Figure S1 presents the diurnal cycle of mean air temperature in neighborhoods across both regions. Air temperature is aggregated for each region by hour of day in July 2015. The figure presents a range of air temperatures between different weather stations inside each region. The aggregated data from median station, stations with values above the median station, and stations with values below median station are represented by the black line, red area, and blue area respectively.

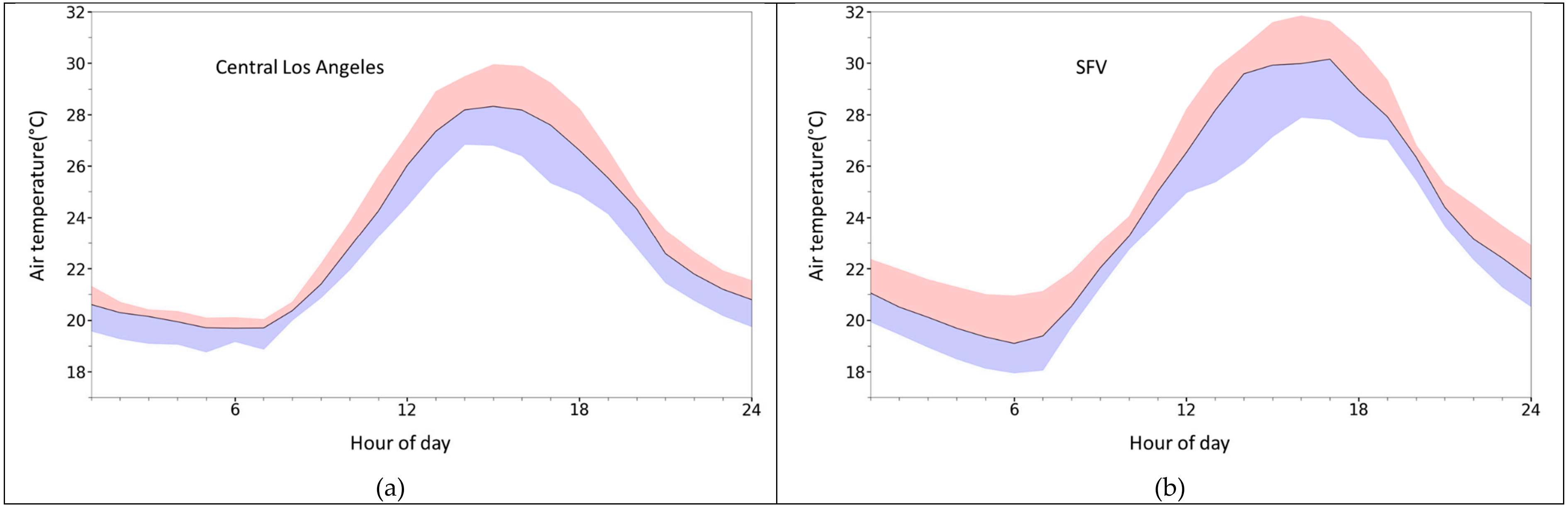

Figure S1. Diurnal range of measured hourly averaged temperature for different stations across the basin. The black line represents the median station, the red range shows the stations above the median, and the blue color shows the stations below the median.

Figure S2 presents the diurnal sensitivity of temperature to the impervious fraction of the neighborhoods. Although the sensitivities are insignificant at all hours in the SFV region, and in late night until early morning (22:00 – 9:00 LT) in the Central Los Angeles region, there are significant hours from late morning to evening (10:00 – 21:00 LT) in Central Los Angeles. These sensitivities show a negative correlation between temperature and the impervious fraction of the neighborhoods that could be the result of covariation between multiple parameters, such as tree fraction and high roof albedo of impervious surfaces.

