Portuguese temperature datasets: homogeneity and exploratory analysis

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In Portugal, the Institute of Meteorology (IM) is the national entity responsible to perform permanent weather watch and forecasts, atmospheric monitoring of the background chemical composition and also the monitoring of climate and climate change. The national observing network includes a large set of meteorological stations, located throughout the country, which are operated and managed to provide weather and climate data, towards meeting its objectives and to comply with the established international recommendations for observation programs.

Some of the meteorological stations of IM's network are collecting data for more than a century, however, during the entire observing period some changes affecting climate data series have to be considered, regarding local conditions, such as station surroundings significantly different across the years, or station moved to rural areas or urban-rural interface due to several factors. Besides these typical changes, of particular interest is the change related to replacement of manually operated instruments by electronic systems (automatic weather stations) at most of the sites oh IM's network in the middle 90's. At many of these sites, parallel observations with both methods were maintained during some years Use was made of the comparison analysis on the existing detection and correction methods, being carried out on the ongoing COST Action ESO601 (www. homogenisation.org), to select a set of methods to study the homogeneity of temperature data sets from some Portuguese stations. Pro-ClimDB and AnClim software (http://www.climahom.eu/) was used to apply several methods for inhomogeneity detection and correction. Results of the homogenization analysis as well as of the exploratory data analysis are be present and discussed.