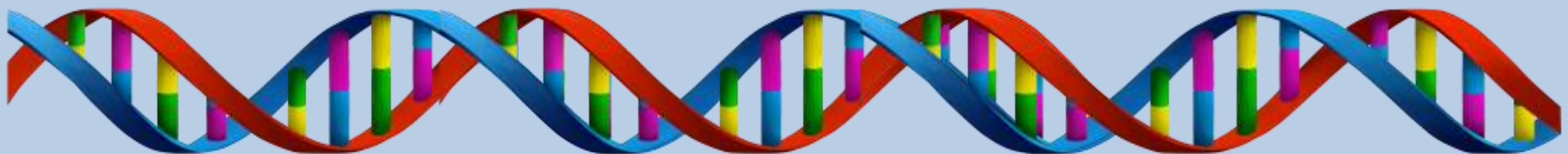1. What is the anthropocene?

2. Why are cows bad?

3. What is a solution for the cow problem?

4. Why is it NOT realistic to get rid of all the cows?

Logistics

- Unit 3 Assessment
  - FRIDAY, November 22nd
  - So far we have covered objectives 1-8
  - By the end of today we will have covered objectives 1-11

Human Impact

- **In your groups review the 8 kinds of human impacts we learned on Friday and describe WHY THEY ARE HARMFUL**
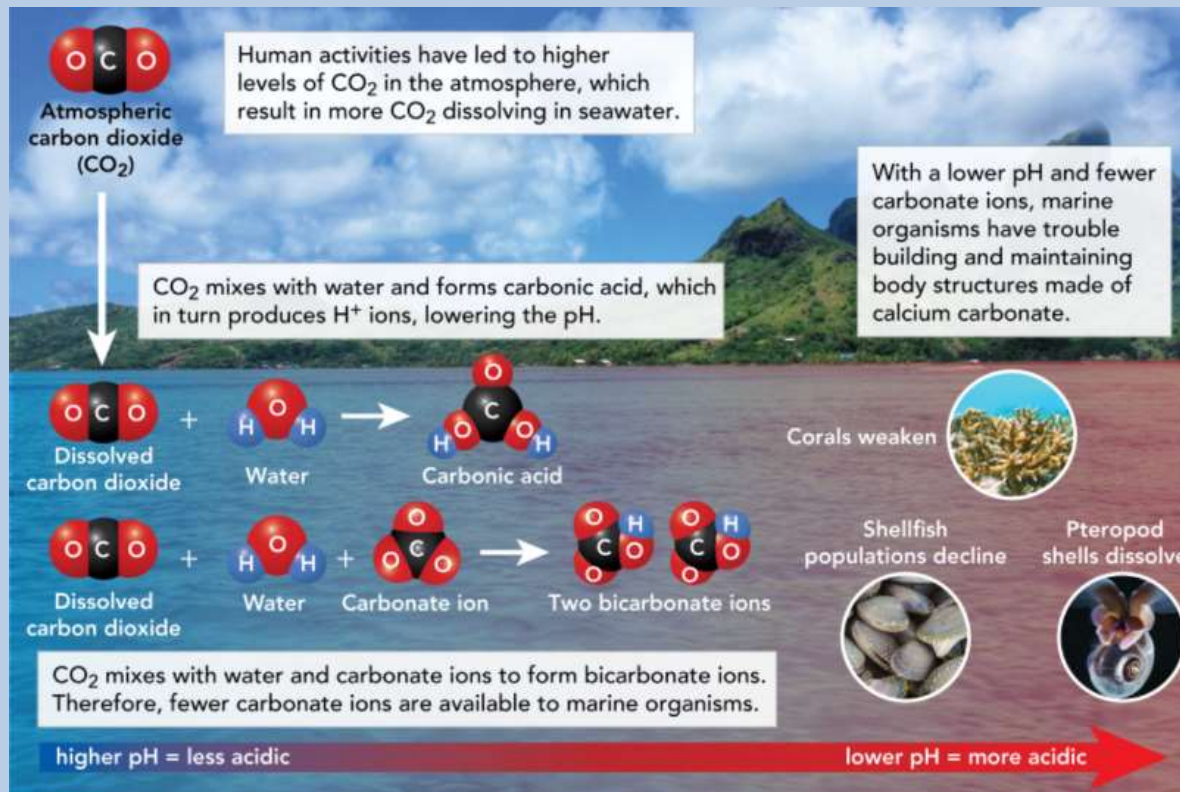
Human Impact

