

# CLIMATE CHANGE'S EFFECT ON PEOPLE: PAST & PRESENT



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## Topics for Discussion

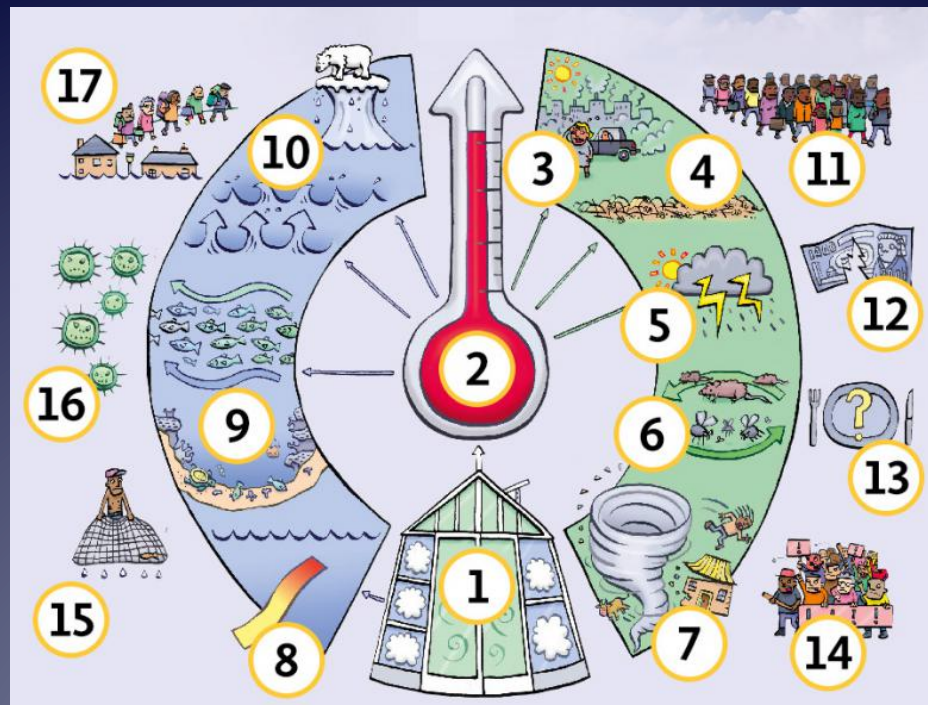
- How Does Climate Change Effect Us?
- Climate Change in the Past:
  - Impact on the Mayan Civilization
- Climate Change in the Present:
  - Impacts on Louisiana's Isle de Jean Charles Band of Biloxi-Chitimacha Indians – America's First 'Climate Change Refugees'



# CLIMATE CHANGE'S EFFECT ON PEOPLE

How Does Climate Change Effect People?

(think-pair-share)



