Resources to Help Scientists Communicate Climate Science

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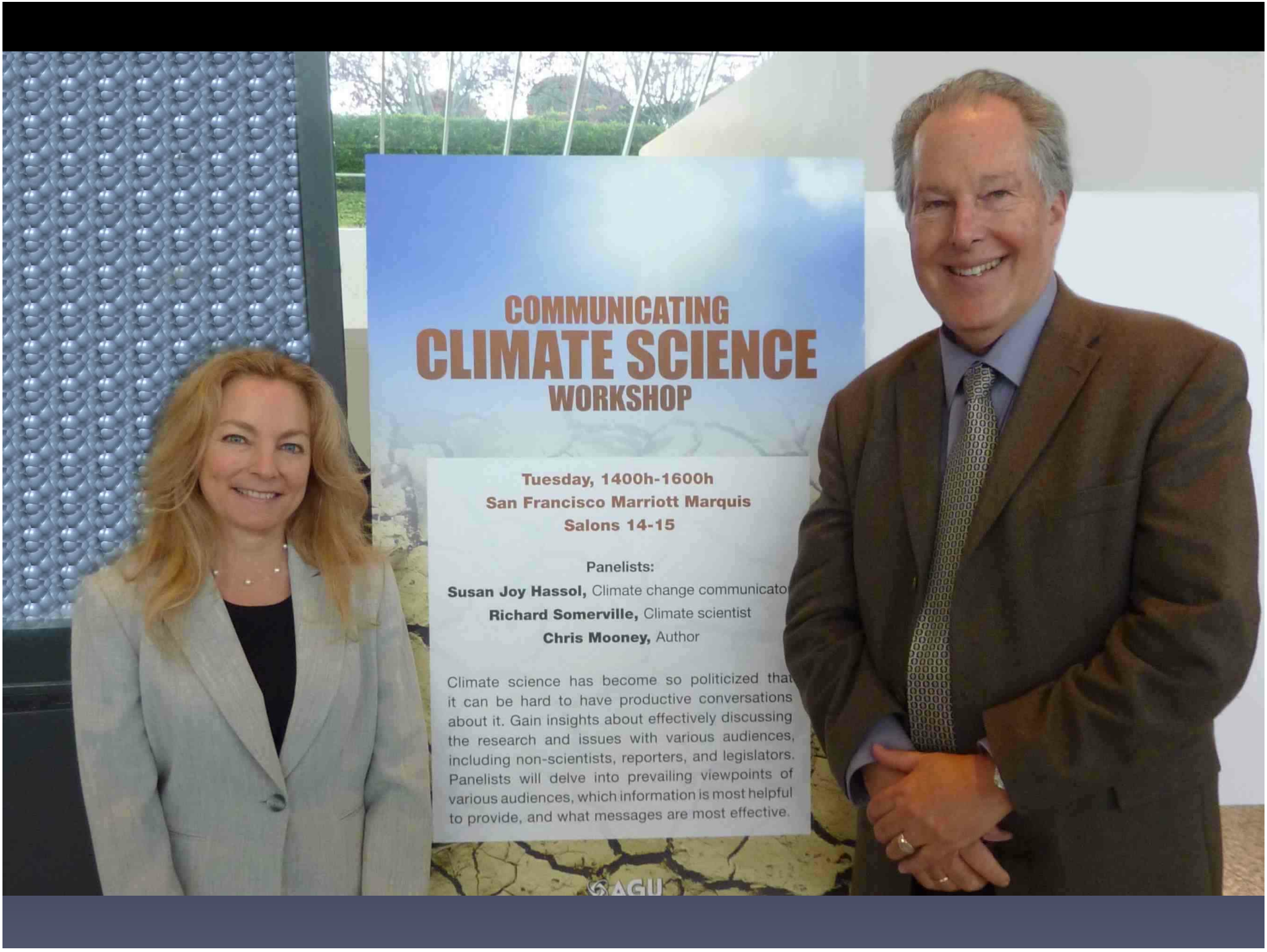
19th ASLI Conference, New Orleans, 13 Jan 2016

Easy steps to find great resources:

1. Go to: climatecommunication.org

2. Click on: Resources

3. Click on: Websites


COMMUNICATING
CLIMATE SCIENCE
WORKSHOP
Tuesday, 1400h-1600h
San Francisco Marriott Marquis
Salons 14-15
Panelists:
Susan Joy Hassol, Climate change communicato
Richard Somerville, Climate scientist
Chris Mooney, Author
Climate science has become so politicized that it can be hard to have productive conversations about it. Gain insights about effectively discussing the research and issues with various audiences, including non-scientists, reporters, and legislators. Panelists will delve into prevailing viewpoints of various audiences, which information is most helpful to provide, and what messages are most effective.
AGU

"Communicating the science of climate change"

Richard C. J. Somerville and Susan Joy Hassol

Physics Today, October 2011, pp. 48-53.

Available for free download at:

www.climatecommunication.org
and
www.richardsomerville.com

Terms that have different meanings for scientists and the public

Scientific term	Public meaning	Better choice
enhance	improve	intensify, increase
aerosol	spray can	tiny atmospheric particle
positive trend	good trend	upward trend
positive feedback	good response, praise	vicious cycle, self-reinforcing cycle
theory	hunch, speculation	scientific understanding
uncertainty	ignorance	range
error	mistake, wrong, incorrect	difference from exact true number
bias	distortion, political motive	offset from an observation
sign	indication, astrological sign	plus or minus sign
values	ethics, monetary value	numbers, quantity
manipulation	illicit tampering	scientific data processing
scheme	devious plot	systematic plan
anomaly	abnormal occurrence	change from long-term average

Somerville/Hassol, Physics Today 2011

climatecommunication.org

"Know thy audience"

"Know thyself"

"Know thy stuff"

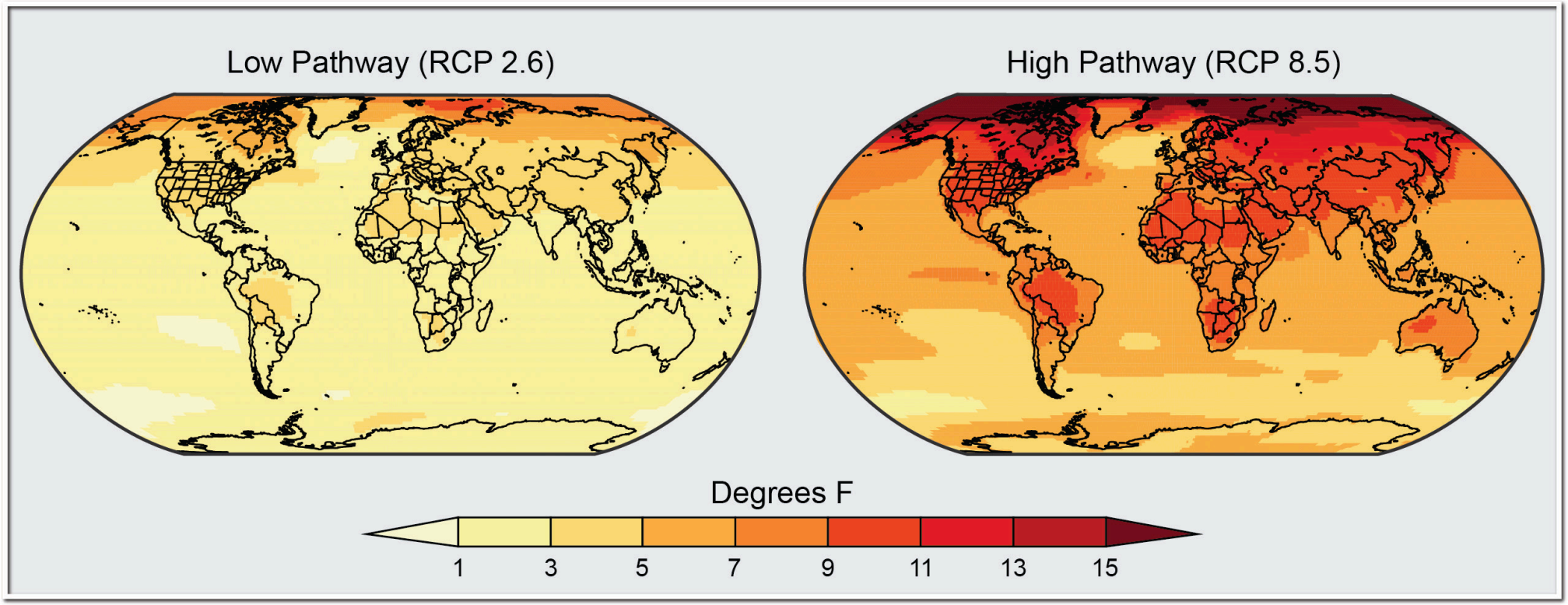
- Stephen H. Schneider (1945 – 2010)

We have known for over 30 years that major emissions reductions would be required NOW.

