

AP / October 21, 2015, 3:21 PM

# What's the best temperature for economic prosperity?



A Chinese woman walks off a boat in Wanxian, southwest China's Chongqing municipality on January 5, 2010. The Yangtze River basin has seen a spike in flooding, heat waves and drought over the past two decades as temperatures rose by an average of 1.04 degrees Celsius between 1990 and 2005. / **STR/AFP/GETTY IMAGES**

/ [Shares](#) / [Tweets](#) / [Stumble](#) / [Email](#)

More +

With each upward degree, global warming will singe the economies of three-quarters of the world's nations and widen the north-south gap between rich and poor countries, according to a new economic and science study.

Compared to what it would be without more global warming, the average global income will shrivel 23 percent at the end of the century if heat-trapping carbon dioxide pollution continues to grow at its current trajectory, according to a study published Wednesday in the scientific journal Nature.

Some countries, like Russia, Mongolia and Canada, would see large economic benefits from global warming, the study projects. Most of Europe would do slightly better, the United States and China slightly worse. Essentially all of Africa, Asia, South America and the Middle East would be hurt dramatically, the economists found.

"What **climate change** is doing is basically devaluing all the real estate south of the United States and making the whole planet less productive," said study co-author Solomon Hsiang, an economist and public policy professor at the University of California Berkeley. "Climate change is essentially a massive transfer of value from the hot parts of the world to the cooler parts of the world."

"This is like taking from the poor and giving to the rich," Hsiang said.

Lead author Marshall Burke of Stanford and Hsiang examined 50 years of

## Most Popular

- 01 [10 best and worst deals at Sam's Club](#) **180780 views**
- 02 [Jim Webb to consider independent presidential bid](#) **120325 views**
- 03 [Joe Biden opts out of presidential race](#) **115791 views**
- 04 [Autistic employee went unpaid by Applebee's for a year](#) **113941 views**
- 05 [3 things you should never tell a car salesman](#) **106516 views**

## Watch CBSN Live



## Watch CBS News Live

*Watch CBS News anytime, anywhere with the new 24/7 digital news network. Stream CBSN live or on demand for FREE on your TV, computer, tablet, or smartphone.*

[Watch Now](#)

economic data in 160 countries and even county-by-county data in the United States and found what Burke called "the goldilocks zone in **global temperature** at which humans are good at producing stuff" - an annual temperature of around 13 degrees Celsius or 55.4 degrees Fahrenheit, give or take a degree.

For countries colder than that economic sweet spot, every degree of warming heats up the economy and benefits. For the United States and other countries already at or above that temperature, every degree slows productivity, Burke and Hsiang said.



The 20th-century global average annual temperature is 57 degrees, or 13.9 degrees Celsius, according to the National Oceanic and Atmospheric Administration. Last year - the hottest on record - was 58.24 degrees and this year is almost certain to break that record, according to NOAA. Burke and Hsiang use

erature figures



*play* **VIDEO**

**Bob Gale discusses impact of hoverboard**

beyond just temperature. He said one year's temperature and economic growth in one nation isn't telling. Instead, he and Hsiang looked at more than 6,000 "country-years" to get a bigger picture.

Burke compared the **effect of global warming on economies** to a head wind on a cross-country airplane flight. The effects at any given moment are small and seemingly unnoticeable but they add up and slow you down.

While it is fairly obvious that unusual high temperatures hurt agriculture, past studies show hot days even reduce car production at U.S. factories, Burke said.

"The U.S. is really close to the global optimum," Burke said, adding that as it warms, the U.S. will fall off that peak. The authors calculate a warmer U.S. in 2100 will have a gross domestic product per person that's 36 percent lower than it would be if warming stopped about now.

But because the U.S. is now at that ultimate peak, there's greater uncertainty in the study's calculations than in places like India, Pakistan, Vietnam, Nigeria and Venezuela where it's already hot and there's more certainty about dramatic economic harm, Hsiang said.

The authors' main figures are based on the premise that **carbon dioxide emissions will continue to rise** at the current trajectory. But countries across the world are pledging to control if not cut carbon pollution as international leaders prepare for a **summit on climate change** in Paris later this year. If the **current pledges** are kept, the warming cost in 2100 will drop from 23 percent to 15 percent, Burke said.