- **1: Acid rain: air pollution combines with water and falls as rain that is acidic and especially damaging to forests and lakes**
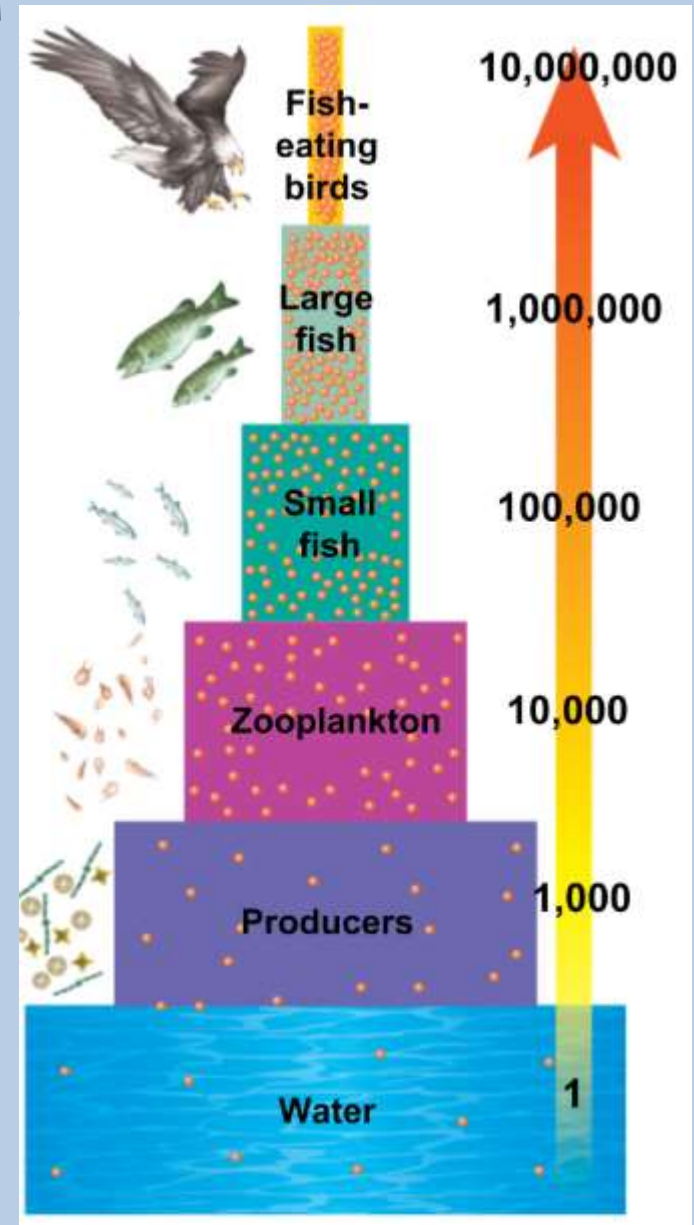
Human Impact

- **2: Ocean acidification: continued decreasing pH due to carbon dioxide absorption from the atmosphere**

Human activities have led to higher levels of CO_2 in the atmosphere, which result in more CO_2 dissolving in seawater.

Atmospheric carbon dioxide (CO_2)

CO_2 mixes with water and forms carbonic acid, which in turn produces H^+ ions, lowering the pH.

With a lower pH and fewer carbonate ions, marine organisms have trouble building and maintaining body structures made of calcium carbonate.