"For a prescribed maximum increase of 50 percent above the preindustrial carbon dioxide level, the production could grow by about 50 percent until the beginning of the next century, but should then decrease rapidly."

From "Predicting Future Atmospheric Carbon Dioxide Levels" by U. Siegenthaler and H. Oeschger, *Science*, 27 January 1978.

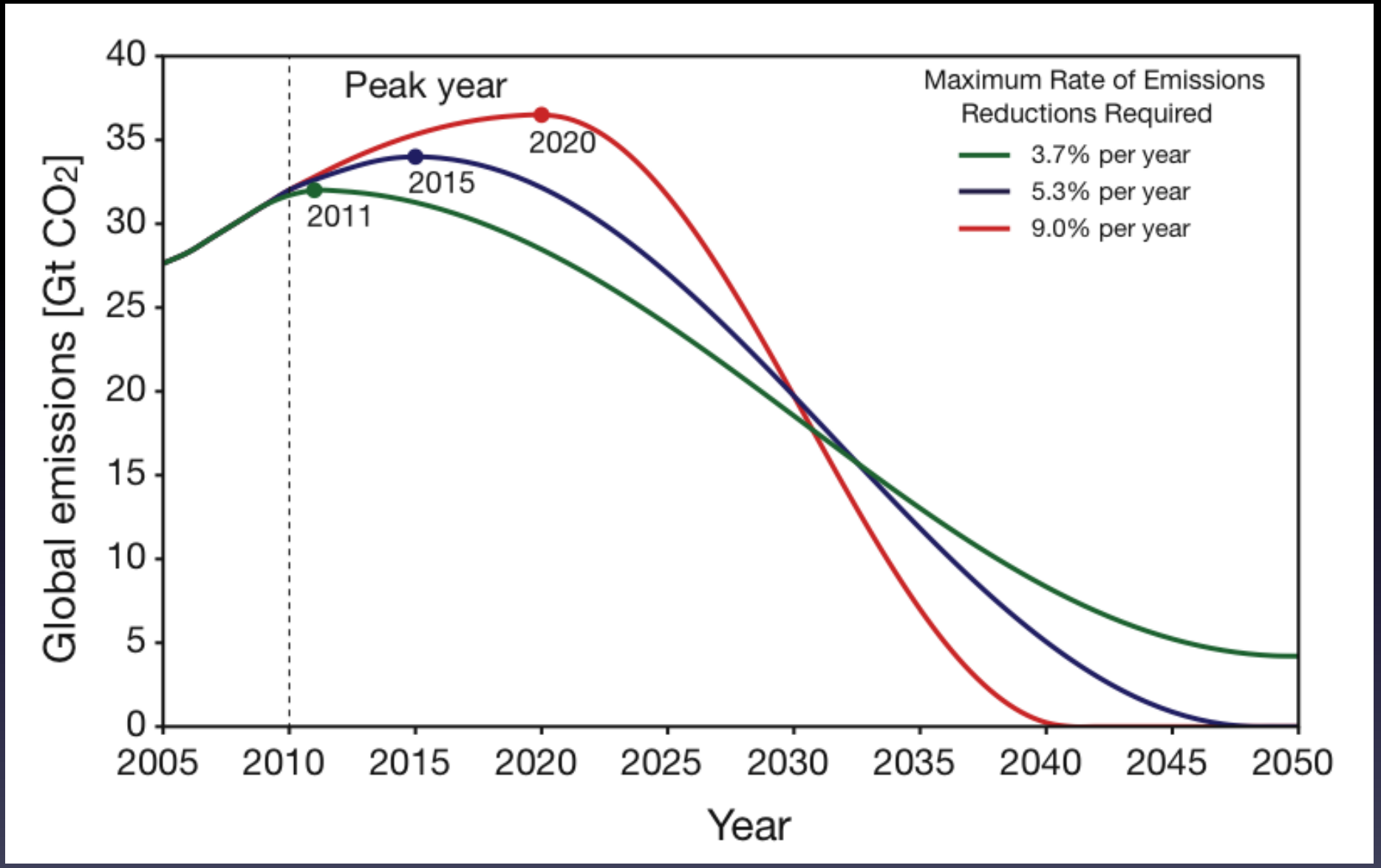
Largest Temperature Increases Over Continents



It is **urgent** to reduce emissions of CO_2.
Emissions of CO_2 can continue to grow…

"…until the beginning of the 21st century, but should then decrease rapidly."

It's getting late.



Emissions pathways to give 67% chance of limiting global warming to 2° Celsius above pre-industrial temperatures.

Communication problems

- Scientists rarely communicate well.
- Society has a science illiteracy problem.
- A disinformation campaign is effective.
- In the US, a toxic partisan divide exists.
- Policy positions infect views on science.
- Media coverage of science is often poor.

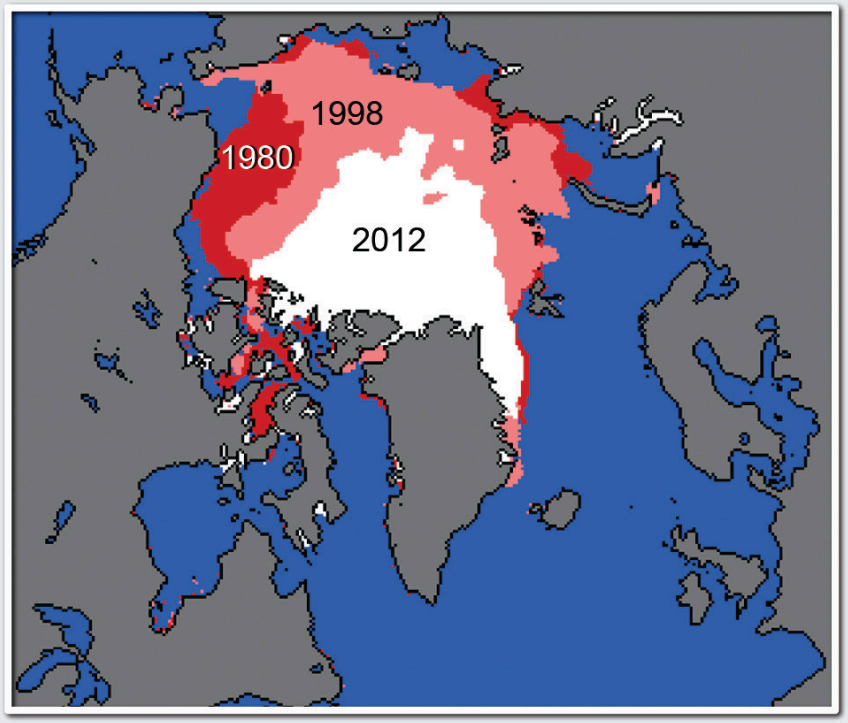

APRIL 3, 2006
www.time.com AOL Keyword: TIME
SPECIAL REPORT GLOBAL WARMING
TIME
BE WORRIED. BE VERY WORRIED.
Climate change isn't some vague future problem—it's already damaging the planet at an alarming pace. Here's how it affects you, your kids and their kids as well
EARTH AT THE TIPPING POINT
HOW IT THREATENS YOUR HEALTH
HOW CHINA & INDIA CAN HELP SAVE THE WORLD—OR DESTROY IT
THE CLIMATE CRUSADERS

