

CLIMATE CHANGES IN POLAND AND EUROPE IN LAST CENTURIES

Summary

This paper presents a short synthesis of recent studies on climate reconstruction in Poland and Europe, mainly during the last millennium. The two key meteorological variables which have been analysed – air temperature and precipitation – are those for which the most complete details about changes in recent centuries are available. In the last millennium the warmest 100-year periods were the 11th century in eastern Europe, and probably the 20th century in western Europe. For the last 500 years correspondence between temperature runs in these two European regions is significantly better. In both areas the warmest century was the 20th century, while the coldest were the 17th century in eastern Europe and the 19th century in western Europe. However the temperature differences between these centuries in both areas were very small ($<0.03^{\circ}\text{C}$). From 1100 to 1900 negative temperature anomalies prevailed in comparison with the present, while in the 20th century a significant upward trend was observed. The new results confirm the correctness of Lamb's schematic division of the last millennium into a Medieval Warm Period, a Little Ice Age and a Period of Modern Warming. Precipitation does not reveal any trend during the last millennium in eastern Europe, or during the last 500 years throughout almost the whole of Europe. On the other hand, variability over the last half of the millennium shows both large in-

terannual and decadal fluctuations.

In Polish climatic history a Medieval Warm Period can be distinguished, which probably lasted from the 11th century until the 14th or early 15th century. Air temperature in this period was probably higher on average by about $0.5\text{--}1.0^{\circ}\text{C}$ in comparison with contemporary conditions and the climate was characterised by the greatest degree of oceanism throughout the whole millennium. A Little Ice Age can be also distinguished in Poland's climate history. Data show that it clearly began around the mid-16th century and probably ended in the second half of the 19th century. In this period some winters were colder by about $1.5\text{ to }3.0^{\circ}\text{C}$ in comparison with present conditions, while summers tended to be warmer by about 0.5°C . Mean annual air temperature was probably lower than the modern temperature by about $0.9\text{--}1.5^{\circ}\text{C}$. The reconstruction of precipitation is much more uncertain than is the reconstruction of air temperature. There was probably considerably higher average precipitation in the 12th century (and particularly in the second half of this century), in the first half of the 16th century and also in the first half of the 18th century. The second half of 13th century and the first half of 19th century were drier than average. In other periods precipitation conditions were close to average.