

THE CLIMATE REALITY LEADERSHIP CORPS

GLOBAL TRAINING

48th in the Series



1

THE CLIMATE CRISIS
AND ITS SOLUTIONS
TRUTH IN TEN

2



3

1. Must we change?

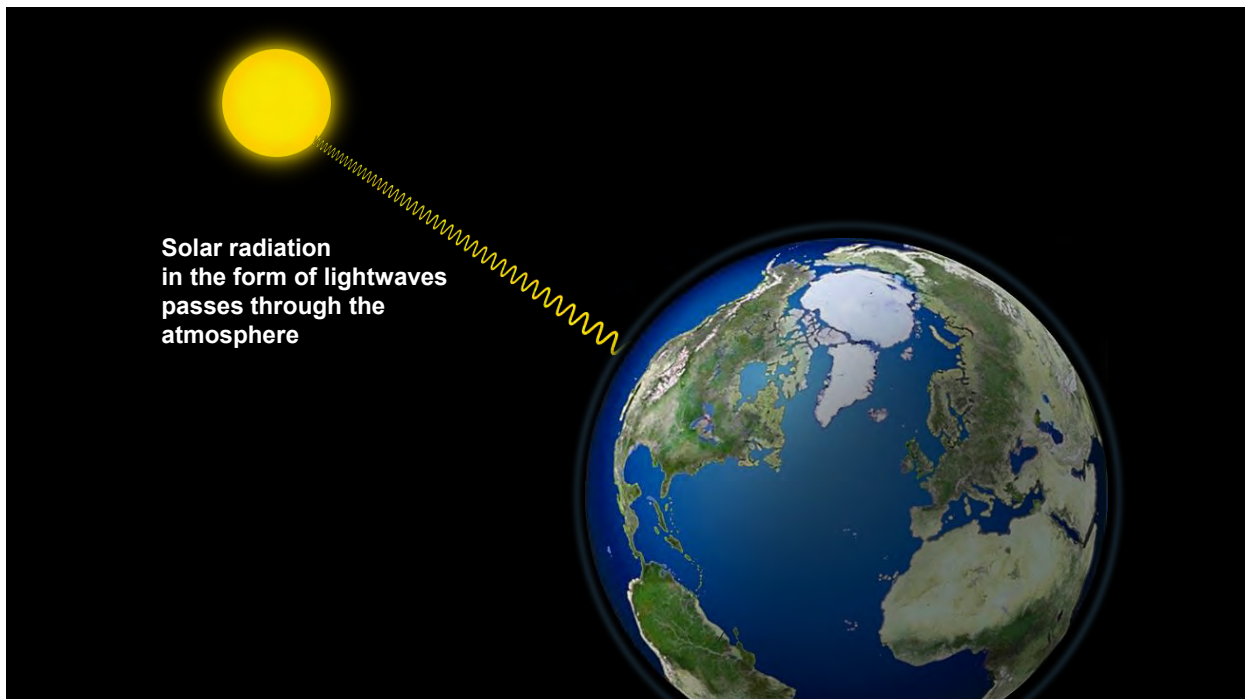
2. Can we change?

3. Will we change?

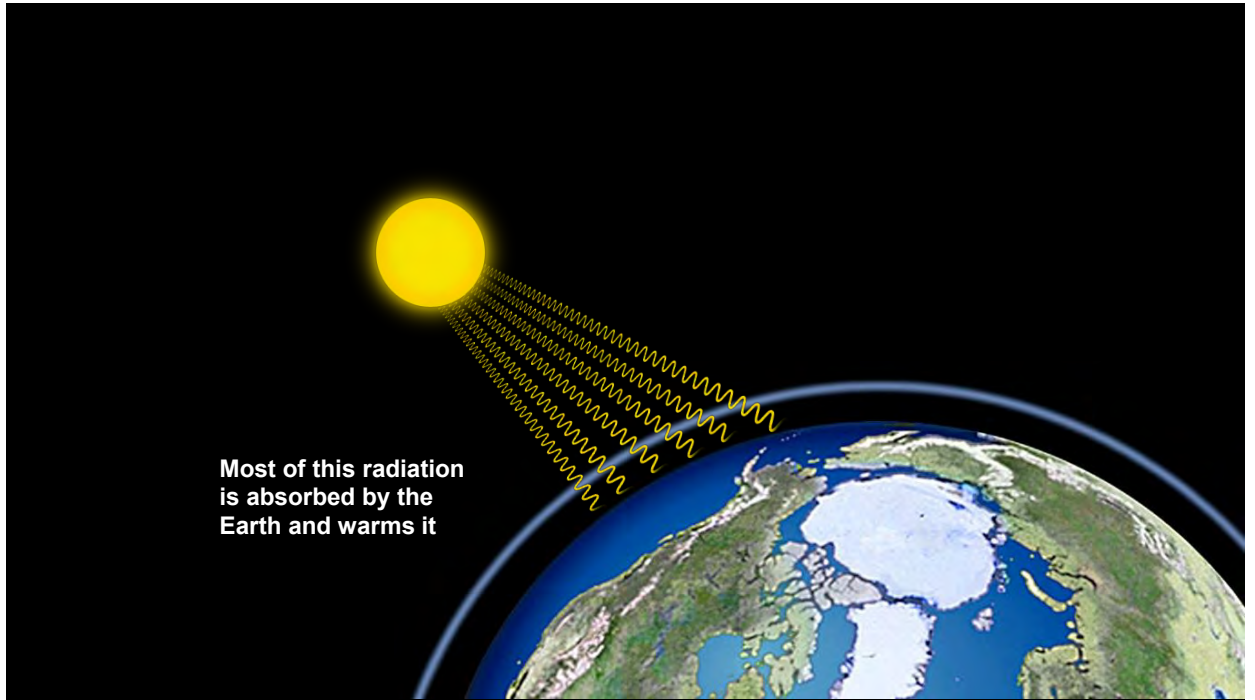
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1. Must we change?

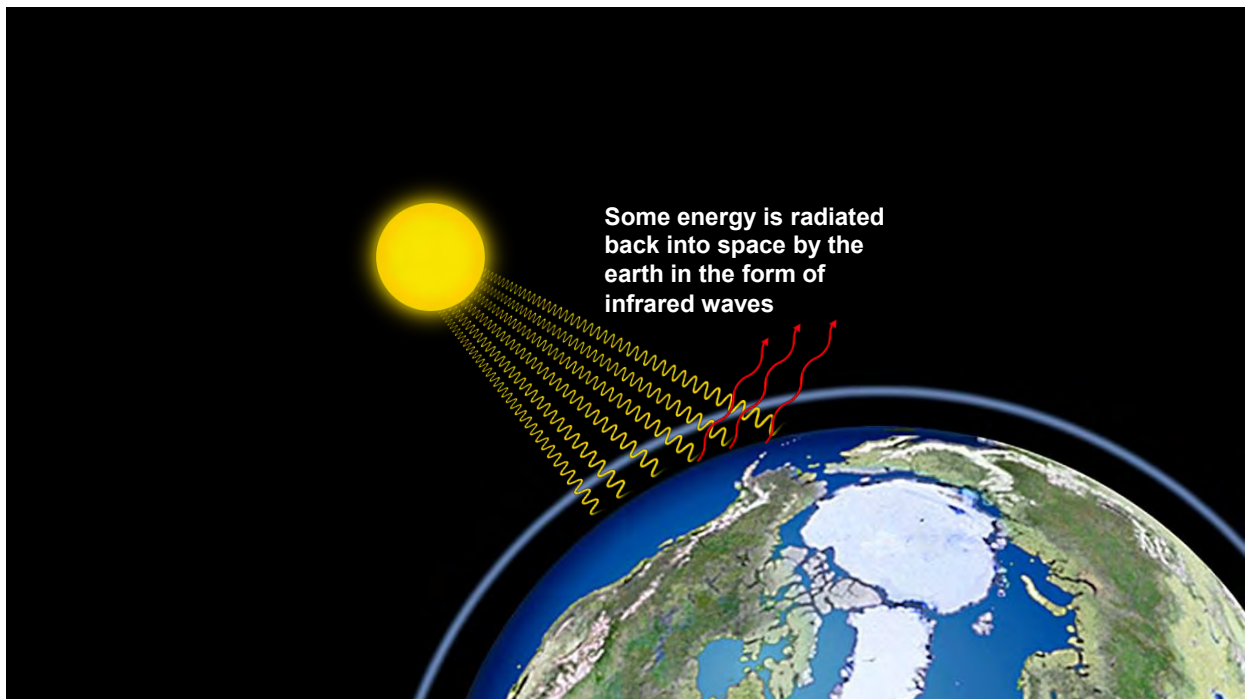
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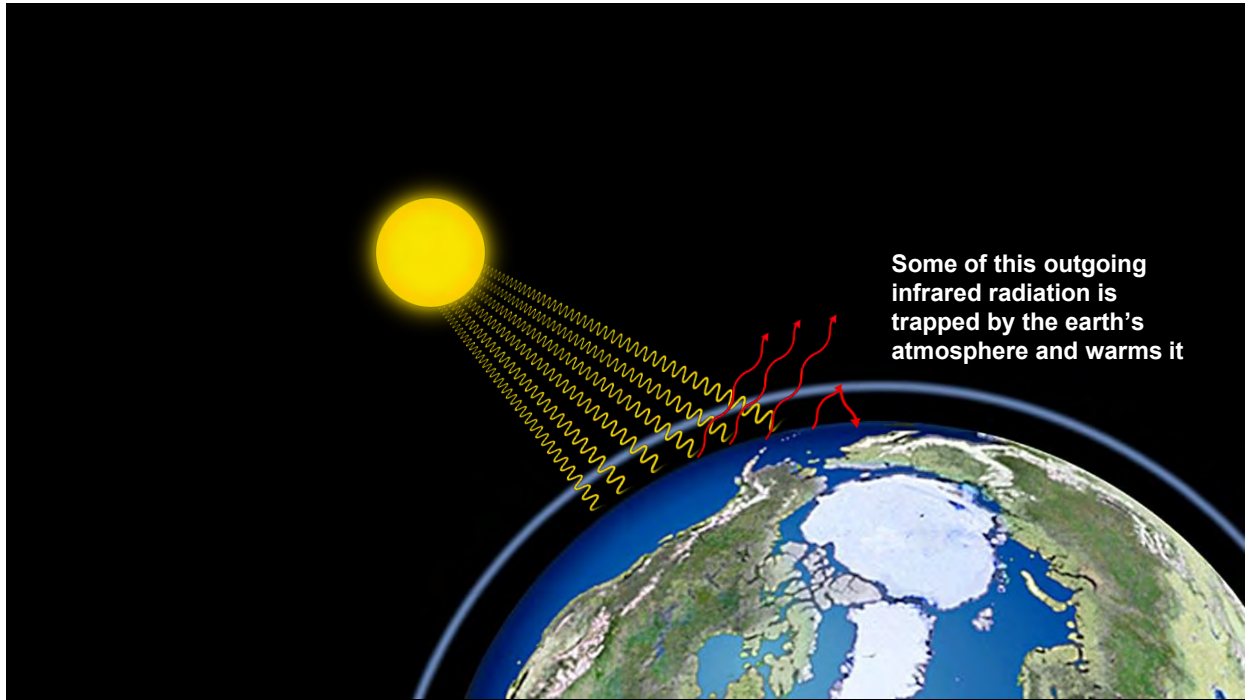
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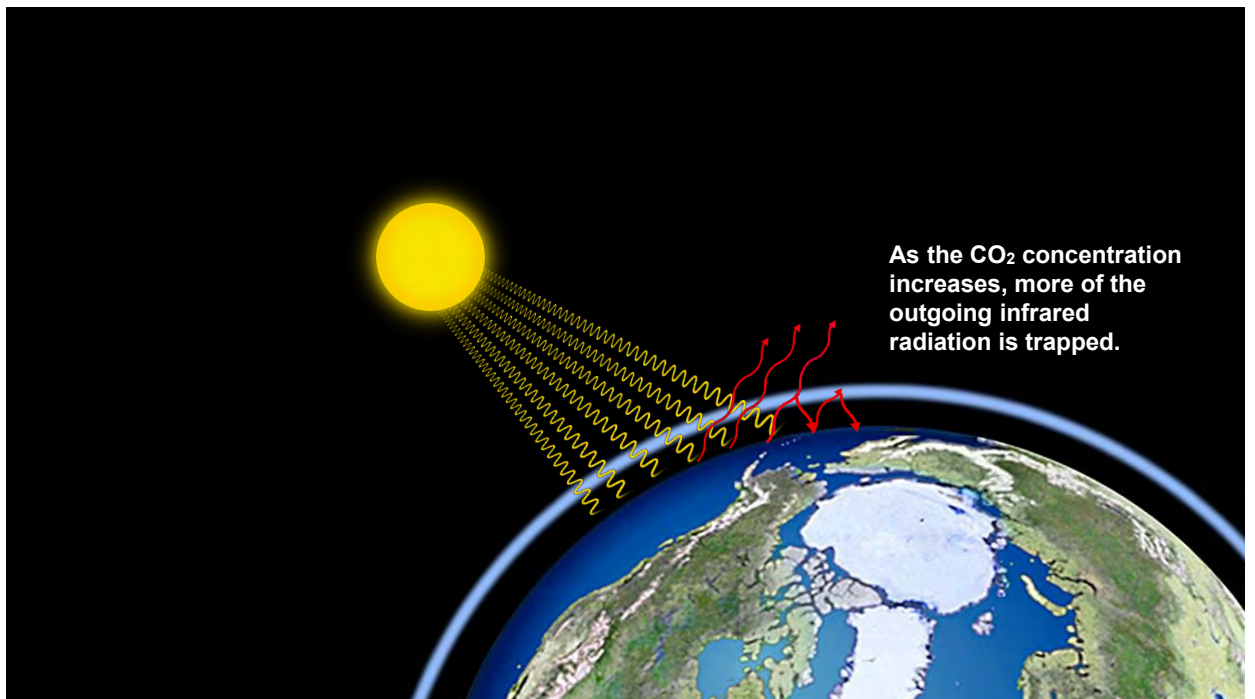
7



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We are spewing **162 million tons** of manmade global warming pollution into the thin shell of our atmosphere **every 24 hours** — as if it were an open sewer.

