



Impact of automatization in temperature series in Spain and comparison with the POST-AWS dataset

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Climate data records are most of the times affected by inhomogeneities. Especially inhomogeneities introducing network-wide biases are sometimes related to changes happening almost simultaneously in an entire network. Relative homogenization is difficult in these cases, especially at the daily scale. A good example of this is the substitution of manual observations (MAN) by automatic weather stations (AWS). Parallel measurements (i.e. records taken at the same time with the old (MAN) and new (AWS) sensors can provide an idea of the bias introduced and help to evaluate the suitability of different correction approaches.

We present here a quality controlled dataset compiled under the DAAMEC Project, comprising 46 stations across Spain and over 85,000 parallel measurements (AWS-MAN) of daily maximum and minimum temperature. We study the differences between both sensors and compare it with the available metadata to account for internal inhomogeneities. The differences between both systems vary much across stations, with patterns more related to their particular settings than to climatic/geographical reasons. The typical median biases (AWS-MAN) by station (comprised between the interquartile range) oscillate between -0.2°C and 0.4 in daily maximum temperature and between -0.4°C and 0.2°C in daily minimum temperature. These and other results are compared with a larger network, the Parallel Observations Scientific Team, a working group of the International Surface Temperatures Initiative (ISTI-POST) dataset, which comprises our stations, as well as others from different countries in America, Asia and Europe.