

EGU2020-648

<https://doi.org/10.5194/egusphere-egu2020-648>

EGU General Assembly 2020

© Author(s) 2020. This work is distributed under the Creative Commons Attribution 4.0 License.



## Documentary evidence of historical floods in lowland Romania during the last millennium

**Gheorghe Badaluta**<sup>1</sup>, Carmen - Andreea Badaluta<sup>1,2</sup>, Monica Ionita<sup>3</sup>, and Marcel Mindrescu<sup>1</sup>

<sup>1</sup>Department of Geography, Stefan cel Mare University of Suceava, Romania (badalutagheorghe90@gmail.com marcel.mindrescu@gmail.com)

<sup>2</sup>Stable Isotope Laboratory, Stefan cel Mare University of Suceava, Romania (carmen.badaluta@usm.ro)

<sup>3</sup>Alfred Wegener Institute, Helmholtz Center for Polar and Marine Research, Bremerhaven, Germany (Monica.Ionita@awi.de)

Floods are among the most destructive natural hazards which affect socio-economical systems. Flood occurrence is considered to be a sensitive indicator of climate variability and is related in particular with changes in atmospheric circulation modes. One of the best archive of the floods evidence are historical documents. In this study we present 1000 years of floods reconstruction, which are some of the most frequent and well documented hazards in lowland areas of Romania. Our investigation spans over three distinct periods: the Medieval Warm Period (MWP), the Little Ice Age (LIA) and the Modern Period (MD), respectively, and it's the longest one, on record, over this area. In total, we extracted 191 flood events which occurred in 167 years. Of 191 flood events, 16 occurred in winter, 34 in spring, 76 in summer, 18 in autumn, whereas for 47 flood events the season was not specified. The results show three periods of increasing floods activity during the Late Medieval Warm Period, middle part of LIA (between AD 1550-1750) and the entire Modern Period. A small increase in the number of flood events was observed during the MWP with an occurrence rate slightly higher than 0.15/year. The highest flood occurrence rates have been documented during LIA (i.e. 16th and 17th centuries) with an increasing trend of up to ~ 0.4/year. The majority of these events were recorded in summer and were typically generated by heavy thunderstorms. Moreover, the rising temperatures of MD were reflected in the increasing flood occurrence rates of up to 0.39/year. In conclusion, our 1000-year long reconstruction of past flood events could bring a major contribution to the knowledge of hydro-meteorological events of Central Eastern Europe and may be used as an indicator for assessment of floods hazards and for predicting the influence in future, in the context of ongoing climatic changes.