Photo © Peter Weber/Shutterstock

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Source: NASA

12

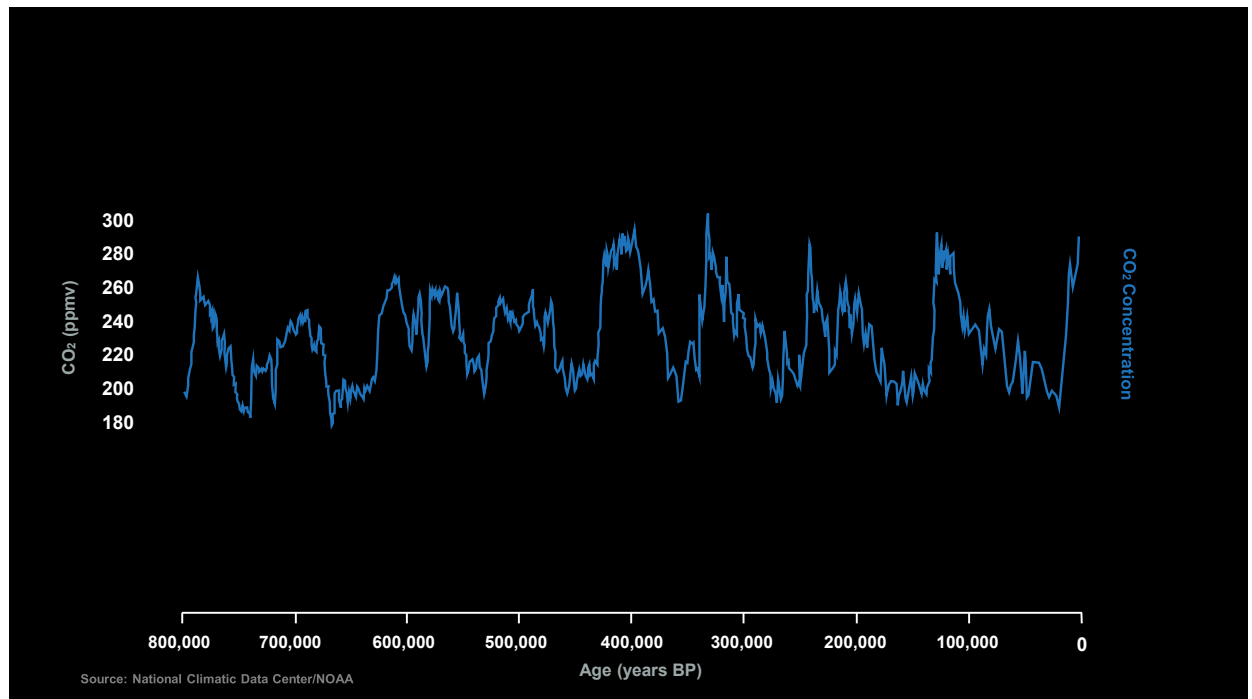
The energy trapped by man-made
global warming pollution is now
“...equivalent to exploding

600,000

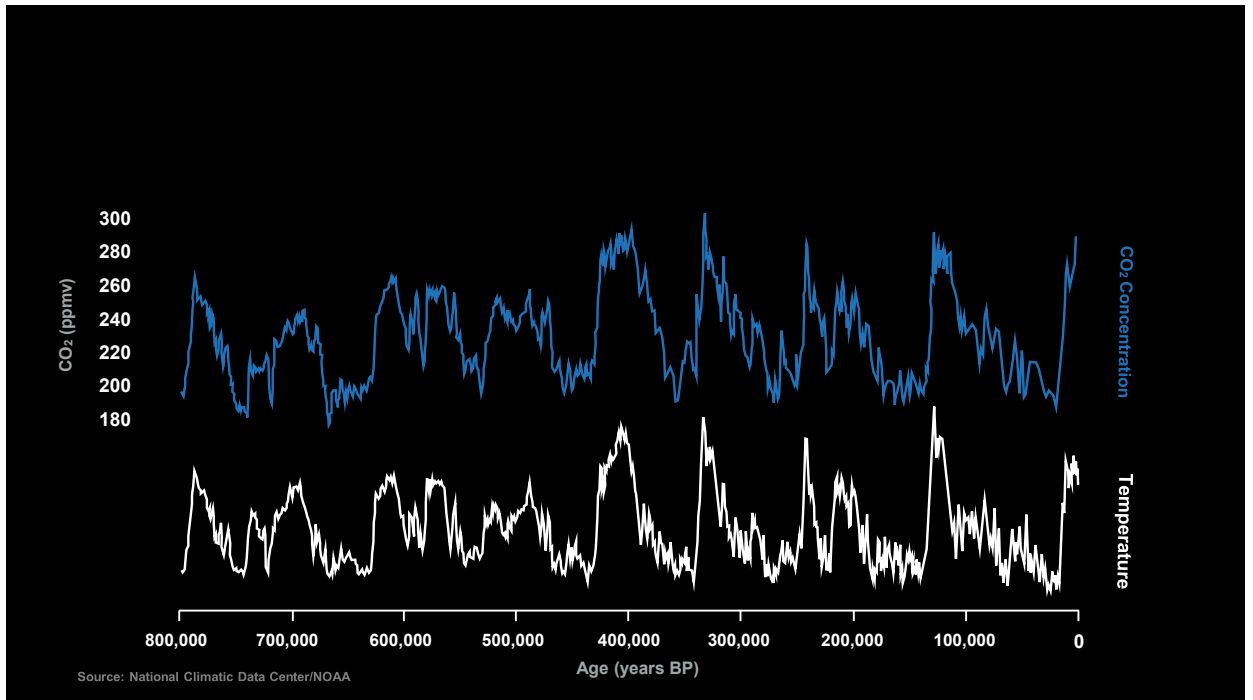
First-generation atomic bombs
per day 365 days per year.”

James Hansen
Former Director, NASA Goddard Institute for Space Studies

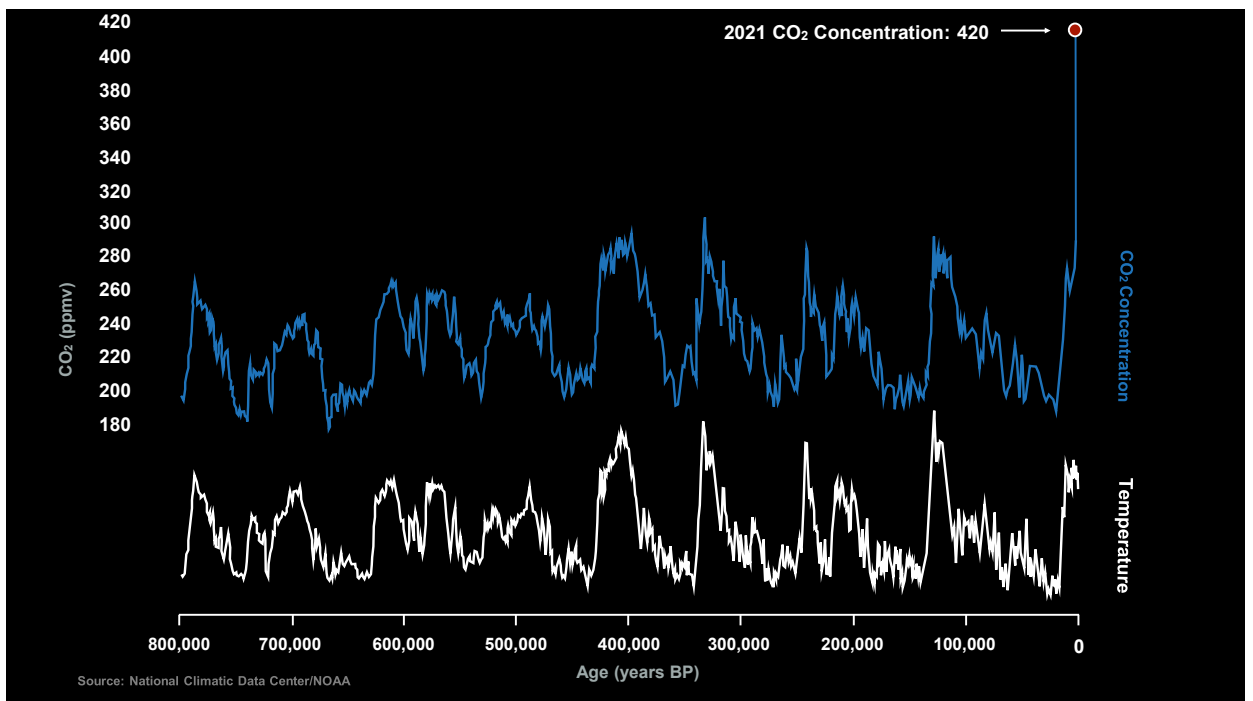
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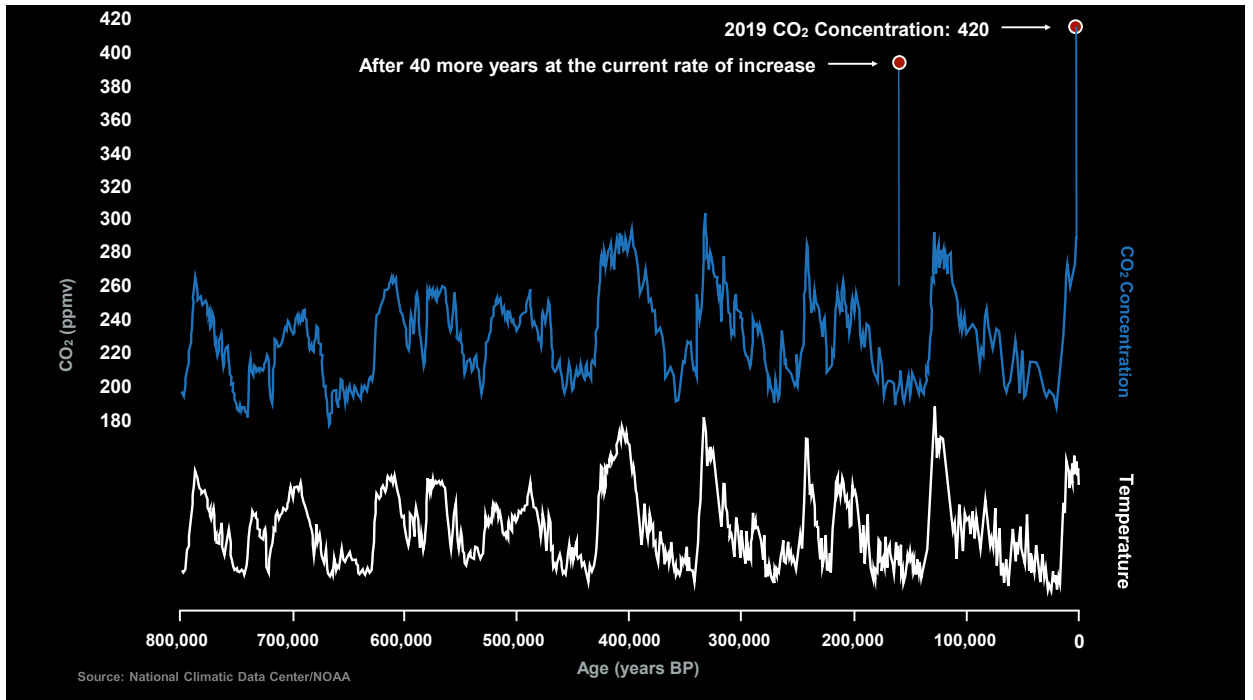
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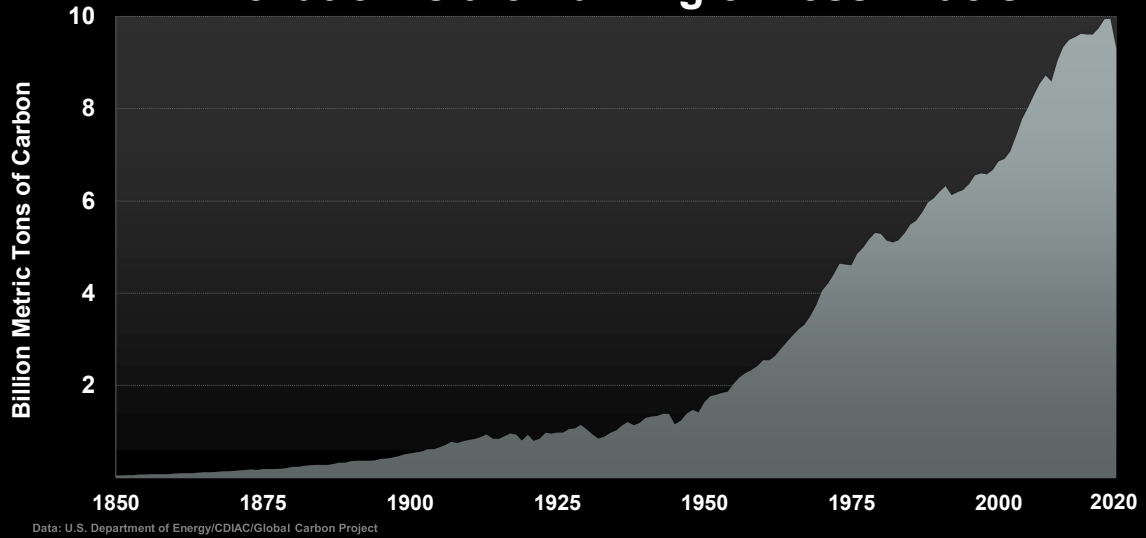


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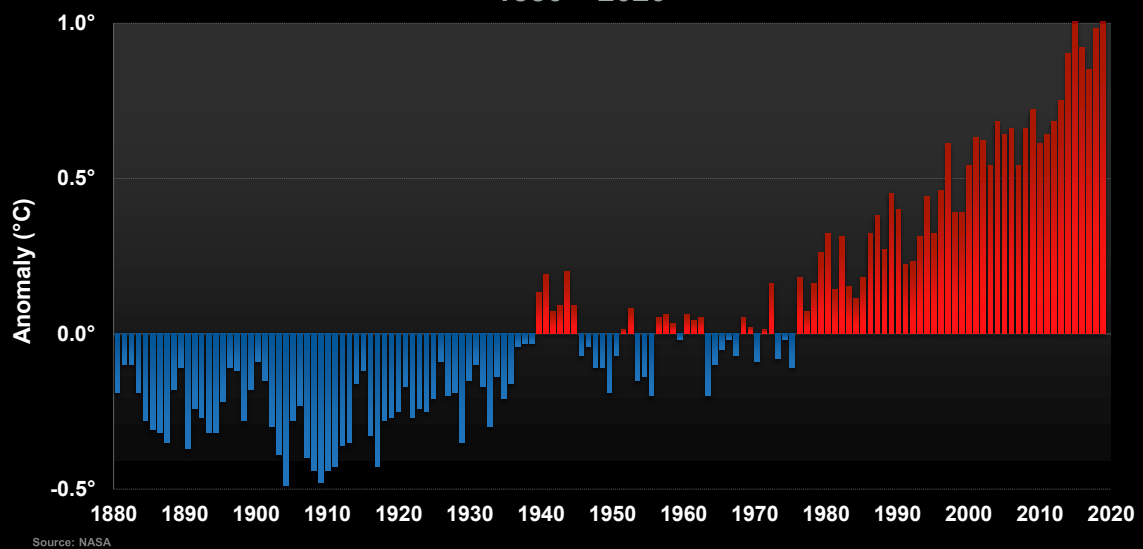
18

The Largest Source of Global Warming Pollution Is the Burning of Fossil Fuels



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Global Surface Temperature – Departure from Average 1880 – 2020



