Name(s)

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Project Number

S0918

Project Title

Streamflow Measurement and Prediction in Southern California: An Observational and Citizen Science Project

Abstract

Objectives

As Southern California faces an increasing threat of drought in our warming climate, it is crucial to understand streamflow patterns to optimize our usage of this essential resource. In order to analyze streamflow patterns, this study analyzed manual measurements of streamflow presence or absence in headwater streams to minimize anthropogenic influences present in other measurement methods. Data were collected both by the study throughout streams surrounding the LA Basin and by a citizen science project nationwide. Regression analysis of the data revealed that Southern Californian streams have greater overall seasonal variation as compared to the national average. In addition, they are far drier in their driest months and wetter in their wettest months indicating both a more rapid response to precipitation and a more rapid decline as precipitation decreases. Thus, this study has applications both as a study through differentiating national and local streamflow patterns and as a proof of concept for the use of citizen science observations to improve streamflow modeling. Improved models is crucial in water resource management, drought prediction, and flood modeling, and this study is a step towards a novel approach to this critical issue.

Methods

An immunity to poison oak
35m climbing rope
Compass
Topographic maps
GPS

Stream Observations
Over the course of four years, more than 200 streams around the Los Angeles Basin (primarily Santa Monica and San Gabriel Mountains) were surveyed for streamflow presence and absence. Streams and time of visit were selected at semirandom locations and dates subject to some inherent bias. Data were aggregated and only sites with three or more observations were used in the analysis.

StreamTracker Data
Obtained data from StreamTracker a citizen science project which compiles observations of small stream streamflow from across the nation. Data were aggregated and only sites with three or more observations were used in the analysis.

Summary Statement

In analyzing streamflow patterns, a novel citizen science observation method was used to enhance the accuracy of the model.

Help Received

None