

Since 1950 the number of world's population has been constantly growing. Nowadays, more than half of the population live in cities, and according to the United Nations predictions, in 2050 it may be even 66%. Therefore, studies concerned with urban climate are very important.

One of the most profound effects of urbanization is "urban heat island" (UHI), which is defined as the difference in temperature observed in urban and rural areas. Temperature can be measured with in situ meteorological stations. However, it is very difficult to obtain a full spatial pattern of measured parameters, especially in urban areas. Only remotely sensed TIR data can provide a continuous and simultaneous view of the whole city, which is of prime importance for detailed investigation of urban surface climate. The difference in surface temperature between urban and rural areas is defined as "surface urban heat island" (SUHI).

Summer SUHI has particularly negative impact on the inhabitants. It is estimated that heat waves in 2003 could cause dozens of thousands of additional deaths, mostly among the elderly. In summer buildings' walls, streets and pavements are getting very hot, and it takes a long time after sunset for the heat to be released into the atmosphere. Therefore, thermal conditions in the cities may be very adverse. Therefore, detailed studies on LST spatial pattern and the intensity of SUHI are one of the most important aspects to design mitigation strategies.

Warsaw is a city that developed rapidly during the last 15 years. There was a surge of new investments connected with e.g. Poland's access to the European Union, which resulted in dramatic changes in land use/land cover in the city of Warsaw, mostly erection of many new buildings. It may be then speculated that thermal conditions in the city of Warsaw have deteriorated.

In previous works focused on SUHI in Warsaw, only single satellite observations were utilized. Thus, those studies are not sufficient to understand the character of SUHI formulation, spatial pattern and extent, or its diurnal, seasonal and annual variability. In the proposed project there will be a big dataset of MODIS (*Moderate Resolution Imaging Spectroradiometer*) and ASTER (*Advanced Spaceborne Thermal Emission and Reflection Radiometer*) satellite observations utilized. Observations were acquired in the period of 2000-2015.

The aim of the proposed project is a comprehensive analysis of SUHI and spatial pattern of surface temperature in the city of Warsaw in the period 2000-2015. LST temporal variability will be specified, as well as, SUHI diurnal, seasonal and annual variability. SUHI intensity indicators, described in scientific literature will be utilized. The results of the project will be published in international journals and presented at scientific conferences.