20

The Hottest 20 Hottest Years on Record Have Occurred Since the Year 2002

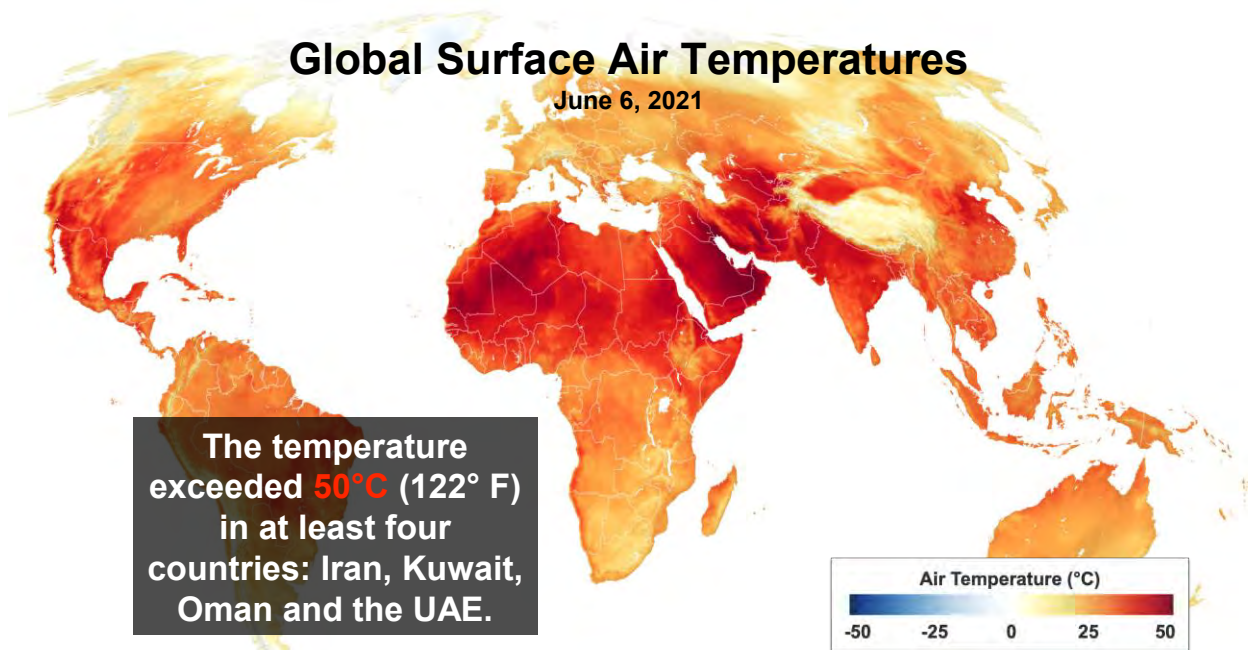


Data: NASA/GISS

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Global Surface Air Temperatures

June 6, 2021



Source: 2021 NASA Earth Observatory

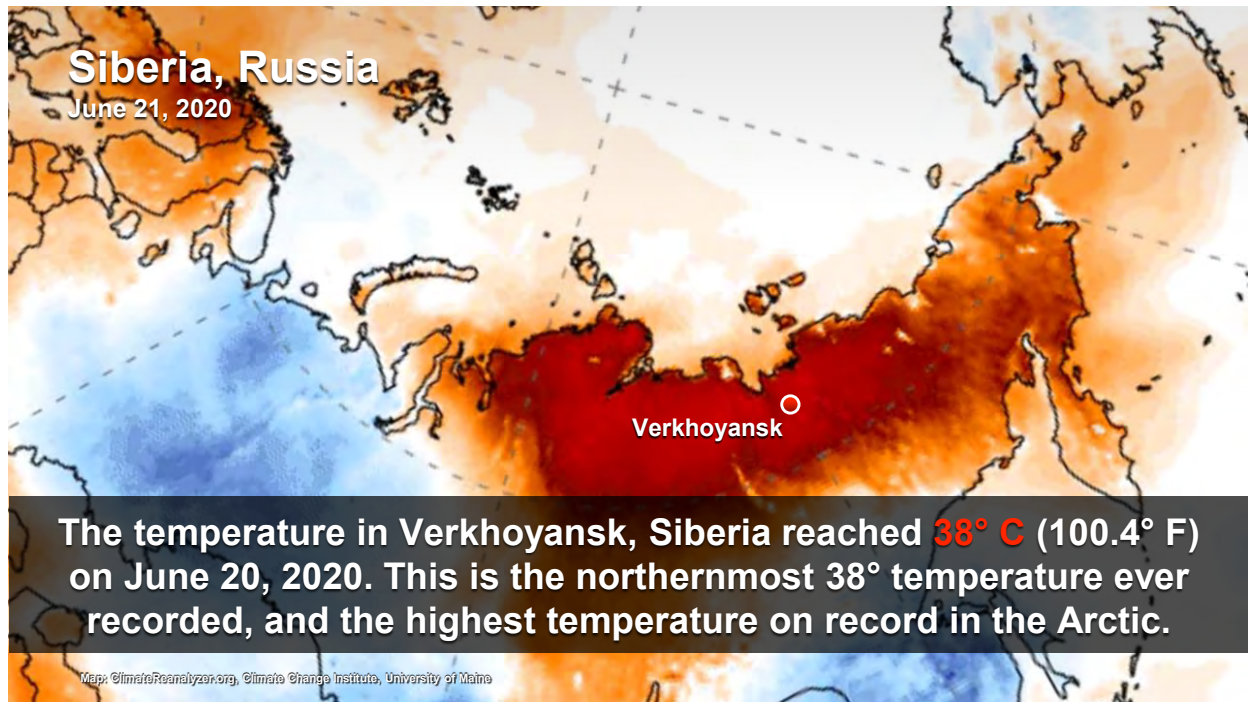
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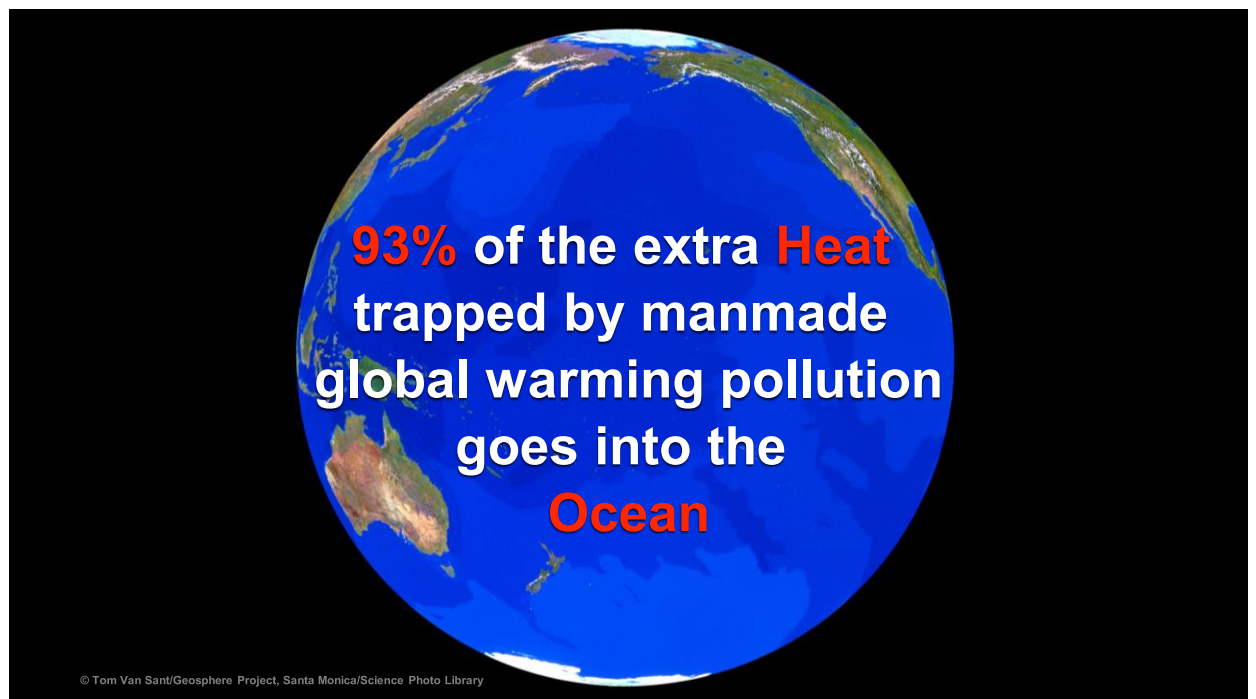
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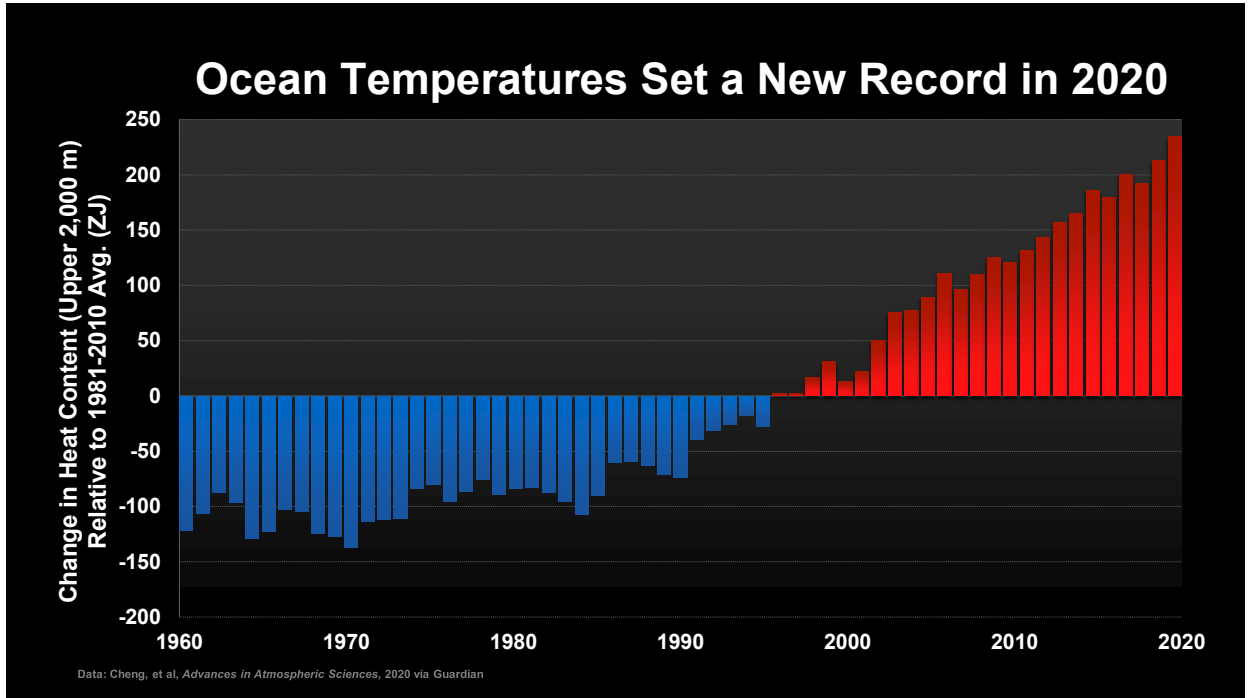
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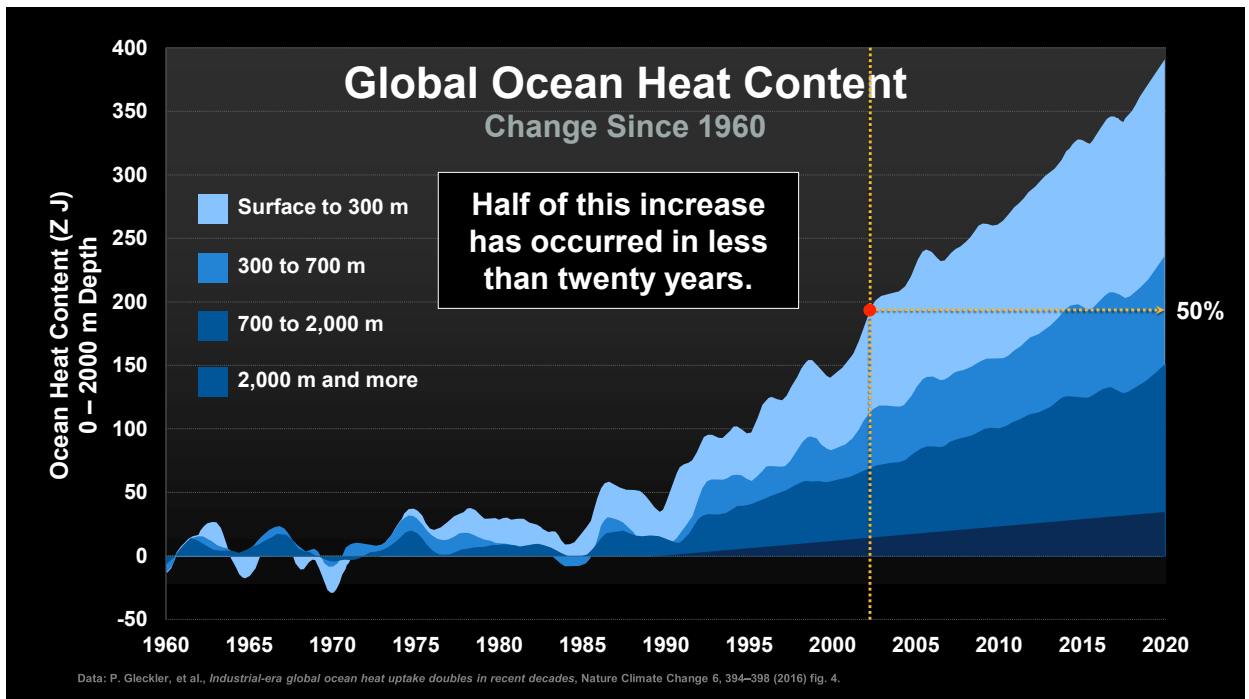
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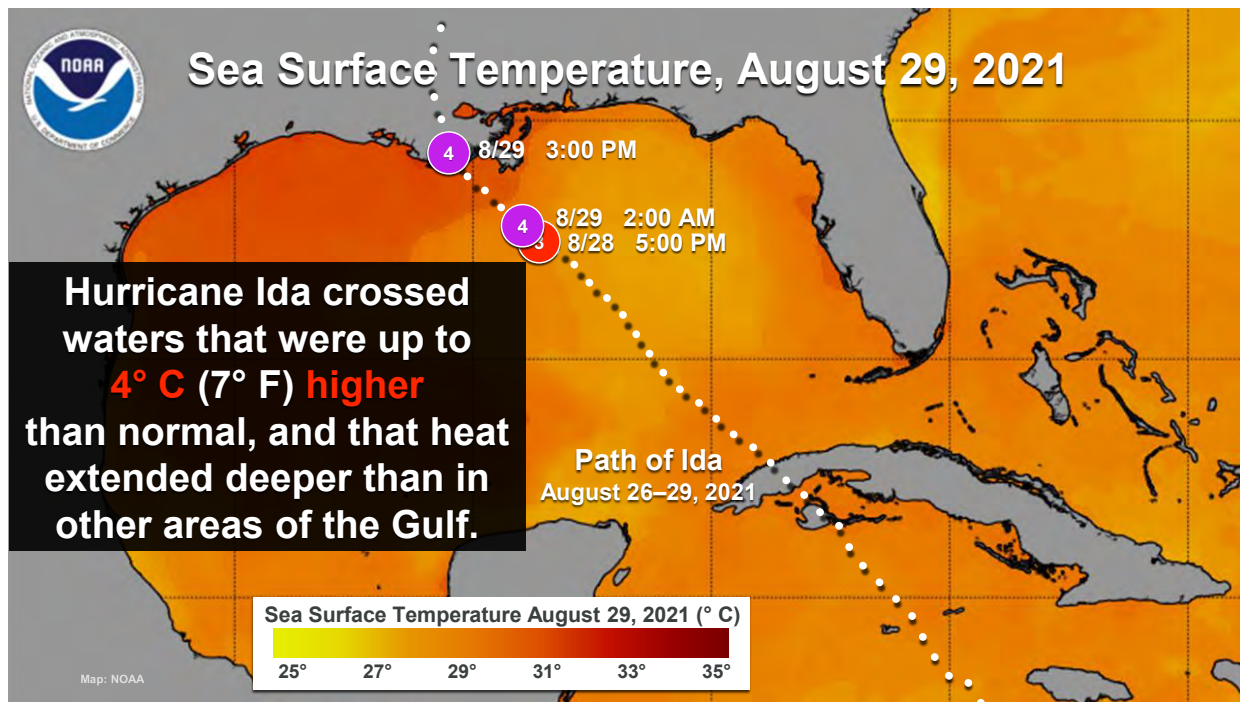
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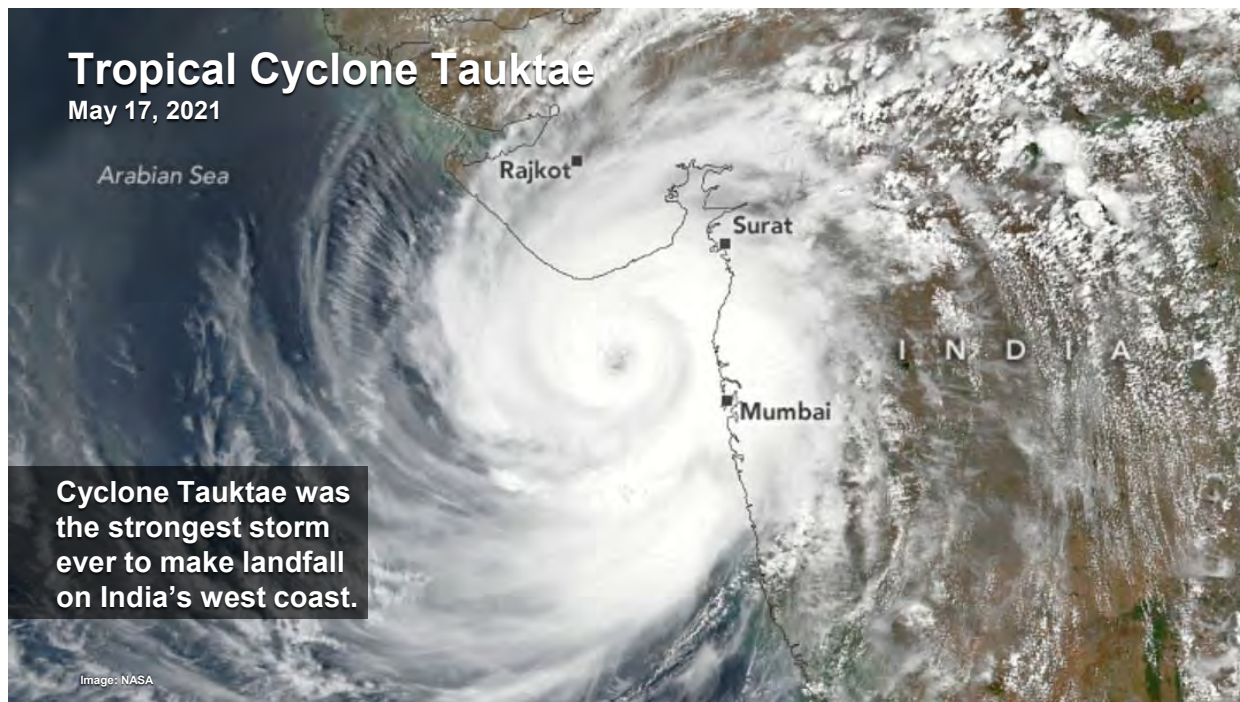
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“...the gravest effects of all attacks on the environment are suffered by the poorest.”