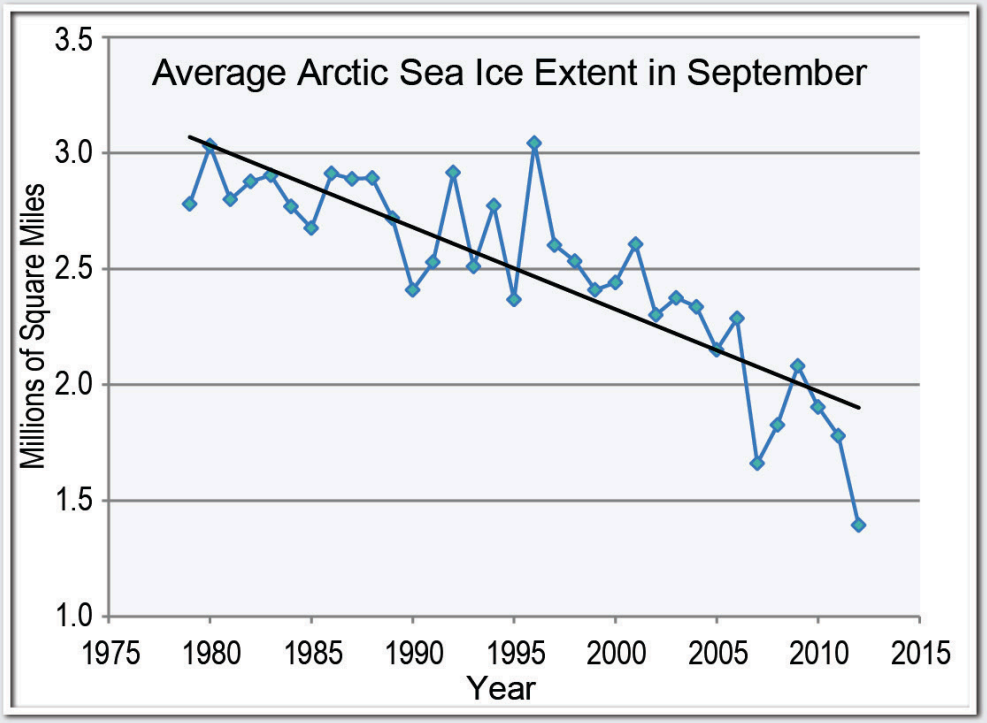
What does the 2013 IPCC report say?

1. It's warming.
2. It's us.
3. It hasn't stopped.
4. The heat is mainly in the sea.
5. Sea level is rising.
6. Ice is shrinking.

7. CO_2 in the air is up 40% since the 1800s.
8. CO_2 is making the ocean more acidic.
9. It's now the highest in 800,000 years.
10. **Cumulative** emissions **set** the warming.
11. **Reducing** emissions **limits** the warming.
12. Climate change will last for centuries.

Arctic Sea Ice Decline





Simple, clear messages,
repeated often,
by a variety of trusted sources


UCSD

richardsomerville.com

climatecommunication.org

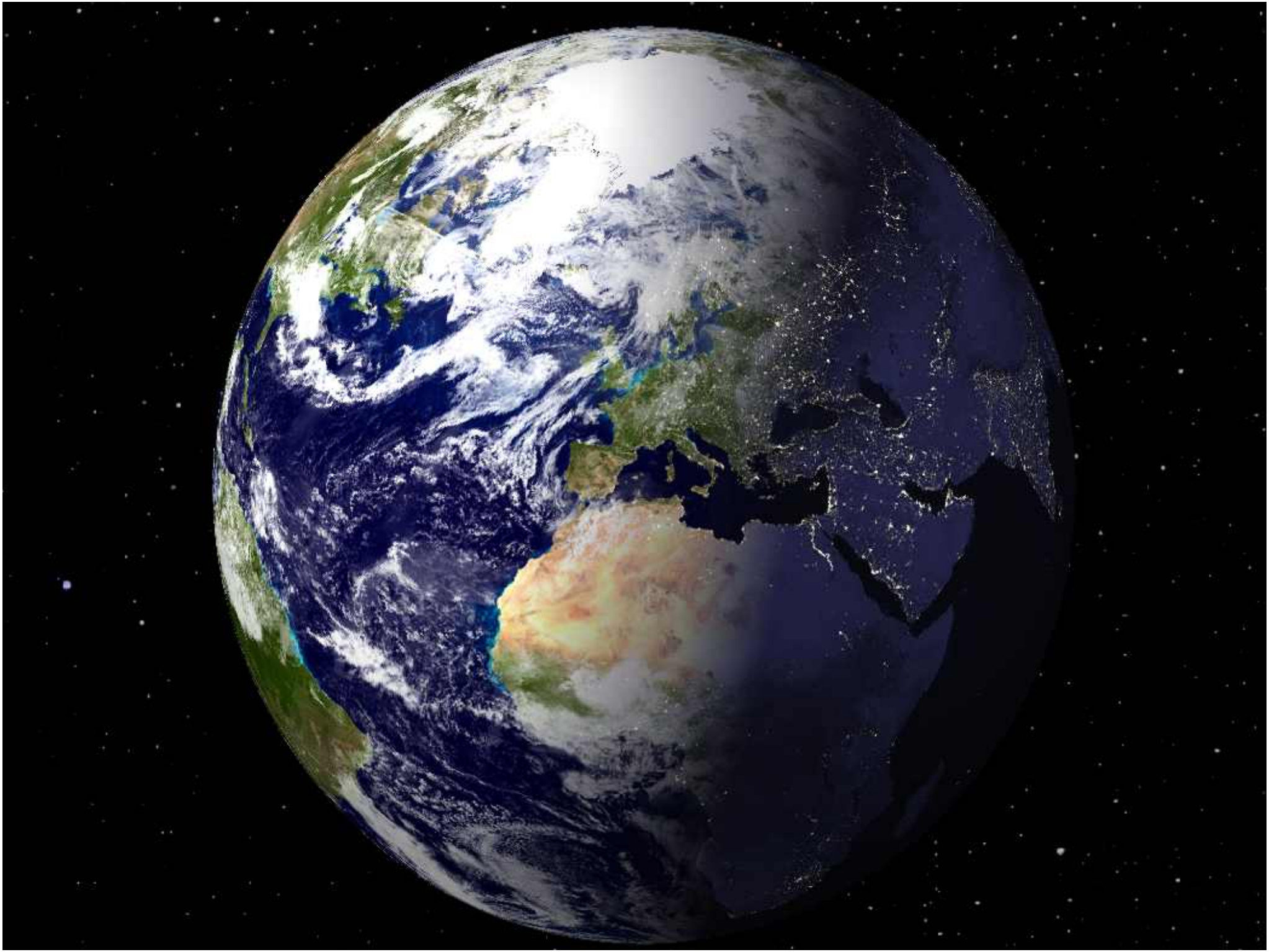
realclimate.org

skepticalscience.com

ipcc.ch

Communication is a learnable skill

- Be a trusted messenger.
- Know your audience's values.
- Keep your messages simple.
- Be warm and likeable.
- Show your passion.
- Avoid jargon, metric units, math.
- Use images and metaphors.



We climate scientists are much like planetary physicians.

Our understanding is incomplete but it is already highly useful.

You don't ask your doctor to predict the date of your heart attack.

Even the least enlightened members of Congress don't hold hearings to denounce medical science as a hoax.

Global warming is just
a symptom, like a fever.

A fever of only a few degrees
can indicate a serious illness.

Journalists covering a medical discovery don't try to present "the opposing view."

They recognize the difference between research in progress and a disinformation campaign.

Quitting smoking,
like quitting using fossil fuels,
is not easy to do.

Preventions is better than cure.

A heart bypass is major surgery.

Surgery has costs and risks.

Doing nothing has costs and risks too.

Greenhouse gases are
the steroids
of the climate system.

They change the odds.


1
2
3
4
5
6
cc

Somerville, R.C.J., 2006. Medical Metaphors for Climate Issues, *Climatic Change*, **76**, 1-6.

www.richardsomerville.com

Obstacles often met:

Misinformation and disinformation
Conflating science and policy
Scientific illiteracy
Distrust in the messenger
Sense of doom and hopelessness

Denialism is the employment of rhetorical arguments to give the appearance of a legitimate debate where there is none.

