Evaluation of the role of vegetation in urban climate

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About 1.7 million inhabitants are living in the Hungarian capital, Budapest, which consists of 23 districts altogether. The entire city is divided by the river Danube into a hilly, greener Buda side on the west, and the flat, more densely built-up Pest side on the east. Most of the extended urban vegetation, i.e., forests are located in the western Buda side. The effects of the past changing of these green areas are analyzed using surface temperature data calculated from satellite measurements in the infrared channels, and NDVI (Normalized Difference Vegetation Index) derived from visible and near-infrared satellite measurements. First, the climatological effects of forests on the urban heat island intensity are evaluated. Then, we also aim to evaluate the relationship of surface temperature and NDVI in this urban environment with special focus on vegetation-related sections of the city where the vegetation cover either increased or decreased remarkably, e.g., recently built shopping centers in previously vegetated area or brown industrial area where low quality vegetation appeared in the past decade.