Encyclical Letter of
His Holiness, Pope Francis
On Care for our Common Home
June 18, 2015

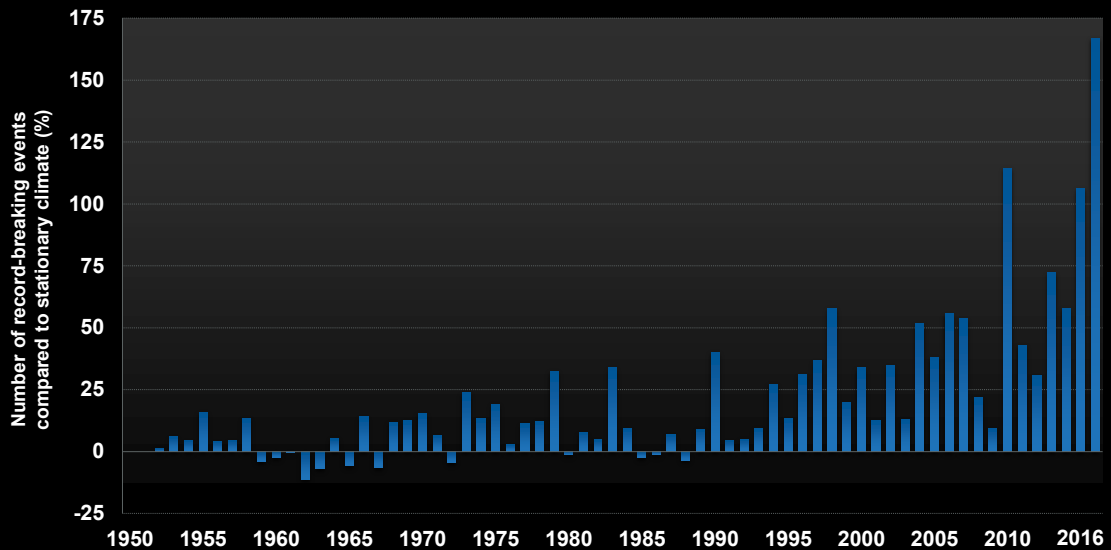
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**As Temperatures Increase, the Oceans
Evaporate More Moisture into the Sky**

Source: Oak Ridge National Laboratory, National Center for Computational Sciences

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Global Record-Breaking Precipitation Anomalies



Data: Jascha Lehmann, Potsdam Institute for Climate Impact Research

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Midland, Texas

June 1, 2021

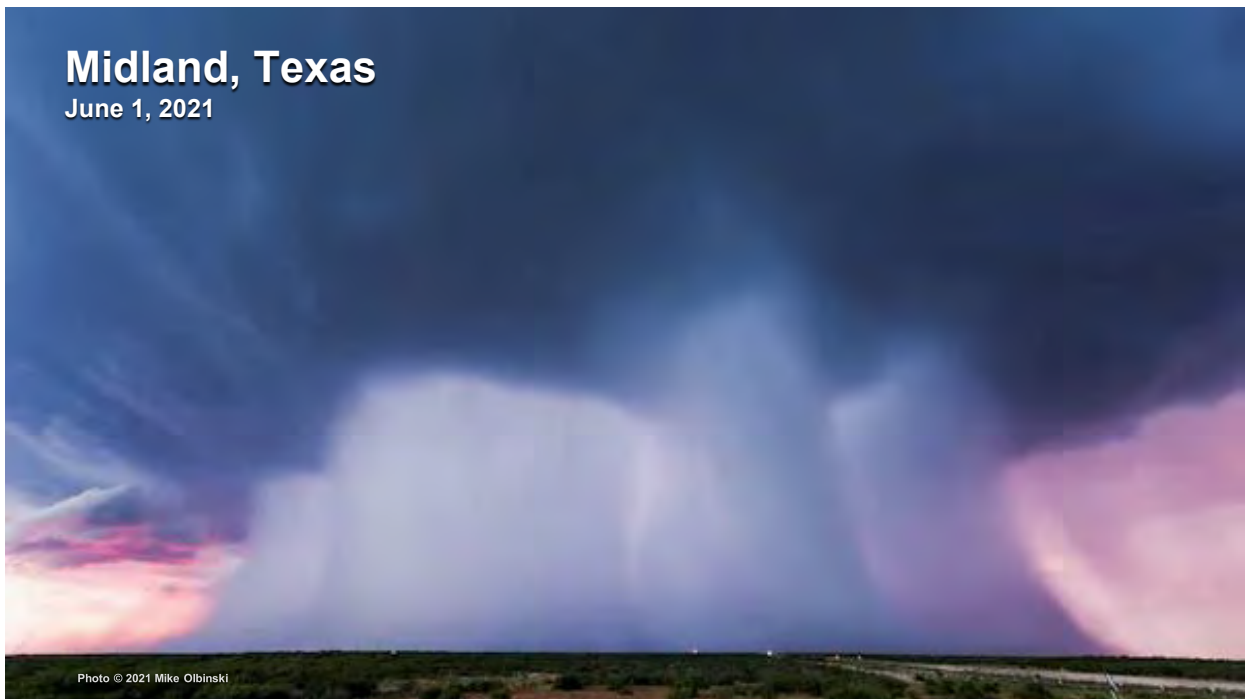


Photo © 2021 Mike Olbinski

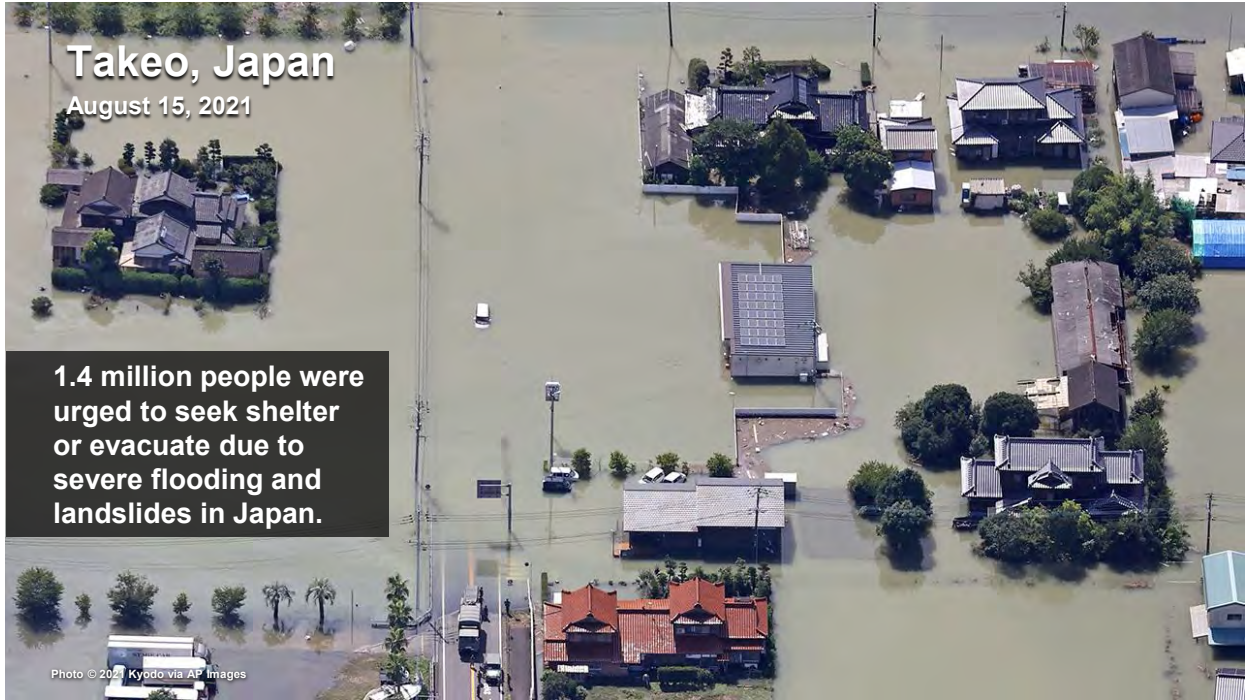
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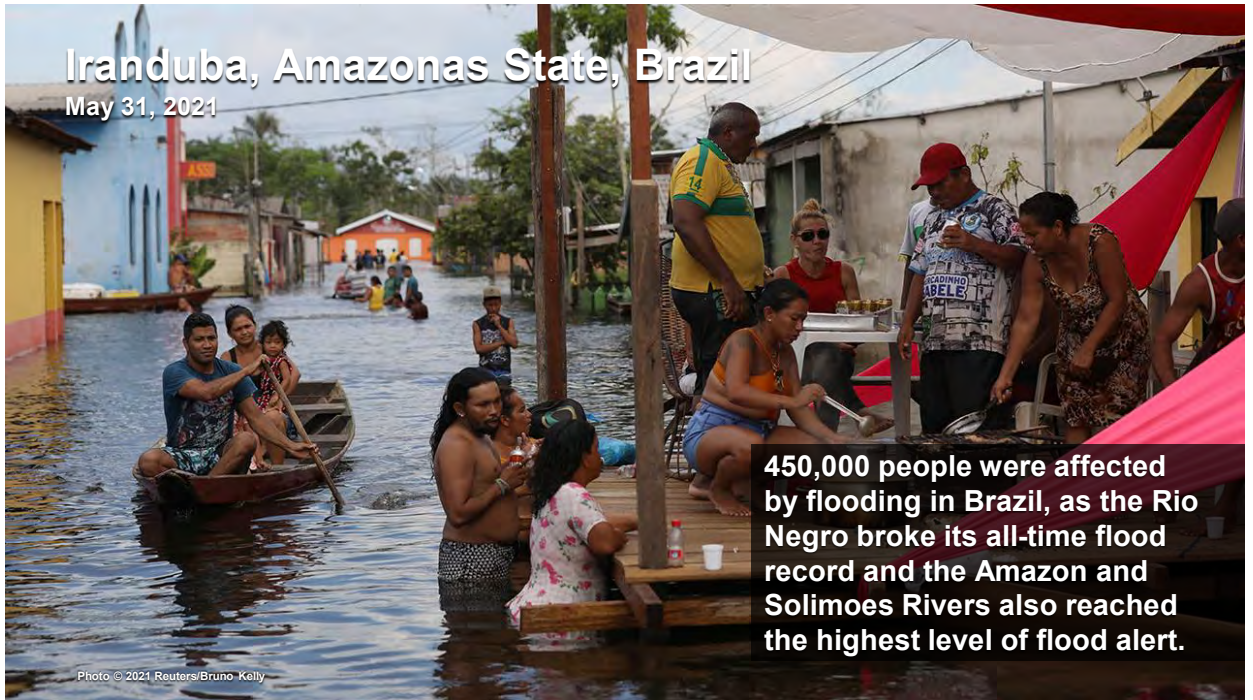
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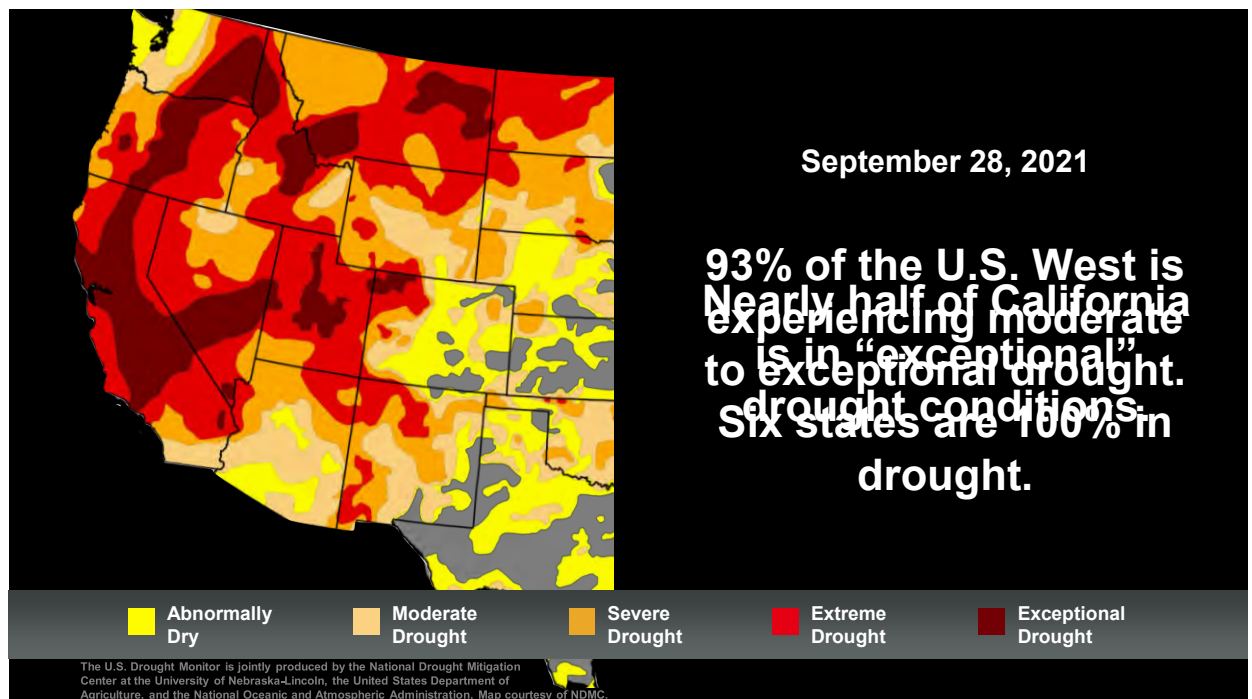
44