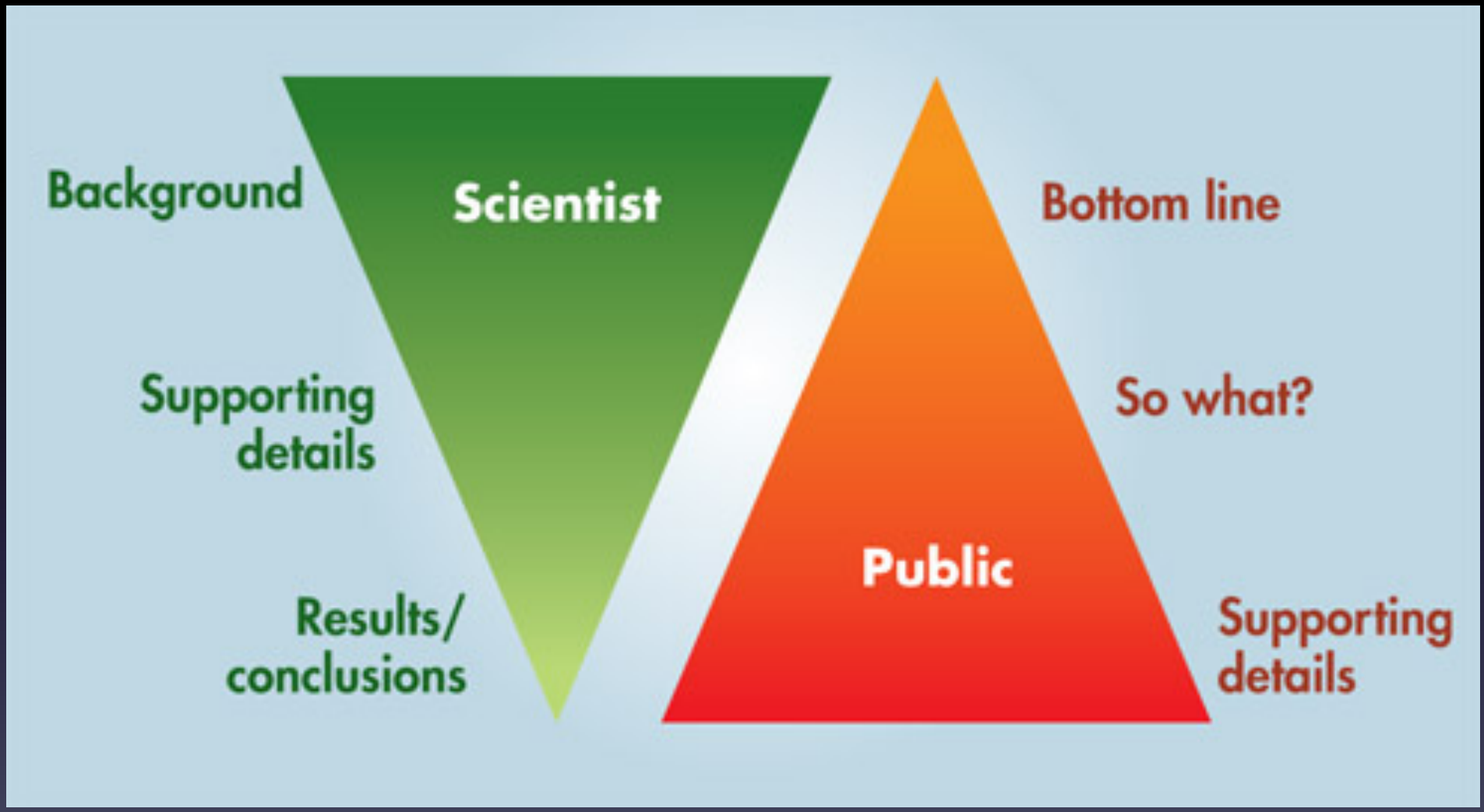
Its ultimate goal is the rejection of a scientific consensus.


20,679 Physicians say "LUCKIES are less irritating"
"It's toasted"
Your Throat Protection against irritation against cough
MEDICAL AUTHORITIES RECOGNIZE PHILIP MORRIS
proved far less irritating to the smoker's nose and throat!
CALL FOR PHILIP MORRIS
Consider your Adam's Apple!!*
Don't Rasp Your Throat With Harsh Irritants
"Reach for a LUCKY instead"
"It's toasted"
BEWARE OF IRRITATION
LUCKY STRIKE CIGARETTE
Toasting removes dangerous irritants that cause Throat irritation and Coughing - -
"It's toasted"
The Doctors behind the Doctor
According to a recent Nationwide survey:
MORE DOCTORS SMOKE CAMELS THAN ANY OTHER CIGARETTE
CAMELS Costlier Tobaccos
Lady with a Lamp
NOSE or THROAT CONGESTED?
CHANGE to SPUDS
Spud
Rosalind Russell says: "L&M Filters are Just What the Doctor Ordered!"
L&M FILTER TIP Cigarettes
Guard Against Throat-Scratch
— enjoy smooth smoking —
PALL MALL
Outstanding... and they are mild!
Mild and Flavorful...
Inhale to your heart's content!
EMBASSY
I'M SENDING CHESTERFIELDS to all my friends. That's the merriest Christmas any smoker can have... Chesterfield mildness plus no unpleasant after-taste
Ronald Reagan
CHESTERFIELD Buy the beautiful Christmas carton

Five Signs of Denialism

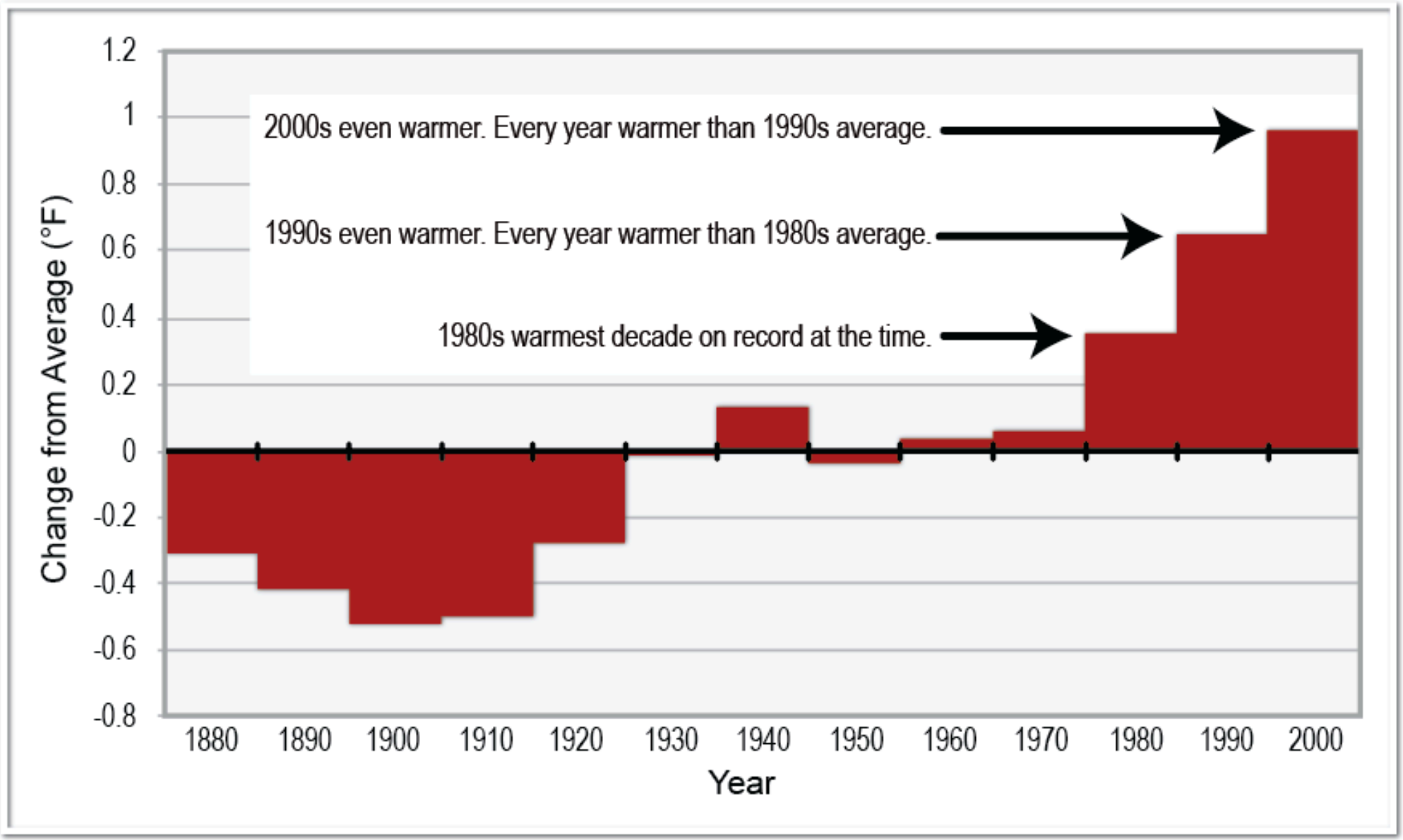
1. Seeing conspiracies
2. Using fake experts
3. Cherry picking
4. Impossible expectations
5. Logical fallacies

