

*The 18<sup>th</sup> and 19<sup>th</sup> century temperature observations, how reliable are they?*

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ABSTRACT: The equipment for observing temperature has changed during history. The development has passed several stages, from open thermometers shaded by buildings, via wall cages to free-standing screens. These changes lead to inhomogeneous time series, which may be detected by statistical tests comparing a test station with neighbouring stations. However, the method may not work if the distance to neighbouring stations are too long or all stations in the network have been changed in the same way.

Alternative methods for detection are to use homogeneous proxy data as a reference for testing or to reactivate old instruments and compare them to their modern counterparts. Results show that instrumental changes do affect the series, but the magnitude varies with season, weather condition, latitude and observing procedure.