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Earth's climate has historically changed over time; natural cycles stemming from solar activity, volcanic events, or orbital patterns. The differences between the climate variations we're experiencing in the present, and those experienced in the past are fundamentally different; the modern climate changes are not natural, but anthropogenic. The Industrial Revolution is a turning point in history, marking the point in which these natural cycles began to be altered by human activity. The wide-spread use of fossil fuels, paired with large-scale deforestation created an imbalance; less carbon being absorbed, and more of it being released (Christopherson et al., 2017).

The climate on Earth depends on energy released by the Sun; while only a small fraction of this radiant energy makes it, it is the driver of our atmosphere. The energy that does reach Earth is called insolation, parts of this energy become reflected, some are absorbed, the final portion that makes it to the surface is responsible for warming Earth's land and oceans. As the surfaces absorb energy, warming causes it to be re-released back in a different form known as longwave infrared radiation (Christopherson et al., 2017). Not all of the longwave radiation escapes Earth's atmosphere, some of the gases within it absorb it, and redirect it; a process that is referred to as the greenhouse effect. Without this natural process Earth would be uninhabitable, the average temperature of our planet –18 °C (0°F), much colder than the comfortable 15 °C (59°F) we currently experience (Christopherson et al., 2017).

The greenhouse effect happens as a result of atmospheric chemistry, the way molecules interact with the infrared energy from Earth. CO_2 and H_2O, are made of three or more atoms, giving them the ability to absorb the infrared energy and release it; while N_2 and O_2 are simpler, and remain transparent to heat and allow energy to pass through (Christopherson et al., 2017). The greenhouse effect has kept the Earth balanced for millions of years, trapping enough heat to keep Earth's temperature stable and releasing what is not needed.

The natural greenhouse effect began changing post industrial revolution, evolving into a more enhanced version of itself. Human activity started adding more of the heat-trapping gases into the atmosphere, making the effect stronger, keeping more heat within the atmosphere and reducing the amount escaping. The amount of carbon dioxide (CO_2) within the atmosphere has changed drastically, prior to industrialization levels were around 280 parts per million (ppm) while current rates are higher than they've been within the last 800,000 years at 400 parts per million (Christopherson et al., 2017).

The increase in carbon dioxide molecules (CO_2) within the atmosphere, allow for more of the longwave infrared radiation to get absorbed and re-emitted back to the surface. This creates an imbalance in our atmosphere, which is known as radiative forcing (Christopherson et al., 2017). Radiative forcing explains the process of energy in versus energy out; relative to our planet; this term describes Earth absorbing more energy than it releases. There is more incoming shortwave radiation to Earth than there is outgoing longwave infrared radiation, creating a gradual buildup of heat. The rise of carbon dioxide levels within the atmosphere, from human activity, has disrupted the natural cycles starting what we can refer to as anthropogenic climate change.

There is strong evidence showing that human activity and modern climate change are intertwined, directly connected rather than resulting of Earth's naturally occurring climate cycles. Evidence has already linked rising carbon dioxide (CO_2) levels in the atmosphere to human activity, with rates sharply increasing after the industrial revolution. Many would argue we can't know if this carbon has resulted directly from human activity, which isn't the case. Chemical indicators can be used to show human involvement using carbon isotope analysis, since carbon is something that naturally occurs isotopes can tell us if the carbon comes from humans burning fossil fuels, or the ancient plant material. Ancient plant material will contain more ^{12}C, than ^{13}C (Christopherson et al., 2017). When measuring the isotope ratio within the atmosphere, the values point to sources with higher levels or ^{13}C, rather than natural sources (Christopherson et al., 2017). Ice cores offer some of the clearest evidence of changes in the atmosphere throughout Earth's history, as ice preserves chemical traces and air bubbles which can be used to reconstruct climates throughout history. Through chemical analysis of ice allows us to see another connection, a rise of CO_2 aligning with the rise of coal burning industries.

The existence of Earth's natural climate cycles cannot be applied to the situation occurring on Earth now. Solar activity, Milankovitch cycles, and volcanic activity are unable to account for the pace in which this warming is occurring, nor the magnitude of it. Solar variability hasn't shown any major increases or decreases, rather they have remained relatively stable (Christopherson et al., 2017). While the current Milankovitch cycle favors a cooling trend not warming, leaving it unable to be traced to the current climate change that Earth is experiencing. The Paleocene-Eocene Thermal Maximum (PETM) which occurred almost fifty-six million years ago, is often used as a comparison to the current climate change. During this period, levels of methane and carbon were high, increasing the global temperature by 5° C to 8 °C (41° F - 46° F), though this warming occurred gradually over around twenty-thousand years (Christopherson et al., 2017). The current rate of warming has occurred much quicker, in about two hundred years opposed to twenty-thousand, and from a different source of carbon.

Even with scientific evidence being widely available to confirm the existence of climate change, and of climate change being human-driven, misinformation and deliberate denial have created a public misunderstanding. The deliberate push of misinformation stems from personal, political and economic interests, in the hopes to create confusion and public distrust. Think-tanks, industries, and political organizations all have worked to create campaigns to create uncertainty around climate change.

Changing the framing of climate change to being uncertain, rather than scientifically supported and proven, was one of the tools deniers used to create debate. A strategy that came from previous campaigns led by the tobacco industry, in order to argue against the health effects of smoking (Kenner, 2014). Throughout the documentary Merchants of Doubt, we see many different figures utilizing this tactic to sway public perception in their favor. Specifically, this can be seen in the hacking incident that occurred in 2009. Using stolen emails from the Climate Research Unit (CRU) hackers were able to spread misinformation by manipulating the emails via select quotes, making it appear that scientists had purposely manipulated their scientific data (Kenner, 2014). The timing of this scandal was purposeful rather than accidental, occurring right before the United Nations Climate Change conference which would be taking place in Copenhagen. Despite the fact that later investigations proved that scientists had not actually manipulated their data, this event still resulted in the weakening of public confidence in climate change research.

Other tactics like ad hominem attacks have been used in climate change debates, Marc Morano frequently utilized this tactic. Marc Morano founded Climate Depot, and rather than engage with scientific data presented by scientists, he opted to use personal harassment and doxxing to discredit them. This is done in an effort to distract from the evidence and move the public's attention to the scientist's credibility and created a space where climate scientists hesitated in speaking out (Kenner, 2014). On a similar note, the film shows us what can happen to those who do speak out; like Bob Inglis. U.S Representative had previously been a climate denier, but after witnessing the evidence he changed his stance and when faced political backlash after he changed his stance.

Inglis is a rare conversion of ideals, originally a denier then changing to an activist, this switch usually happens in the reverse. Politics has been instrumental in the public perspective of climate change, as it's more commonly viewed as an ideology rather than a science like it is. Changing climate change from a science to a partisan issue has allowed for fear-mongering about government overreach and control, regulations, job loss, and economic impacts to take priority over the scientific data (Kenner, 2014).

The denial of climate change is not about the lack of scientific data or evidence, or support within the scientific community; it stems from the manipulation of perception. Companies, industries, and politicians

have come together and manufactured uncertainty, in a deliberate attempt to manipulate the views and beliefs of the public.