ABSTRACT

Climate change is a global occurrence and is studied at multiple scales within Los Angeles County, California. Determining the type of surface temperature trend across Los Angeles County is best observed using historical daily, monthly, and yearly temperature data. Each type of historical temperature data is analyzed for various temperature and extreme temperature threshold trends: (1) thresholds of frost days (minimum temperature ≤ 32°F), misery days (maximum temperature ≥ 90°F), and heat wave events are examined at six weather stations; (2) type of linear trend is measured for monthly surface temperature at eight weather stations; and (3) type of linear trend is analyzed for yearly surface temperature and yearly summer surface temperature (July to September) for twenty weather stations from 1931 to 1950 and six weather stations from 1951 to 2010.

This study's major findings are (1) daily maximum and minimum surface temperature show strong departures from normal conditions for threshold temperature trends as Palmdale experiences an accelerated warming trend and Sandberg experiences an accelerated cooling trend; (2) a variance in decadal heat wave thresholds exists at each weather station for 80 years; (3) monthly mean surface temperature is a good source to reflect seasonal temperature variations; and (4) yearly surface temperature is not sufficient temperature data to track temperature trends. Analyzing surface temperature trends is a tool for monitoring how climate change is impacting temperatures globally.

The following chapters include: (1) introduction is the motivation and research questions; (2) literature review is previous studies on climate change and its impact on temperature; (3) data and methods are data sources and the implementation of these sources; (4) results offer a detailed explanation and examples of the findings; (5) discussion is an overview of the important findings; and (6) references are sources that are cited within the manuscript.