Infographic Notes

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1. Greenhouse Effect — A process that occurs when gases in Earth's atmosphere trap the sun's heat
    - Greenhouse Gas — A gas that contributes to the greenhouse effect by absorbing infrared radiation
        - Carbon dioxide, methane, nitrous oxide, ozone, water vapor, and fluorinated gases
    - Most greenhouse gases are created from burning fossil fuels
2. The 6 Pollutants in the Clean Air Act:
    - Particulate Matter
    - Tropospheric (Ground-Level) Ozone
    - Carbon Monoxide (CO)
    - Sulfur Dioxide (SO_2)
    - Lead (Pb)
    - Nitrogen Dioxide (NO_2)
3. La Niña and El Niño
    - La Niña — Strong trade winds push warm water west across the Pacific, leaving cold water on the west coast. This shifts the Pacific Jet Stream north, giving rain to the pacific northwest and Canada
    - El Niño — Weak trade winds mean warm water stays on the west coast, shifting the Pacific Jet Stream south, giving rain to California and the southern USA. Occurs once every 2-7 years
4. Montreal Protocol — An international treaty that limits or prohibits use of certain pollutants

- CFCs — Phased out
- HCFCs — Phased out
- HFCs — In progress

5. Ground-Level vs. Stratospheric Ozone

   - Ground-level ozone is bad and is created by chemical reactions
   - Stratospheric ozone protects us from the sun's ultraviolet radiation (good ozone)

6. Solutions to Ground-Level Ozone

   - Drive less
   - Travel wise
   - Use air-friendly products
   - Strict NO_x emission limits

7. Atmospheric Levels

   (a) Endless space — Beyond 3000 kilometers
   (b) Exosphere — 800 to 3000 kilometers
   (c) Thermosphere — 80-90 to 800 kilometers
   (d) Mesosphere — 40-50 kilometers to 80-90 kilometers
   (e) Stratosphere — 11 kilometers to 50 kilometers
   (f) Troposphere — Ground to 11 kilometers

8. Kyoto Protocol — An international treaty for climate change. Parties are to reduce greenhouse gas emissions from 1990 levels by 5%

9. Industrial vs. Photochemical Smog

   - Industrial
     (a) Burning fossil fuels
     (b) Sulfur dioxide released
   - Photochemical
     (a) Accumulation of Pollutants
     (b) Oxidant formation

10. Sea and Ice Level Changes

    - Average global temperature increased from 57.3°F to 58.76°F
    - Arctic ice mass has shrunk

11. Solutions to the Ozone
    - Aerosol sprays and CFCs have led to widening of the ozone hole
    - Damage can be minimized by buying local groceries, minimizing car use, and avoiding purchase of harmful cleaning products
12. Climate Change — A Positive Feedback Loop
    (a) CO_2 increases
    (b) The planet warms up
    (c) The oceans release more carbon
    (d) So less CO_2 is taken from the atmosphere
    (e) So CO_2 increases again
    (f) And the loop repeats
13. Proxy Indicators
    - Different things in the environment can indicate different levels of environmental damage:
      - Ocean sediment
      - Tree cores
      - Ice cores
      - Pollen
      - Coral
14. Temperature and Precipitation Changes
    - Global temperature has increased
    - The average surface air temperature in the Arctic Siberia has also increased
    - Global precipitation rates have gone up
15. Changes in Animals and Plants
    - Air
      - Rising temperatures result in increased wildfires
      - The extra trapped heat disrupts a lot of the environment
    - Land
      - Drought leads to lack of food for animals
      - Floods destroy land and aquatic habitats, which kills and displaces many animals and plants
    - Ocean
      - Excess CO_2 absorbed leads to higher temperatures
      - This leads to coral bleaching and the degradation of habitats and deaths of aquatic species