Dissolved carbon dioxide + Water → Carbonic acid

Corals weaken

Dissolved carbon dioxide + Water + Carbonate ion → Two bicarbonate ions

Shellfish populations decline

Pteropod shells dissolve

CO_2 mixes with water and carbonate ions to form bicarbonate ions. Therefore, fewer carbonate ions are available to marine organisms.

higher pH = less acidic

lower pH = more acidic

Human Impact

- **3: Biological magnification: in a food chain the concentration of a pollutant increases as the number of organisms at each trophic level decreases**

Human Impact

- **4: Deforestation: loss of forests that can have negative effects on soil, water, carbon storage, and animals**

Human Impact

- 5: Monoculture: planting large areas with a single, high production crop every year

Human Impact

- **6: Habitat fragmentation: causes biodiversity loss and makes ecosystems more vulnerable to other disturbances**

Human Impact

- **7: Overharvesting: using a natural resource in an unsustainable way**

Human Impact

- **8: Invasive species: species can be introduced to new places by humans and disrupt the ecosystem**

Climate Change

- **What is climate change? *(What is really changing?)***

- https://www.climaterealityproject.org/video/climate-101-bill-nye

Climate Change

- What is climate change? *(What is really changing?)*
  - **Temperature**
  - **Clouds**
  - **Winds**
  - **Precipitation**
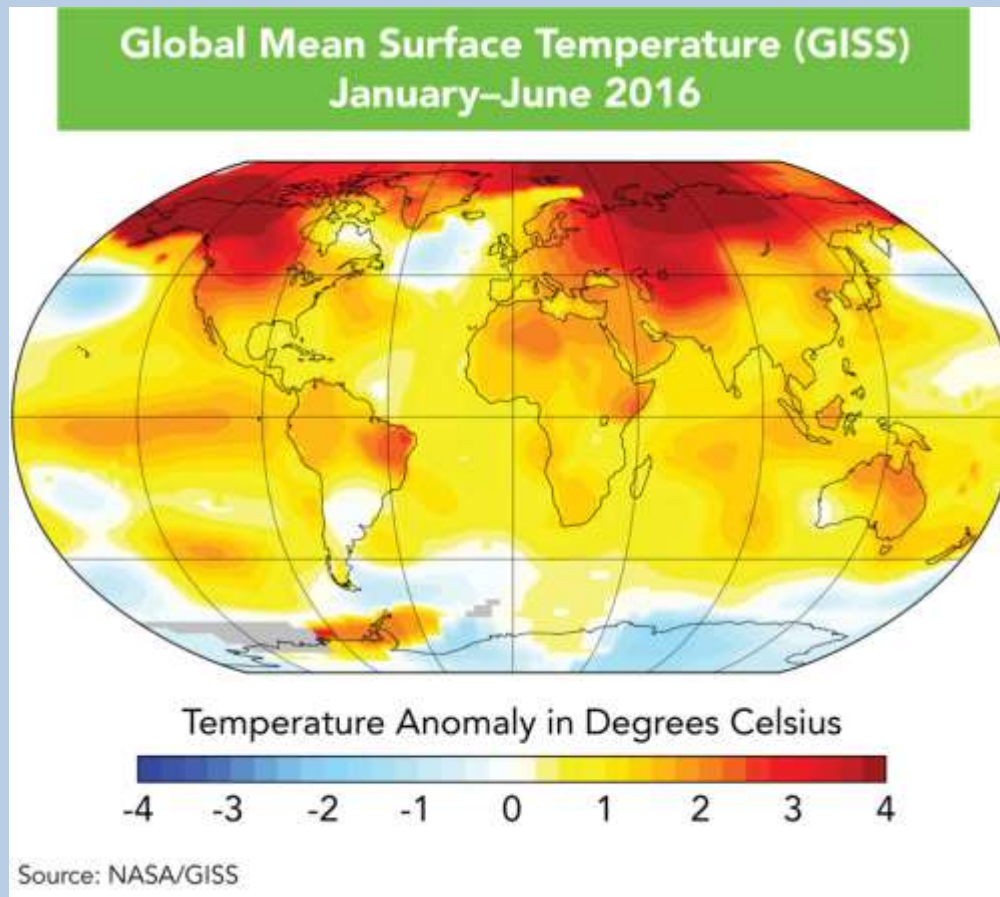 - **The frequency and severity of extreme weather events**

