

EGU23-15694, updated on 15 Apr 2024  
<https://doi.org/10.5194/egusphere-egu23-15694>  
EGU General Assembly 2023  
© Author(s) 2024. This work is distributed under the Creative Commons Attribution 4.0 License.



## Heat Waves over Eastern Balkans: A statistical analysis, possible causes and physical drivers.

**Hristo Popov**<sup>1</sup> and Oleg Stepanyuk<sup>2,3</sup>

<sup>1</sup>Sofia University, Faculty of Geology and Geography, Climatology, Hydrology and Geomorphology, Sofia, Bulgaria (hpopov@gea.uni-sofia.bg)

<sup>2</sup>UATL Private Research University, Remote Sensing and Big Data Department (Helsinki, Finland)

<sup>3</sup>iAthena7 Labs

Heat wave is a period of prolonged abnormally high surface temperatures relative to those normally expected. Heat waves may form when high pressure system strengthens and remains over a region from several days up to several weeks. Severe and exceptional heat waves, such as those that occurred over the Balkans (2007), France (2003), or Russia (2010), are associated with increased mortality, health hazards, reduced personal work productivity and have significant economic impacts by compromising agricultural harvest. Extremely high air temperature values in the Balkan Region are associated with anticyclones formed at the Azores maximum or high-pressure ridges and advections of hot air from the south and southwest.

In our study we perform statistical analysis of the occurrence, durability and intensity of the heat waves over the Balkan Peninsula for the period 1980-2020 based on historical satellite and reanalysis datasets. We analyse correlation between heat waves occurrence and North Atlantic Oscillation Index and certain historical meteorological data for Atlantic and Mediterranean regions aiming to figure out possible causes and physical drivers of this phenomena. One of the mid-term goals of the project is to develop a CNN based predictive system for short and long-time forecasting of extreme weather conditions over the Balkans.