



Data quality of Central Andean temperature and precipitation measurements

Stefan Hunziker (1), Stefanie Gubler (2), Clara Oria (3), Delia Acuña (3), Juan Calle (4), Isabel Moreno (4), Marcos Andrade (4), Fernando Velarde (4), Stefan Broennimann (1), Mischa Croci-Maspoli (2), Thomas Konzelmann (2), and Gualberto Carrasco (5)

(1) Oeschger Centre for Climate Change Research and Institute of Geography, University of Bern, Bern, Switzerland, (2) Federal Office of Meteorology and Climatology MeteoSwiss, Zürich, Switzerland, (3) Servicio Nacional de Meteorología e Hidrología del Perú, SENAMHI, (4) Laboratorio de Física de la Atmósfera, Instituto de Investigaciones Físicas, Universidad Mayor de San Andrés, La Paz, Bolivia, (5) Servicio Nacional de Meteorología e Hidrología de Bolivia, SENAMHI

Quality control and the potential correction of errors are the first step in gaining climatological information from station measurements. Data from developing countries, such as Bolivia and Peru, are often strongly affected by quality problems. The lack of metadata increases the difficulty of assessing the quality of the data gathered by single stations and detecting errors in time series. The sources of erroneous and unreliable data are diverse and may occur at any point in the chain of data generation (e.g. poor measurement configuration, unsuitable station location, poor maintenance, erroneous instrument reading, errors in data digitalization and post processing). Standard quality control procedures may not detect all the errors present in Central Andean data sets. Therefore, greater emphasis should be given to quality control when using these data.

In dense station networks, single time series of questionable quality can be excluded without reducing the potential of the data significantly. In networks of low density however, the number of stations may already be critical for various applications such as homogenization. Therefore it is important to correct errors in time series whenever possible. If the source and shape of an error are known, time series may be corrected and used for further analyses.

The projects DECADE (Data on climate and Extreme weather for the Central ANdes) and CLIMANDES (Servicios CLIMáticos con énfasis en los ANdes en apoyo a las DEcisioneS) analyze and improve the quality of Bolivian and Peruvian temperature and precipitation data. The time series are controlled visually and statistically. Metadata is gathered by visiting important stations and reporting current (and past, if possible) state of the stations. Station history recovered from observer surveys and information stored on original data sheets is collected whenever possible.

Typical errors found within the DECADE and CLIMANDES projects will be shown. The ability of quality control procedures to detect these errors and possible options for correcting the data will be discussed.