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Recent climate change in Japan – spatial and temporal characteristics of trends of temperature

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Abstract. In this paper temperature series of Japan were statistically analysed in order to answer the question whether recent climate change can be proved for Japan; the results were compared and discussed with the global trends. The observations in Japan started for some stations in the 1870s, 59 stations are available since 1901, 136 stations since 1959. Modern statistical methods were applied, such as: Gaussian binominal low-pass filter (30 yr), trend analysis (linear regression model) including the trend-to-noise-ratio as measure of significance and the non-parametric, non-linear trend test according to MANN (MANN's Q). According to the results of the analyses, climate change in Japan is clearly shown for temperature over the 100 yr (1901–2000): Annual mean temperatures increased at all stations from 0.35 (Hakodate) to 2.95°C (Tokyo). The magnitude of climate change is illustrated to increase over the recent period 1976–2000. Seasonally, the strongest warming trends were observed for winter temperatures and also increasing temperature trends prevailed in summer, with the exception of slightly decreasing trends at only four stations.

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