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Climate Reality Project Online Presentation

6th grade version

**As we work through this presentation you will be asked to
answer questions.**

Please have paper and something to write with available.

This presentation is designed for middle school students.

Similar presentations are available for all grade levels.

Climate
is changing



**IF YOU CANNOT LAUGH ABOUT A SITUATION, YOU ARE
IN REAL TROUBLE.**

So...You know climate change is real when

You go outside and your shadow stays inside.

...You know climate change is real when

**You discover that hot air balloons can't fly because the air outside is
hotter than the air in the balloon.**

...You know climate change is real when

You see a bee take its yellow jacket off.

...You know climate change is real when

The four seasons are; tolerable, hot, really hot, and are you kidding me?

Why is addressing climate change important?

Lots of reasons could be listed, but...

A picture is worth 1000 words. These four and all of you should be around in 2120.



What will our planet be like then?



Photo: NASA

CLIMATE CHANGE IS ALL ABOUT SCIENCE

PLEASE WRITE AN ANSWER TO THIS QUESTION –

WHAT IS SCIENCE?

My favorite

Science is a reliable way to make predictions

about the future.

**SCIENTISTS MAKE PREDICTIONS ABOUT THE WEATHER,
ABOUT HOW MEDICINES WORK,
ABOUT THE ORBITS OF PLANETS,
ABOUT SUNSPOTS,
ABOUT SOLAR ECLIPSES, AND
ABOUT TRANSITS OF PLANETS ACROSS THE SUN**



