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# Climate & Health News

Newsletter of the JHU-UPF Public Policy Center Climate Change Working Group



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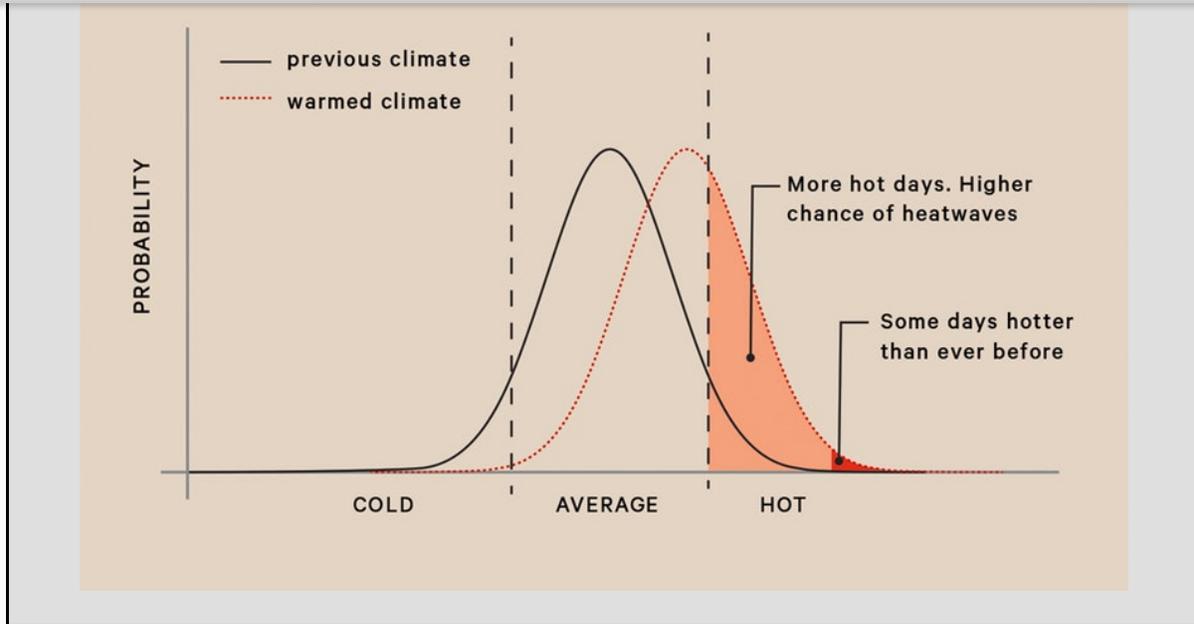
## NEWS

### [2017, A YEAR OF RECORD EXTREME WEATHER](#)

2017 was the hottest year since global records began, without considering the natural climate cycle El Niño. 2017 also saw extreme weather events strike across the world, from hurricanes in the US and Caribbean to heatwaves in Australia, drought and wildfire in California and Europe, and devastating floods in Asia. Many of these events have been shown to have been made much more likely by the heat resulting from global warming. -- *Guardian*

