



# At the margins of survivability: **Water stress, climate change, and refugee/IDP camps**

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Dahdaleh Institute for Global Health Research, York University

**Water @ Wilson: 50 Years of Water, Conflict, and Cooperation**

Washington, D.C., November 28, 2018



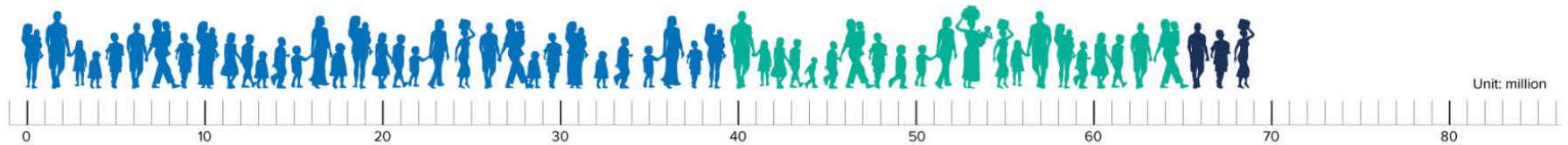
UNHCR, the UN Refugee Agency

@Refugees

Following

68,500,000 people  
 68,500,000 stories  
 68,500,000 dreams  
 68,500,000 journeys  
 68,500,000 lives uprooted  
 68,500,000 missed chances  
 68,500,000 longing for home  
 68,500,000 unthinkable tragedies  
 68,500,000 heads full of memories  
 68,500,000 were displaced in 2017

**68.5 million** forcibly displaced people worldwide



Internally Displaced People  
**40 million**

Refugees  
**25.4 million**

19.9 million under UNHCR mandate  
 5.4 million Palestinian refugees registered by UNRWA

Asylum-seekers  
**3.1 million**

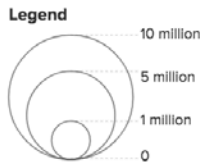
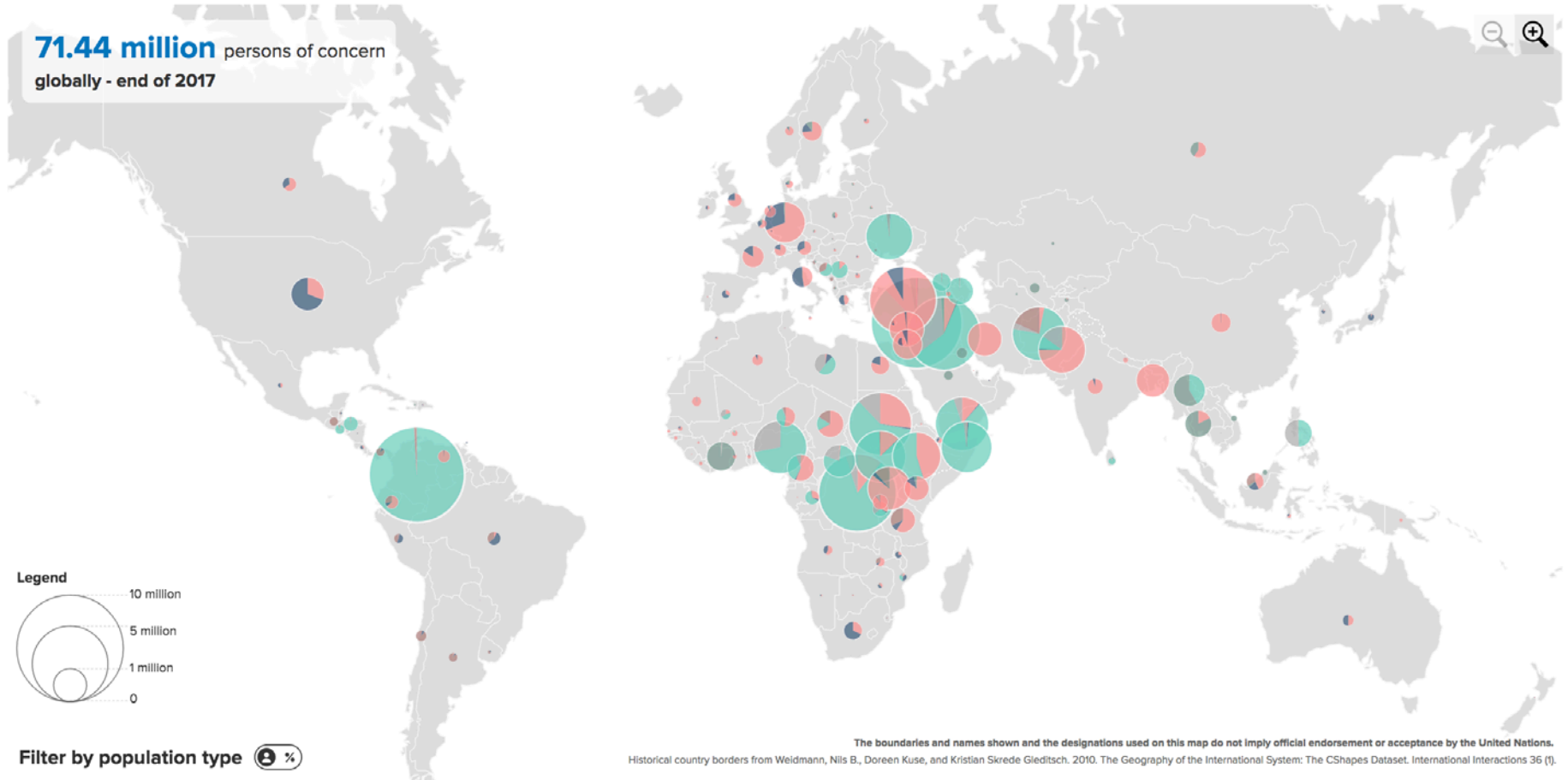
Source: UNHCR

