

DECADAL CLIMATIC VARIATIONS INDICATED BY DULAN TREE-RING AND COMPARISON WITH OTHER PROXY DATA IN CHINA OF THE LAST 2000 YEARS

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ABSTRACT: Based on high-resolution tree-ring data from Dulan area of Qinghai Province, five spells have been divided: the warm period before 230' s A. D., the cold period between 240' s A. D. and 800' s A. D., the significantly warm period between 810' s A. D. and 1070' s, i. e. "Medieval Warm Period", the cold period including the "Little Ice Age" 1420' s – 1870' s and the warming period since 1880' s. All the eleven coldest or warmest decades and several great abrupt changes took place before the Middle Ages, indicating that climatic system operated in great instability during the period 150' s – 1100' s A. D.. Comparison of the tree-ring data with other temperature proxy data from East China, Guliya ice core as well as the south of Qinghai-Xizang Plateau shows that such great climatic events as Eastern Han warm period between the beginning of the 1st century and the previous fifty years of the third century, the cold period covering the span of the Wei, the Jin, and the Southern and Northern dynasties, the well-known "Medieval Warm Period" as well as the "Little Ice Age" appeared in these series such as East China and Dulan area. Only the first two climatic events were recorded conspicuously in Guliya ice core while the "Medieval Warm Period" and "Little Ice Age" is far weaker. Also, the well-defined "Medieval Warm Period" didn't occur in the south of Qinghai-Xizang Plateau. The warming since the 20th century is the warmest in the last 2000 years in Guliya ice core, the second in Dulan area and East China, but it scarcely seems pronounced in the eastern part of Qinghai-Xizang Plateau.

KEY WORDS: Chronology of Qinghai Dulan area; the last two millennia; East China; Guliya ice core

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Research on the climatic and environmental changes during the last 2000 years with the time resolution of at least decadal and ideally annual and seasonal plays an important role whether in past global changes (PAGES) of IGBP or on climate variability and predictability (CLIVAR) of WCRP. Only by this way can research on the predictability of climate variability and

the sustainability of special climate type be promoted. Dulan tree-ring chronology, which reconstructed by KANG Xingcheng *et al.* with accurate cross-dating, is the longest annual climate series in China to date, the samples of which were collected from Ela mountains (36°21' – 36° 31'N, 98° 23'E, elevation 3100 – 3700 m) in Xiariha Village of Dulan region, Qinghai

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