

ATMOSPHERIC TURBIDITY FOR BRAȘOV URBAN AREA

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Atmospheric turbidity is an important parameter for assessing the air pollution in local areas, as well as being the main parameter controlling the attenuation of solar radiation reaching the Earth's surface under cloudless sky conditions. The paper proposes a study of the Linke's turbidity factor, calculated on the basis of the meteorological data recorded during three years, in Brașov urban area. The meteorological data measurement was carried out with a local weather station Delta-T positioned on the roof of the "Transilvania" University of Brașov (Romania). The obtained results are presented as comparative diagrams (variation of the mean monthly values depending on time).

Solar radiation is a primary driver for many solar energy applications such as photovoltaic systems for electricity generation, solar collectors for heating, solar air conditioning climate control in buildings and passive solar devices. Thus, the determination of solar radiation data is important. The proposed study of the turbidity factor is carried out in order to develop a likelihood estimate method of the solar radiation. In this paper, the turbidity factor is calculated for solar radiation data from Brașov with the intention of finding a variation model of this; all the conclusions are very useful in the development of a mathematical model of the solar radiation for the urban area of Brașov.

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Atmospheric aerosol is recognized as an important constituent of the atmosphere regarding its role in the modification of solar light intensity at the earth's surface and hence climate modification.

Due to the relationship existing between aerosols and attenuation of solar radiation reaching the Earth's surface, different turbidity factors based on radiometric methods have been defined to evaluate the atmospheric turbidity. The attenuation of radiation through a real atmosphere versus that through a clean dry atmosphere gives an indication of the atmospheric turbidity.

The future researches will follow the determination of the solar radiation variation for the Brașov urban area. In this way the accurate knowledge of the turbidity factor variation will make possible the determination of a relation for the solar radiation variation, to approximate the reality in a great extent. It is taking into consideration the fact that the only unknown parameter (in the solar radiation expression) is the turbidity factor. Therefore, the determination of the solar radiation makes necessary the adjustment of the turbidity factor depending on the all the geographic and climatic conditions and the pollution of a built-up area.

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