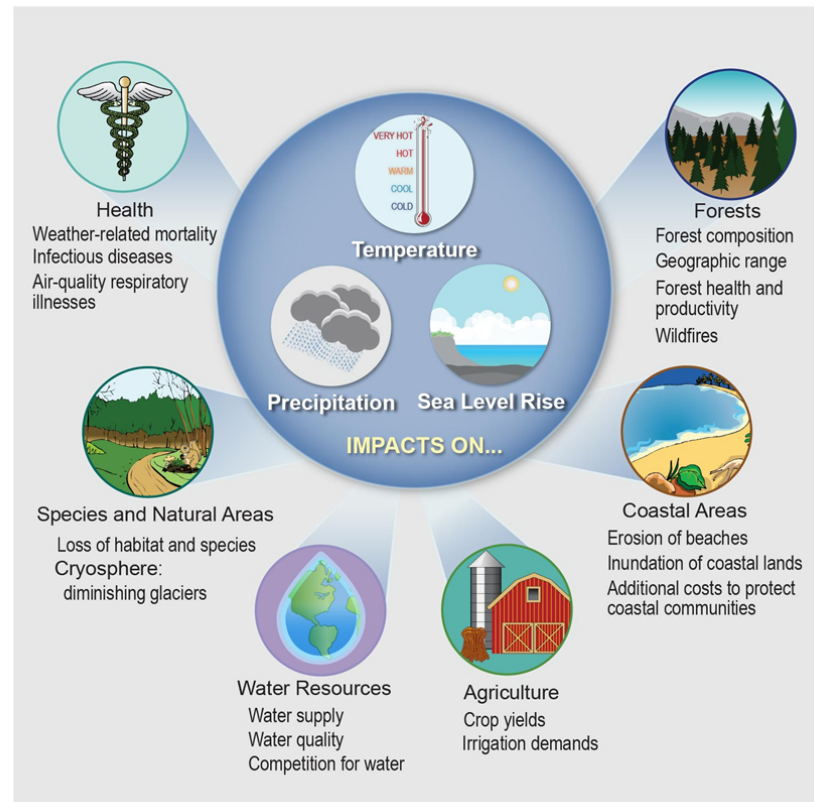
# CLIMATE CHANGE'S EFFECT ON PEOPLE

## How Does Climate Change Effect People?

- Health
- Agriculture/Fisheries
- Energy
- Water
- Ecosystems
- Forests
- Coastal Areas
- Recreation



### Potential Effects of Climate Change





# CLIMATE CHANGE'S EFFECT ON PEOPLE

## How Does Climate Change Effect People?

- Health

- Temperature-Related Illnesses
- Air Quality-Related Illnesses
- Spreading Diseases



- Agriculture/Fisheries

- Crop & Species Losses = Food Shortages



- Energy

- Increased Demand = Energy Shortages

- Water

- Low or Dried-Out Streams, Rivers, Ponds, Lakes (reservoirs)
- Public Water Supply Shortages, Irrigation Restrictions, Reduced Hydropower, Transportation Disruptions

# CLIMATE CHANGE'S EFFECT ON PEOPLE

## How Does Climate Change Effect People?

- Ecosystems (plants and animals)
  - Altered/Diminished Habitat
- Forests
  - Spread of Pests
  - Increased Wildfires
- Coastal Areas
  - Coastal Cities Flooded
  - Coastal Wetlands Destroyed
- Recreation
  - No Snow = No Skiing/Snowboarding
  - Beach Erosion = No Beach





# CLIMATE CHANGE'S EFFECT ON PEOPLE

## Impact of Climate Change on the Maya Civilization

- *Maya civilization – one of the most dominant indigenous societies of Mesoamerica (Mexico and Central America) before the 16<sup>th</sup>-century Spanish invasion. Experienced growth over 2,700 years between 3,800-1,100 years before present (B.P.), followed by collapse @ 1,100 B.P., and a 600-yr transition to villages*
- *Maya culture centered in one area (shown in green) – Yucatan Peninsula (in modern-day Guatemala, Belize, parts of Mexican states Tabasco and Chiapas, and western parts of Honduras and El Salvador)*



# CLIMATE CHANGE'S EFFECT ON PEOPLE

- EARLY MAYA PERIOD (3,800-2,250 B.P.)
  - Agricultural culture (*corn [maize], beans, squash and cassava [manioc]*)
  - City and pyramid-builders - Mirador – one of the greatest cities ever built
- CLASSIC MAYA PERIOD (2,250-1,100 B.P.)
  - 40 cities with plazas, palaces, temples and pyramids, and ball-courts
  - Each city @ 5-50,000 people; total est. population ca. 2 million
  - Cities surrounded/supported by large population of farmers
  - Farming = primitive “slash-and-burn” agriculture; also irrigation, and terracing
  - **“Collapse” @ ca. 1,100 B.P. – Why???**
    - Possible causes: 1) *exhausted environment*; 2) *constant warfare - led to broken trade alliances, politics, and religion*; or 3) climate change (drought)



