

Extreme Cold Winter Events in Southern China during A.D. 1650-2000

J. Y. Zheng, Z. X. Hao, Q. S. Ge, and L. L. Ding

Institute of Geographic Sciences and Natural Resources Research, CAS, Beijing 100101, China (zhengjy@igsnr.ac.cn)

Extreme cold winter events since 1951 were defined when the events occurrence probability density function were lower than 10 percent of the total, based on the observed winter temperature data in Southern China. The chronology of extreme cold winter events during the period from 1650 to 1949 was reconstructed from the cold events and their impact evidences recorded in historical documents, by comparing impact severity of extreme cold winter event between historical and instrumental periods. It was found that: The change of frequency of the extreme cold winter events since 1650 can be divided into several stages: most frequent occurrences existed during the three periods from 1650 to 1699, from 1800 to 1849 and from 1850 to 1899, which are twice as many as that in the second half of the twentieth century; the occurrence frequency at the two periods from 1700 to 1749 and from 1750 to 1799 is close to that in the second half of the twentieth century. The two periods of 1650-1720 in Maunder Minimum and 1795-1835 in Dalton Minimum have higher frequency of extreme cold winters occurrence. The intensity of the coldest winter event since 1950s did not exceed that of the cold events which had ever been occurred during 1650-1949.