Turn your world upside down…



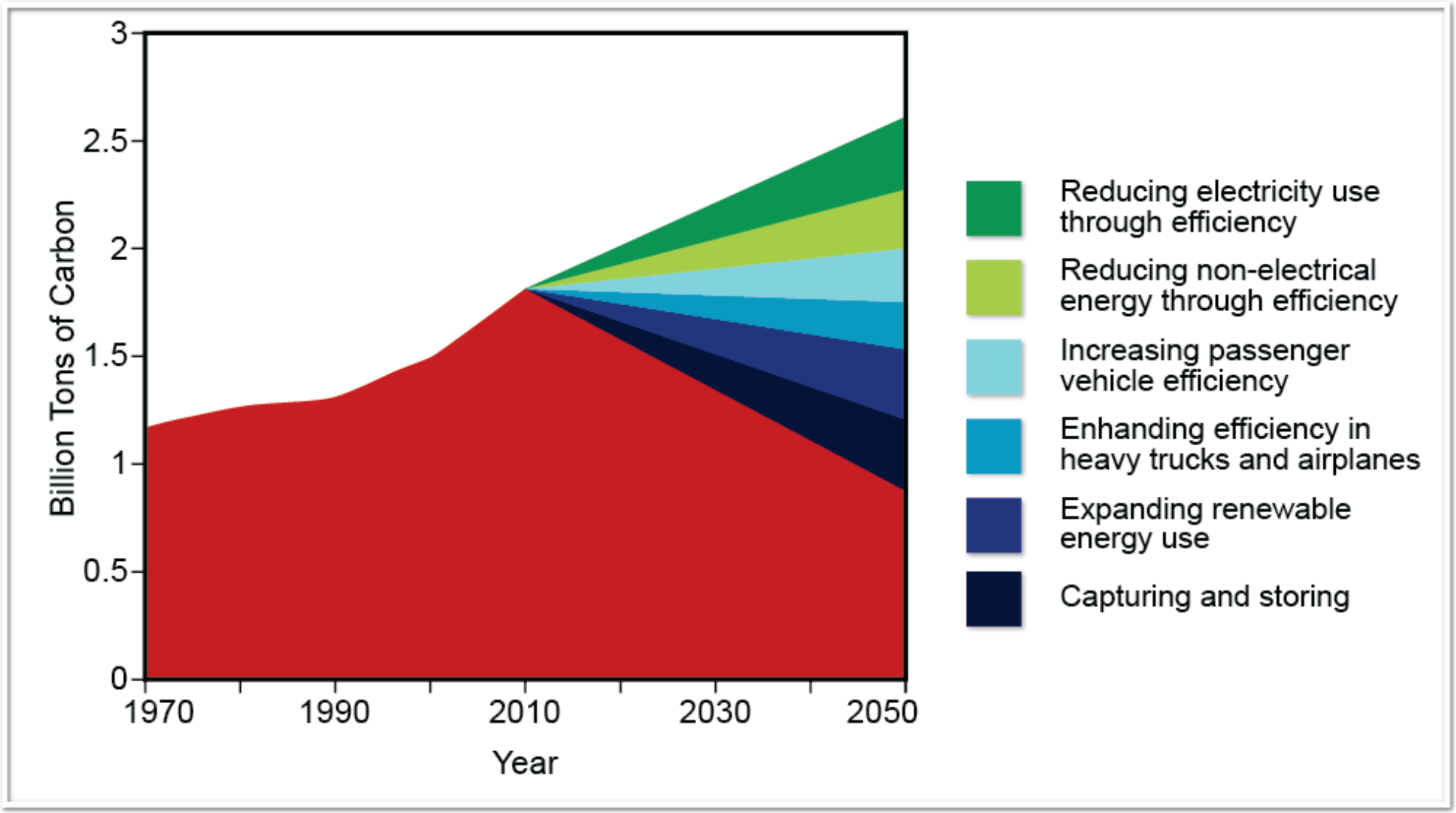
The world is warming
and
the warming is not natural

Global Temperature Change: Decade Averages



The greenhouse effect
and
the role of carbon dioxide in it
are well understood.

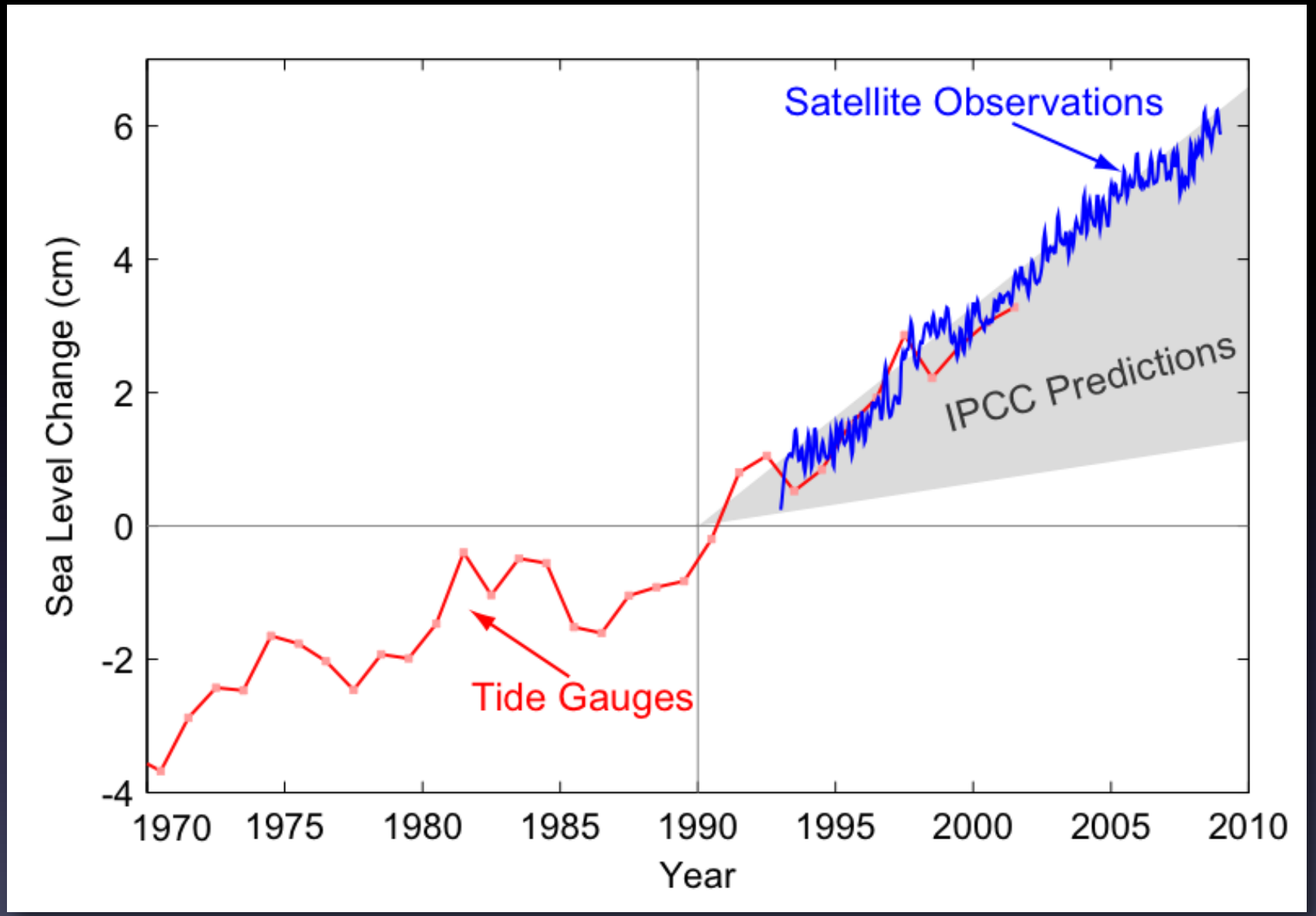
How to Cut U.S. Global Warming Emissions in Half



Our climate predictions
are coming true.

