

Submitted Abstract

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Abstract

The Cordillera Blanca, Peru (10 degrees S) and the Snake Range of the Great Basin National Park, Nevada (40 degrees N) are separated by 50 degrees of latitude. Intercomparing the temperature and moisture trends of these two mountainous regions fosters an understanding of latitudinal variability in elevation dependent warming within the American Cordillera. Low-cost lascar sensors were installed along the slopes of these mountain regions. Four sensors range from 3955 m to 4700 m in the Cordillera Blanca and 29 from 1639 m to 3976 m in the Great Basin National Park. These networks of sensors collect hourly temperature, dewpoint, and relative humidity data providing insight on elevation dependent trends from 2006-2018. Within this period, daily minimum temperatures in Nevada increased by 2.1 °C. An upward trend in daily temperatures at higher elevations in Peru is observed with daily minimum temperatures increasing more than 1 °C at 4700 m. In both regions, greater rates of warming were observed at higher elevations. In Peru, there were increasingly positive rates of change in dewpoint and relative humidity with height. Just as the temperature trends, the increase in humidity was most apparent at higher elevations, especially above 4500 m. Stations at lower elevations exhibited more daily and seasonal variations in humidity trends than temperature trends. The most evident increasing humidity trends are associated with the wet season.