

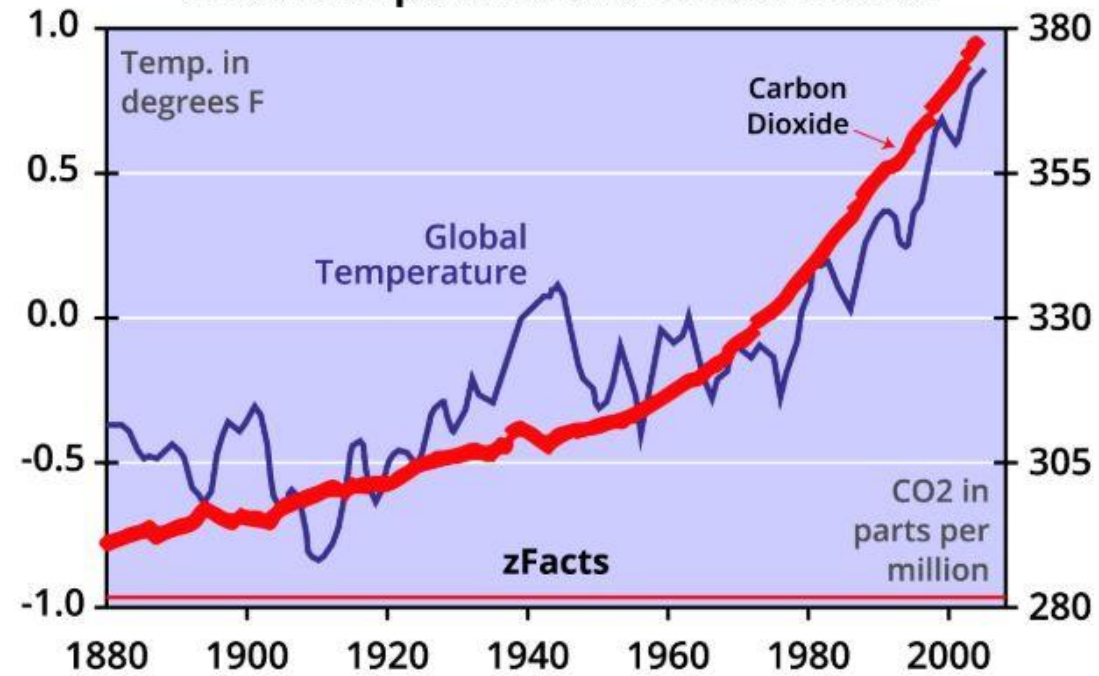
# EFFECTS OF GLOBAL WARMING

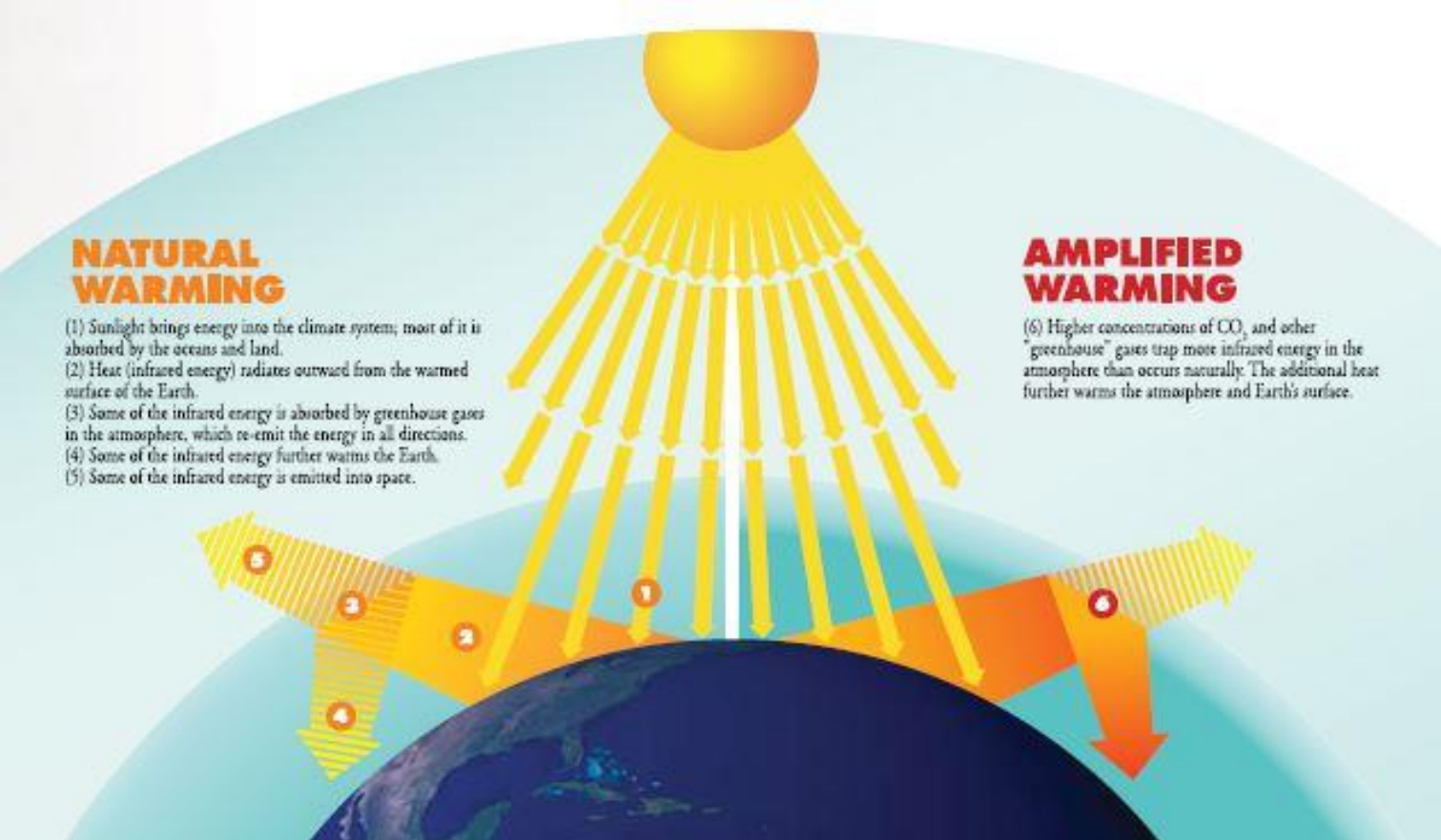
HOLLAND PROFESSIONAL CLUB

January 9, 2020

By David Trudell

Global Temperature and Carbon Dioxide





Glacier Barnett Glacier, Antarctica 2

Antarctic Edge



Melt Zone



# Science: One Big Greenhouse

Monday, May 28, 1956

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Since the start of the industrial revolution, mankind has been burning fossil fuel (coal, oil, etc.) and adding its