The same extra heat that evaporates more water from the ocean, causing bigger downpours and floods...

...pulls moisture even more quickly from the soil, causing longer and deeper droughts.

An Inconvenient Truth © 2006 by Paramount Classics, a Division of Paramount Pictures. All Rights Reserved.

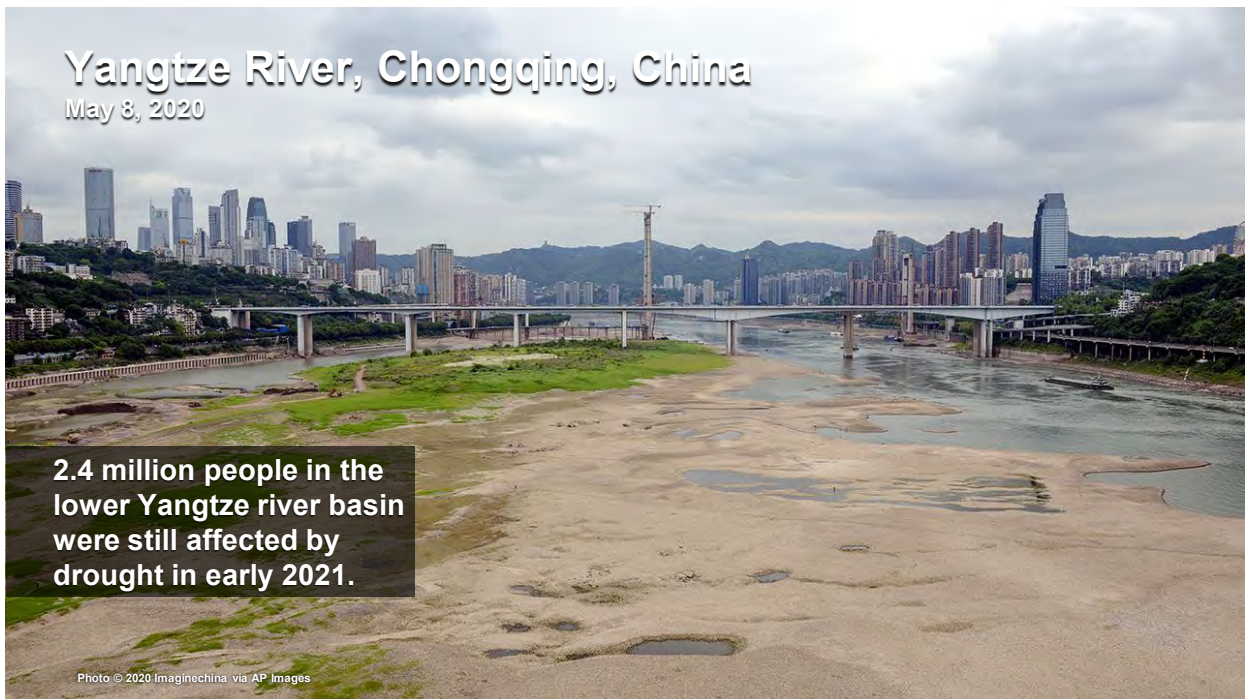
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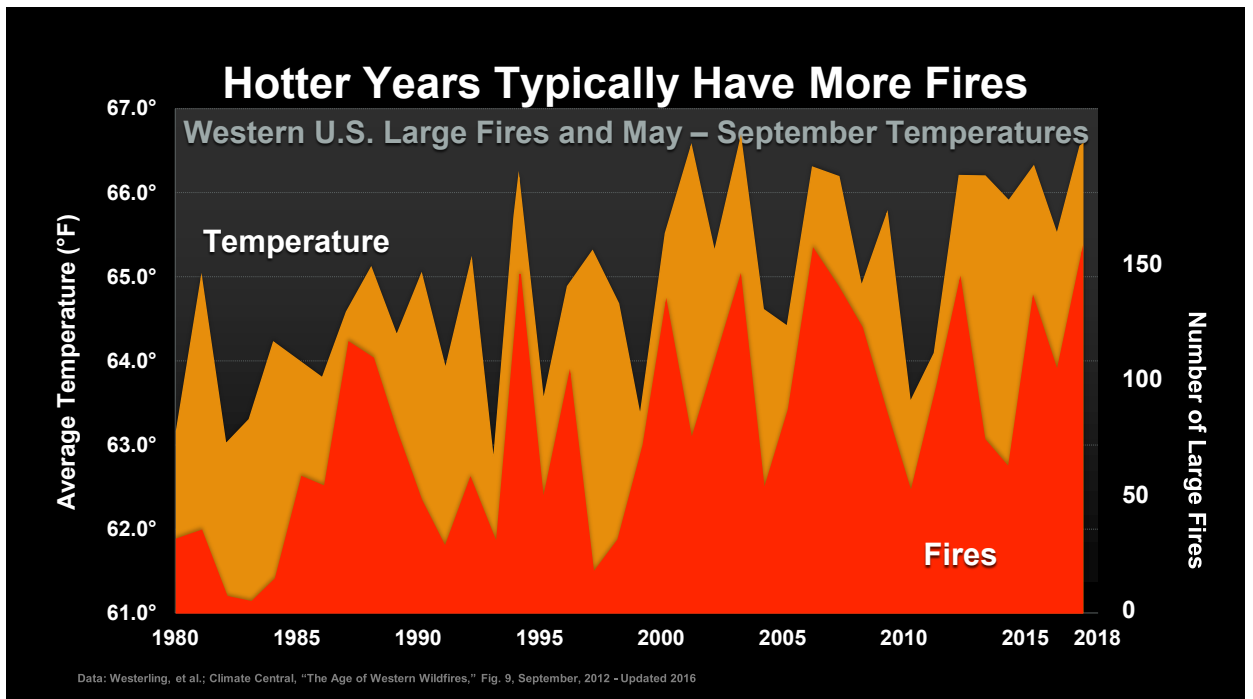
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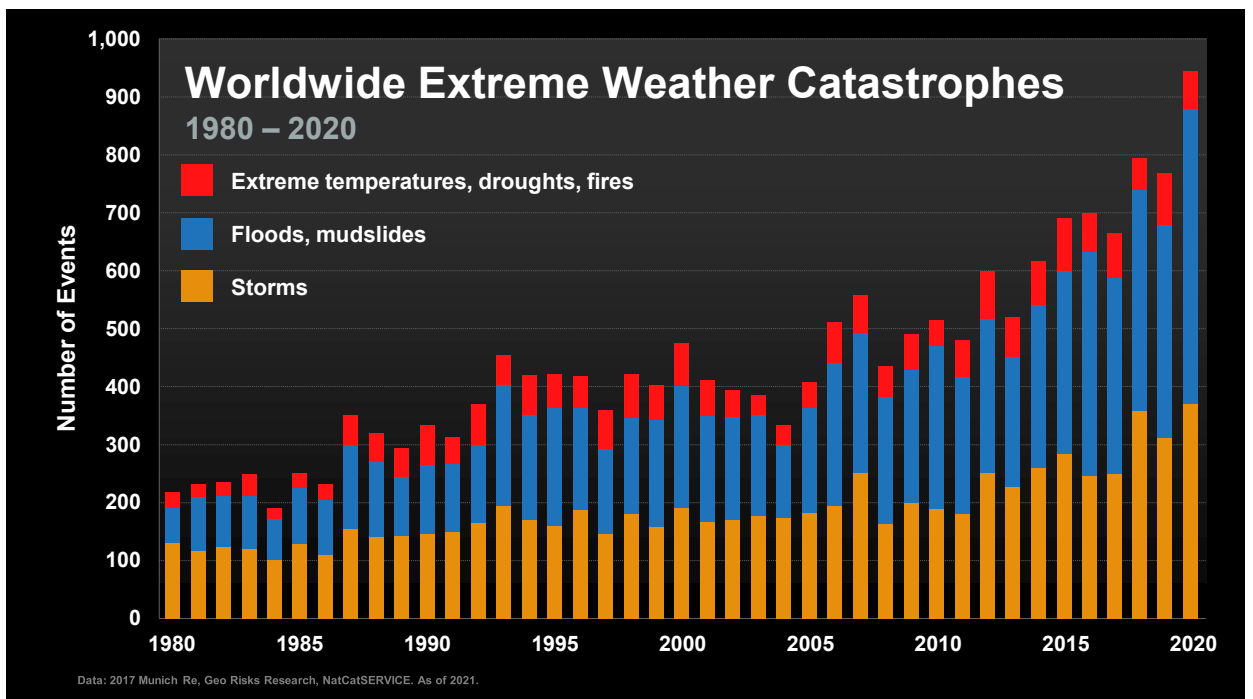
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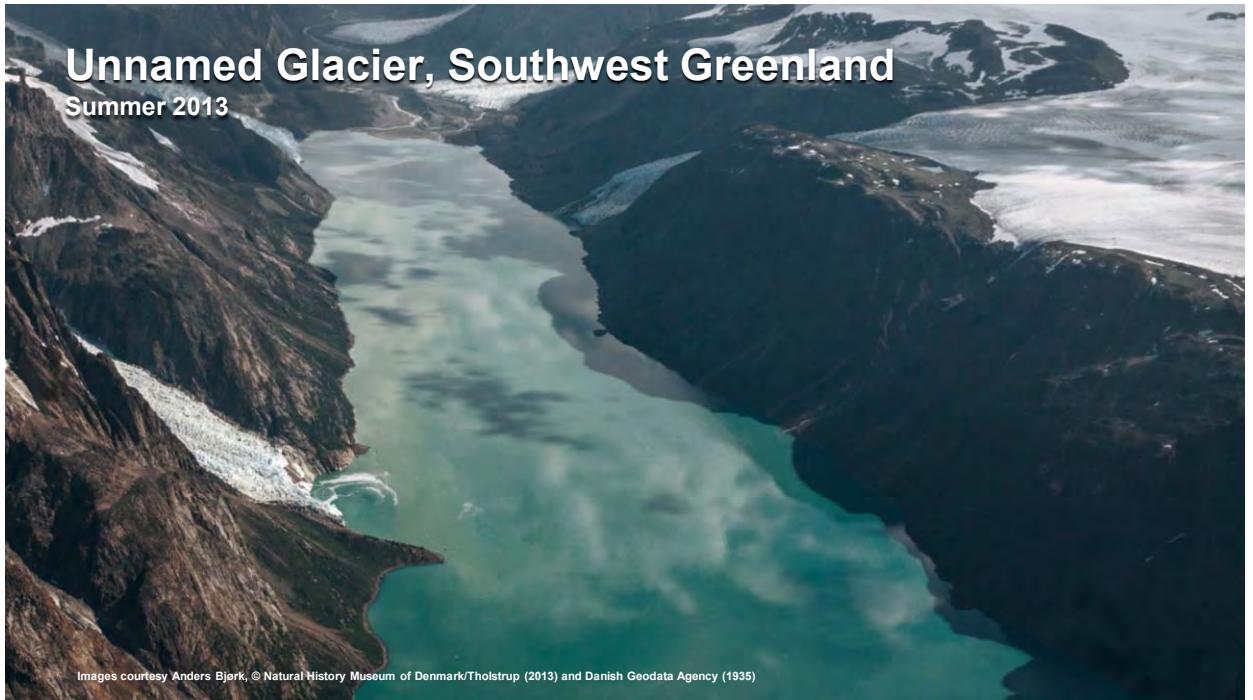
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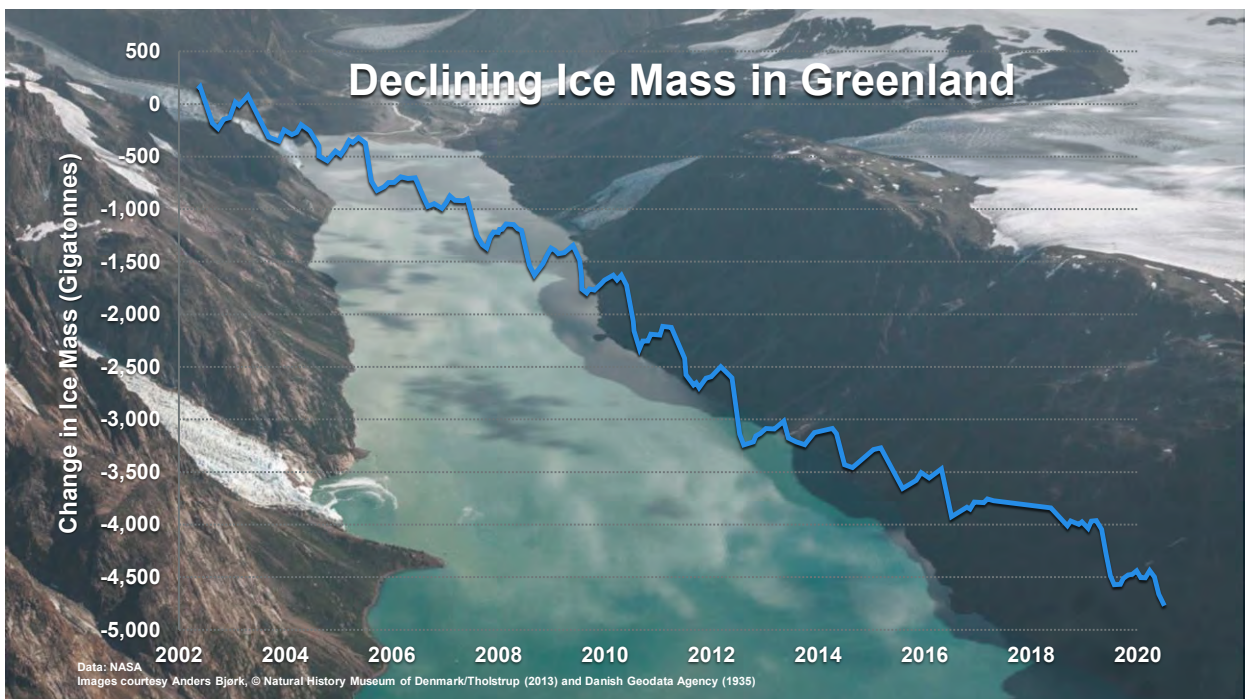
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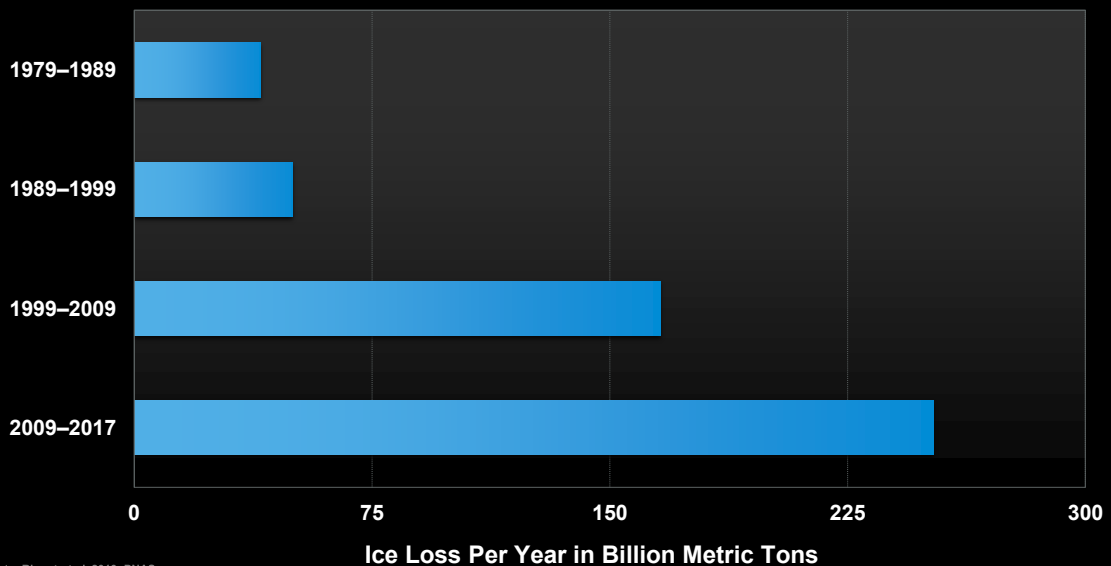
Ice Sheet, Kangerlussuaq, Greenland

