



Using the weather generator PGECLIMA_R to fill gaps in climate series in southern Brazil.

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Many studies which requires climatological information are restricted by the quantity and quality of available data. Some regions of Brazil, are highlighted by major deficiency of meteorological stations, and some have many problems such as periods without records or with inconsistent data. Several existing methods are used to correct gaps in the historical series, each one showcasing their talents and limitations, in which common aspects between the methodologies are generally an interpolation of existing data from neighboring regions of the station where failures must be corrected. In this context, the weather generators are climate computational tools that are capable of generating series of climatic data with statistical properties similar to historical records, presented as an interesting option since these models have been widely used in agronomic studies, water resources engineering and analysis of environmental impact caused by extreme events. This study aimed to use the brazilian weather generator PGECLIMA_R, to fill the missing data in climatic series for locations in the state of Parana, southern Brazil. The study was conducted in the Laboratory of Applied and Computational Statistics at the State University of Ponta Grossa, where were used historical series of five stations in the state of Parana, with geographic coordinates which covers the boundaries of the state. Data gaps were introduced in the middle of the historical series, with periods of different durations, so that they could test the geographical sensitivity of the generator to simulate the missing data. Statistical analysis were used to evaluate the distributions, averages and variability around them. PGECLIMA_R showed a very good performance, simulating the missing data with statistical properties similar to the observed data, which also recognizes it as a viable alternative to homogenize inconsistent climatic series.