The observations are often at or beyond the worst-case forecasts.

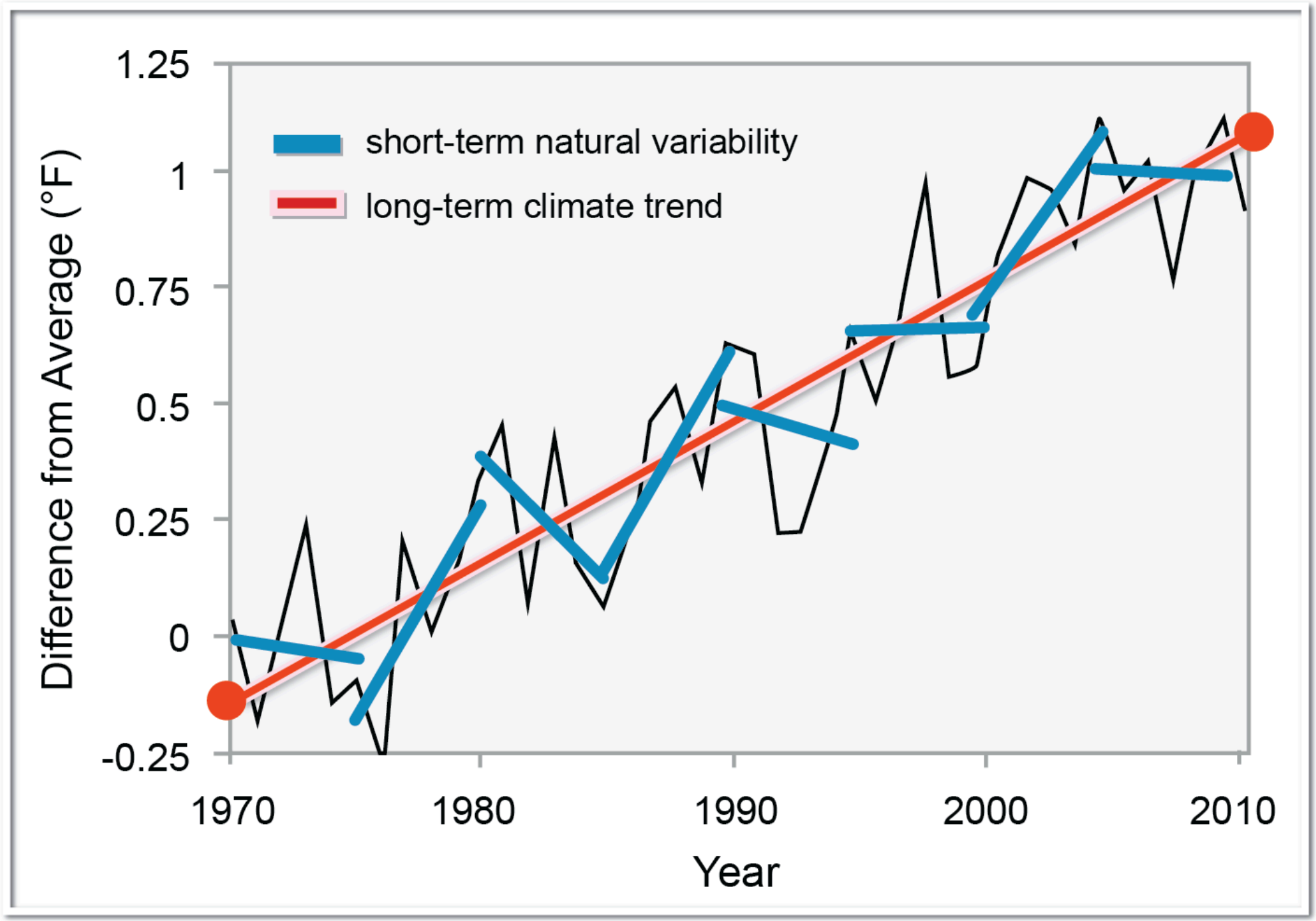
Sea-level change 1970-2010



All the standard skeptical arguments have long ago been refuted in peer-reviewed papers.

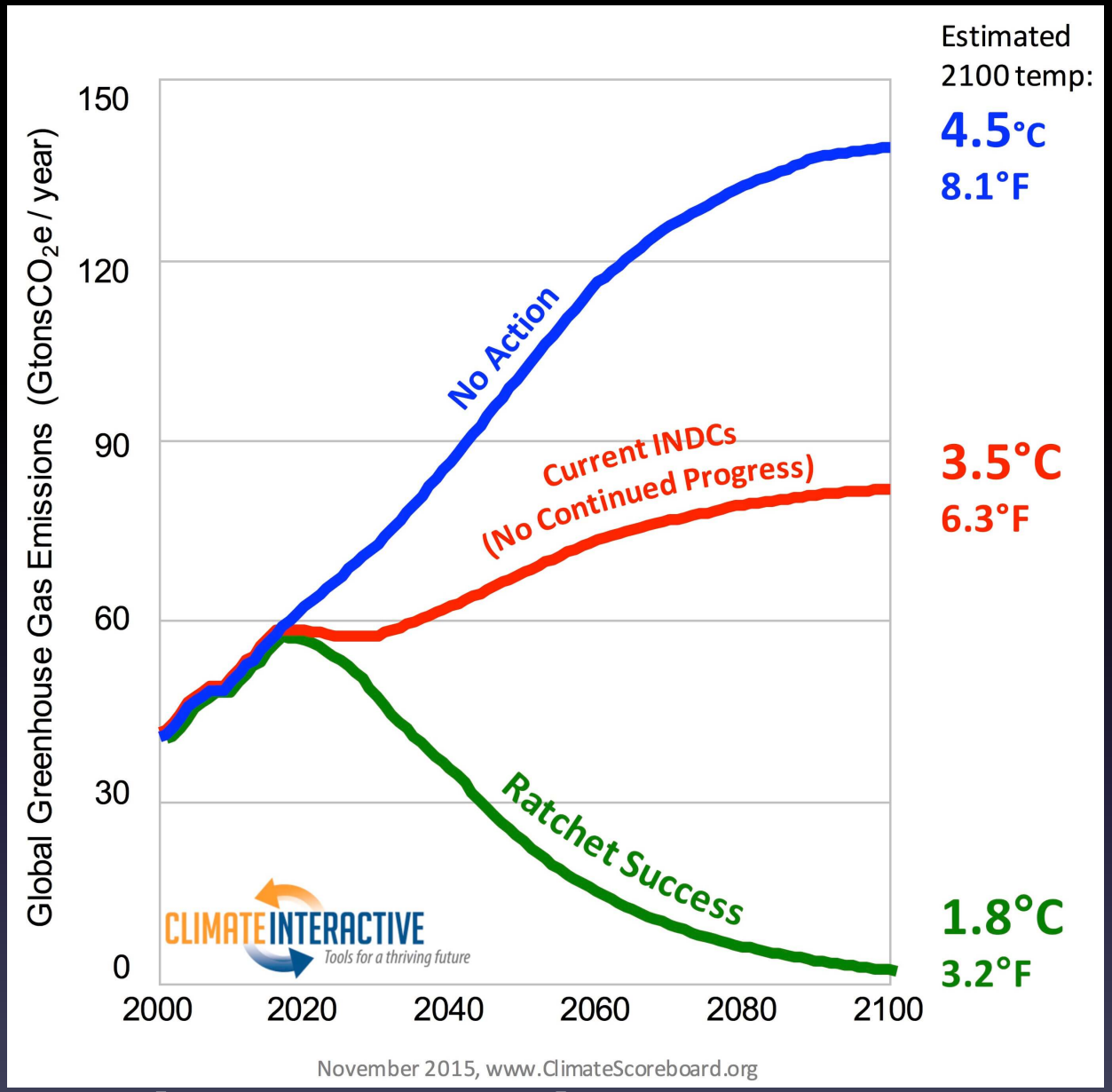
The refutations are now easy to find in books and on the Internet: www.skepticalscience.com

Short-term Variations Versus Long-term Trend



Science has its own high standards and its own methods. It is self-correcting, given time.