Greenland's ice is **melting four times faster** than originally thought, and more is melting from the permanent ice sheet than from glaciers.

Data: M. Bevis, et al., "Accelerating changes in ice mass within Greenland, and the ice sheet's sensitivity to atmospheric forcing," *PNAS*, January 2019.
Photo © 2017 Martin Zwick/REDA360/UTS via Getty Images

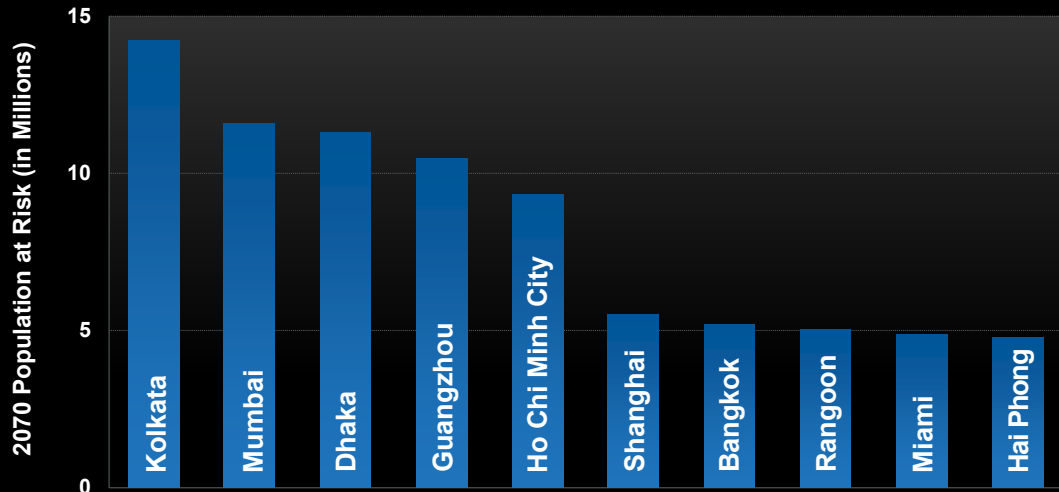
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Antarctic Ice Loss



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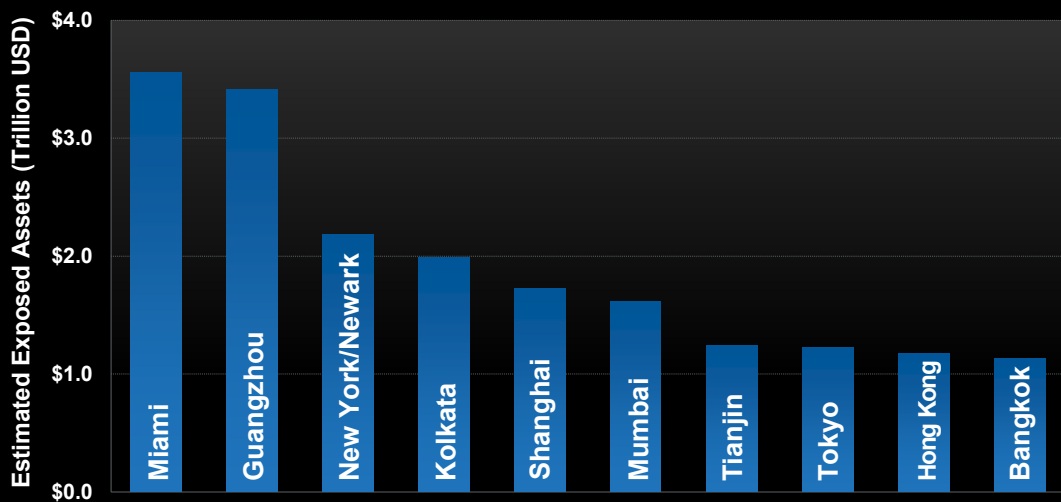
Top 10 Cities at Risk from Sea Level Rise in 2070 By Population at Risk



Data: Nichols, et al., OECD Environment Working Paper No. 1 (ENV/WKP(2007)1)

59

Top 10 Cities at Risk from Sea Level Rise in 2070 By Assets at Risk



Data: Nichols, et al., OECD Environment Working Paper No. 1 (ENV/WKP(2007)1)

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By 2100, \$14.2 trillion worth of property worldwide could be threatened by coastal flooding.

63

A photograph of a person standing on a long, narrow stone pier that extends into the ocean. The person is silhouetted against the bright sky and water. The ocean is a deep blue-green color, and the sky is filled with soft, white clouds. The pier is made of rough, grey stone blocks. In the distance, the horizon line is visible where the ocean meets the sky.

Kiribati is the first nation to purchase land in another country to house its climate refugees.

Photo: © 2013 Reuters/David Gray

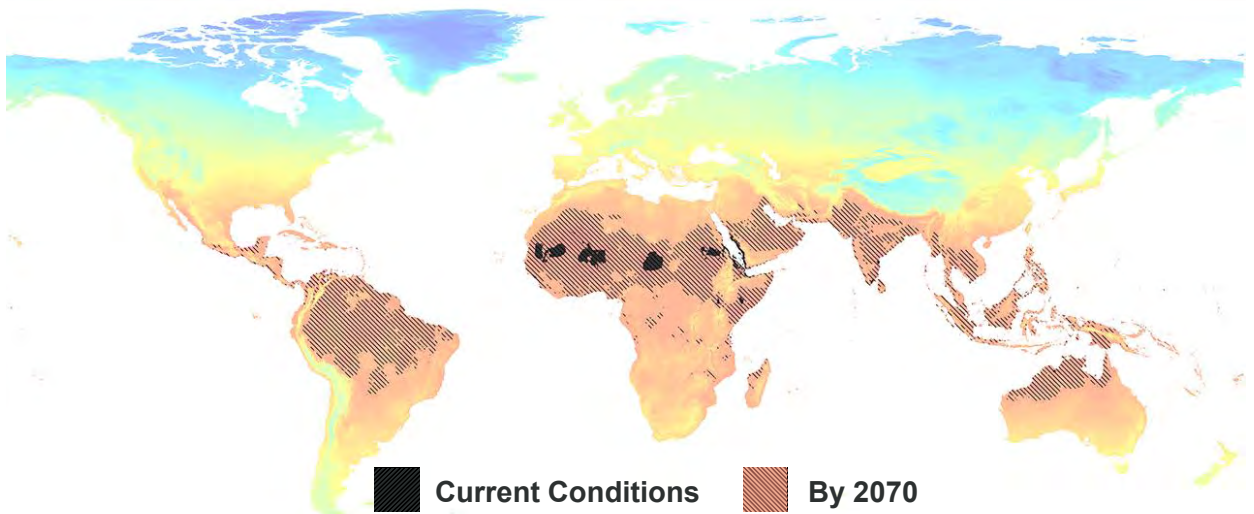
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U.S. Department of Defense
2014 Climate Change Adaptation Roadmap

Climate change
“will likely lead to
food and water shortages,
pandemic disease,
disputes over **refugees** and resources,
and destruction by natural disasters in
regions across the globe.”

65

Earth's “Uninhabitable” Zones



Data and Graphic: Chi Xu, et al. "Future of the human climate niche," *PNAS*, May 26, 2020

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The world could see up to
1 billion climate migrants.

The Lancet Countdown Report 2018

68

**“Climate change is the
biggest global health threat
of the 21st century.”**

**The 2018 Report of the Lancet Countdown
on Health and Climate Change**

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Yunnan Province, China

April 28, 2020

As the climate changes and
humans expand further into
Earth's remaining wild places,
five new infectious diseases
are emerging, on average
each year.

Photo © 2020 Xinhua/Yang Zongyou via Getty Images

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Tropical Diseases on the Move

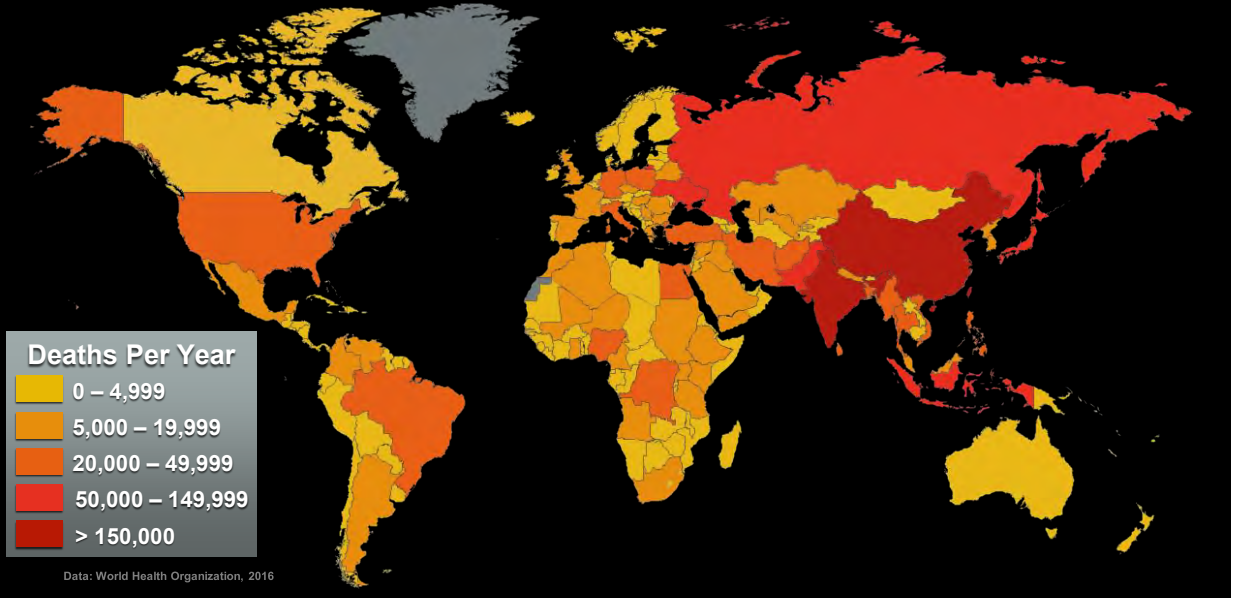


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The global economic impact of air pollution from fossil fuels is **\$2.9 trillion per year** (\$8 billion per day).

