



The urban heat island dynamics during heat waves: a study of cities in the United States

Leiqiu Hu

Research Application Lab, National Center for Atmospheric Research, Boulder, United States (leiqiu@ucar.edu)

The urban heat island (UHI) is a common phenomenon describing that metropolitan areas are usually warmer than their rural surroundings. This effect is compounded by extreme heat events, which are a leading cause of weather-related human mortality in many countries worldwide. However, the spatial and diurnal variability of temperature and humidity in urban and adjacent rural areas during extreme heat events is not well measured and therefore not well understood. The recently developed dataset of near-surface air and dew temperature from MODIS atmospheric profiles and the new method for the UHI quantification—urban heat island curve are used to quantify the urban climatic changes during heat waves in cities of the United States. The enhanced and weakened UHIs are observed in various cities. The causes of UHI changes during heat waves are discussed, including climate region, vegetation type and amount, city geolocation, etc.