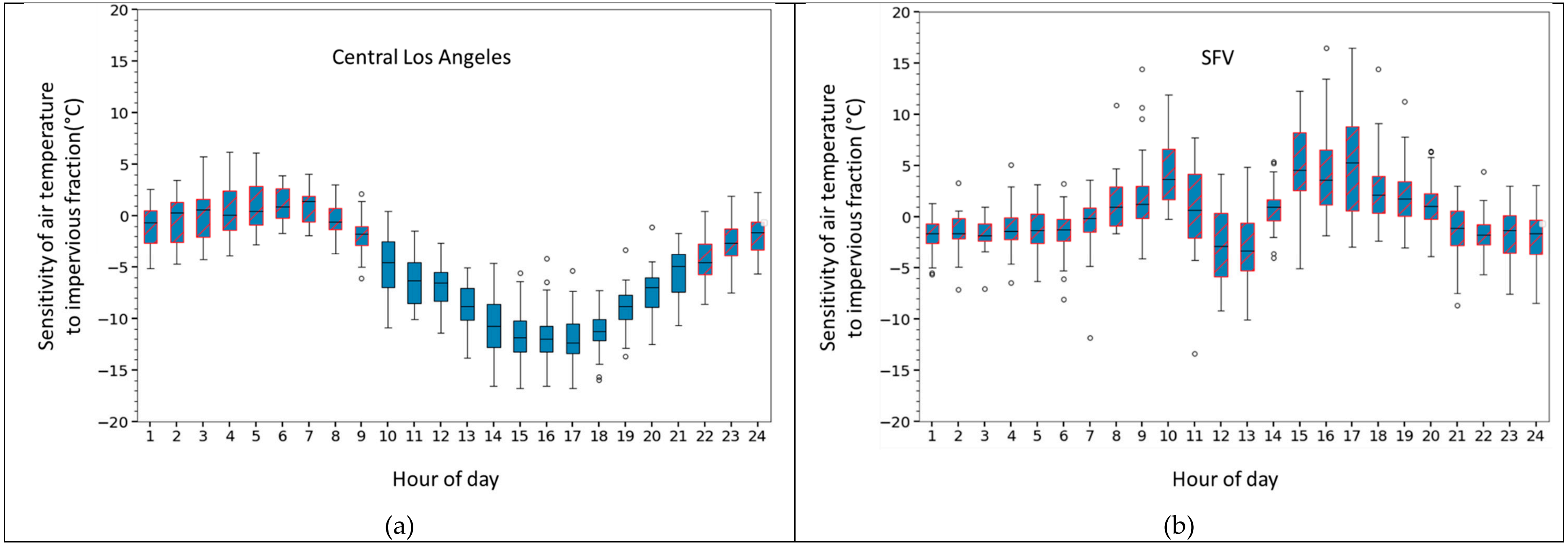

Figure S2. Boxplots for the diurnal cycle of sensitivity of temperature to impervious fraction. Panel (**a**) is for Central Los Angeles and panel (**b**) is for San Fernando Valley (SFV). Each box contains the sensitivities by hour of day for July 2015. The hours with statistically insignificant sensitivities have red hatching. Boxes show the inner-quartile range (IQR), whiskers show the [({first quartile}-1.5 {Interquartile range}), ({third quartile}+1.5 {interquartile range})], and the black line within the box represents the median. Hour of day 1 = 00:00 to 01:00 LDT.

Figure S3 presents the diurnal sensitivity of temperature to the building height of the neighborhoods. The sensitivities in the SFV region follow the same pattern as the sensitivities of temperature to the impervious fraction, but they are mostly significant. The results of this figure, combined with the material presented in the main article on roof albedo, shows the significance of buildings in the region of SFV. The results for Central Los Angeles show relatively smaller sensitivities, due to higher values of building heights in this region.

