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IMPACT OF THE PARTICULATE MATTER ON THE NIGHT SKY BRIGHTNESS

Summary

The brightness of the night sky depends on many factors of both natural and artificial origin. In the case of overcast sky the clouds are the main source of lighting the earth's surface, bouncing incorrectly targeted artificial lights. In the case of a cloudless sky there are noticeable differences in its brightness, not only in the year, but also in a short timescale. The authors put the thesis that the main factor affecting the brightness of the cloudless, light polluted night sky is the particulate matter (PM), deriving mainly from low-emission, especially in winter. This effect is particularly evident in Krakow and its surroundings, one of the most PM polluted places in Europe. Over the year measurements made in the Krakow agglomeration allowed to establish a linear relationship between the concentration of PM and brightness of the night, cloudless sky. A similar effect was found for the measurement point near the Mount Suhora astronomical observatory in the Gorce Mountains National Park. The preliminary observations indicate that similar correlations occur for the other industrialized areas in Poland.