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## A global statistics of heat waves based on a spatial and temporal connection criterion

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Heat waves constitute an increasing concern in last years. Several studies show that the intensity and the frequency of heat waves is growing in last decades. In particular, also the extension of the areas interested by these phenomena is increasing: among the extreme events of this kind, two significant occurrences were in Europe in summer 2003 and in Russia in summer 2010. The interest about the monitoring and forecast of heat waves is also growing, and the most recent meteorological datasets (at continental or synoptic scale) are used in this sense.

In this work an approach based on the automatic identification of heat waves as spatially connected areas in which the surface air temperature exceeds a threshold value is presented. The method is based on criteria of spatial and temporal connections of the cells in a temporal sequence of temperature and air humidity maps. The threshold are selected basing on the seasonal average temperatures and humidity, and the the approach allows the tracking of the trajectories of single heat waves.

The method was applied on world-scale temperature and humidity maps from the EC-Earth dataset, in the period 1960-2012. Statistics on the occurrence, values, duration and extension were computed and discussed.