



Central Andean temperature and precipitation measurements and its homogenization

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Observation of climatological parameters and the homogenization of these time series have a well-established history in western countries. This is not the case for many other countries, such as Bolivia and Peru.

In Bolivia and Peru, the organization of measurements, quality of measurement equipment, equipment maintenance, training of staff and data management are fundamentally different compared to the western standard. The data needs special attention, because many problems are not detected by standard quality control procedures. Information about the weather stations, best achieved by station visits, is very beneficial. If the cause of the problem is known, some of the data may be corrected. In this study, cases of typical problems and measurement errors will be demonstrated.

Much of research on homogenization techniques (up to subdaily scale) has been completed in recent years. However, data sets of the quality of western station networks have been used, and little is known about the performance of homogenization methods on data sets from countries such as Bolivia and Peru.

HOMER (HOMogenizatON softwarE in R) is one of the most recent and widely used homogenization softwares. Its performance is tested on Peruvian-like data that has been sourced from Swiss stations (similar station density and metadata availability). The Swiss station network is a suitable test bed, because climate gradients are strong and the terrain is complex, as is also found in the Central Andes. On the other hand, the Swiss station network is dense, and long time series and extensive metadata are available. By subsampling the station network and omitting the metadata, the conditions of a Peruvian test region are mimicked. Results are compared to a dataset homogenized by THOMAS (Tool for Homogenization of Monthly Data Series), the homogenization tool used by MeteoSwiss.