



Reconstruction of winter temperatures based on documentary sources in the central area of the Iberian peninsula during the second half of the XVI century

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This paper studies the relationship between cold events and the evolution of the environment in a 6000 km² geographic area located in the central area of the Iberian Peninsula in the second half of the XVI century. A large number of historical documents kept in national, regional, local and religious institutions were consulted in order to carry out this research.

The winter temperature conditions that existed in the area analyzed were reconstructed based on information included in monastery records, books of agreements, reports or personal correspondence. The data obtained were: 1. Direct data, which gives explicit information about meteorological events. 2. Mixed data, associated with the direct data, which explain the consequences of the meteorological events and make it possible to evaluate their intensity. 3. *Proxy* data, which describe the consequences of meteorological phenomena, not the meteorological events themselves. The data was first arranged and weighted according to the intensity of the meteorological phenomena described and subsequently these values were assigned an ordinal number ranging from + 4 to - 4.

The statistical treatment applied is based on the reconstruction of temperatures equivalent to this ordinal index, expressed as anomalies of the 1961 – 1990 period at a reference station located at the approximate geographical center of the area under study. The results show winter thermal conditions different from current ones that, for the most part, stay below the reference average. Likewise, the wide range of variability in

the annual distribution of the thermic values allows us to identify various subgroups consisting of those years with specific behaviour of temperatures.

The influence that thermal conditions had on the evolution of some environmental aspects are considered based on 1st: data on the state and manner of forest exploitation and 2nd: the importance of production and economic performance of certain types of agricultural crops.