

Notes for Man Made Climate Change

- Industrial Revolution – 1800's
 - Beginning of mining fossil fuels for industrial use and transportation.
 - Began with using coal, then added oil in 1900's.
 - Resulted in population explosion and increased use of natural resources, especially timber (deforestation).
- Increased Greenhouse Gases –
 - Charles David Keeling – began measuring CO₂ levels in the atmosphere from Hawaii.
 - Noticed seasonal variation due to change in photosynthesis, but also an overall increase in CO₂. (1955 - 315 ppm to 420 ppm today)
 - Ice core data (air bubbles in glaciers) provide an historical record of past CO₂ levels. Varied over time, corresponding with ice ages and warming up periods, but levels of CO₂ were never as high as today's levels.

- **Increased Global Temperatures**

- Historical recordings using thermometers for over 100 years.
- Ice core data using oxygen isotopes provided historical record for 100,000 of years.
- Rate of temperature increase has doubles within the past 50 years and the warmest years have all occurred within the past 20 years.
- Overall average global temperature has increased about 1⁰ F, but some places are warmer and other places are cooler.

- **Greenhouse Gases**

- Methane (CH₄) emissions has increased but its residency time in the atmosphere is only 10 years, before it reacts with H₂O and becomes CO₂.
- CO₂ residency time lasts hundreds of years. After 100 years, only 50% is broken down. (1 car emits 7.5 tons of CO₂ each year – after 100 years, 3.25 tons is still left in the atmosphere).

- **Evidence for Increased CO₂ from Human Activities**
 - **Mining fossil fuels is a business and records have been kept on exactly how much coal, oil, and natural gas has been mined.**
 - **Records have also been kept on how much forest land has been cleared for timber, agriculture, or land development. (trees remove CO₂ from atmosphere are store it).**
- **Controversy**
 - **Mining fossil fuels is a big business with a lot of money, a lot of stock investors, and several nation's main source of income.**
 - **They have an invested interest in keeping the fossil fuel industry strong.**
 - **They pay into politician's campaigns to ensure they don't create laws or programs that will hurt their industry.**
 - **They publish and spread propaganda that makes the general public think climate change is not occurring or not caused by human activity.**