



## **Extreme European heat waves since 1950 with Heat Wave Magnitude Index and their occurrence in the future**

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Heat waves are defined as prolonged periods of extremely hot weather and their magnitude and frequency are expected to increase in the future under climate change.

Here we grade the heat waves occurred in Europe since 1950, by means of the Heat Wave Magnitude Index (HWMI) applied to daily maximum temperature from European Observation dataset (E-OBS).

As shown in many studies the worst event in the last decades occurred in Russia in 2010. However many other heat waves, as shown here and documented in literature and also in newspapers, occurred in different European regions in the past 64 years.

In addition, predictions from ten models from the COordinated Regional climate Downscaling EXperiment (CORDEX) under different IPCC AR5 scenarios, suggest an increased probability of occurrence of extreme heat waves by the end of the century. In particular, under the most severe scenario, events of the same severity, as the 2010 Russian heat wave, will become the norm and are projected to occur as often as every two years in the studied region.