carbon to the atmosphere as carbon dioxide. In 50 years or so this process, says Director Roger Revelle of the Scripps Institution of Oceanography, may have a violent effect on the earth's climate.

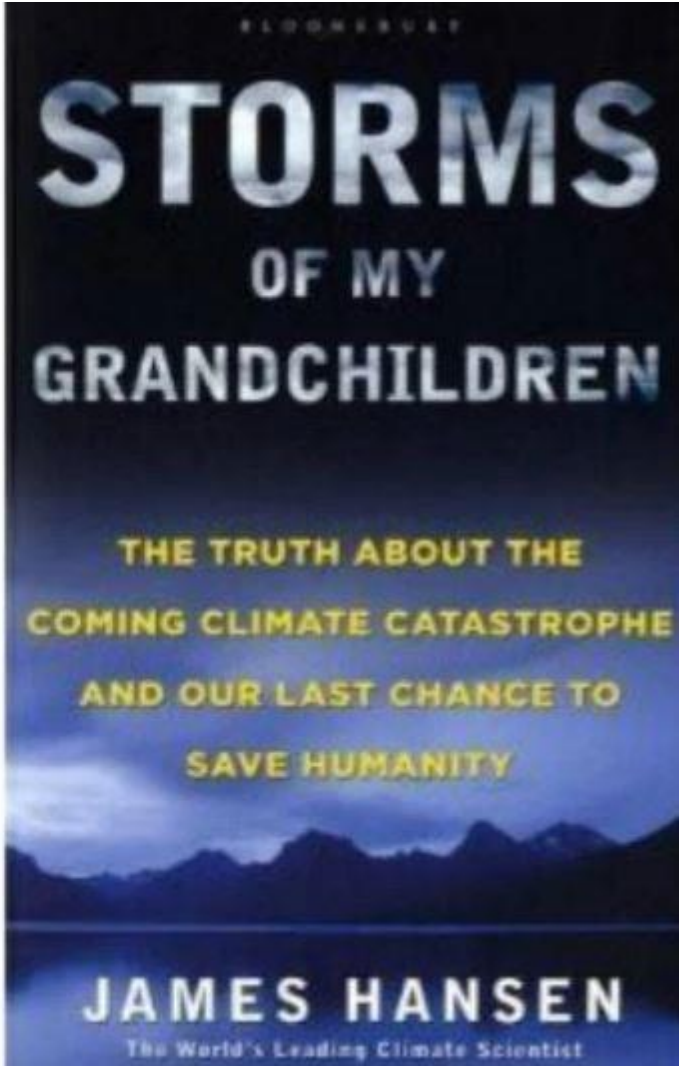
Tons of CO<sub>2</sub>. The temperature of the earth's surface depends largely on two minor constituents of the atmosphere: water vapor and carbon dioxide. They are transparent to the short-wave energy (light and near infrared) that comes from the sun, but opaque to...

