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Environmental aspects of the Chinese antiquity: cases for archaeology and palaeogeography

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The last twenty years of palaeogeographical studies in China brought much evidence for the environmental changes that have occurred during the Holocene. Many summary studies have been translated into English. Quantitative pollen- and tree-ring-based reconstructions of the Holocene climate changes in China are rather numerous. However, to choose among the variables those which have a better response in the records is not an easy task. It can be illustrated by the recent studies of living trees and archaeological wood from Dulan county (Qinghai province), first time in China providing chronological and palaeoclimatic information for the last 2500 years. Using a rather weak correlation between juniper tree rings and temperatures of the autumn months Kang et al. (1997) have reconstructed a succession of “cold” and “warm” intervals and tried to correlate it with the Medieval Warm Period and Little Ice Age found in European records. However, further evaluation demonstrates that ring-width data from Dulan much better respond to the precipitation of the ‘water year’ (Tarasov et al. 2004; Sheppard et al. 2005). This relationship is easy to explain by the physiological processes limiting tree growth in the semi-arid regions of China, where precipitation varies between 100 and 400 mm per year. However, in many publications pollen and tree-ring records from these areas are interpreted in terms of changes in temperature. We have found that the driest phase reconstructed from Dulan tree-ring data occurred during the first centuries AD, synchronously with the arid events recorded in NW China and in Central Asia. Less correspondence occurs when results from further north (e.g. Central Mongolia) are compared. Occurrence of dry conditions in NW China as well as in Middle Asia seems to be in agreement with a change in population

dynamics and land use to a strengthening of the herdsmen and a weakening of the farmer society in these regions. Another recent example: “China Daily” (12.04.2002) informed its readers that “evidence of a 4000-year old flood associated in Chinese legends with an ancient hero Yu and in the Bible with Noah has recently been found in the village of Lajia in Minhe County in the upper reaches of Yellow River”. In the given case the information about an environmental catastrophe which is assumed to have happened at the beginning of Chinese antiquity is accompanied by an explanation, precise dating and even long-distance correlation. Precise dating and clear statements lend more credibility to the story, in which mythological events and personages are mixed with archaeological finds and environmental reconstruction. However, an interesting question is what kind of data lay behind the newspaper article. Looking through publications concerned Chinese pre-history and antiquity we found that their authors are much more critical to their own materials or to the data coming from the same study field. However, supporting conclusions of the representatives from the other disciplines are usually taken “on belief”. Such “overestimation of the sources” creates an ideal image of antiquity. As the result geoscientists consider that “the existence of well-developed cultures is thought to indicate more favourable climatic conditions” (Winkler and Wang 1993, p. 232) and historians conclude that “it is not implausible to suppose that such a favourable environment help to explain the increasing prosperity of the Neolithic and Bronze Age cultures and contribute to the general optimism about the human conditions and human nature that characterizes much early Chinese religion, legend and philosophy (Keightley 1999, p. 36).