CHILEAN WINTER PRECIPITATION:
AN EXERCISE IN INTERPOLATING SPARSE DATA
ONTO A NATIONAL GRID

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Abstract

Chilean precipitation varies greatly zonally and meridionally over a topographically diverse region ranging from sea level on the west coast to more than 6000m in the Andes Cordillera. Observations are generally sparse, and for this reason, precipitation remains largely understudied, especially compared to similar mountainous regions. In this research, sparse observational data from two sources- the Chilean Dirección de Aguas and NOAA's National Climatic Data Center- was transformed into a gridded data set using MATLAB's thin-plate smoothing spline function.

Figure 1. Map of Chile showing total precipitation amounts in mm for the month of May 2008, during a higher than average winter of precipitation.

Results/Conclusions

By analyzing trends in the gridded data, we found the following: (1) adding additional data points generally improved the interpolation; and (2) intraseasonal precipitation variability in central Chile was low (~6-7%), while interannual variability was much higher (nearly 700%).
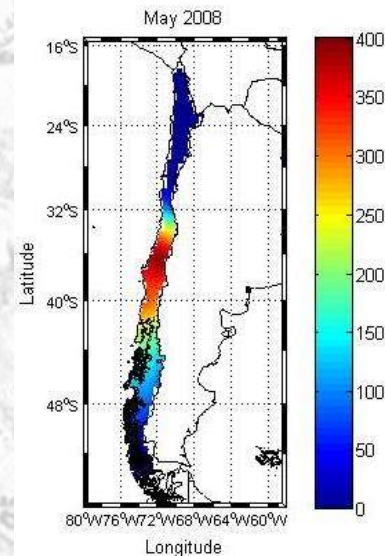
Relevance

Higher-resolution gridded precipitation datasets enable quick calculations of trends and anomalies, which may help governments prepare for flooding and erosion due to severe storms. Additionally, the gridded datasets could be used to assist in the verification of numerical model outputs and remote sensing platforms.