

Extreme heatwaves may hit Europe in the short term

November 27 2015



Severe heatwaves in the past have caused crop failures and thousands of deaths.
Credit: © Maksim Pasko, Fotolia

Regional climate projections for the two coming decades (2021-2040)

suggest enhanced probability of heatwaves anywhere in Europe, which would be comparable or greater than the Russian heatwave in 2010 - the worst since 1950 - according to a JRC-led article published today in *Environmental Research Letters*. Using an improved heatwave index, the article also ranks the 10 record-breaking heatwaves that have struck the continent in the last 65 years.

The findings are based on the use of the Heat Wave Magnitude Index daily (HWMId) which allows comparison of events over space and time. The authors estimate the magnitude and probability of occurrence of extreme heatwaves in the near-term.

The analysis shows that all previous records were broken in 2010 in Russia as the heatwave exceeded night and day records in the extent of territory covered, average peak and duration. In particular, the spatial extent and the spatial HWMId maximum were about twice as high as those of the heatwave in central Europe in 2003 and in Finland in 1972.

Nearly all the models showed that a [heatwave](#) like the one in central Europe in 2003 occurs at least once in 30 years under two of the four climate scenarios adopted by the Intergovernmental Panel for Climate Change (IPCC) for its [fifth Assessment Report \(AR5\)](#) in 2014. These two scenarios are known as RCP4.5 and RCP8.5 (see details in background).

Background

EURO-CORDEX is a new generation of downscaled climate projections that is used for [climate change](#) impact studies in Europe.

The climate RCP8.5 scenario of the Intergovernmental Panel on Climate Change (IPCC) assumes the highest levels of greenhouse gas (GHG) emissions, and foresees a global temperature rise exceeding 4⁰C before

the end of the century. RCP8.5 assumes high population, slow income growth, modest technological innovation and energy intensity improvements leading to high energy demand, without change in climate policies.

The RCP4.5 scenario assumes that global annual GHG emissions peak around 2040 and then decline. It projects a mean temperature rise of 1.8⁰C by the end of the century (range between 1.1⁰C and 2.6⁰C). It assumes decline of population in the second half of the century and explicit action to mitigate greenhouse gas emissions. This scenario depicts decline in overall energy use, as well as decline in the use of fossil fuels with substantial increase in renewable energy.

More information: Simone Russo, Jana Sillmann, Erich M Fischer; Top ten European heatwaves since 1950 and their occurrence in the coming decades; *Environmental Research Letters*; iopscience.iop.org/1748-9326/10/12/124003

Citation: Extreme heatwaves may hit Europe in the short term (2015, November 27) retrieved 27 April 2024 from <https://phys.org/news/2015-11-extreme-heatwaves-europe-short-term.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.