Climate Change

- **The Intergovernmental Panel on Climate Change was founded in 1988 by the World Meteorological Organization and the United Nations to collect data on the climate**

- *Over 2,500 scientists contribute and 195 governments are members*

Climate Change

- **What evidence is there for climate change?**
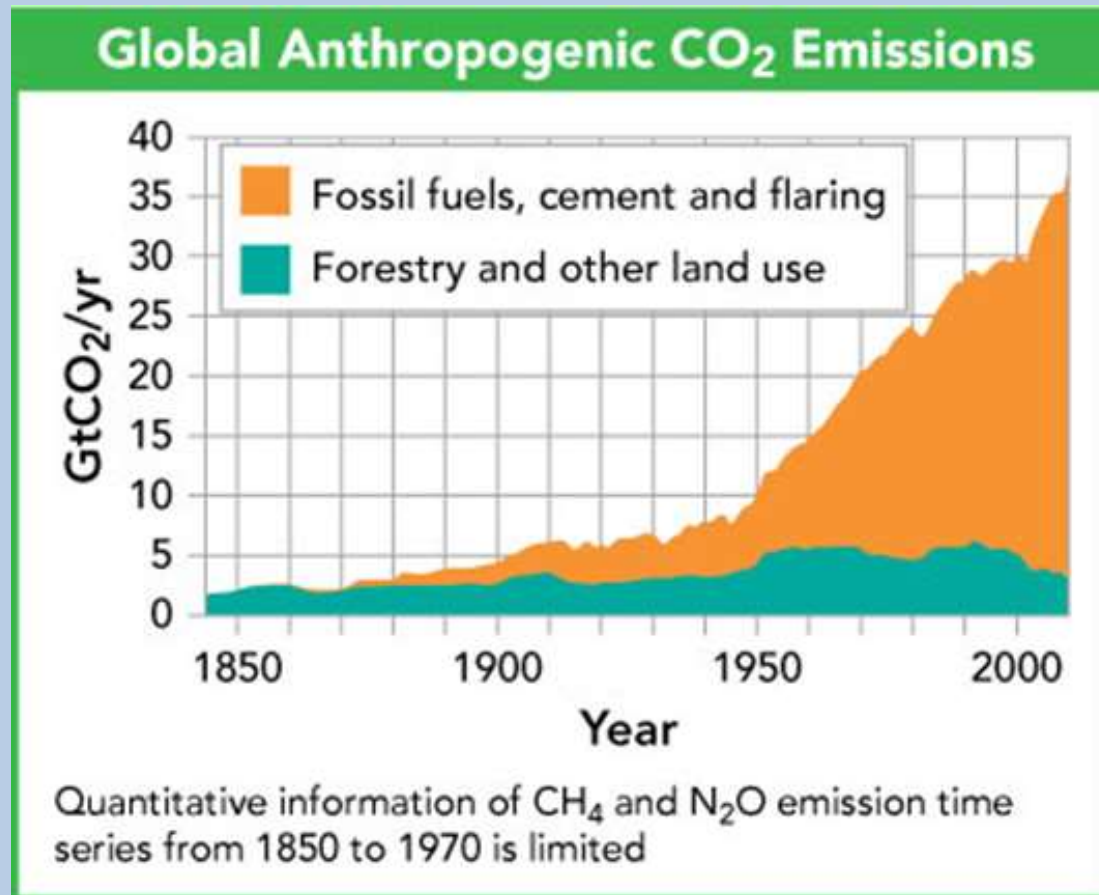
Climate Change

