CLEARING UP CLIMATE CONFUSION

We're hearing people share a lot of misinformation about climate change—confusion about why it is happening and what we can do about it. Here are ten points that might clear the air.

Hasn't the climate always been changing?

THE TRUTH: The rate of change today is alarming, and humans could not have survived some of Earth's early climate swings.

The Earth's climate has gone through natural cycles of warming and cooling over millions of years.

Human civilization has only thrived for the past 10,000 years when the climate has been relatively stable. Since the Industrial Revolution, humans have raised carbon dioxide levels in the air, and now we are at levels higher than anything in the last 800,000 years. Warming of the kind we are currently experiencing has already had major impacts and will continue to affect people, farms, coastlines, and infrastructure. **People have never before experienced the kind of climate change that we are on track to face. It is literally unprecedented in human history.**[1]

Are climate scientists adjusting data to push their own agendas?

THE TRUTH: All investigations show this is not true.

In 2009, thousands of private emails by climate scientists were released in what has become known as "Climategate." Quotes were misrepresented or cut off to portray scientists as corrupt and untrustworthy. Several investigations were launched, and every one of them came to the same conclusion: the climate scientists had done nothing wrong.

There was no evidence of any adjustment of numbers to promote anyone's agenda. Every single one of the supposedly damning emails was innocuous when read as written, as opposed to doctored and presented by bloggers with a pro-pollution agenda.[2]

CLEARING UP CLIMATE CONFUSION

I've heard that the climate may be changing, but it's not because of people.

THE TRUTH: Climate change is being driven by a marked increase of carbon dioxide in our atmosphere, which is a direct result of human activities.

Greenhouse gases—water vapor, carbon dioxide, methane, and nitrous oxide—have always trapped heat in our atmosphere like a blanket. But for more than a century, humans have been sending extra greenhouse gases into our atmosphere, from industrial and agricultural activities. The atmosphere is now trapping too much heat, so that our planet cannot properly cool off.

How do we know that people have caused this imbalance? The carbon dioxide that comes from fossil fuels has a special signature "fingerprint": it is lighter than other types of carbon dioxide. **Scientists have confirmed that the type of carbon dioxide that is increasing is the lighter type – showing that human activity is responsible.**[3]

It still gets cold in winter, so what's this baloney about warming?

THE TRUTH: Seasons still happen, but on average, annual global temperature is rising.

Global temperature is calculated as an average, which is the central tendency of near-surface temperature measures from all over the world – from land, sea, and ice. As climate change warms the planet as a whole, it also disrupts regional weather patterns, sometimes allowing arctic air to sweep far south, and warmer air moves to the north. There are still warm days and cold days and vast local variation in temperatures. But the global average over an entire year, something no one person can experience from a specific place at a specific time, tells a consistent story.

2016 was the third straight year to set a new record high for average global temperature. **15 of the 16 warmest years on record have occurred since 2001.**[4]

Doesn't heavy rainfall make up for drought, so changes in the weather aren't a big deal?

THE TRUTH: Extreme weather presents many challenges.

California suffered through a historic five-year drought that placed a lot of strain on drinking water supplies, agriculture, tourism, and other sectors. Now the state is seeing historic rain- and snowfall. This causes damage too. **Both drought and flood are exacerbated by climate change, and there are costs to both.**

Atmospheric scientists have established that weather is getting more extreme in all directions. Where there is drought, it tends to persist longer and be more severe. Where it rains, there tends to be more rainfall. Scientists predict that we will continue to see such weather extremes in California and in many other places if climate change continues unabated.[5]

MOMS clean air FORCE

For more information about climate change please visit: **www.momscleanairforce.org**

CLEARING UP CLIMATE CONFUSION

Is there anything wrong with a little warm weather? I like warm weather.

THE TRUTH: Even small changes in average temperature can have a big impact on our lives.

Human activities, such as burning coal and oil and cutting down tropical forests, have increased atmospheric concentrations of heat-trapping gases and caused the planet to warm by 1.4 degrees Fahrenheit since 1880. That may not sound like a lot, but look at the changes we are already seeing: our weather systems are on steroids. Polar ice is melting at record rates. Wildfires burn longer, and devastate much more forest, than ever before.

Our global infrastructure and agricultural system are based on average temperatures of the past; global warming will knock these systems out of balance. Although warmer weather might open up new farmland in some areas, the nutritional value of global staple crops like corn and rice is predicted to decline as carbon dioxide levels increase. Warmer weather will likely reduce winter deaths due to cold weather exposure, but it will also increase heat illness and deaths. In the US, the increase in heat-related deaths is likely to be larger than the reduction in cold-related deaths.[6]

Is the science even settled on climate change? We shouldn't take action yet.

THE TRUTH: The science is settled, and the time to take decisive action is now.

