On the causes and impacts of anthropogenic climate change as a result of an increase in greenhouse gases affecting the top of the atmosphere energy balance

By Tom Di Liberto

1. Innovim – NOAA/NWS/Climate Prediction Center

* All statements made reflect the thoughts and opinions of Tom Di Liberto and not that of his employer. Have a nice day.
Climate Change: The who?, what? and huh? of humankind’s greatest challenge

Tom Di Liberto

@TDiLiberto
When climate’s got you down
Future Meteorologist!

Age 4
Future whatever he wants
Age: 10 months
Greenhouse Effect

I’m back!
This is abnormal
Australopithecus afarensis

My great x 50,000 grandparent
Very hot

#1: 2014
Very hot

#1: 2015

#2: 2014
Very hot

Likely

#1: 2016
#2: 2015
#3: 2014
Very hot
15 of 16 warmest years are since 2000
How low can it go?

(by Climate.gov, adapted from NSIDC’s Charctic (http://nsidc.org/arcticseaicenews/charctic-interactive-sea-ice-graph/))
1 in 20 yrs
A lot of:

- Air Conditioners
- Flat Tires
- Wavy Roads
- Bendy Rails
Drought
We’re pretty sure.
Grass is always greener
1 in 20 yrs
15
Panda Break
Great Barrier Reef this year
Past and Projected Changes in Global Sea Level

Credit: National Climate Assessment
West Antarctica is 12 feet

20 feet

200 feet
Miami at high tide now!

Credit: Steve Rothaus, Miami Herald
Lots of $$$
Not a fun day at the beach

MY EYES! THE GOGGLES DO NOTHING!
Ocean Acidification
What we know about what we don’t know.
Hurricanes?
Tornadoes?
El Niño...
More like El “I don’t know”
IPCC AR5
Optimistic

(a) Change in average surface temperature (1986–2005 to 2081–2100)

(b) Change in average precipitation (1986–2005 to 2081–2100)
We did it...right?

Paris, France
Estimated global greenhouse gas emissions

In gigatons, CO2 equivalent

Forecast effect on global temperatures

- Current policy: +3.3/3.8 C
- New pledges: +2.5/2.7 C
- Less than +2 C

*Expected temperature change by 2100, versus period before Industrial Revolution
**Based on intended nationally determined contributions submitted to UNFCCC by Oct. 1

SOURCE: Climate Action Tracker

Javier Zarracina/Vox
Climate change isn’t fair.
We are here. Our only
Thank you!

Tom Di Liberto