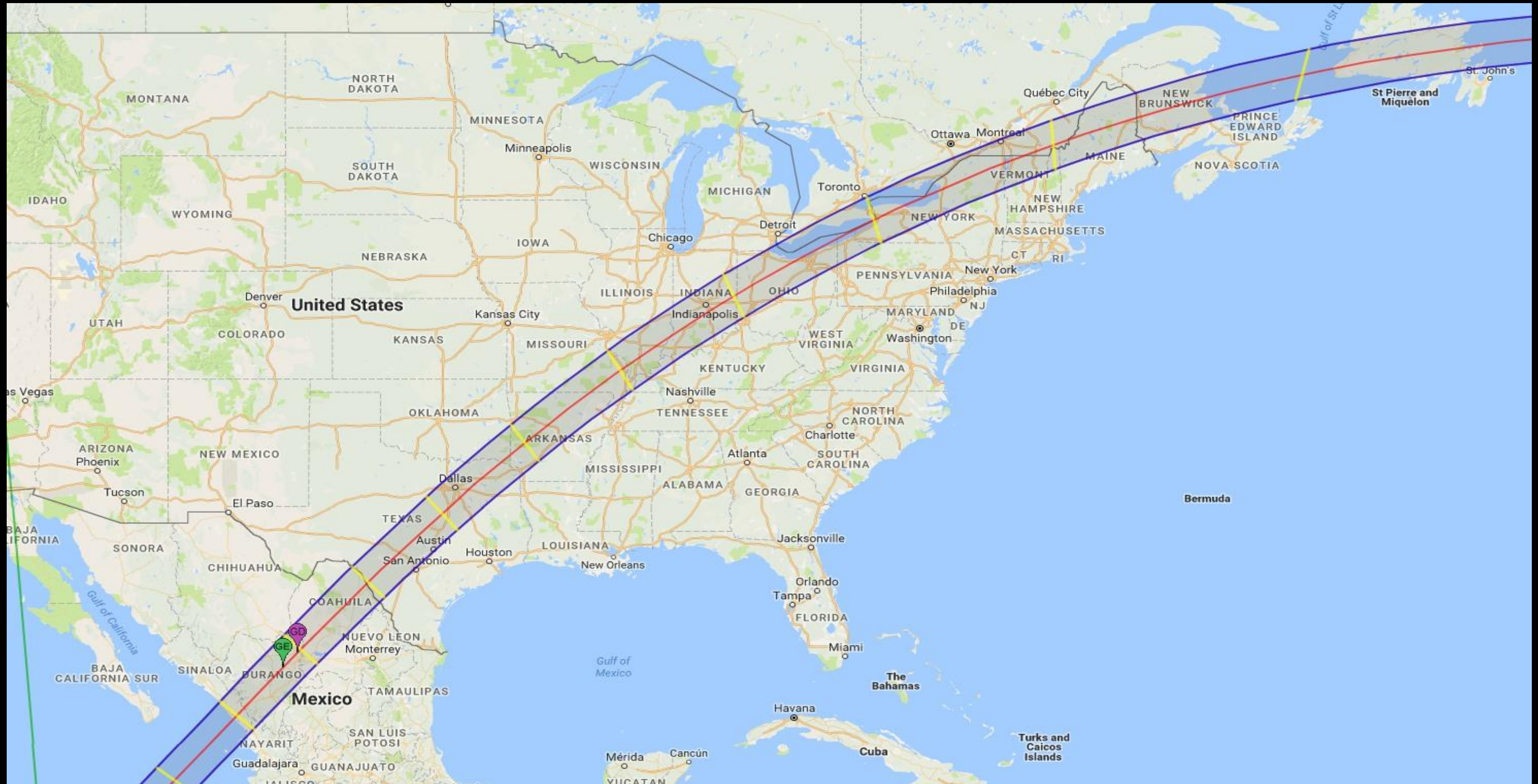
Solar Max



Solar Min



PATH OF TOTALITY April 8, 2024





**Every day folks spend most of their time
keeping things organized.**

**Please make a list of three things you use
every day.**

**Using those things makes them become
less organized.**

**If you will be able to use any of them
again, you need to get them organized.**

**Everything all around us is falling apart
all the time.**

Shoes wear out, food spoils,

ice melts, iPhones wear out,

notebooks fall apart,

paint fades, your skin flakes off!

Please write 2 or 3 words or phrases that can be used to describe the difference between a big ice cube, and a large glass of water.



The ice is organized, and the water is disorganized.

Put the ice on a table and it keeps its shape as it melts.

**Pour out the water and it goes
everywhere.**

**Scientists describe how disorganized
something is using the word**

ENTROPY

Anything that is poorly organized has high entropy.

Things that are well organized have low entropy.

PLEASE DRAW A LINE DOWN THE MIDDLE OF YOUR PAPER.

ON THE LEFT, LIST THREE THINGS THAT HAVE LOW ENTROPY.

ON THE RIGHT LIST THREE THINGS THAT HAVE HIGH ENTROPY.

THE BEST ANSWER I HAVE RECEIVED TO THIS QUESTION IS

THE TRASH IN A TRASH CAN.

Burning fossil fuels increases the entropy of our planet.

ON YOUR PAPER DESCRIBE A CHUNK OF COAL.

NOW DESCRIBE THE COAL AFTER IT HAS BEEN BURNED.

Here are processes that result in a net increase in entropy of our planet:

Mining coal

Drilling for oil

Transporting coal and oil

Burning coal, oil, and gasoline



PLEASE WRITE AN ESTIMATE OF THE DISTANCE FROM THE SURFACE OF THE EARTH TO THE CENTER OF THE EARTH.

4,000 MILES

NOW WRITE AN ESTIMATE OF THE DISTANCE FROM THE SURFACE OF THE EARTH TO THE TOP OF THE ATMOSPHERE (THE HEIGHT OF THE ATMOSPHERE).

60 MILES

We are Dumping 110 Million Tons of Manmade Global Warming Pollution into the Atmosphere every 24 Hours