### [HOW CLIMATE CHANGE IS DRIVING EXTREME HEATWAVES](#)

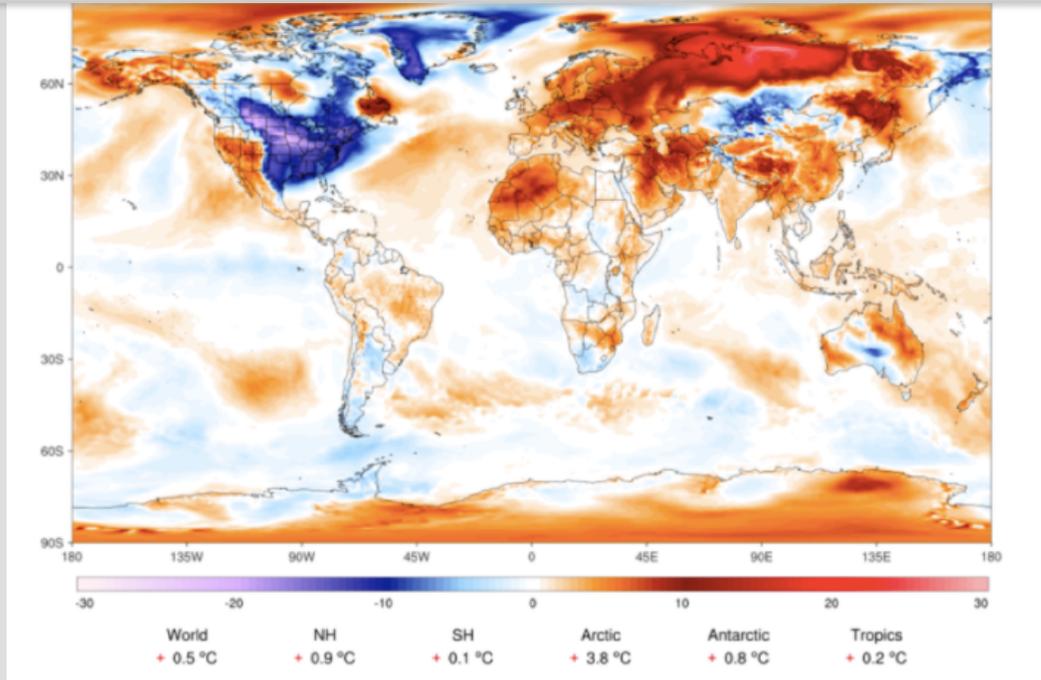
The unrelenting heat of the 2017 summer was made 50 times more likely by the single degree Celsius of global warming that has already occurred. A number of studies have raised concerns about the habitability of some corners of the world: in Australia temperatures may reach 50 degrees C in Melbourne and Sydney with a global 2 C increase; large swathes of the Middle East and North Africa could be uninhabitable within decades. – *Cosmos Magazine*



*A large shift in the hot tail: even a small increase in average temperature can make individual hot days much more likely, which also means longer heatwaves and more of them. COSMOS MAGAZINE*

## [A 'PERFECT STORM': EXTREME WINTER WEATHER, BITTER COLD, AND CLIMATE CHANGE](#)

World-renowned climate scientist Dr. Michael Mann explains how the “bomb cyclone” of frigid weather developed in parts of the US in January, and why these bitter cold and snowy conditions are “an example of precisely the sort of extreme winter weather we expect because of climate change.” -- *The Climate Reality Project*



(Image obtained using [Climate Reanalyzer](#), Climate Change Institute, University of Maine, USA)

## [SURVEY: US MAYORS VIEW CLIMATE CHANGE AS PRESSING URBAN ISSUE](#)

U.S. mayors increasingly view climate change as a pressing urban issue, so much so that many advocate policies that could inconvenience residents or even affect city finances. The annual survey of big-city executives is conducted by the Boston University Initiative on Cities. “A striking 68 percent of mayors agree that cities should play a strong role in reducing the effects of climate change, even if it means sacrificing revenues or increasing expenditures,” a report accompanying the survey stated. – *Associated Press*

## [SURVEY: GLOBAL URBAN AIR POLLUTION AND WHAT IS BEING DONE ABOUT IT](#)

This series examines air pollution in world cities, its health impacts and what cities are doing about it. Labeled a “public health emergency,” poor air quality around the world now causes over 11% of deaths annually. The story covers highly exposed populations in cities in Asia, Latin America, and elsewhere, and features editorials from mayors of large world cities on what they are doing to address air pollution. – *Huffington Post*

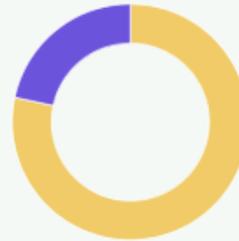
## [CITIES ON FAST TRACK TO WATER DEFICITS](#)

By 2050 many of the world's major cities will face surface water shortages, spurring regional conflict and competition for scarce resources. This series highlights two climate impacts relevant to drinking water:

Phoenix; Porto Alegre; Monterrey.