# UNHCR STATISTICS

The World in Numbers

HELP ?

**71.44 million** persons of concern globally - end of 2017



Filter by population type

Refugees	<b>19,941,347</b>	Asylum-seekers	<b>3,090,898</b>	IDPs	<b>39,118,516</b>	Returnees	<b>4,896,352</b>	Stateless persons	<b>2,796,204</b>	Others	<b>1,596,189</b>
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The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.  
Historical country borders from Weidmann, Nils B., Doreen Kuse, and Kristian Skrede Gleditsch. 2010. The Geography of the International System: The CShapes Dataset. International Interactions 36 (1).

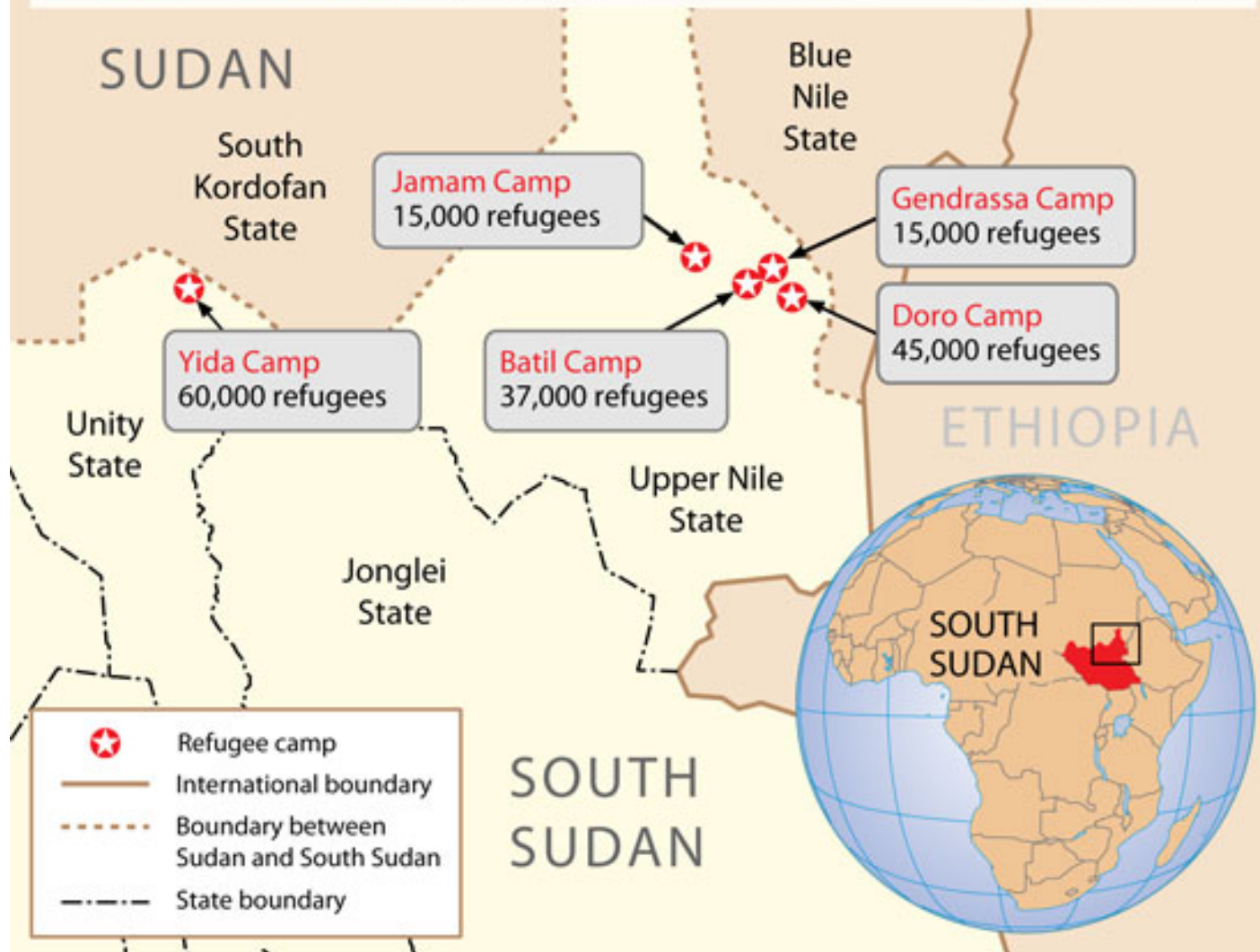
Source: UNHCR





# MSF EMERGENCY REFUGEE ACTIVITIES IN SOUTH SUDAN

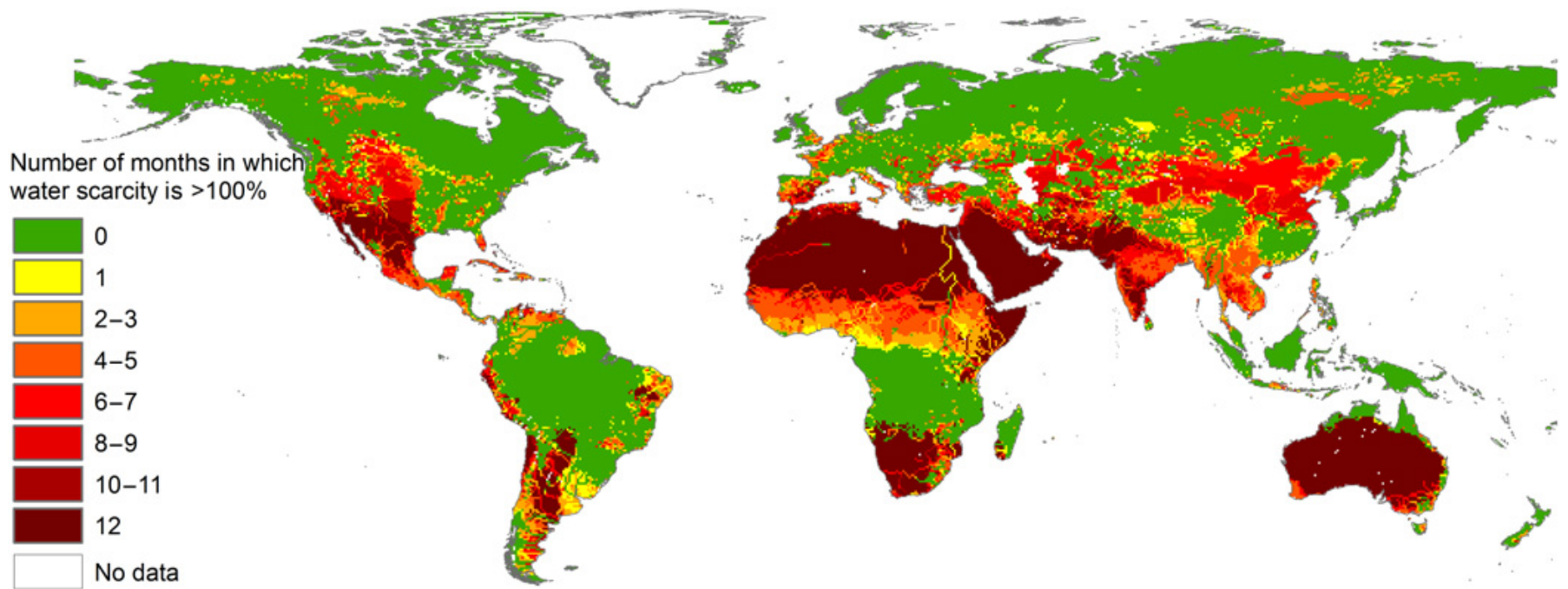
As of JANUARY 17, 2013



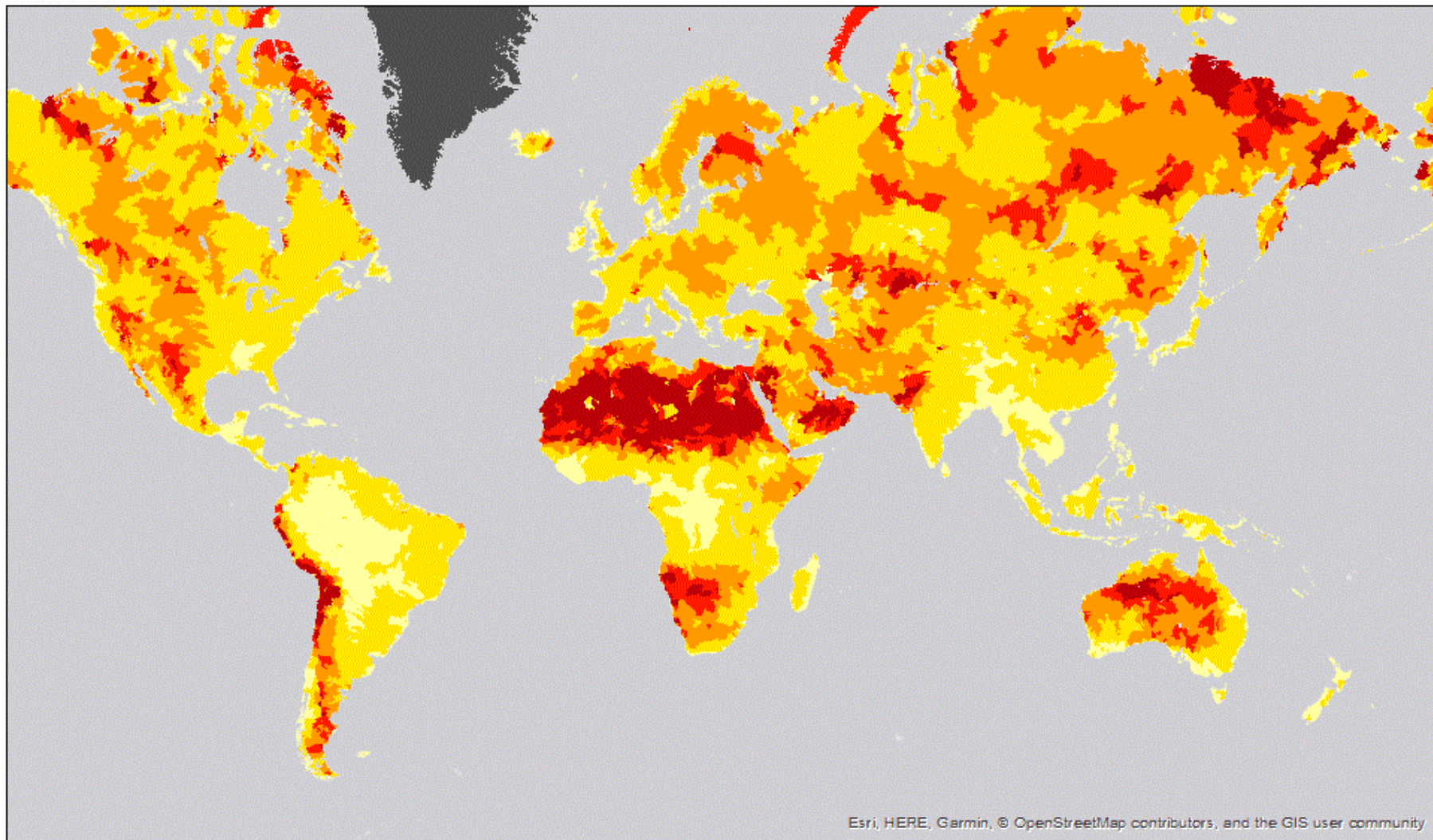








Mekonnen, M. M.; Hoekstra, A. Y. Four billion people facing