

## USING THERMAL REMOTE SENSING IN ENVIRONMENTAL STUDIES

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### Abstract

Thermovision is a new method of research which is often applied in such areas like: military, residential monitoring, technological process control, medical diagnostics and emergency. But it is still not so popular in environmental studies. The paper presents an innovative method of using thermovision for topoclimatic studies. The method is based on the spatial distribution of land surface temperature (LST). LST distribution indicates amount of solar energy reaching the Earth's surface and depends primarily on terrain's shape and land cover types. Analyzing land surface temperature distribution, we can conclude about spatial topoclimatic variability. LST based topoclimatic classification was compared with classical, theoretical topoclimatic classification (Paszynski 1980) based on the heat balance connected with DEM (digital elevation model) and land cover characteristics. New classes of topoclimates were delimited (e.g. topoclimate of beach shelves) and some of existing types were diversified (e.g. arable land and meadows). The analysis were made for lowland areas (upper reaches of Parsęta catchment and Wolin Island) so it was expected that land cover characteristics would be more important than shape of the terrain. But statistical analysis showed that both, land cover and terrain shape characteristics, have a significant impact on the LST distribution, even in lowland areas. The goal of this paper is to show the possibilities of using thermovision in environmental research, to present the new method of topoclimates delimitation based on thermal remote sensing data and GIS techniques and to compare LST classification method with conventional methods based on DEM and land cover analysis.

**Keywords:** LST (Land Surface Temperature), GIS, Remote Sensing, Thermovision, DEM.

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