**A number like 110 million tons is too large to
imagine.**

**This is equivalent to 44 million SUVs being
thrown away EVERY Day**

or

**Thirty thousand 747 jets thrown away EVERY
day - more than 1000 747s every hour!**



THAWING PERMAFROST

COAL MINING

COAL PLANTS

AIR TRANSPORT

OIL PRODUCTION

FERTILIZATION

LAND TRANSPORT

INDUSTRIAL PROCESSES

LANDFILLS

DATA	AGE (YEARS)	3	6	9	12	15	18	21
	HEIGHT (FEET)	2	3.5	4	5	5.5	6	6.3

PLEASE USE THE DATA GIVEN TO DRAW A BAR GRAPH ON YOUR DRY ERASE BOARD



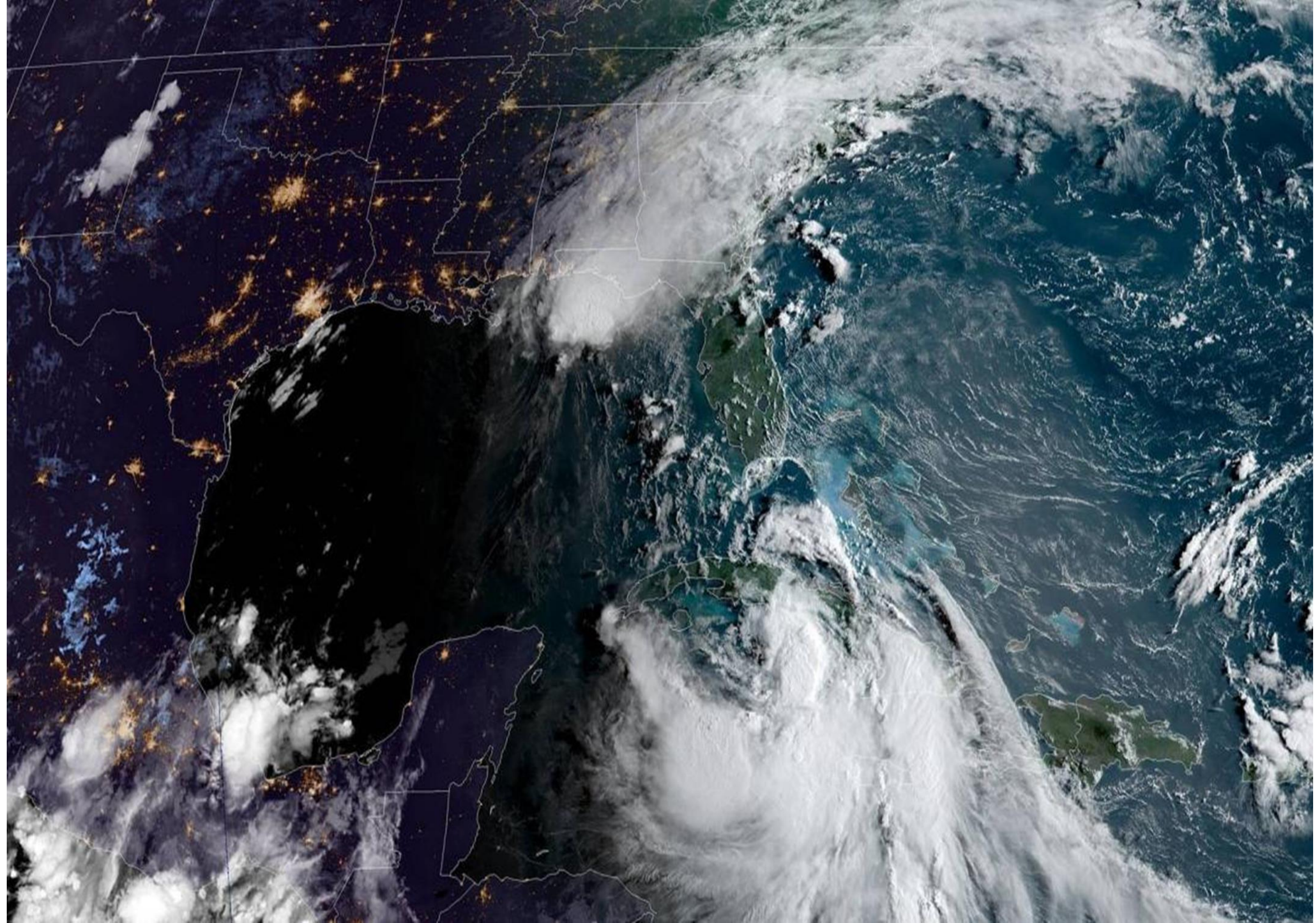
The Largest Source of Global Warming Pollution Is the Burning of Fossil Fuels



Data: U.S. Department of Energy/CDIAC

16 of the 17 Hottest Years on Record Have Occurred Since the Year 2001

2016



Three Category 4 Hurricanes at One Time

August 30, 2015

Hawaii

**Hurricane
Kilo**

**Hurricane
Ignacio**

**Hurricane
Jimena**

NOAA

Source: NOAA

Unnamed Glacier, Southwest Greenland

Summer 1935



3

**“Climate Change
is a
Medical Emergency.”**

**Professor Hugh Montgomery, Co-Chair,
The 2015 Lancet Commission on
Health and Climate Change**

June 2015

The Cost of Carbon

\$



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

Global Wind Energy Capacity

1980 – Present

Wind Capacity (Megawatts)

500,000
400,000
300,000
200,000
100,000

1980 1984 1988 1992 1996 2000 2004 2008 2012 2016

Cost of Crystalline Silicon Solar Cells

\$ Cost per Watt (Inflation Adjusted)

\$80
\$70
\$60
\$50
\$40
\$30
\$20
\$10
\$0

1976 1980 1984 1988 1992 1996 2000 2004 2008 2012 2016



The Chilean Solar Market

Total Installed Solar Capacity (Gigawatts)

