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Spatial and Temporal Variability of Precipitation in the Tarapacá Region, Atacama Desert, Northern Chile

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This research aims to contribute to knowledge of the behavior of precipitation in the Tarapacá region, northern Chile, analyzing historical data of the 34 meteorological stations of the General Water Directorate (DGA), distributed throughout the region, and of which only 25 are operational. The geographical characteristics of the region adjacent to the Atacama Desert, and its arid conditions allow that there a great difference in terms of amount, intensity and distribution of precipitation. These, are conditioned by the known as Altiplanic or Bolivian Winter, and increasing significantly with height. The purpose of this study is discusses the evolution through time of the precipitation occurred in this area since the 60's to the present. To correlate pluviometric behavior with geographical factors (altitude) were used integrated tools such as Geographic Information Systems (GIS) and statistical techniques. With the analysis of the monthly distribution, is concluded that the months which concentrated the most intense precipitation are December, January, February and March, of these, the most frequent month is February. However, by analyzing the distribution of the hourly maximum precipitation was verified that with the increasing of latitudes, rains are more concentrated and sectored. The results confirm that there's a spatial and temporal heterogeneity of hydrometeorological variables and more complexity in hydrological processes that require the provision of a more representative amount of data to generate short or long term predictive models.