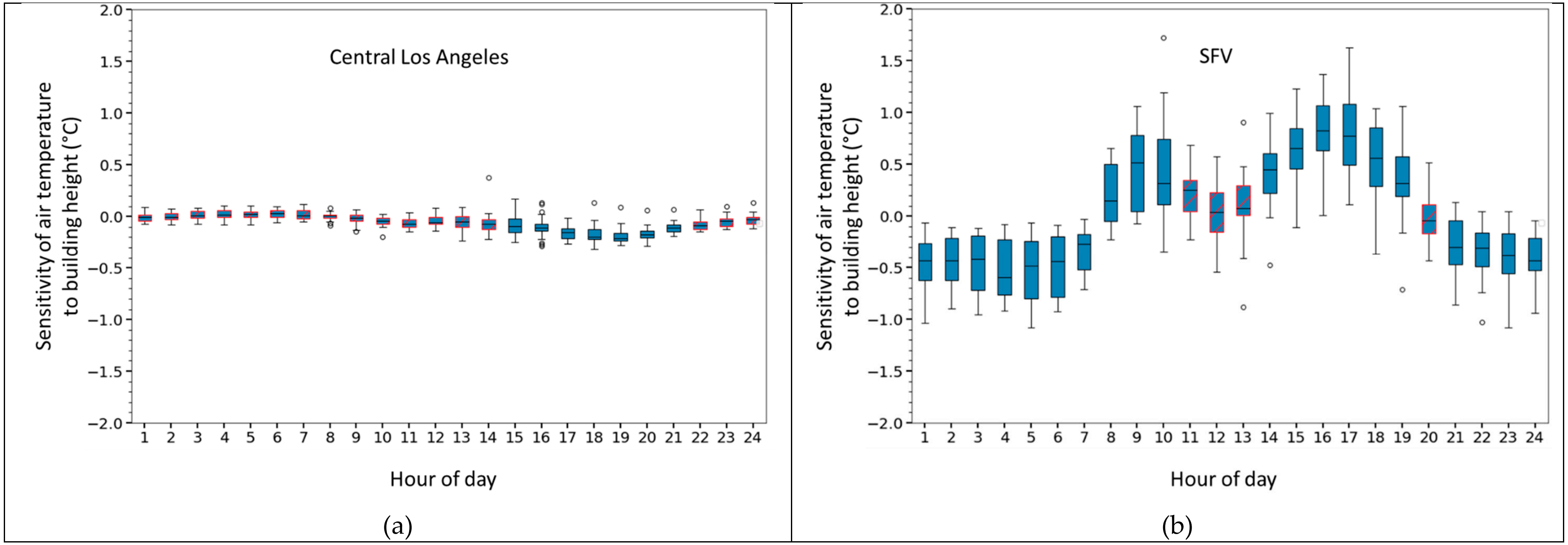

Figure S3. Boxplots for the diurnal cycle of sensitivity of temperature to building height. Panel (**a**) is for Central Los Angeles and panel (**b**) is for SFV. Each box contains the sensitivities by hour of day for July 2015. The hours with statistically insignificant sensitivities have red hatching. Boxes show the inner-quartile range (IQR), whiskers show the [({first quartile}-1.5 {Interquartile range}), ({third quartile}+1.5 {interquartile range})], and the black line within the box represents the median. Hour of day 1 = 00:00 to 01:00 LDT.

Figure S4 presents the diurnal sensitivity of temperature to the overall albedo of neighborhoods. The results for the SFV region are insignificant. Central Los Angeles shows significant results, except in late morning hours. The sensitivities are mostly negative and peak during the afternoon, which is expected due to the peak of the cooling mechanism of the albedo during these hours, which is similar to the results of the roof albedo in the main article.

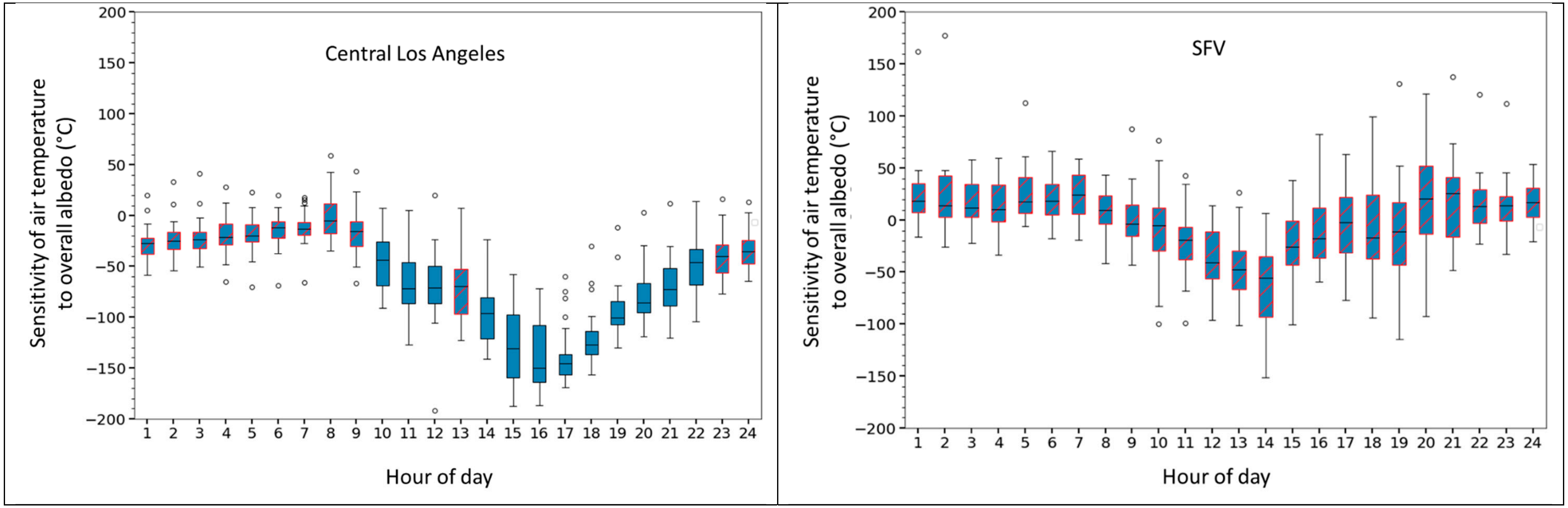

Figure S4. Boxplots for the diurnal cycle of sensitivity of temperature to overall albedo. Panel (**a**) is for Central Los Angeles and panel (**b**) is for SFV. Each box contains the sensitivities by hour of day for July 2015. The hours with statistically insignificant sensitivities have red hatching. Boxes show the inner-quartile range (IQR), whiskers show the [({first quartile}-1.5 {Interquartile range}), ({third quartile}+1.5 {interquartile range})], and the black line within the box represents the median. Hour of day 1 = 00:00 to 01:00 LDT.