**Climate Change & *Unsettled* by Steven Koonin (Part 1)**

**Claims by President Biden (7/20/22)**

1. “The UN’s leading international climate scientists called the latest climate report nothing less than, quote, ‘code red for humanity.’”

*- Intergovernmental Panel on Climate Change (8/21): extreme projections for warming downgraded to “low likelihood”*

2. “We lose it all” if we don’t suppress temperature increases below 1.5 degrees Celsius.”

*- IPCC estimates warming of 1.1°C since 1850*

*- Extreme poverty down 80%; global crop yields of grains up 200%*

*- Humans innovate/adapt*

3. Last year, “extreme weather [cost] $145 billion” in property damage because of climate change.

*- World Bank: damages from weather disasters decreasing since 1990 as percent of GDP*

*- OMB: Death toll in US from climate-related disasters decreased 96% over past century*

*- Oxford: 15,071 people died globally in natural disasters in 2020*

*- CDC: 93,331 deaths in US from drug overdoses in 2020*

4. Hurricanes, tornadoes, drought, flooding, and wildfires are becoming more destructive because of climate change.

*- IPCC: no discernible global trends for hurricanes, winter storms, floods, tornadoes, or thunderstorms; trends in heat waves, heavy precipitation, and some kinds of drought*

 5. Biden intimated our air is choked with pollution.

*- EPA: air pollution decreased 73% since 1980*

<https://www.dailysignal.com/2022/07/21/what-you-need-to-know-about-bidens-climate-emergency>

**Did you know? According to US, UN reports: (*Unsettled* by Steven Koonin)**

 1. Heat waves no more common than in 1900

 2. No human impact on hurricanes over last century

 3. Greenland’s ice sheet not shrinking any more rapidly than 80 years ago

**Telling the truth?**

1. “Is doesn’t matter what is true. It only matters what people believe is true.” (Paul Watson, co-founder of Greenpeace)

2. “We’ve got to ride this global warming issue. Even if the theory of global warming is wrong, we will be doing the right thing in terms of economic and environmental policy.” (Timothy Wirth, president of the UN Foundation)

3. “Some colleagues who share my doubts argue that the only way to get our society to change is to frighten people with the possibility of a catastrophe, and that therefore it is all right and even necessary for scientists to exaggerate. They tell me that my belief in open and honest assessment is naïve.” (Daniel Botkin, former chair of Environmental Studies at UCSB)

**Koonin’s discoveries**

 1. Humans exert small warming influence

 2. Climate models disagree and even contradict each other

 3. Governments & UN don’t accurately reflect these reports

4. Science can’t make useful projections on climate change, much less what effect we can have

**Reducing human impact on climate involves**

 1. Risk tolerance

 2. Economic development

 3. Environmental impact

 4. Energy cost, availability, & reliability

5. Scientific certainties & uncertainties

**Koonin’s summary**

“The earth has warmed during the past century, partly because of natu­ral phenomena and partly in response to growing human influences. These human influences (most importantly the accumulation of CO2 from burning fossil fuels) exert a physically small effect on the complex climate system. Unfortunately, our limited observations and understanding are insufficient to usefully quantify either how the climate will respond to human influences or how it varies naturally. However, even as human influences have increased almost fivefold since 1950 and the globe has warmed modestly, most severe weather phenomena remain within past variability. Projections of future climate and weather events rely on models demonstrably unfit for the purpose.” (p. 24)

**Earth’s temperature & human influence**

 1. Balance between warming by sunlight & cooling by heat radiated back into space

 *- 70% of sunlight absorbed; 30% reflected back (albedo)*

 *- Atmosphere intercepts >80% of infrared radiation from surface*

 2. Human influences on atmosphere

*- Carbon dioxide, methane, other gases*

 3. Natural influences on atmosphere

 *- Volcanic eruptions’ aerosols reflect sunlight & cool planet*

 *- Sun’s intensity due to sunspots*

4. “Past variations of surface temperature and ocean heat content do not at all disprove that the -1°C (1.8°F) rise in the global average surface temperature anomaly since 1880 is due to humans, but they do show that there are powerful natural forces driving the climate as well, and they illuminate the scientific challenge of under­standing those natural influences well enough to confidently identify the climate's response to human ones. In other words, the real question is not whether the globe has warmed recently, but rather to what extent this warming is being caused by humans.” (p. 44)

5. “The energy that flows in and out of the climate system is measured in watts per square meter (W/m2). The sunlight energy absorbed by the earth (and hence the heat radiated by earth) amounts to an average of 239 W/m2…Human influences amount to just over 2 W/m2, or slightly less than 1% of that natural flow.” (p. 56)

**Carbon dioxide**

1. “The simple fact that carbon dioxide lasts a long time in the atmosphere is a fundamental impediment to reducing human influences on the climate. Any emission adds to the concentration, which keeps increasing as long as emissions continue. In other words, CO2 is not like smog, which disappears a few days after you stop emissions; it takes centuries for the excess carbon dioxide to vanish from the atmosphere. So modest reductions in CO2 emis­sions would only slow the increase in concentration but not prevent it. Just to stabilize the CO2 concentration, and hence its warming influence, *global emissions would have to vanish.”* (p. 68)

**Climate models**

 1. Computer model covers earth with 3-D grid of 10-20 layers of 60x60 mile boxes

 2. Surface—ground temperature, water, energy, carbon fluxes

 3. Atmosphere—wind, humidity, clouds, temperature, height

4. The implication is that the models generally agree. But that isn't at all the case. Comparisons among models within any of these ensembles show that, on the scales required to measure the climate's response to human influences, model results differ dramatically both from each other and from observations. But you wouldn't know that unless you read deep into the IPCC report. Only then would you discover that the results being presented are averaging models that disagree wildly with each other…The uncertainties in modeling of both climate change and the consequences of future greenhouse gas emissions make it impossible today to provide reliable, quantitative statements about relative risks and consequences and benefits of rising greenhouse gases to the Earth system as a whole, let alone to specific regions of the planet.” (p. 86-87, 96)