severe water scarcity. *Science Advances* 2016, 2 (2).





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### Drought Severity


Legend:


Drought Severity


 Low (<20)


 Low to medium (20-30)

 Medium to high (30-40)

 High (40-50)

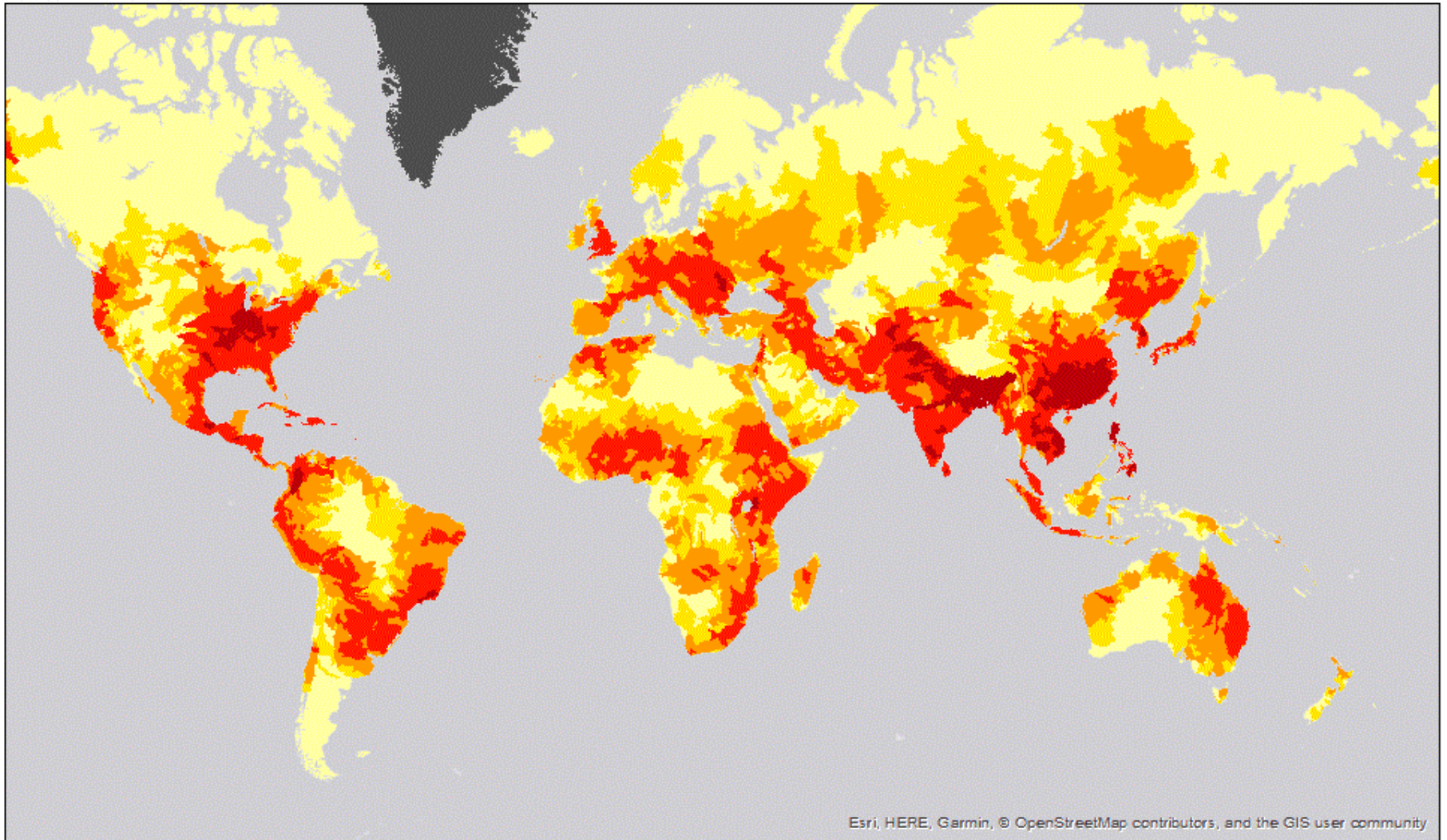
 Extremely high (>50)