1.00
0.75
0.50
0.25
0.00

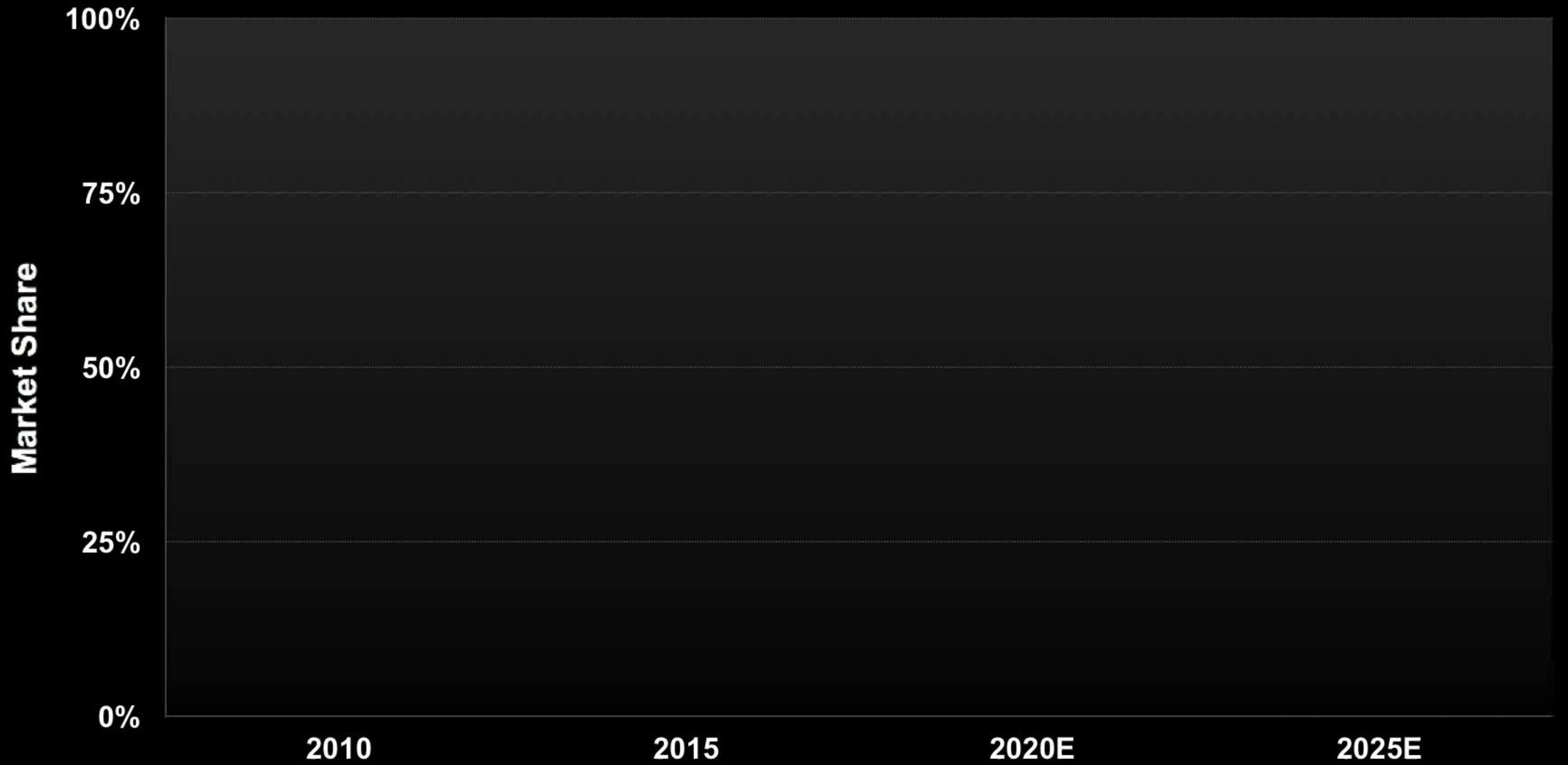
End of 2013

End of 2014

End of 2015

Data: Greentech Media, *Latin America PV Playbook*; CleanTechnica

LED Lights: Percentage of the Total Lighting Market





The Climate Reality Project is an organization that advocates for actions that work to minimize climate change challenges.

For more information go to

<https://www.climate reality project.org/our-mission>

WHAT CAN YOU DO?

CONSERVE EVERYTHING YOU CAN.

**ENCOURAGE YOUR PARENTS TO CONSERVE EVERYTHING
THEY CAN.**

Unplug! Any electronic gadget you can turn on with a remote (TV, DVD player, Nintendo, Xbox) uses power even when it is "off."

WHAT CAN YOU DO?

RECYCLE!

How can I reduce my trash pile?

Ask your parents to buy reusable grocery bags.

Recycle everything you can.

"BYOM." Bring your own mug.

Go to <https://climatekids.nasa.gov/how-to-help/>

Questions ?

Thank you!



The Climate
Reality Project