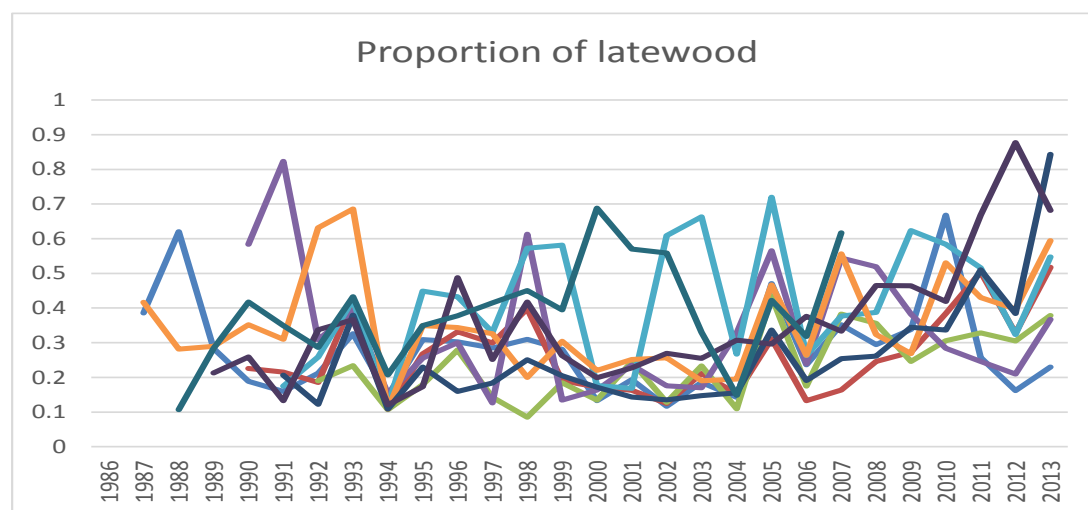


Supplementary file 1: Details of the series checking

Quality check of the measurements

Since we worked with tree-ring data i.e. we had the annual resolution of our data, we wanted to be sure, that each tree ring was dated correctly. Our preliminary analysis showed that, for instance, the proportion of latewood (see the figure) expressed quite different patterns of variation amongst the trees (see the figure below), supporting the need of accurate dating. In such cases, a time lag in raw measurement series may significantly under/overestimate the results due to any age trend and formation of tree-ring under different weather conditions. To verify this, we performed statistical crossdating and quality checking of our data using COFECHA, especially because the outermost tree-rings were quite often lost during the sampling as they fell off with the bark. We do not know why that was happening, as the borer was kept clean and sharp, but still this was an important issue as it was introducing a lag in time series.



The verification of datasets was based on tree-ring widths. Time series of tree-ring width were treated as cross-dated datasets and the defaults of COFECHA were used to produce any suggestions of errors. The only two things we changed in the default configuration of the program was the length of segments analysed and their lag. As the time series were short, we used 25 and 20 year segments with 5 year lags. If the output showed that series had to be moved to younger years and the correlations

with the “master series” was at least two fold higher than in the original position (indicating lost ring), that adjustment was made. Indeed at the current activity we did not set a strict minimum threshold of correlation (when the agreement of series was considered as “good”) and we looked by the conditions. Still the correlation values were quite high as they were mainly above 0.50 that is considered quite high for tree-ring width series. Nevertheless, there were several (6 + 6) time series, for which one “best” position was not suggested as the correlations with the “master chronologies” were similar in two or three possible positions (adjustments). As we worked with a tree-ring resolution, we considered such imprecision inadequate due to variability of other parameters and hence the tree was excluded from further analysis. Pooling of the time series with a certain lag i.e. shifted by a phase, would artificially increase difference of annual means and increase variation, at the same time erasing common signal in high-frequency variation.