 Arid & low water use

 No data

0 1,100 2,200 3,300 miles

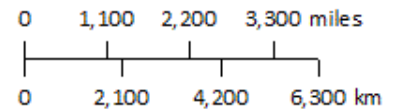
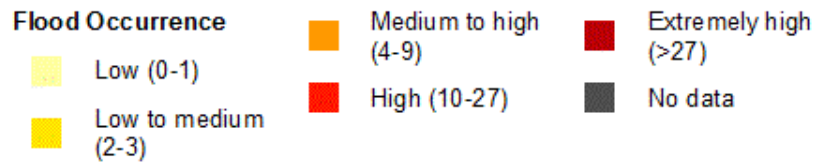
0 2,100 4,200 6,300 km



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**Flood Occurrence**

Legend:



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NEW RESEARCH IN Physical Sciences Social Sciences

### Multimodel assessment of water scarcity under climate change

Jacob Schewe, Jens Heinke, Dieter Gerten, Ingjerd Haddeland, Nigel W. Arnell, Douglas B. Clark, Rutger Dankers, Stephanie Eisner, Balázs M. Fekete, Felipe J. Colón-González, Simon N. Gosling, Hyungjun Kim, Xingcai Liu, Yoshimitsu Masaki, Felix T. Portmann, Yusuke Satoh, Tobias Stacke, Qihong Tang, Yoshihide Wada, Dominik Wisser, Torsten Albrecht, Katja Frieler, Franziska Piontek, Lila Warszawski, and Pavel Kabat

PNAS published ahead of print December 16, 2013 <https://doi.org/10.1073/pnas.1222460110>

Edited by Hans Joachim Schellnhuber, Potsdam Institute for Climate Impact Research, Potsdam, Germany, and approved August 13, 2013 (received for review January 31, 2013)

Article Figures & SI Info & Metrics PDF

#### Abstract

Water scarcity severely impairs food security and economic prosperity in many countries today. Expected future population changes will, in many countries as well as globally, increase the pressure on available water resources. On the supply side, renewable water resources will be affected by projected changes in precipitation patterns, temperature,

“...[warming of 2°C] will increase the number of people living under absolute water scarcity by another 40% [to 100%] compared with the effect of population growth alone.”

Schewe, J. et al. Multimodel assessment of water scarcity under climate change. *Proceedings of the National Academy of Sciences* 2014, 111 (9), 3425–3250.

“Although it has been said that **individual climate events cannot be attributed to anthropogenic climate change**, a recent assessment by the National Academies of Science concludes that **“this is no longer true as an unqualified blanket statement”**”.

Stott, P. How climate change affects extreme weather events. *Science* 2016, 352 (6293), 1517 LP-1518.

