



## **Quality control of air and ground surface temperatures in the Iberian Peninsula.**

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Analysis of the ground-air energy exchange and energy transport within the subsurface are central questions in borehole paleoclimatology. An standard assumption in this context is the existence of a strong ground surface temperature (GST) and surface air temperature (SAT) coupling that would ensure that past GST is a good proxy for SAT changes. Another typical hypothesis is that conductive heat transport dominates below the surface thereby supporting simple inversion schemes that allow past changes in the GST to be reconstructed from borehole temperature profiles (BTPs). Both assumptions can hardly be validated from BTP information and (preferably) long time series resulting from continuous monitorization of SATs and GSTs at various depths near the surface are needed to address the validity of the SAT-GST coupling and subsurface conductive regime hypothesis. The availability of such data is however limited and, with the exception of a very few cases, individual monitoring sites in only a few locations are available.

This work addresses the compilation and analysis of a dataset of 51 sites over the Iberian Peninsula where soil temperatures at 5 levels below the surface (5, 10, 20, 50 and 100 cm) were recorded. The oldest records were taken in the early 1980s and extend to present day at a resolution that changes with depth: 4 times per day the top 3 levels and daily for the two deepest ones. This dataset represents a nice case example showing relatively high spatial resolution and homogeneous distribution over a variety of areas involving different soil thermal properties. A quality control process is carried out to identify erroneous data, involving extreme values, long term changes in mean and in variance. Preliminary analysis of the GST-SAT coupling as well as the deviations from the reference conductive regime are performed.