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CAUTION: Urbanization May Be Hot!

The purpose of this investigation was to determine if urbanization has increased the variance of the data collected by the United States Historical Climatology Network (USHCN) thermometer stations. I hypothesized that if comparing thermometer station readings over a 100 year time period, then urbanization has increased the variance of data collected because of the introduction of new unnatural surfaces to the thermometer stations' surroundings. The experiment involved physically collecting data from six (6) different self-made thermometer stations with different surroundings over the course of 18 days as well as analyzing USHCN's thermometer station data. Data from my thermometers was used to determine that different surfaces do lead to temperature variations. The analysis of the USHCN's data was processed via a self-programmed analysis application. The data collected did support my original hypothesis. The average deviation from the norm from 1905-1955 for the stations with 5 nearby surfaces increased by 124% in 1956-2005. Also, the deviation from the norm of thermometer stations having cement within 10 meters increased by 197% in 1956-2005. However, comparing deviation from the norm to population and housing density of the thermometer station's county -- overall indicators of urbanization -- showed no collation. These findings lead me to believe that the prominent reason for temperature variation is because of the thermometer station's microclimate and that adequate adjustments on a per station basis can be found within the existing data. Ultimately, a number of thermometer stations should be relocated to more natural environments so that data collection would be more accurate.