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Summer temperature variability inferred from tree-ring records in the central

Hengduan Mountains, southeastern Tibetan Plateau

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Highlights

- This is the first dendroclimatological reconstruction based on mean minimum temperature in the central Hengduan Mountains.
- Our reconstruction successfully captured recent climatic warming events and several cold years coinciding with a sequence of major tropical volcanic eruptions.
- Our reconstructions contain strong regional temperature signals for the southeastern TP and its vicinity.

Abstract Current understanding of the paleoclimatic variability across the Tibetan Plateau (TP) is still limited because of the lack of long-term climatic records. We developed a regional tree–ring width chronology of *Picea likiangensis* var. *balfouriana* from the central Hengduan Mountains region, in the southeastern TP. Climate-growth correlation analysis revealed that the current year's July (cJuly) and the current year's August (cAugust) mean minimum temperature was the main climatic factor controlling tree-ring growth. Using a linear regression function, we reconstructed this indicator for the past 214 years (1795–2008) to produce the first mean minimum temperature reconstruction for the central Hengduan Mountains. The reconstruction satisfied all statistical calibration and validation tests, and represented 35.9% of the temperature variance recorded over the 1958–2008 instrumental period (34.6% after adjusting for the loss of the degrees of freedom). During the past 214

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