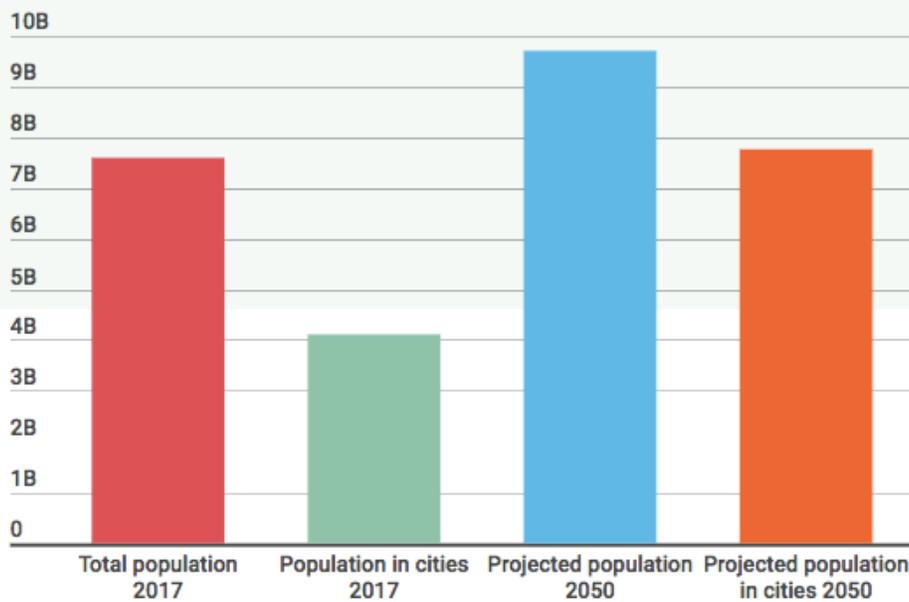
# Population, Cities, Water

Currently about 54% of the global population lives in cities. That number is likely to grow to between 60% and 92% by the end of the 21st century. About 27 percent of people in 2050 will be living in a city with a surface water shortage.



- Major cities using surface water
- Cities projected to have surface water deficit in 2050

Download data



[Brian Bienkowski](#)

## [OTHER CITIES IGNORE PARIS FLOODS AT THEIR PERIL](#)

This month marks the anniversary of the catastrophic 1910 Paris flood, the worst natural disaster in the modern history of Paris, displacing thousands. Major infrastructure was put in place to manage flooding, however, more than 100 years later, this month Paris is once again flooding to near historic levels, enough to shut down the subway, close the Eiffel Tower and the Louvre. Cities need to learn and build flood resilience into urban planning – *CNN*

This month a storm turned Jakarta's streets into rivers, bringing the city of 30 million to a halt. Jakarta is sinking faster than any other big city — so fast that rivers sometimes flow upstream. Tokyo was in a similar predicament in the 1950s, but invested in new infrastructure and strict development regulation, and is now better able to cope with climate change. Can Jakarta become a 21st-century version of Tokyo in the 20th century? -- *New York Times*



Subsidence data courtesy of Irwan Gumilar of Geodesy Research Group of ITB | Satellite images via Landsat 5 and Landsat 8

# SCIENCE



## [SHARE OF DEATHS DUE TO HIGHER TEMPERATURES HAS INCREASED OVER FOUR DECADES ACROSS 10 COUNTRIES](#)

Using a multi-country data set, researchers examined mortality and weather variables for 308 cities in 10 countries from 1972 to 2013 to assess changes in diurnal temperature range (DTR)-related mortality. Results show that the overall attributable fraction of total mortality to DTR was 2.5% (95% eCI: 2.3-2.7%), increasing from 2.4% (2.1-2.7%) to 2.7% (2.4-2.9%) between the first and last study years. The attributable fraction significantly increased over time in the USA, the UK, Spain, and South Korea. Because the health impact of DTR is not likely to decrease, measures are needed to reduce impact on public health.