Early Maya city  
of Mirador



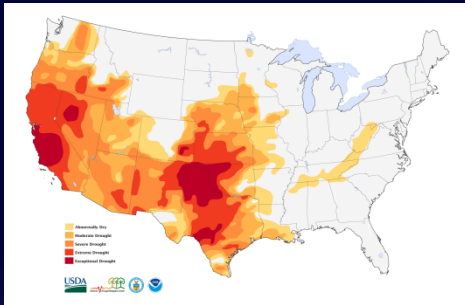


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- **Collapse of Maya Civilization (ca. 1,300-1,100 B.P.)**
  - *Evidence of climate change (ca. 200 yr-long period of intense drought) found in sediment samples taken from two lakes (north and south)*
  - *Examined ratio of heavy & light oxygen isotopes found in fossilized shell and sedimentary rock, and hydrogen isotopes in the acid found in the waxy coatings of Land plants*
  - *Lighter isotopes of oxygen evaporate more readily – times of greater evaporation and lower precipitation = a greater amount of heavy isotopes in the water, which end up in the fossilized shell and sedimentary rock*
  - *Also looked at growth rates of stalagmites – they grow quicker during wet months*
  - *Mayan culture founded on anomalous high rainfall patterns. Drought found to be worse in the southern region –where the civilization's collapse was more rapid)*
  - *Possible result of shift in the Intertropical Convergence Zone or El Nino – similar effect on several ancient societies (e.g., Teotihuacan and Akkadian Empires)*

# CLIMATE CHANGE'S EFFECT ON PEOPLE

## Extreme Drought Conditions in California and the Midwest Since 2000



The chances of a 35-year or longer "megadrought" striking the Southwest and central Great Plains by 2100 are above 80 percent if the world stays on its current trajectory of greenhouse gas emissions, according to scientists from NASA, Columbia University, and Cornell University.



California has been the #1 food & agricultural producer in the United States for more than 50 consecutive years.

A nearly \$44 billion dollar industry that generates over \$100 billion in related economic activity in the United States every year.

**Any Similarities Between Ancient Mayan Situation and Ours Today?**

(think-pair-share)



# CLIMATE CHANGE'S EFFECT ON PEOPLE

## Impact of Sea Level Rise on the Islands and Wetlands of South Louisiana

- *Since 1930, the Louisiana coast has lost about 190,000 square miles of land = an area the size of Rhode Island*
- *USGS: Over the last 25 yrs – losing 16.57 sq mi/year (= football field of coast every hour)*



*“It ain’t they-uh no maw.”*

- Isle de Jean Charles Band of the Biloxi-Chitimacha Indians will be America’s First “Climate Change Refugees”
- Island population is about 70 people, down from a peak of about 350, with only 25 homes full-time residences. Rising waters are now threatening the very existence of the Tribe and its homeland

# CLIMATE CHANGE'S EFFECT ON PEOPLE

## Impact of Sea Level Rise on the Islands and Wetlands of Southern Louisiana

- *50 yrs ago, Isle de Jean Charles was 11 miles long-x-5 miles wide. It is now 2 miles long-x-0.5 miles wide and shrinking rapidly*
- *Louisiana's \$50-billion "Comprehensive Master Plan for a Sustainable Coast" released in 2012 does not include any measure to rebuild or protect the Isle de Jean Charles*



- *Chief Albert Naquin hoped to relocate the Tribe, but dropped idea because some determined to stay*
- *Tribe faces not only the disappearing land of their ancestors, but also the disappearance of their island-based culture*



# CLIMATE CHANGE'S EFFECT ON PEOPLE

Social Justice Question: Who will be the “Winners” and “Losers”? Why?

(think-pair-share)



E. Matunuck, RI



Manhattan, NY &  
Miami Beach, FL



Isle de Jean  
Charles  
Southeastern ,LA