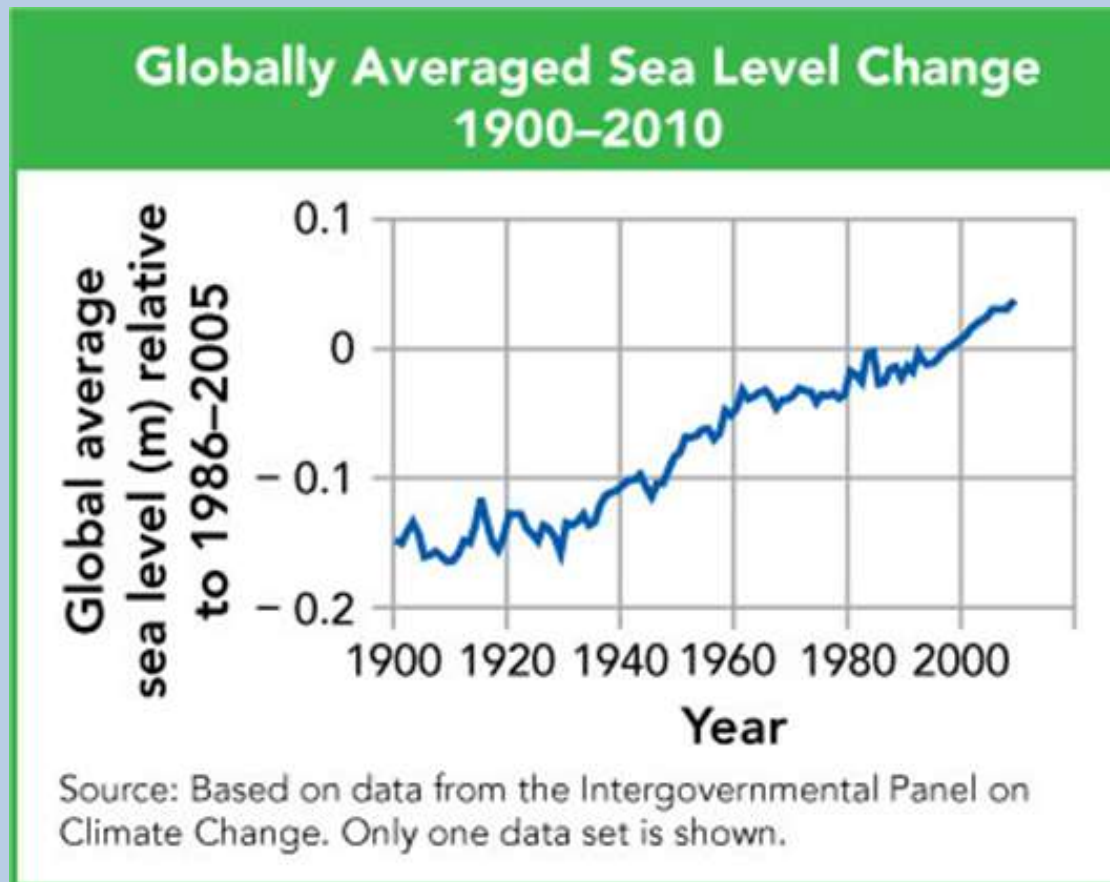- **What evidence is there for climate change?**

