

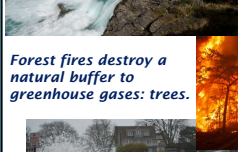
PROJECT SUMMARY

Industrial emissions of heat-trapping gases are causing earth's atmosphere to heat up, a process known as the "Greenhouse Effect." Atmospheric warming causes rapid downstream changes in global water systems. In particular, a warming atmosphere hastens melting of both freshwater and sea water ice packs. Whereas frozen ice is white and reflects sunlight, melting polar ice darkens and absorbs more sunlight than ice, further triggering cycles of melting and heating. Runoff from both freshwater and seawater ice contributes to rising sea levels.

Polar bears are among the first species listed as endangered due to global warming. (www.nwf.org)



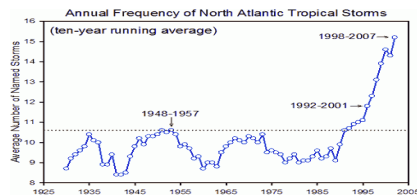
Glacial lake outburst floods (GLOFs) occur when lakes trapped in warming glaciers explode.



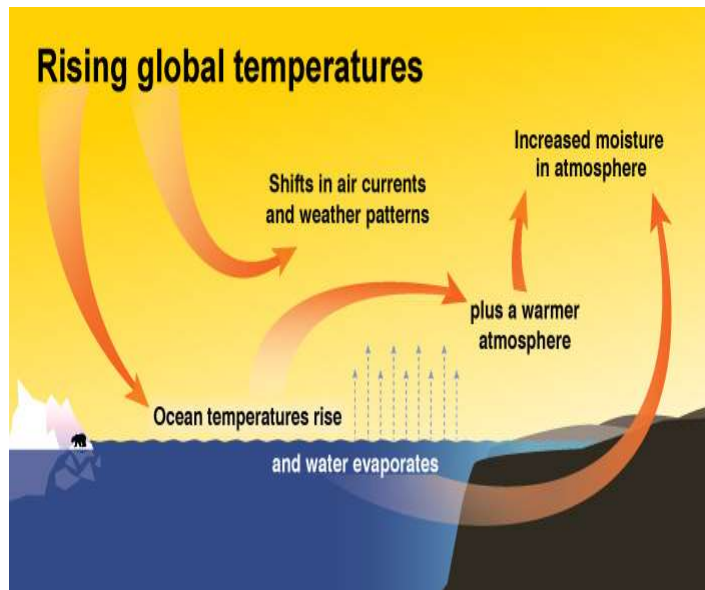
Forest fires destroy a natural buffer to greenhouse gases: trees.



Warming oceans mean stronger storms, rising tides, and increased risk for coastal communities.



As global temperatures rise, the risk of powerful storms like Hurricane Katrina (2005) also increases.



How does a warming planet affect us?

More Extreme weather

- Storms (such as Flooding in Colorado, 2013)
- Hurricanes (such as Katrina, 2005 and Sandy, 2012)

Rising Sea Levels

- Increased coastal flooding
- Droughts in California
- Wildfires in Montana

Warming Oceans

- Warmer, contributing to melting ice, glaciers
- Soak up 90% of extra heat in atmosphere
- Expansion & higher sea levels more extreme weather

Human Health and Economic Burden

- Rising energy demands and costs
- Loss of tourism revenue for coastal destinations
- Poor air quality → respiratory illnesses

Coral reefs are particularly vulnerable to warming seas.



LOCAL IMPACT

Lake Erie

- Current water level is below average
- Potential 4-5 foot drop by end of 21st Century



Great Lakes

- Warming water decreases oxygen levels
- Reduced oxygen results in dead zones
- Native cold-water fish species cannot survive warming lake water



- Warming lakes increase invasive species
- Decreased water levels, and increased contamination threaten water supply

REFERENCES

1. Environmental Defense Fund, <http://www.edf.org/climate/climate-change-impacts>, Accessed March 6, 2015
2. Scripps Institute of Oceanography. (2012, April 1). New comparison of ocean temperatures reveals rise over the last century. *ScienceDaily*. Retrieved March 30, 2015 from www.sciencedaily.com/releases/2012/04/120401135345.htm
3. National Wildlife Federation, <http://www.nwf.org/Wildlife/Threats-to-Wildlife/Global-Warming/Effects-on-Wildlife-and-Habitat/Great-Lakes.aspx>, Accessed April 6, 2015

ACKNOWLEDGEMENTS

We would like to thank **Dr. Cathleen Rossman** and **Professor Brenda Stotesbery**.

For more info please contact:
Nancy Turner at Nancy.Turner001@acad.tri-c.edu
Cuyahoga Community College
2900 Community College Ave
Cleveland, Ohio 44115
(216) 987-4660