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## Quantification of the Urban Heat Island effect on the rise of the European temperature

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The Urban Heat Island (UHI) effect on the rise of the European temperature is quantified by comparing European averaged temperatures based on all meteorological stations in the European Climate Assessment & Dataset with those based on three subsets of stations: from rural areas, from areas with low growth in urbanization and with stations characterized by a low temperature gradient. Land cover information is obtained using the CORINE dataset, showing that most stations (75%) have a small percentage (up to 10%) of urban area within a 10 km radius and 81% saw no more than 1% change in urbanization between 1990 and 2006. The results show that the UHI effect explains 0.0031°C/decade of the annual-averaged pan-European temperature trend of 0.179°C/decade. This trend has a strong seasonality, being the largest in summer. The European-averaged UHI intensity has a strong seasonality as well, with very different UHI intensities in spring and autumn.