Global Mean Surface Temperature (GISS)
January–June 2016

Temperature Anomaly in Degrees Celsius

-4 -3 -2 -1 0 1 2 3 4

Source: NASA/GISS

Climate Change

- **What evidence is there for climate change?**

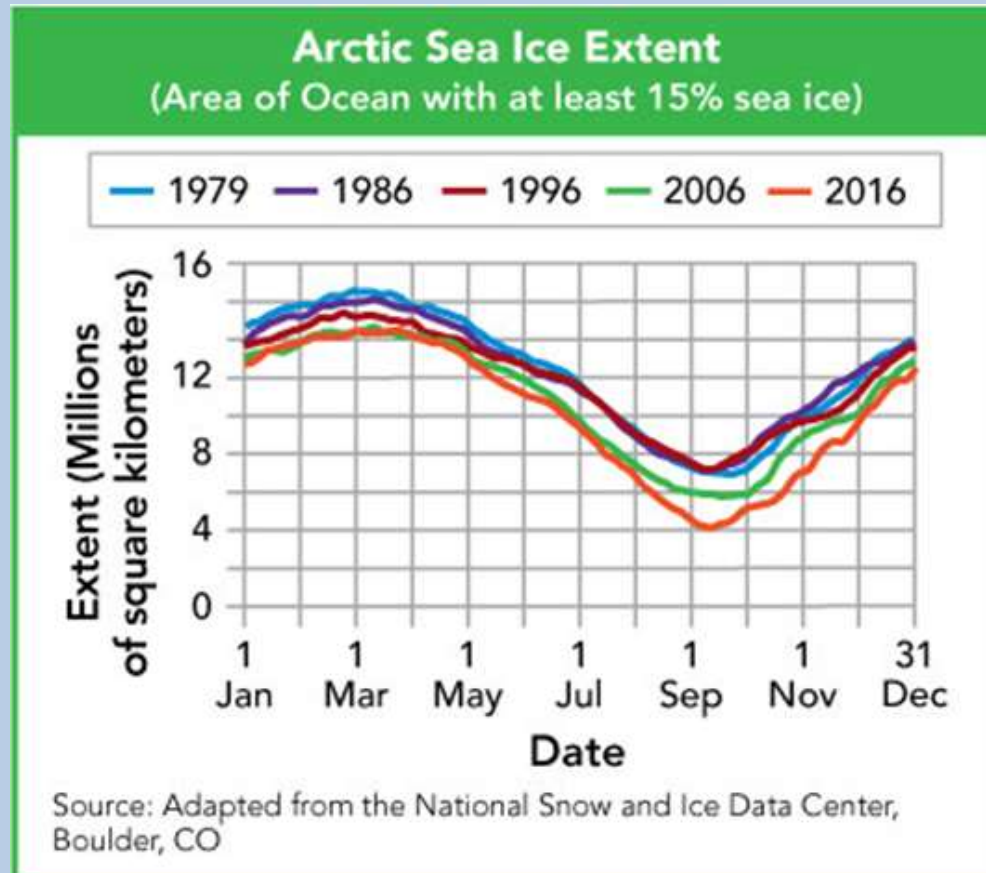# Climate Change

- **What evidence is there for climate change?**

Globally Averaged Sea Level Change 1900–2010

Source: Based on data from the Intergovernmental Panel on Climate Change. Only one data set is shown.

Climate Change

- **What evidence is there for climate change?**

Arctic Sea Ice Extent
(Area of Ocean with at least 15% sea ice)

— 1979 — 1986 — 1996 — 2006 — 2016

Source: Adapted from the National Snow and Ice Data Center, Boulder, CO

Climate Change

- Data that the IPCC collects is used to make models that predict future outcomes:

  - If CO_2 emissions are reduced the temperature will increase by 3 degrees in this century

  - If CO_2 emissions are held constant the temperature will increase by 4 degrees in this century

Climate Change

- How does climate change **impact humans**?

Climate Change

- Humans are impacted by:
  - Water availability
    - Droughts
    - Decreased snow pack
  - Crop cycles
    - Negative impact on crop yield
  - Loss of land
    - Sea level has increased 4 inches in 55 years

Climate Change

- **What is the role of science in dealing with climate change?**

Climate Change

- Science can help by:

  1. Recognizing that there IS a problem

  2. Gather data

  3. Use data to change behavior

Human Project

- As you work on your project keep in mind that you are *studying the culture, resources, politics, economy, and conflicts* of your country in order to *identify the biggest environmental impact of the country*

Human Project

- **You have two options for your presentation:**
    1. **Poster**
    2. **Slideshow**
- **It is due on <u>NOVEMBER 26/27th</u>**
- **You will be presenting in small groups**
- **Use the rubric**

Human Project

- Begin the human impact project

  - YOU SHOULD AT LEAST START RESEARCHING TASK 4 BEFORE LEAVING