



Three centuries of winter temperature change on the southeastern Tibetan Plateau and its relationship with the Atlantic Multidecadal Oscillation

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Long-term, high-resolution proxy records containing cold season temperature signals are scarce on the southeastern Tibetan Plateau (TP), limiting our understanding of regional climate and the potential driving forces. In this study, we present a nearly three centuries long reconstruction of winter (December–February) mean temperature for the central Hengduan Mountains, southeastern TP. The reconstruction is derived from a composite tree-ring width chronology of *Pinus yunnanensis* Franch from two high elevation sites (>3000 m above sea level). Our reconstruction passes all standard calibration-verification schemes and explains nearly 73% of the variance of the original instrumental data. However, we were constrained to calibrate our full period (1718–2013) reconstruction of December–February mean temperature on the calibration period from 1959 to 1992 only, due to a decrease in temperature sensitivity of tree-ring index exhibited after 1992. Spatial correlation analysis shows that our reconstruction represents large-scale temperature variations in southwest China and the eastern TP. Our reconstructed December–February mean temperature shows a close association with the Atlantic Multidecadal Oscillation (AMO) over the past three centuries, with warm (cold) periods coinciding with the positive (negative) phases of the AMO. This persistent relationship suggests that the AMO may have been a key driver of multidecadal winter temperature variations on the southeastern TP.