



Merits and drawbacks of the regional curve standardization of tree-ring records

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We consider tree-ring width series as records of paleo-thermometers with unknown scales. At the first time we calculate a correlation matrix of ring width deviations from their regional mean age-dependent curve (RC) for long-living (1000 years and more) conifers growing in the Dulan area (the northeastern Qinghai-Tibetan Plateau, China). This matrix evidences several important features of the tree growth that help to explain why the lower-frequency paleoclimatic variations turn out to be deteriorated in the currently created reconstructions based on the RC standardization (RCS). One of the most important features consists in a systematic bias of nearly every individual tree-ring width record as a whole in respect of RCS. Another important feature consists in a systematic increase of the outermost ring widths in respect of widths of the inner rings. An improvement of the RCS technique is proposed that takes into consideration these features. As a result a new 2000-year long paleoclimatic reconstruction is created in which the Medieval Warm Period looks to be very expressed in contrast to the earlier created reconstruction based on the RCS method.