## [PROJECTION OF GLOBAL TEMPERATURE-RELATED MORTALITY](#)

Researchers estimated temperature and all-cause mortality relationships globally, across over 400 locations in 23 countries for periods ranging from 1984 to 2015 through the Multi-Country Multi-City Collaborative Research Network, and projected end-century temperature-related mortality. Results indicate the negative health impacts of climate change under high-emission scenarios would disproportionately affect warmer and poorer regions of the world, e.g., net increases in heat-related mortality by 2090-2099 (compared to 2010-2019) of 3% in Central America to 13% in Southeast Asia.

## [HIGHER TEMPERATURES ARE ASSOCIATED WITH POORER LUNG FUNCTION IN THE US](#)

Researchers analyzed data on lung function (NHANES) and temperature, and concluded that in the US population, residing in regions with warmer ambient air temperatures was associated with lower lung function (FEV1). The effect size (0.59-0.71% decrease in FEV1 per 10°F temperature increase) was similar to that of traffic pollution. This suggests rising temperatures associated with climate change could have effects on pulmonary function in the general population.

## [REVIEW: STRATEGIES TO REDUCE URBAN HEAT ISLAND](#)

Researchers reviewed the literature and outlined urban heat island characteristics and their impacts in a wide variety of cities around the world; introduced strategies which may be employed in order to reduce heat island effects; and analyzed available tools to systematize the initial high-level assessment of the phenomenon for multidisciplinary teams involved in the urban planning process.



© AFP/Getty Images

*Peak: A picture taken late on Sunday evening shows the flooded Quai de Grenelle by the banks of the Seine river with the Eiffel Tower in the background. AFP/Getty Images*

## [REVIEW: HEALTH CO-BENEFITS OF LEED STRATEGIES AIMED AT FLOOD RESILIANCE](#)

Researchers systematically reviewed evidence linking green building strategies in the Leadership in Energy and Environmental Design® (LEED) Rating System with the potential to reduce negative health outcomes following exposure to urban flooding events. Results suggest public health co-benefits to leveraging green building design to enhance flooding resilience included: improving the interface between humans and wildlife and reducing the risk of waterborne disease, flood-related morbidity and mortality.

## [EDITORIAL: ATTRIBUTION OF EXTREME STORMS AND THEIR HEALTH EFFECT TO CLIMATE CHANGE](#)

Following the unusually active 2017 North Atlantic hurricane season, the authors reviewed the methodology for attribution of these storms and their health impacts to climate change. They emphasize the question is not “Did climate change cause event X?” but “By how much did climate change increase the chance that event X would occur?” Attributing health impacts to a changing climate is even more complex, and there is no one method. They conclude that the 2017 hurricane season was consistent with projections of more severe extreme weather, and that devastating long-term impacts of such events need to be more proactively addressed.

[A SIMPLIFIED METHOD TO ESTIMATE EXTREME WEATHER](#)

however challenging due to lack of information on these rare events. Researchers illustrated a simple approach based on local expert elicitation to define two percentiles of the loss distribution in order to provide an estimate for the severity distribution of climate impacted hazards. The method allows local government decision makers to focus on extreme losses and the tail of the distribution, with an illustration provided for bushfires in northern Sydney.