**Losing Earth**  
**A Recent History**  
**Nathaniel Rich**



**During the Cold War, JASON's focused on defense (left). Now a more diverse group, it tackles questions on health, biology, and agriculture (right).**





**James Hansen**

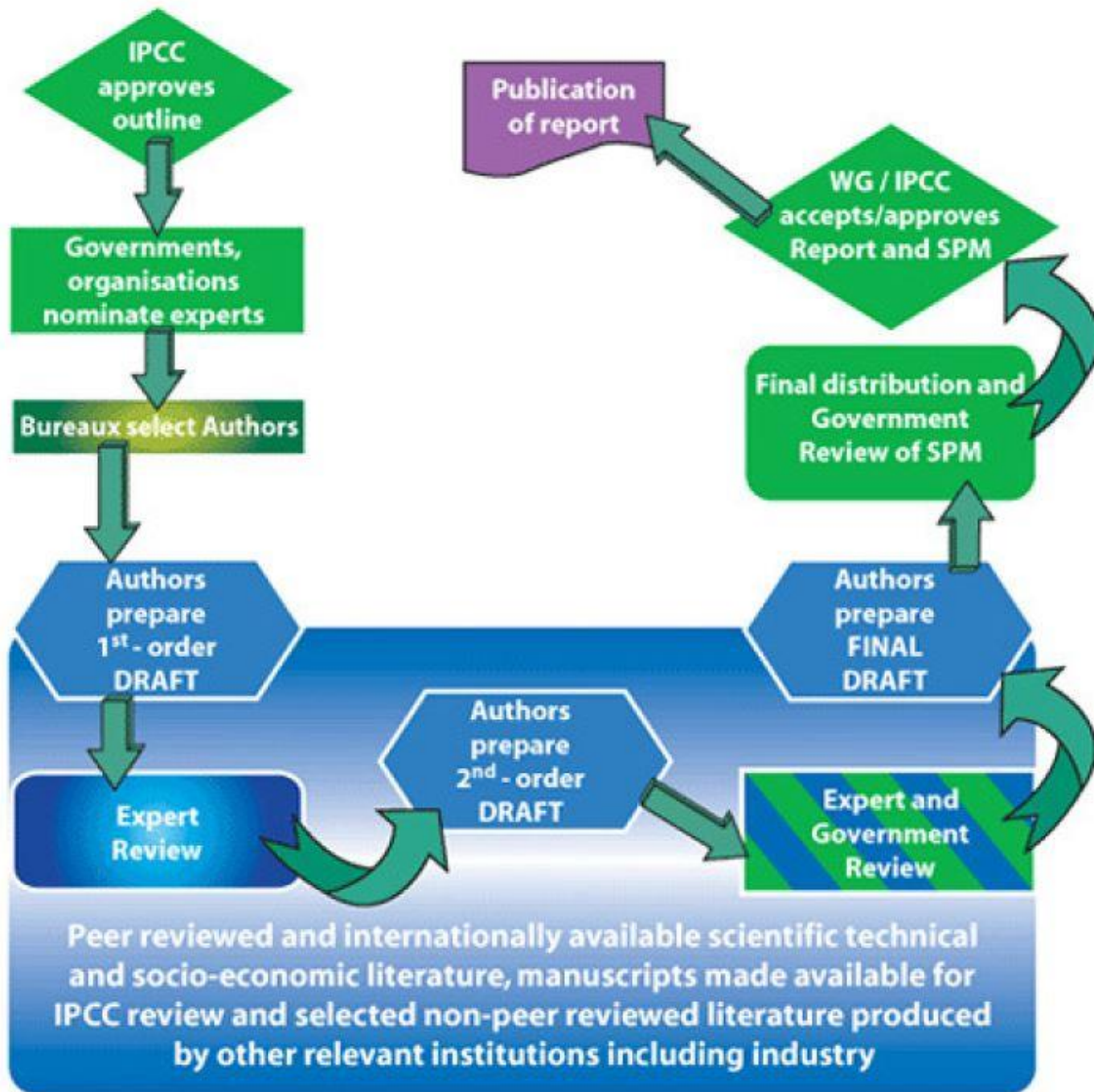


**President George H.W. Bush and his Chief of Staff, John