



European climate reconstructed for the past 500 years based on documentary and instrumental evidence

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The paper summarises the results of historical-climatological research conducted as part of the EU-funded 6th FP project MILLENNIUM the principal focus of which was the investigation of European climate during the past one thousand years (<http://www.millenniumproject.net/>). This project represents a major advance in bringing together, for the first time on such a scale, historical climatologists with other palaeoclimatological communities and climate modellers from many European countries. As part of MILLENNIUM, a sub-group (SG1) of historical climatologists from ten countries had the responsibility of collating and comprehensively analysing evidence from instrumental and documentary archives. This paper presents the main results of this undertaking but confines its attention to the study of the climate of the past 500 years and represents a summary of 10 themed papers submitted for a special issue of Climatic Change. They range across a variety of topics including newly-studied documentary data sources (e.g. early instrumental records, opening of the Stockholm harbour, ship log book data), temperature reconstructions for Central Europe, the Stockholm area and Mediterranean based on different types of documentary evidence, the application of standard paleoclimatological approaches to reconstructions based on index series derived from the documentary data, the influence of circulation dynamics on January-April climate, a comparison of reconstructions based on documentary data with the model runs (ECHO-G), a study of the quality of instrumental data in climate reconstructions, a 500-year flood chronology in Europe, and selected disastrous European windstorms and their reflection in documentary evidence and human memory. Finally, perspectives of historical-climatological research and future challenges and directions in this rapidly-developing and important field are presented together with an overview of the potential of documentary sources for climatic reconstructions.