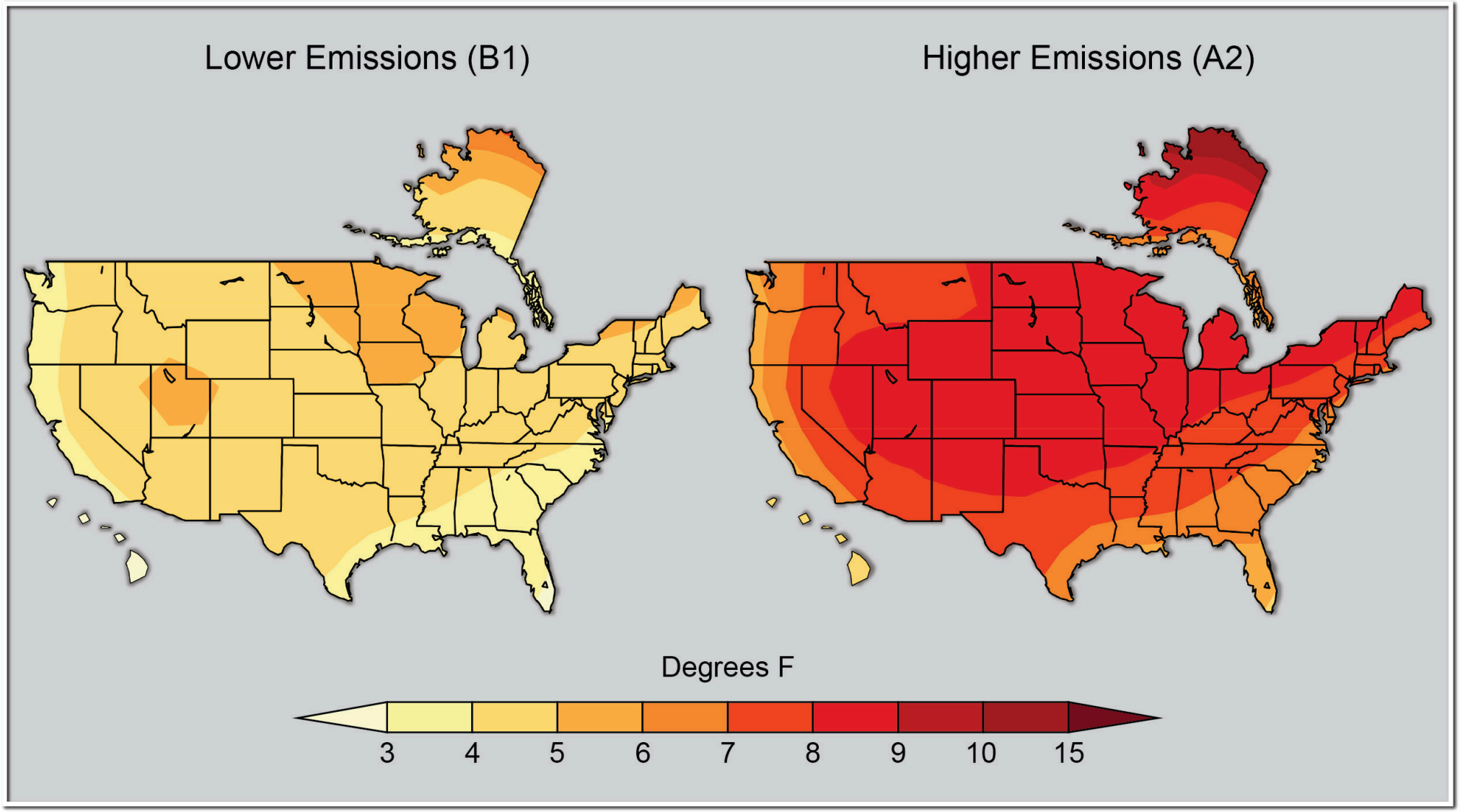
It does not work by unqualified people making claims via media.



climateinteractive.org

All the legitimate academies of science and professional societies have endorsed the mainstream scientific findings on climate change as assessed by IPCC.