There is overwhelming agreement from scientific societies, scientists, medical associations, government agencies, and international governmental consortia. These groups have all affirmed the growing consensus on climate change science, while continuing to ask questions and do careful research.

Systematic, peer-reviewed reviews of the scientific literature show that 97% or more of scientists publishing papers on the topic of climate change agree that climate change is happening and that human activity is a significant factor. **The time to act is now.**[7]

Renewable energy relies on government subsidies, so it's obviously a bad idea.

THE TRUTH: Renewable energy is poised to become competitive with fossil fuel energy.

Renewable energy capacity in the US has more than tripled since 2008. Costs of solar energy are falling. The fastest growing job category in the US is wind-turbine engineer. **Renewable energy sources like solar and wind are approaching cost-parity with coal and natural gas.**

Subsidies are part of this story, and that's not a bad thing. Fossil fuel companies also rely on subsidies and tax breaks, and have for more than a century. Oil and gas giants--some of the world's most profitable companies--are granted hundreds of billions of dollars in tax subsidies each year. Subsidies are meant to help get new industries off the ground; renewable energy companies are expected to become profitable over time. Right now, it is important to level the playing field while we transition to clean energy independence.[8]

CLEARING UP CLIMATE CONFUSION

Don't clean air regulations cripple our businesses?

THE TRUTH: Cleaning up our air goes hand-in-hand with growing the economy.

There is no evidence that pollution protection measures cripple businesses or kill jobs. **The past four decades have brought cleaner air and a thriving economy.** Since 1970, air pollution has declined 68%, while the GDP grew more than 200%. Many businesses recognize that clean air is good for the bottom line: the business community has demonstrated broad support for clean air regulations.[9]

This problem seems too complex and expensive to solve. Should we focus on everyday problems with clear solutions instead?

THE TRUTH: This is a problem we know how to solve.

Climate change is a simple pollution problem. We have to stop the methane and carbon dioxide pollution that is changing our atmosphere. There are lots of different ways to do this. Although some pollution reduction strategies are high-tech and innovative, many other strategies are already widely in use and well-tested. Solving climate change isn't rocket science. Of course, getting to a cleaner energy future isn't that simple. **But the longer we wait, the more expensive it gets—because the problem grows worse every year.** Moving into a cleaner energy future means new jobs, new markets, new inventions and new companies.[10]

SOURCES

1. National Atmospheric and Oceanic Administration, http://climate.nasa.gov/
   Smithsonian Institution, http://humanorigins.si.edu/evidence/human-evolution-timeline-interactive
2. Read some of the investigations here: Penn State's final report of the inquiry into Dr. Michael Mann's emails; the UK House of Commons' Science and Technology Committee report; the International Science Assessment Panel investigation; University of East Anglia Independent Climate Change Email report; U.S. EPA investigation (unavailable as of 2/17); a second UK House of Commons' Science and Technology report.
   Climate Nexus, http://climatenexus.org/messaging-communication/basics/debunking-top-10-climate-change-myths
3. US Environmental Protection Agency, https://www.epa.gov/ghgemissions
   National Academy of Sciences, http://dels.nas.edu/resources/static-assets/exec-office-other/climate-change-basics.pdf
   National Atmospheric and Oceanic Administration, www.esrl.noaa.gov/gmd/outreach/isotopes/
4. National Atmospheric and Oceanic Administration, http://climate.nasa.gov/evidence/
   National Atmospheric and Oceanic Administration, http://humanorigins.si.edu/evidence/human-evolution-timeline-interactive
   Carbon Brief, https://www.carbonbrief.org/explainer-how-do-scientists-measure-global-temperature
5. Intergovernmental Panel on Climate Change, https://www.ipcc.ch/publications_and_data/ar4/wg2/en/ch3s3-4-3.html
   National Geographic, http://news.nationalgeographic.com/2015/11/151105-climate-weather-disasters-drought-storms/
6. US Global Change Research Program, https://health2016.globalchange.gov/food-safety-nutrition-and-distribution
   US Global Change Research Program, https://health2016.globalchange.gov/temperature-related-death-and-illness
7. National Atmospheric and Oceanic Administration, http://climate.nasa.gov/scientific-consensus/
   Environmental Research Letters, http://iopscience.iop.org/article/10.1088/1748-9326/11/4/048002
8. Nature, http://www.nature.com/news/solar-and-wind-energy-propel-growth-in-us-renewables-1.21472
   Oil Change International, http://priceofoil.org/fossil-fuel-subsidies/
9. Scientific American, https://www.scientificamerican.com/article/7-solutions-to-climate-change-happening-now/
10. US Environmental Protection Agency, https://www.epa.gov/clean-air-act-overview/clean-air-act-and-economy
    Moms Clean Air Force, http://www.momscleanairforce.org/clean-power-plan-gets-huge-support/

06/2017

MOMS clean air FORCE

For more information about climate change please visit: **www.momscleanairforce.org**