74

Deaths Attributable to Ambient Air Pollution



75

Worldwide,
air pollution kills
9 million people
every year

Data: The Lancet Commission on Pollution and Health

76

The
climate crisis
is also an
**extinction and
biodiversity crisis.**

Photo © 2009 AP Photo/Charlie Riedel

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We now risk
losing up to
50% of all
land-based
species
in this century

Source: Nicholas Stern, *The Economics of Climate Change*
Photo: © Dirk Ercken/Shutterstock

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The Cost of Carbon

- \$ *Political Instability*
- \$ *Floods & Mudslides*
- \$ *Wildfires*
- \$ *Drought*
- \$ *Storm Damage*
- \$ *Ocean Acidification*
- \$ *Infrastructure Loss*
- \$ *Climate Refugees*



- \$ *Species Extinction*
- \$ *Melting Glaciers*
- \$ *Famine*
- \$ *Water Scarcity*
- \$ *Ecosystem Loss*
- \$ *Our Way of Life*
- \$ *Infectious Diseases*
- \$ *Sea Level Rise*

... And *much, much more*
"It Threatens
Global Economy"

© 2005 iStockphoto/themoog

So...
Yes!
Must we change?

2. Can we change?

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**We have
the solutions
at hand...**

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Green Energy Progress

How Do Projections Compare With Reality?

2000 Projection

Worldwide
wind capacity
will reach 30
GW by 2010

Reality

By 2020 that goal
was exceeded by
a factor of

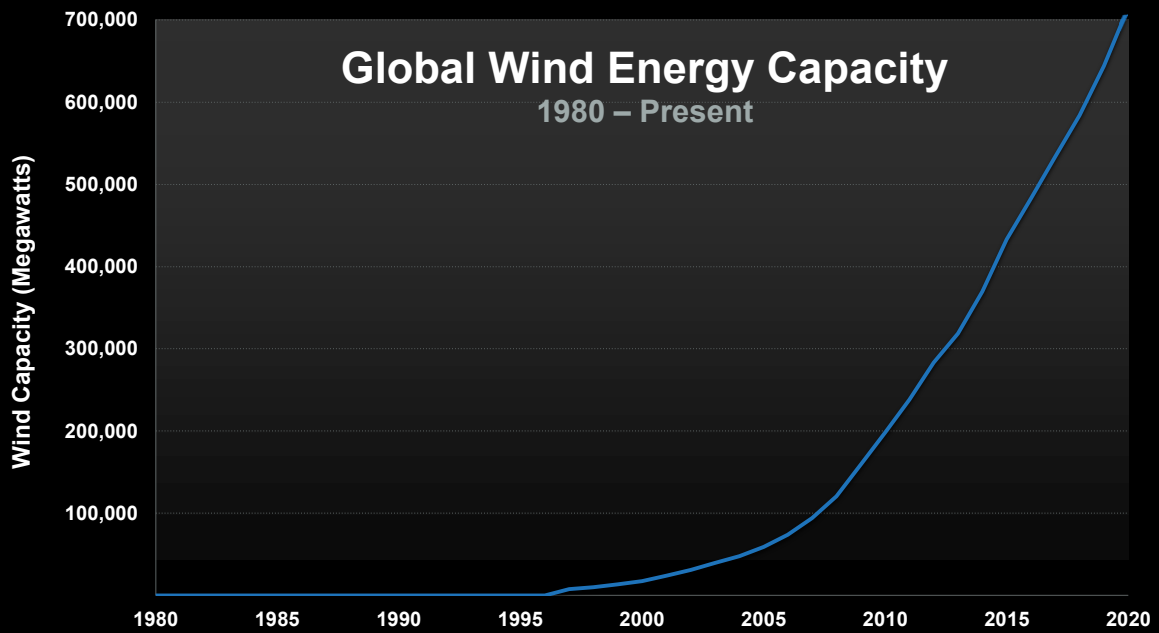
24 x

Data: International Energy Agency; Global Wind Energy Council; Bloomberg New Energy Finance

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Global Wind Energy Capacity

1980 – Present



Data: Earth Policy Institute/Bloomberg New Energy Finance

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Royds Farm, Yorkshire, England



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**Globally, wind could supply
worldwide electricity consumption
40 times over**

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Solar Energy Progress

How Do Projections Compare With Reality?

2002 Projection

The solar energy market will grow one gigawatt per year by 2010

Reality

The reality is in 2020 it was exceeded by

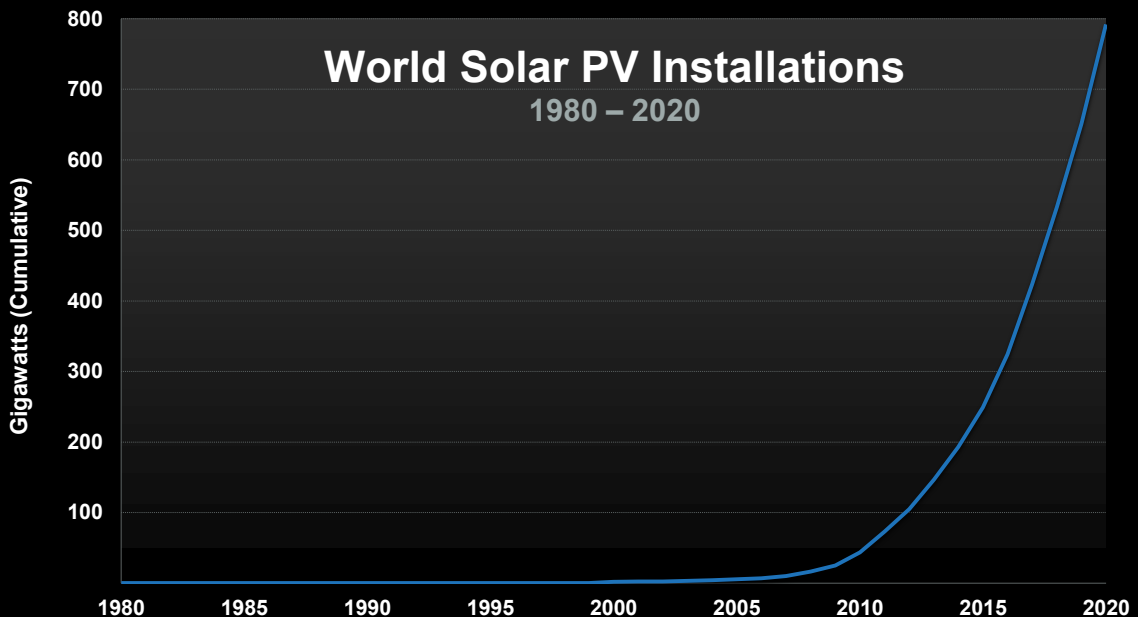
132x

Source: Fresh-Energy; Bloomberg New Energy Finance

87

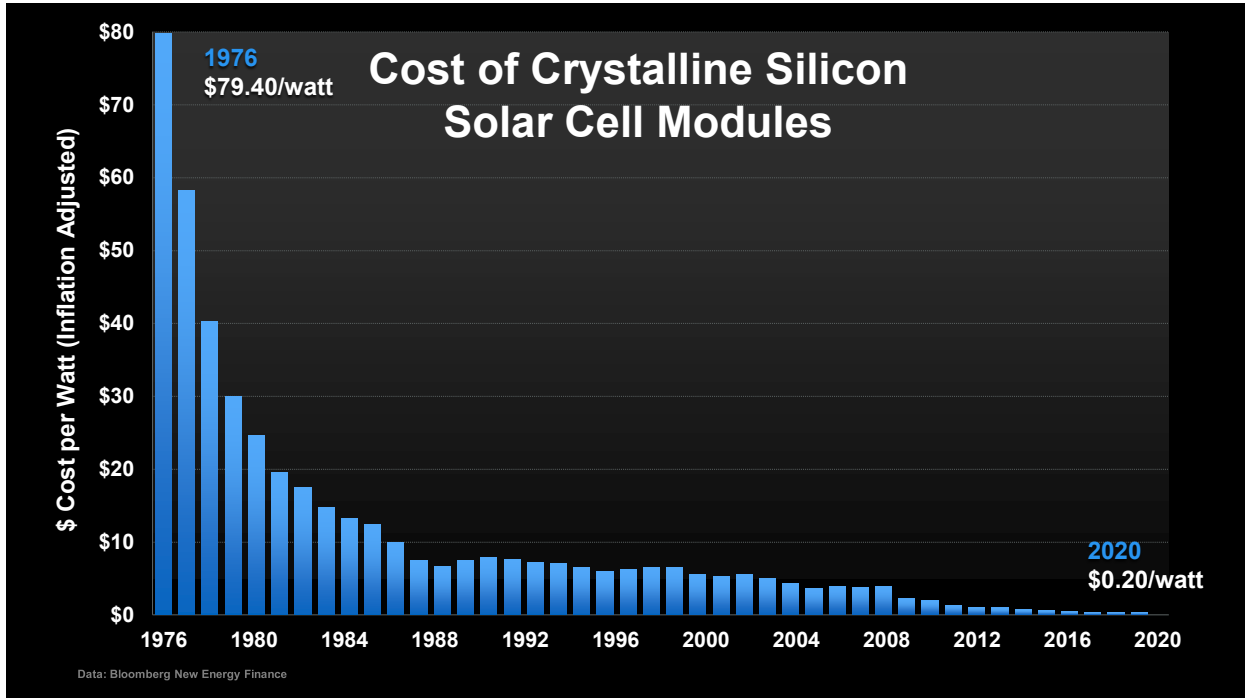
World Solar PV Installations

1980 – 2020



Data: Earth Policy Institute/BP, Statistical Review of World Energy June 2014 (London: 2014); Bloomberg New Energy Finance

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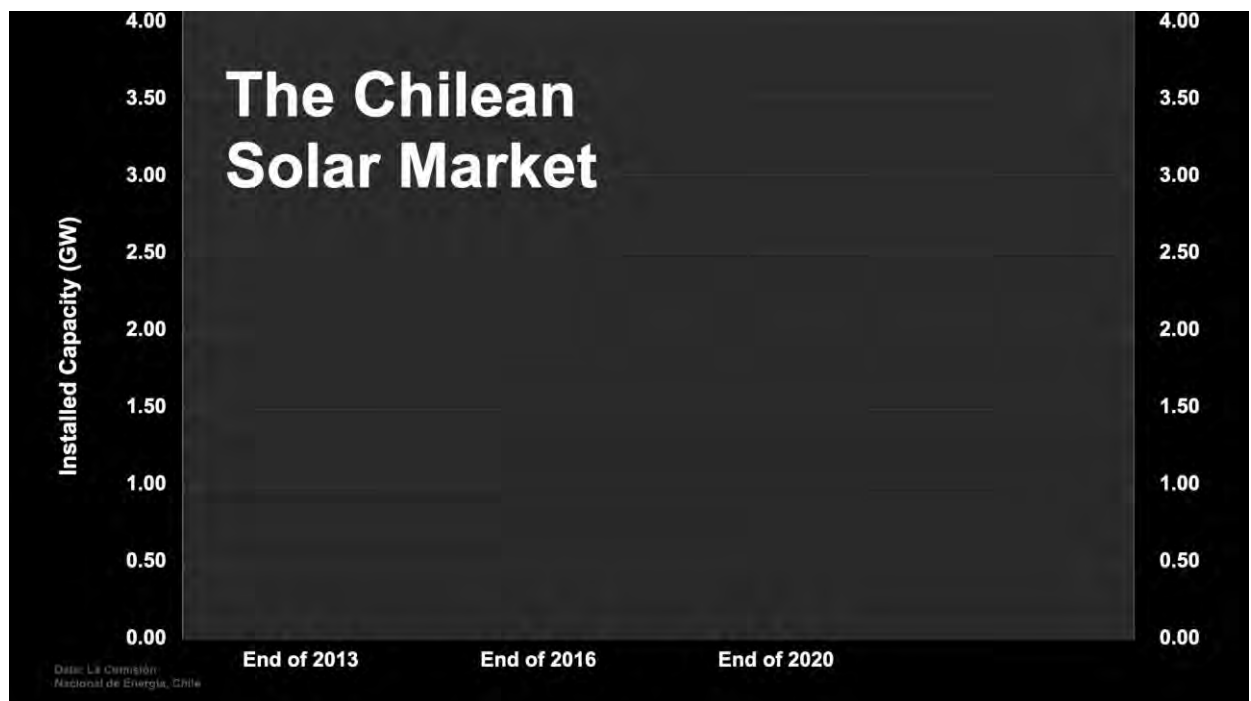