Projected Temperature Change



www.ipcc.ch

www.realclimate.org

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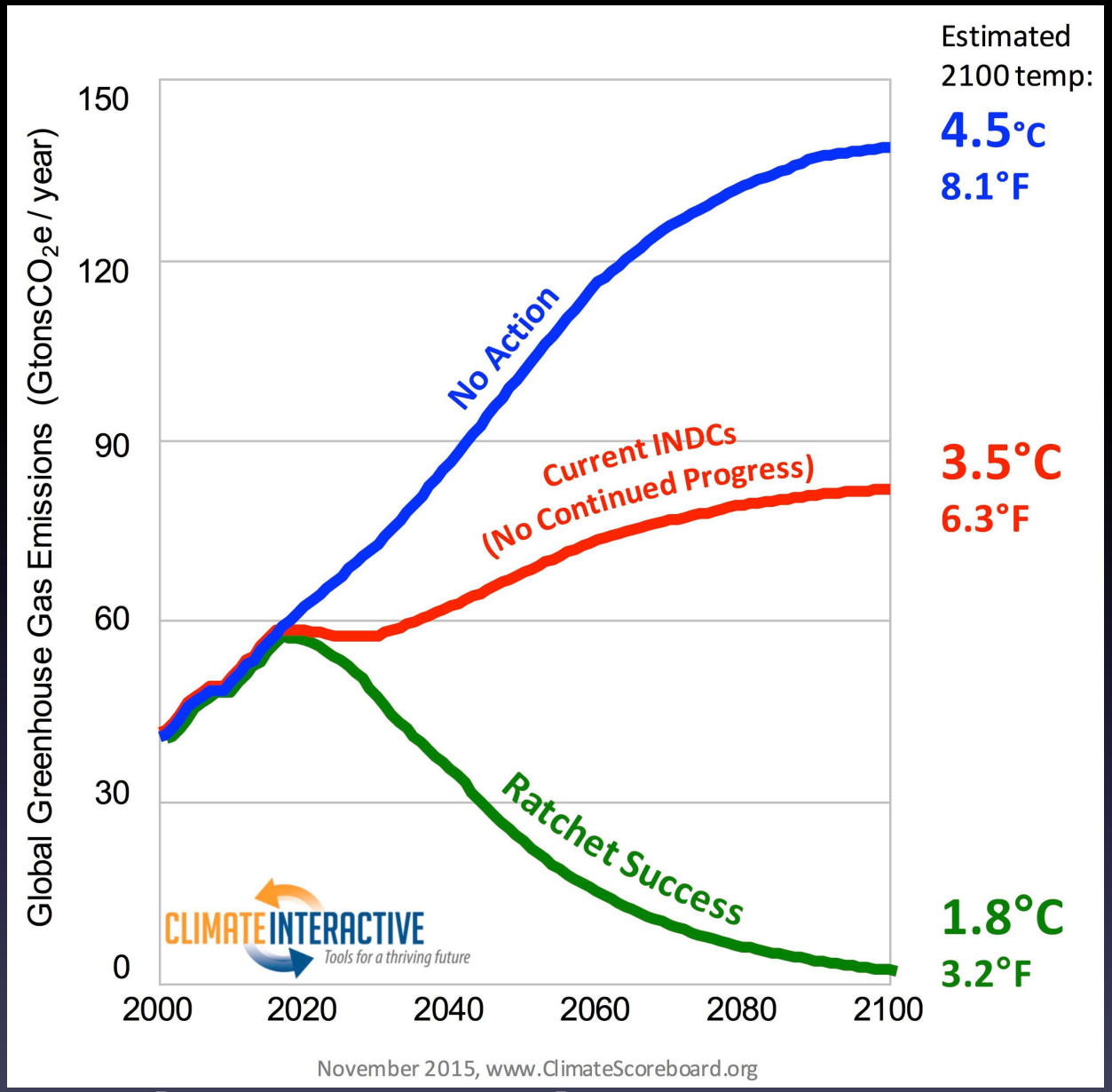
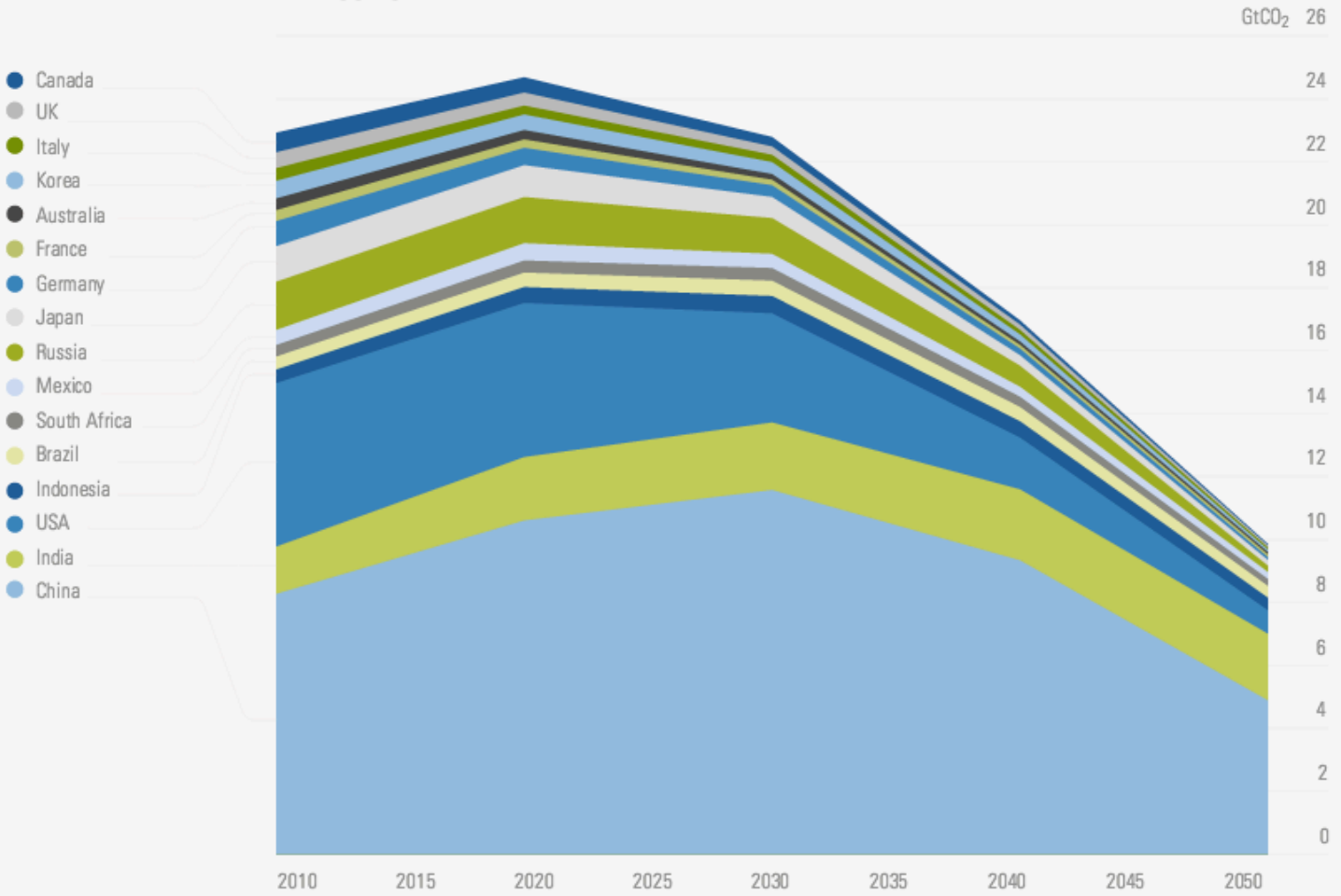


climateinteractive.org

DDPP DEEP DECARBONIZATION PATHWAYS PROJECT

Figure 1. Emissions trajectories for energy CO_2, 2010-2050, showing most ambitious reduction scenarios for all DDPP countries. 2050 aggregate emissions are 57% below 2010 levels.



deepdecarbonization.org

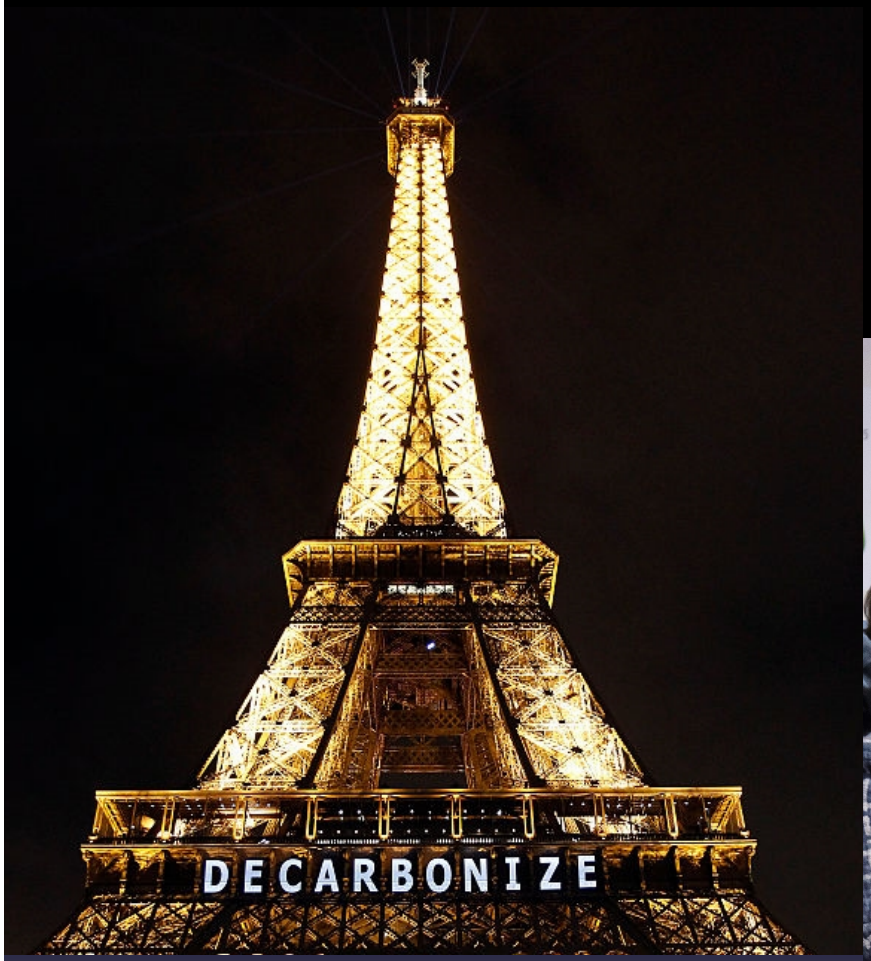
Reasons for optimism:

- World leaders are engaged
- Emissions begin to decline
- Solar and wind get cheaper
- Renewable energy increases
- Many corporations now act
- States and localities act too
- Other countries show progress

Clean Technology

thesolutionsproject.org

The Paris Agreement!



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