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Comparing temperature variations in different proxy records over the last millennia

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Many different proxy records — including ice-cores, marine and lake sediments, tree-rings and speleothems — have been used to deduce paleoclimatic time series for the Northern Hemisphere.
To extract from these series the climate variability on different time scales advanced spectral methods are required that allow one to separate significant oscillations from the high noise background.

For this purpose, we constructed a data set of 28 temperature series, satisfying the requirement that the temperature calibration of each proxy record be provided by the experts who published the record under study. An optimal interpolation procedure has been devised for the 9 irregularly sampled series in our data set and then different spectral methods have been applied to it.
The results of this analysis show common (hemispheric) and regional variability modes over time scales of decades to millennia.