methods used for SVF estimation at different spatial scales.

In their study, the authors provided method selection suggestions for scholars in the fields of urban climatology and urban heat island research. The estimation methods they compared geometric analysis method, fish-eye photographic method, Global Positioning System method, model-simulation method and street view image method.

The study's spatial scale, the height (a.s.l.) at the analyzed location, the complexity of urban street canyon environment, data type of input and output data, and accuracy and efficiency of each method (i.e., computing power and time cost) were found to be important elements in SVF method selection.

The fish-eye photographic method has intuitive graphical information and high estimation accuracy, and can be used to verify the accuracy of computing results. The street view image method based on the deep learning model can obtain almost the same estimation [accuracy](#) as the fish-eye photographic method.

Future research should focus on the applications of model-simulation methods and street view image methods in irregular street [canyon](#) and complex [urban environments](#), and on the seasonal impacts of street trees and sun paths on SVF [estimation](#), the authors suggested.

This study was published in the journal *Building and Environment* with the title "Review of methods used to estimate the sky view factor in urban [street](#) canyons."

**More information:** Chunping Miao et al. Review of methods used to estimate the sky view factor in urban street canyons, *Building and Environment* (2019). [DOI: 10.1016/j.buildenv.2019.106497](https://doi.org/10.1016/j.buildenv.2019.106497)

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