How do we know that humans are causing the Earth to warm and the climate to change?

1. **Simple chemistry**  
   Since 1900s
   - Burning carbon-based fuels releases carbon dioxide into the atmosphere.

2. **Basic accounting**  
   Since 1970s
   - We keep track of and add up how much we burn and therefore can calculate how much CO₂ and other pollutants we emit.

3. **Measuring in the atmosphere**  
   Since 1950s
   - Measuring CO₂ in the atmosphere in remote locations shows that the increase in emissions is indeed increasing atmospheric concentrations.
   - CO₂ trapped in ice shows that levels today are much higher than over the past 800,000 years.

4. **Chemical analysis**  
   Since 1950s
   - Chemical analysis of the CO₂ in the atmosphere reveals that the excess is from burning ancient plants that have been buried for millions of years (fossil fuels).

5. **Basic physics**  
   Since 1820s
   - Certain gases (such as CO₂) absorb heat emitted by Earth and prevent it from going to space.

6. **Monitoring climate conditions**  
   Since 1930s
   - Independent temperature records show that the Earth is warming, and that this warming trend is correlated with the rise in atmospheric CO₂ concentrations from human activities.

7. **Ruling out natural factors**  
   Since 1830s
   - Many factors can influence climate conditions. But monitoring and examining natural factors show that they have not played a major role in 20th Century warming.

8. **Employing computer models**  
   Since 1960s
   - Computer models are tools that scientists use as a virtual laboratory (because we can’t experiment with the Earth!)

9. **Consensus among scientists**  
   Since 1990s
   - Analyzing the above evidence for themselves, 97% of 12,000 climate scientists from 74 countries that published in the scientific literature from 1994 to 2011 agree that humans are the main cause of climate change.

**THIS EXPLAINS WHY:**
1. A greenhouse is hot
2. The Earth isn’t frozen
3. Venus is hotter than Mercury even though it is farther from the Sun—its atmosphere is filled with CO₂

**SCIENTIFIC ANALYSIS REVEALS THAT IT’S NOT:**
- THE SUN
- OCEAN CYCLES
- PLANTS

Only the inclusion of human activities in climate models can reproduce observed temperature warming.