



## Historical climatology in Eastern Europe during the Little Ice Age

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This study represents an extended analysis of the historical climatology during the Little Ice Age and the negative impact on society, caused by extreme events, over the eastern part of Europe. The historical data (meteorological parameters, hydrological events) used in this study have a long temporal extension and have been taken from different sources (e.g. books, documentary evidences). Our analyses shows clear differences between intra (ICM) and extra Carpathian Mountains regions (ECM), which are due to the different influence of the large-scale atmospheric circulation. The historical analysis points out that the last 500 years have been characterized by three distinct rainy periods (1424 - 1549, 1549 - 1824, 1824 - 1899 AD) and three dry periods (1424 -1599, 1599 - 1824, 1824 – 1899). The regions in the intra and extra Carpathian Mts. Show, in general, a cycle in drought and rainy years as follows: i) the first period (1424-1574) was characterized by a reduced wet period (19%) and a higher frequency of dry years (27%) in ICM, over ECM we observe a higher rate of rainy periods (35%) and drought years (47%); ii) the second period (1574-1824) is the mirror image of the first period, with a high rate of wet (67%) and dry (47%) years in ICM and low rainy (38%) and dry (22%) years in ECM; iii) during the last period (1824-1899) (only 75 years long) more than 25% of rainy and drought years during the Little Ice Age, has been recorded. These extreme events (pluvials and droughts) caused major disasters which had a negative impact on the population, with a higher frequency especially in the first half of the 17th and 18th centuries. A large number of human casualties caused by famine and epidemics was found between 1633 - 1634, 1708 - 1710, 1718 – 1719 (the next great pestilence after the Black Death) and 1737 - 1739 AD, respectively. In this context, this study brings a major contribution to the past climate of Eastern Europe and the effects they have had on the environment and also on society.