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## How climate change affects extreme weather events

Peter Stott<sup>1,2</sup>

+ See all authors and affiliations

*Science* 24 Jun 2016:  
Vol. 352, Issue 6293, pp. 1517-1518  
DOI: 10.1126/science.aaf7271

Article

Figures & Data

Info & Metrics

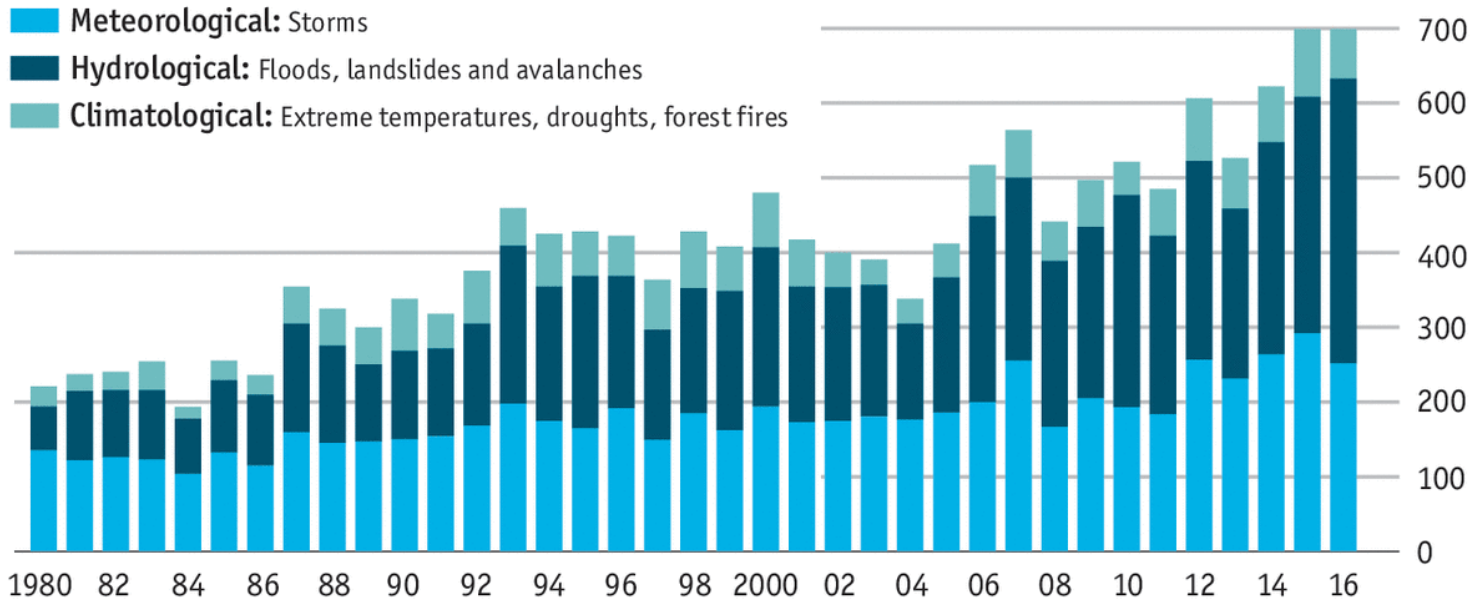
eLetters

PDF

Human-induced climate change has led to an increase in the frequency and intensity of daily temperature extremes and has contributed to a widespread intensification of daily precipitation extremes (1, 2). But has it also made specific extreme weather and climate events—such as floods, droughts, and heat waves—more likely? Although it has been said that individual climate events cannot be attributed to anthropogenic climate change (3), a recent assessment by the National Academies of Science concludes that “this is no longer true as an unqualified blanket statement” (4). Robust event attribution can support decisions such as how to rebuild after a disaster and how to price insurance by quantifying the current risk of such events.

## A rising tide

Natural disasters by cause



Source: Munich Re

<https://www.economist.com/graphic-detail/2017/08/29/weather-related-disasters-are-increasing>

you have to understand,  
that no one puts their children in a  
boat  
unless the water is safer than the land  
no one burns their palms  
under trains  
beneath carriages  
no one spends days and nights in the  
stomach of a truck  
feeding on newspaper unless the miles  
travelled  
means something more than journey.

- warsan shire