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Cape Town, South Africa

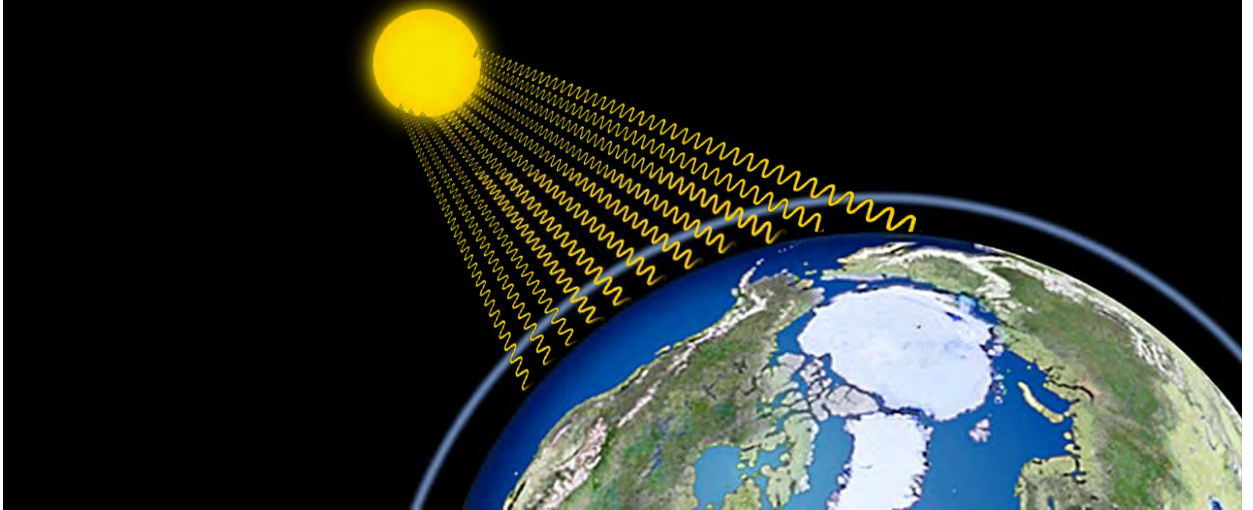


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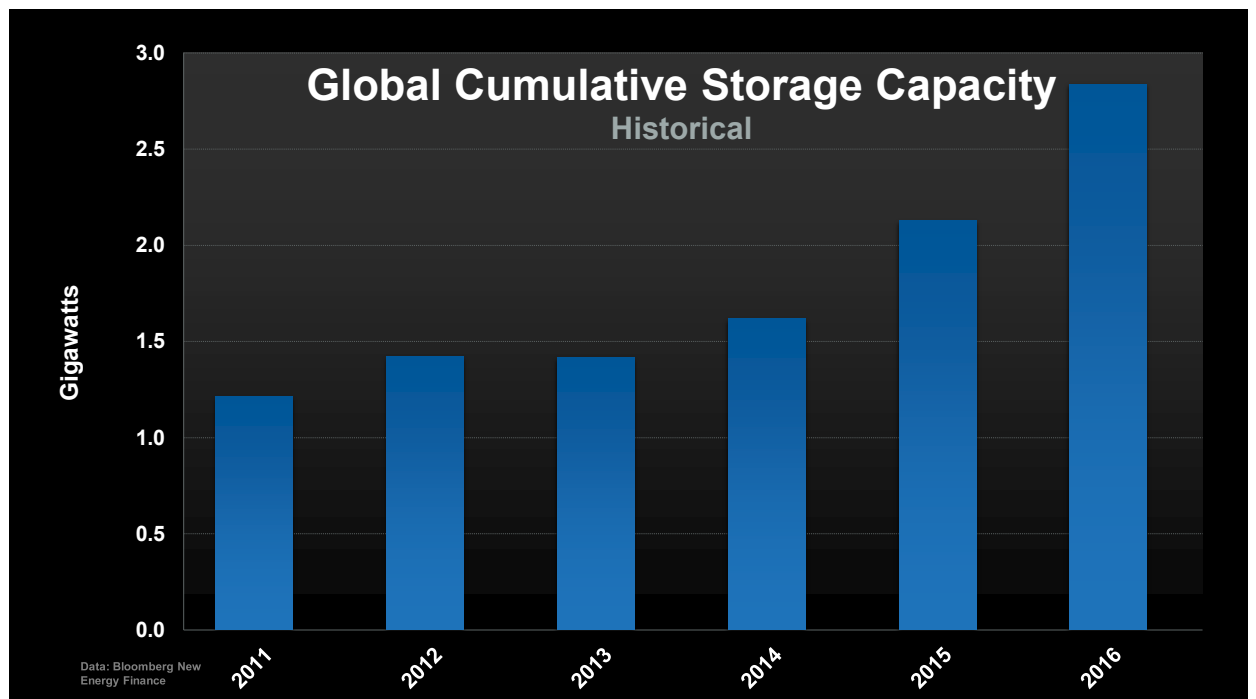


92

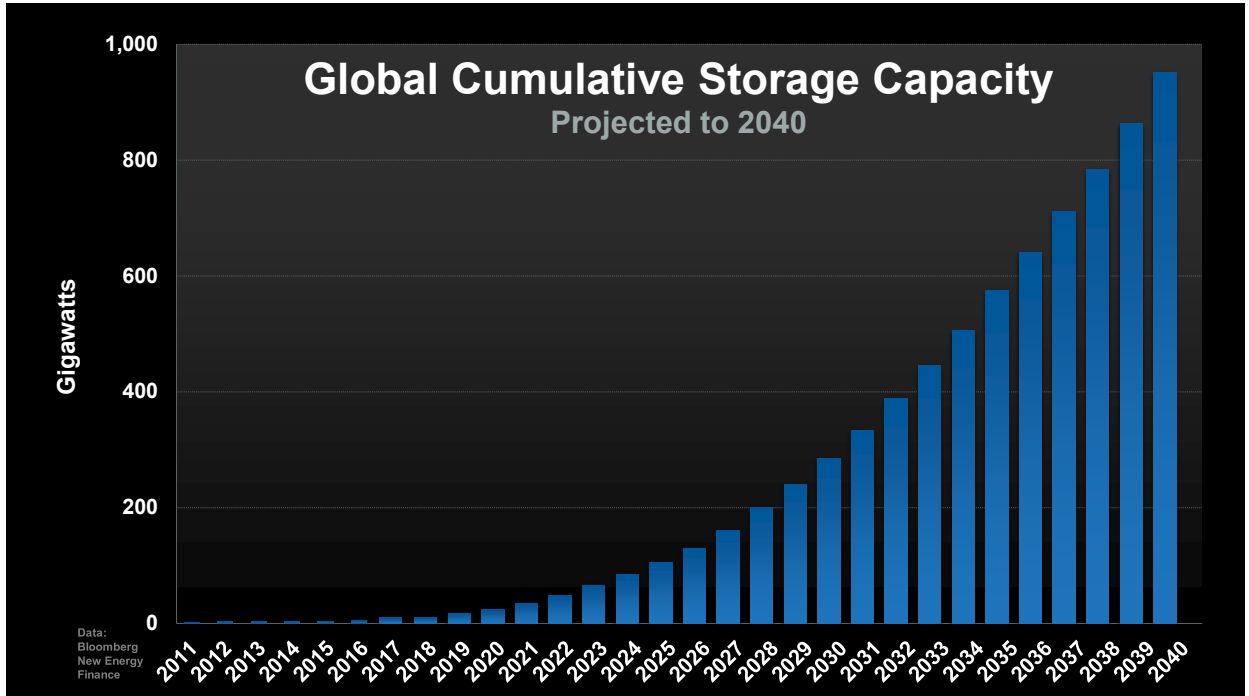
Enough solar energy reaches Earth **every hour** to fill all the world's energy needs **for a full year**



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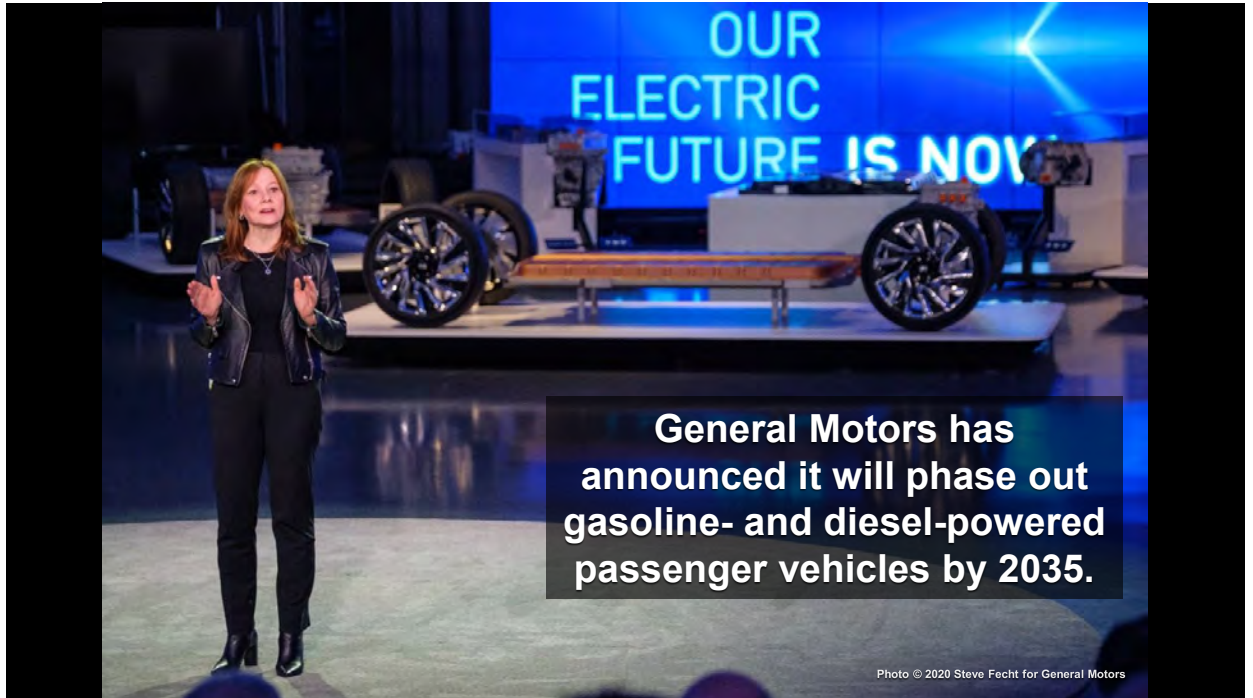
95

Electric Vehicles Will Reach Price Parity...

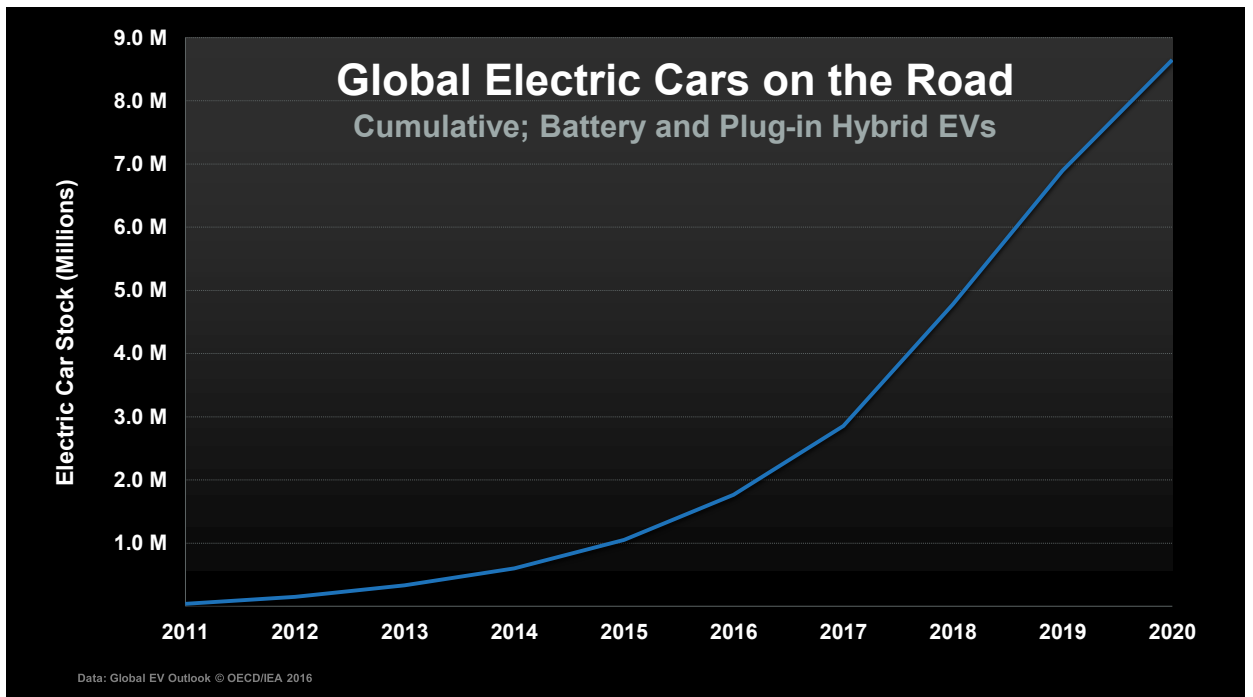
- By 2022 in the U.S., Australia and Europe for large cars, and in the U.S. and Australia for SUVs
- By 2023 in the U.S. and Australia for all segments of the car market, and in China for midsize cars
- By 2024 in Europe for SUVs and midsize cars

Data: Bloomberg New Energy Finance, 2021.
Photo © guteksk7 via Shutterstock

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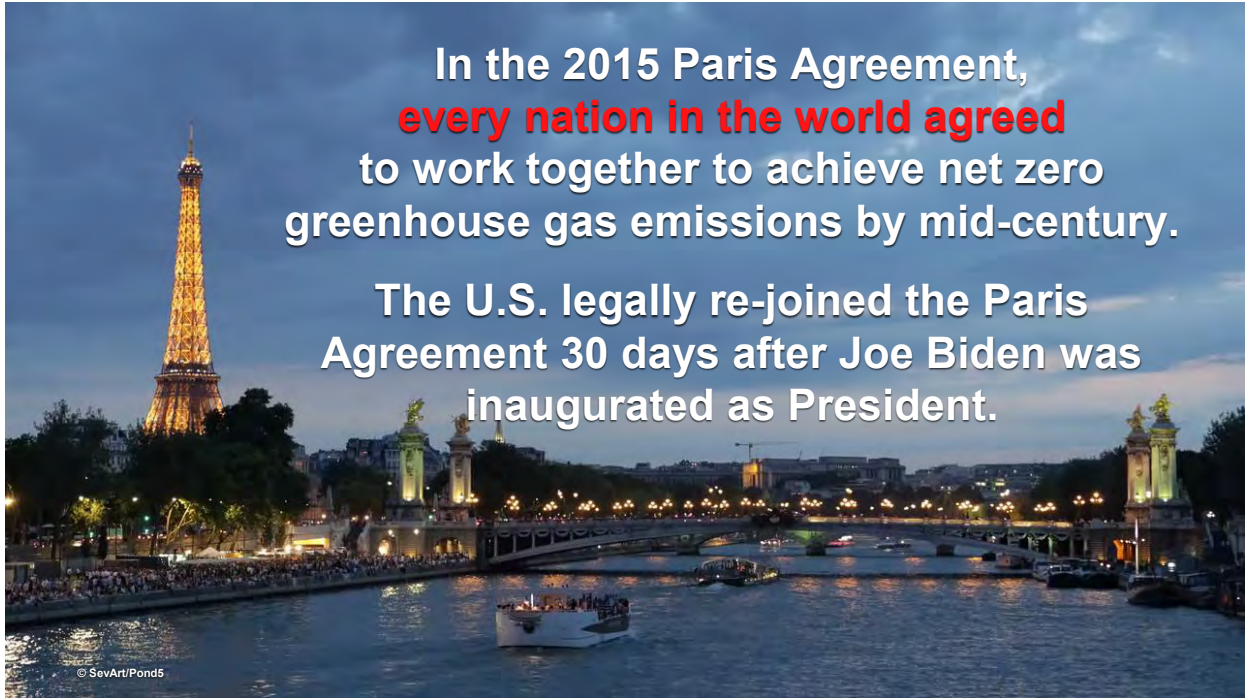
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So...
Yes!
Can we change?

99

3. Will we change?

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**54% of global emissions are from
countries that have set a net zero target.**

Andorra	Costa Rica	Italy	Monaco	Slovenia
Argentina	Denmark	Jamaica	Namibia	Solomon Islands
Austria	Dominican Rep.	Japan	Nauru	South Korea
Barbados	The EU	Kazakhstan	Nepal	Spain
Bhutan	Fiji	Laos	New Zealand	Sri Lanka
Brazil	Finland	Latvia	Panama	Sweden
Canada	France	Luxembourg	Portugal	Switzerland
Cape Verde	Germany	Malawi	Seychelles	United Kingdom
Chile	Hungary	Maldives	Singapore	United States
China	Iceland	Marshall Islands	Slovakia	Uruguay
		Mauritius		

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**Join those who are using
their **voices**
their **votes**
their **choices**
to fight for their future, their
community, and their world.**

108

Use your **voice**
your **vote**
your **choices**

Speak Truth to Power
like your world depends on it.

109



Your world depends on it.

Source: NASA

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