Sununu, Oct. 1990**



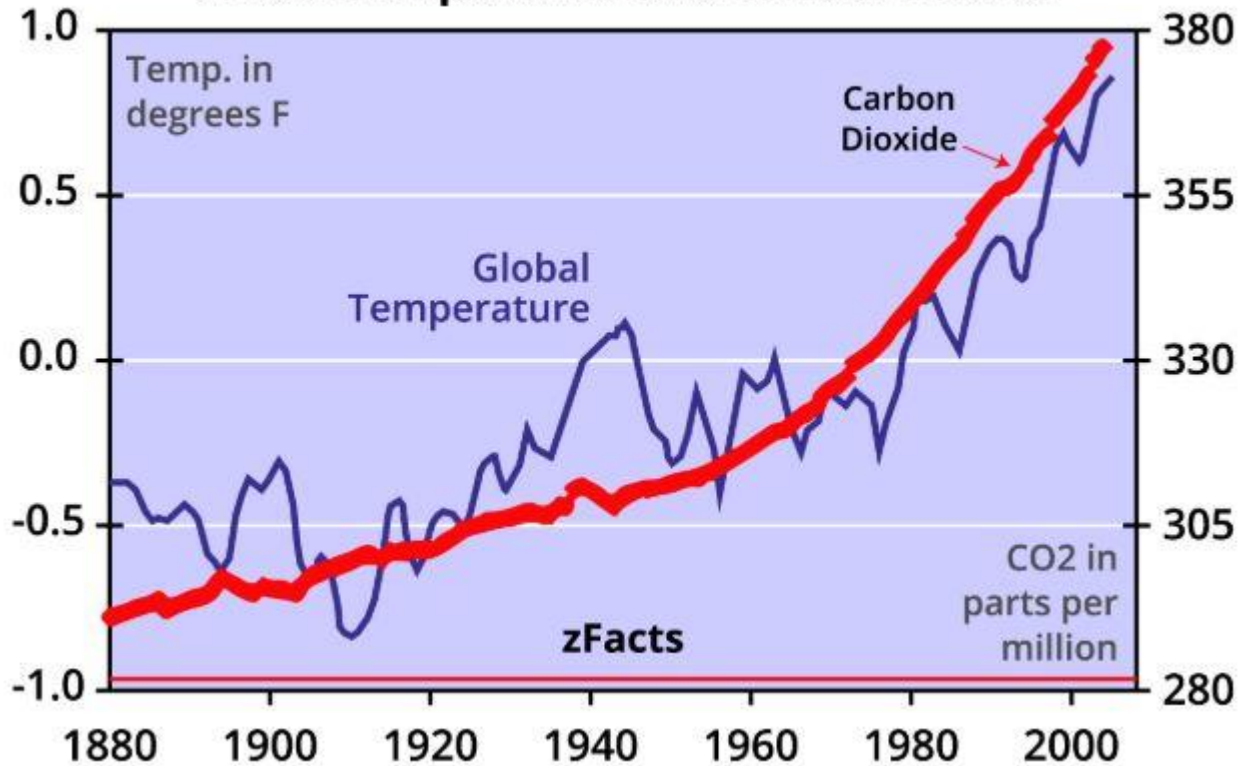
**Dr. William Happer**





**International Panel on Climate Change (IPCC)**  
 The main activity of the IPCC is to provide at regular intervals Assessment Reports of the state of knowledge on climate change. This graphic represents the strict procedures agreed by the panel.

