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Recent annual and seasonal temperature trends for a Trans-Pyrenean region, 1950-2008

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Estimation of multidecadal trends in regional temperatures has remained a key indicator of global warming. Here we show a preliminary approach analyzing surface temperature series for a trans-pyrenean region involving three different countries (Andorra, Catalonia and south-eastern France), representing different climate regimes and covering the period 1950-2008.

The monthly data employed in this work was obtained after careful quality control of daily values. The QC'd dataset was homogenised usig the available metadata and the Cassinus-Mestre (C-M) method, both for breakpoint detection and series correction. C-M is a pair-wise comparison procedure which uses a bayesian approach to detect multiple changes and avoids problems associated with reference series (e.g. difficulties in ensuring homogeneity and mixture of record lengths in climate series) and enables all temperature series to be evaluated. This work was carried out within the action **COST-ES0601: Advances in homogenisation methods of climate series: an integrated approach (HOME)**, which has among its goals to investigate the impacts of different homogenisation approaches over the observed data series.

The results show a similar positive annual temperature trend over the whole region and period (1950-2008) of about +0.20ºC/decade, and being statistically significant ($p<0.05$). Coastal and southernmost regions tend to confirm a deeper warming while high elevation and northernmost series are less affected by this process. Summer is the more sensitive season to the warming, with increasing rates exceeding +0.30ºC/dec over the Catalan region. In contrast, autumn does not show any conclusive positive trend. Finally, maximum temperature increases at a higher rate than that experienced by minimum temperature, being Catalonia the region showing more significant discrepancies.

This cooperative effort will have continuity in the future, as daily homogeneous series will be obtained and more concluding remarks about temperature indices and extremes will be available.