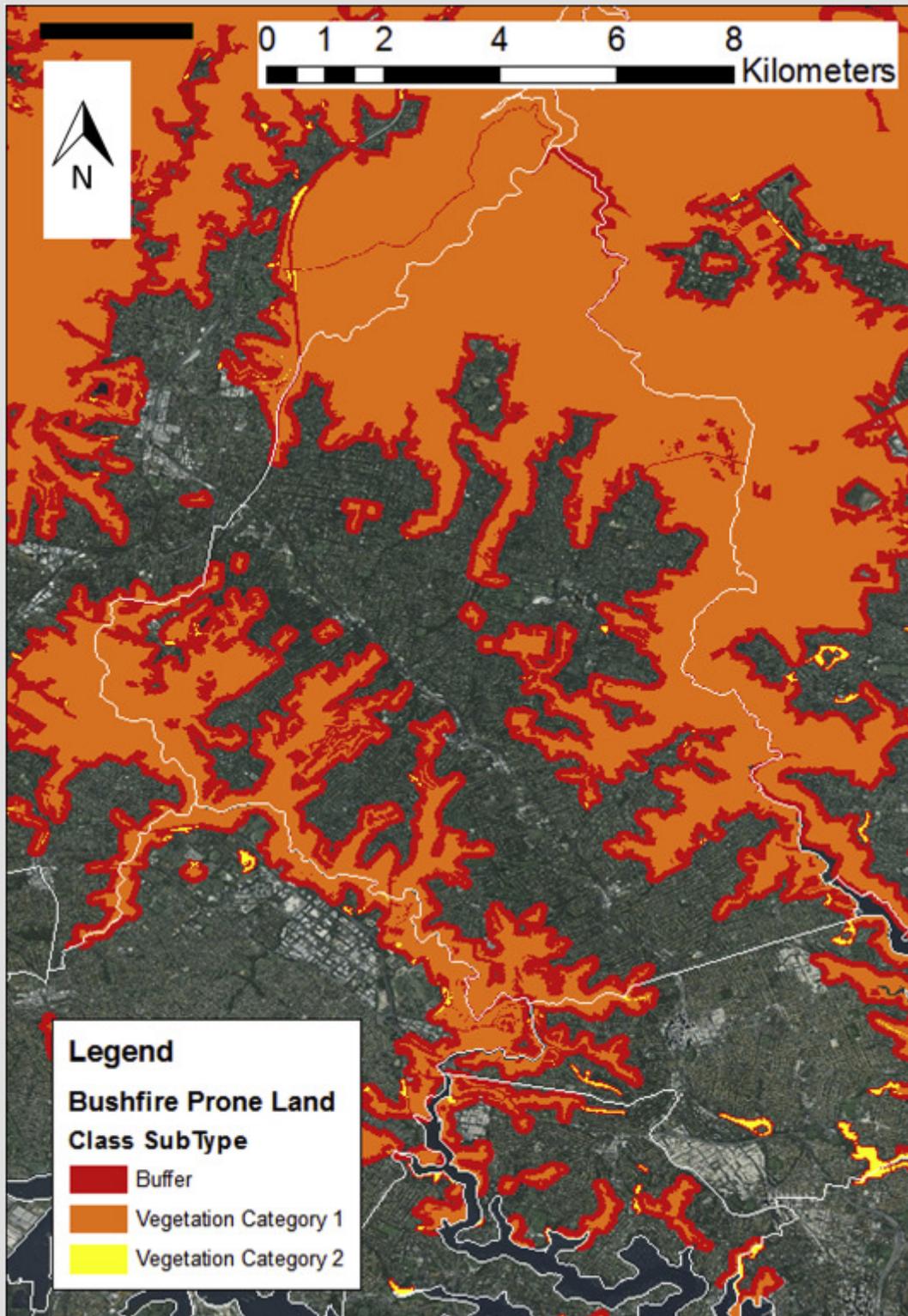


Fig. 3. Bushfire prone land in Ku-ring-gai and surrounds (created using GIS data from [NSW RFS, 2014](#)).

## [BUILDING COMMUNITY RESILIENCE TO VECTOR-BORNE DISEASE](#)

The threat of a rapidly changing climate poses new conceptual and practical challenges in responding to vector-borne diseases, including non-linear dynamics. The field has been dominated by disease modeling, which has provided limited practical advice to policymakers and practitioners. Researchers provides an alternative perspective grounded in the social science concepts of vulnerability, resilience and participation, focused on seven climate-sensitive vector-borne diseases: malaria, schistosomiasis, dengue, leishmaniasis, sleeping sickness, chagas disease, and rift valley fever. They propose more attention is needed on public participation, appropriate technologies, strengthening health systems, wider economic development and institutional change.

## [THE ETHICS OF GENETIC ADAPTATION TO CLIMATE CHANGE](#)

As climate change progresses, humans may inhabit a world for which we are increasingly maladapted. Would it be ethically justifiable to edit genes that directly influence our ability to adapt and thrive in a changing climate? This researcher proposes a "4-S framework" for analyzing the justifiability of gene editing: (1) safety, (2) significance of harm to be averted, (3) succeeding generations, and (4) social consequences.



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