# Global Temperature and Carbon Dioxide



September 1958 - September 2019

# Atmospheric CO<sub>2</sub>

September CO<sub>2</sub> | Year Over Year | Mauna Loa Observatory

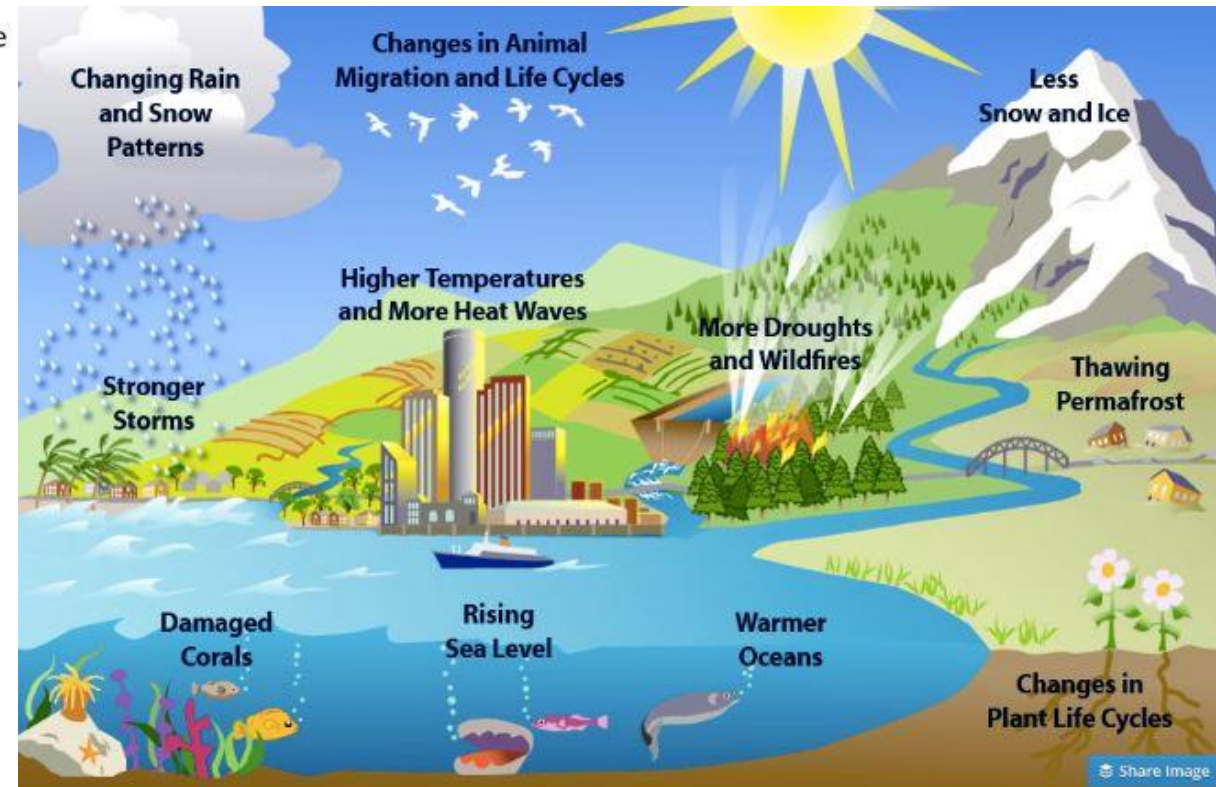
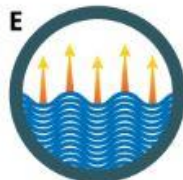
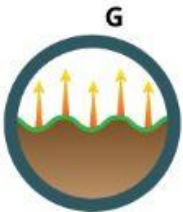


