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## Impact of Urban Land Cover Types on Surface Temperature

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The conversion of natural land to built-up surfaces has been widely documented as the main determinant of warming across urban areas. However, uncertainties remain regarding which primary land cover variables control urban heat in different climatic conditions at a global scale. While there is a very little understanding of how the cooling effects of vegetation cover vary over different cities, there is a deep knowledge gap in realizing how other land covers (such as soil, water, and built-up areas) are associated with urban warming and how this relationship is varied in different background climates. Accordingly, using a high spatial resolution dataset, a global synthetic investigation is needed to find the underlying factors influencing intra-urban temperature variability in various climates. To address this shortcoming, this study focuses on exploring the relationship between land surface temperature and land cover in different cities (using Landsat 8 imagery) and aims to investigate the effects of these land cover types on thermal environments in different climatic backgrounds. Preliminary analysis shows that different land cover types have different roles in different climate classes due to their various surface characteristics and in particular, the performance of green spaces to reduce LST is highly dependent on its background climate. For example, the efficiency of vegetation cover to reduce urban surface warming in temperate and tropical climates is more than that in arid and semi-arid areas. In this climate class, since bare soil is the main contributor to the intensity of LST, increasing the area of a green space presents an effective method to mitigate the adverse effects of local warming. Our findings provide helpful information for future urban climate-sensitive planning oriented at mitigating local climate warming in cities.