

# New index measures the magnitude of heat waves

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JRC scientists have developed a new index to measure the magnitude of heat waves, in cooperation with colleagues from five research organisations. According to the index projections, under the worst climate scenario of temperature rise nearing 4.8<sup>0</sup>C, extreme heat waves will become the norm by the end of the century. Heat waves like the one that hit Russia in summer 2010, the strongest on record in recent decades, will occur as often as every two years in southern Europe, North and South America, Africa and Indonesia.

The Heat Wave Magnitude Index is the first to allow comparing heat waves over space and time. It takes into account both the duration and intensity of heat waves and can serve as a benchmark for evaluating the impacts of future climate change. Results also show that the percentage of global area affected by heat waves has increased in recent decades, and the probability of occurrence of extreme and very extreme heat waves is projected to increase further in the coming years.

The [index](#) is based on an analysis of daily maximum temperatures, which was carried out to classify the strongest heat waves that occurred worldwide during three study periods (1980-1990, 1991-2001 and 2002-2012). In addition, a combination of models is used to project the future occurrence and severity of heat waves, under different scenarios as established in the latest Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

Taking into account the disastrous effects of the 2003 and 2010 [heat](#)

[wave](#) events in Europe, and those of 2011 and 2012 in the USA, results show that we may be facing a serious risk of adverse impacts over larger and densely populated areas if mitigation strategies for reducing global warming are not implemented.

**More information:** G. Graversen, Jana Sillmann, Hugo Carrao, Martha B. Dunbar, Andrew Singleton, Paolo Montagna, Paulo Barbosa and Jürgen V. Vogt, "Magnitude of extreme heat waves in present climate and their projection in a warming world," *Journal of Geophysical Research: Atmospheres*, [DOI: 10.1002/2014JD022098](https://doi.org/10.1002/2014JD022098), [onlinelibrary.wiley.com/doi/10 ... 002/2014JD022098/pdf](https://onlinelibrary.wiley.com/doi/10.1002/2014JD022098/pdf)

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