Gary Yohe, an environmental economist at Wesleyan University in Connecticut, praised the study as significant and thorough, saying Burke and Hsiang "use the most modern socio-economic scenarios." But Richard Tol, an economist at the University of Sussex in England, dismissed the study as unworthy to be published in an economics journal, saying "the hypothesized relationship is without foundation."

Other experts found good and bad points, with MIT's John Reilly saying it will spark quite a debate among economists.

© 2015 The Associated Press. All Rights Reserved. This material may not be published, broadcast, rewritten, or redistributed.

## Most Shared



**Joe Biden opts out of presidential race**



**Gunfight re-enactment goes awry in Tombstone, Arizona**



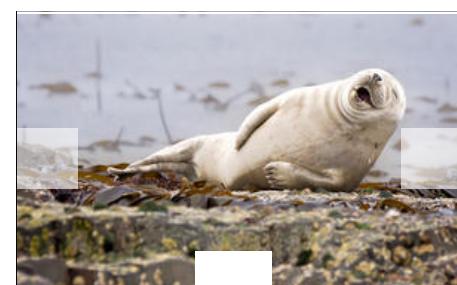
**Excessive drinking is draining America's economy**



**GOP conservatives unveil debt ceiling hike that comes with steep price**



**Autistic employee went unpaid by Applebee's for a year**



*25 PHOTOS*

**Comedy Wildlife Photography Awards**

## Featured in SciTech



### 25 years of breathtaking Hubble Telescope images

Since it was launched in 1990, the Hubble Space Telescope has sent us breathtaking images back from the deepest corners of space



### 11 species threatened by climate change

As the world warms, many plants and animals are struggling to adapt

## Popular

Celebrities who posed for Playboy

10/14: Teen beaten to death inside secretive NY church; Former six-figure couple...

Donald Trump keeps up momentum, targets Bernie Sanders

"Droopy Face Bandit" sought by FBI in San Francisco bank heists

ISIS confirms leader killed in airstrike

10 cars you can keep for 10 years

LendingTree disrupts the mortgage landscape

LendingTree Sponsored

This Year's Holiday Must-Haves

Wayfair Sponsored

[Learn more](#)

Powered by

for Cega

## Recommended

Drone zappers stop flying intruders in midair

2015 Mortgage Rates Take Huge Dip - 2.97% APR

LendingTree Sponsored

[Learn more](#)

7 pricing tricks that make you spend more

You won't believe what DIRECTV does for business.

DIRECTV for BUSINESS™  
Sponsored

Powered by

for Cega

## Most Discussed



GOP conservatives unveil debt ceiling hike that comes with steep price



Democrats: Benghazi committee interviews discredit GOP claims about Clinton



Benghazi chairman to GOP colleagues: "Shut up"



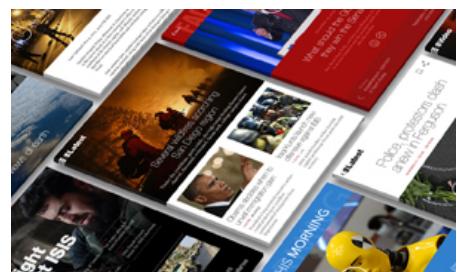
Trump, Bush spat ramps up over 9/11 comments



Fiorina blasts Clinton on Benghazi, playing the "gender card"



## New Android App



### CBS News App for Android®

For your Android phone and tablet, download the FREE redesigned app, featuring CBSN, live 24/7 news.

[Download](#)

[Site Map](#)[Help](#)[Contact Us](#)[CBS Bios](#)[Careers](#)[Internships](#)[Development Programs](#)[Privacy Policy](#)[Ad Choice](#)[Terms of Use](#)[Mobile User Agreement](#)[About CBS](#)[Advertise](#)[Closed Captioning](#)[Facebook](#)[Twitter](#)[RSS](#)[Email Newsletters](#)[YouTube](#)[CBS Radio News](#)[CBS Local](#)

Copyright © 2015 CBS Interactive Inc.

All rights reserved.

Search...