This study examines the temperature variability between 2011 and 2018 across the rural and urban grids of Istanbul and Ankara using multiple data sources, including satellite, ground observations, and a daily temperature reanalysis product downscaled from ERA5. Attempting to identify the differences in the monthly and seasonal temperature characteristics of urban and rural grids separately, we utilize the GHS Settlement Model grid (GHS-SMOD) settlement classification dataset with a resolution of 1 km, along with the MODIS-Terra daily land surface temperature and 2-meter temperature observations. Also included in the analysis is the CHIRTS-daily temperature product at high resolution, which we use to compare the number of days where daily maximum temperature exceeds a specified threshold at urban and rural grids in each city. Results reveal the monthly and seasonal variability of temperature difference, which we refer to as urban heat island (UHI), between the corresponding urban and rural grids. However, this variability is higher for Istanbul, where the urban land use constitutes approximately A% of the grid compared to Ankara, for which the percentage of the grid represented by urbanization is fewer than B%. Furthermore, there is a clear signal of a shift in the location parameter of observed temperature values to the warmer side of the probability distribution when urban land use is considered, as revealed by the kernel density estimation analysis. Lastly,