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Analysis on the cooling effect of vegetation in the Seoul Metropolitan Area by using BioCAS

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The urban surface consists of the artificial factors such as buildings or asphalt pavement and the natural covering, and so on. The atmospheric flow, heat and other meteorological elements within urban is quite influenced these factors. The observation data of flux towers at Hankuk University of Foreign Studies show differences in temperature and radiation flux between vegetation and urban areas. The role of the vegetation area is important for the mitigation of urban heat island or short-term response to heat-waves. In this study, we tried to analyze the effect of air temperature reduction due to cold air production on a tall vegetated area. For this, the high resolution digital elevation data and land cover data for the Seoul metropolitan area were constructed and heat and flow in the atmosphere were analyzed by using Biometeorological Climate impact Assessment System (BioCAS). In order to analyze the cooling effect of tall vegetation, the air temperature and radiation flux before and after application of vegetated area on were investigated. In addition, the results of BioCAS were evaluated by comparison with observation data of vegetation area. The observation data to be used are data of Jungnang flux which is residential area in urban, Bucheon and Yongin flux tower which are in suburban. There are many farmland near the Bucheon flux tower, and there are forest and a lot of trees around the Yongin flux tower.
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