**CO<sub>2</sub>-earth** Featuring Scripps data of October 7, 2019

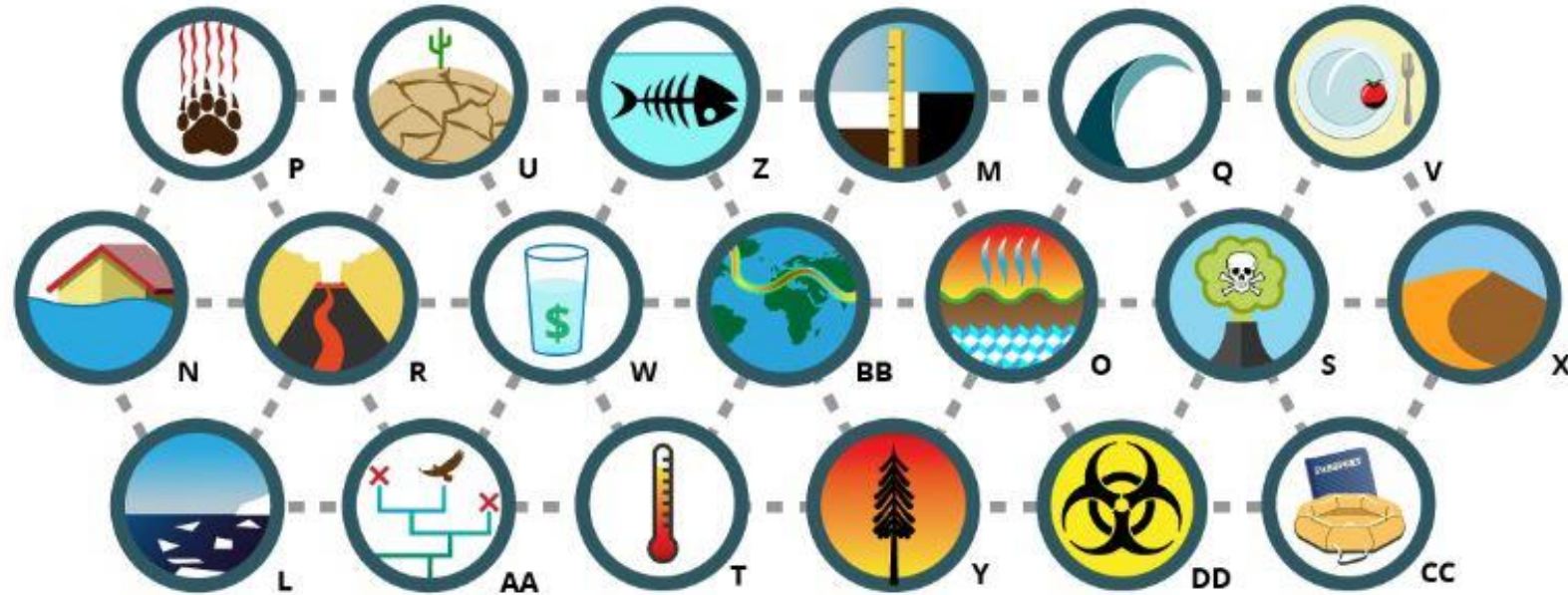
# Global Warming Tipping Points



- A - Melting Ice
- B - Forest Loss
- C - Ocean Current Change
- D - Permafrost Pandemic
- E - Ocean Heating
- F - Weight of Rising Seas
- G - Soils Overheating
- H - Water Vapor Increase
- I - Albedo Effect
- J - Methane Release
- K - Plankton Dying



## Global Warming Consequences Intensify and Interact



**L** - Shrinking Sea Ice & Ice Shelves  
**M** - Shrinking Glaciers & Snowpack  
**N** - Flooding  
**O** - Melting Tundra & Permafrost  
**P** - Animal Attacks  
**Q** - Tsunamis  
**R** - Increased Volcanic Activity

**S** - Toxic Air Pollution  
**T** - Increased Heat  
**U** - Droughts  
**W** - Water Costing More  
**X** - Desertification

**Y** - Fires & Wildfires  
**Z** - Ocean Acidification & Marine Death  
**AA** - Loss of Biodiversity  
**BB** - Jet Stream Disruption  
**CC** - Mass Climate Migrations  
**DD** - Disease & Pandemic



**Escalating Global Warming**

# Global Warming Consequences Destabilizing our Climate and Lives



- A - Conflict & War
- B - Increased Water Vapor
- C - Rising Sea Levels
- D - Methane Time Bomb
- E - Financial Loss & Collapse
- F - Animal Attacks
- G - Tsunamis
- H - Increased Volcanic Activity
- I - Toxic Air Pollution
- J - Increased Heat
- K - Droughts
- L - Less Food
- M - Water Costing More
- N - Desertification
- O - Fires & Wildfires
- P - Ocean Acidification & Marine Death
- Q - Loss of Biodiversity
- R - Loss of Breathable Air (From Phytoplankton)
- S - Mass Migrations
- T - Jet Stream Disruption
- U - Shrinking Sea Ice & Ice Shelves
- V - Shrinking Glaciers & Snowpack
- W - Flooding
- X - Melting Tundra & Permafrost
- Y - Disease & Pandemic