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Human thermal environment of the Carpathian Basin according to clo index

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The Earth's thermal environment observed by ancient cultures, later on scientists developed different methods for its characterizing describing, for instance, the human thermal comfort relationships. The modern studies possess physiological relevance due to using energy balance concept of the human body.

The aim of this study is twofold: to represent spatiotemporal structure of the Carpathian Basin's human thermal environment in terms of clo index (I_{clo}) in the period 1961-2010 and to relate its features to macrocirculation types as specified by Péczely. I_{clo} is a measure for expressing insulation rate of human clothing to thermal stresses. $I_{clo}$is calculated by using human body energy balance equation driven by the external radiation constraints and internal metabolic energy. Required meteorological data were from the observation based CarpatClim. The dataset's temporal resolution is 1 day; the spatial resolution is 0.1° x 0.1° (about 10 km x 10 km). Péczely's macrocirculation type catalogue was determined on the basis of daily synoptic charts referring to 00 UTC measuring time by Károssy.

Preliminary results suggest that I_{clo} values vary considerably with weather and altitude. The I_{clo}/weather relationships are investigated by analysing the I_{clo}/Péczely's macrocirculation type correspondence. We assume, for instance, that in summer the lower/higher I_{clo} values refer to cyclonic/anticyclonic macrocirculation types. Concerning altitudinal effects, we had to notify that an I_{clo}/altitude dependence was less considered so in this study they will be more carefully discussed. Lastly I_{clo} also possesses individual variability. Some physiological aspects of this individual variability will also be investigated performing detailed anthropometric measurements.