



## **Observing low-level stratiform clouds and determining its base height at night by sky camera measurements**

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The amount and base height of low-level clouds are critical parameters in aviation meteorology. New techniques which can extend the geographic area coverage and characteristics of the cloudiness could be beneficial. In recent years, sky camera systems became more and more popular as a meteorological observation tool. Recent commercial digital cameras with increasingly sensitive sensors provide cheap opportunities for luminance measurements of the night sky.

We introduce a new observation method for determining cloud base height analogous to the triangulation principle of searchlight ceilometer. We show that light pollution (the upward component of artificial lights) could be used passively as cloud ceiling projector in various environments. The method was tested in one year period from one observation site in central Budapest. Comparison with the Budapest airport cloud observation data could be performed. In the case of homogeneous stratus cloud sheets, we found that the base height could be estimated with reasonable accuracy via the illumination of the clouds from the stronger ornamental lights in the city. Case studies with different local light pollution characteristics (e.g. smaller settlements, different observation distances) will be presented. Limitations of the method will be discussed. The main problem to be addressed is how can we assimilate nighttime sky camera data into other routine meteorological observations available at night regarding low-level clouds.