

# UNDERSTANDING SEA LEVEL RISE:

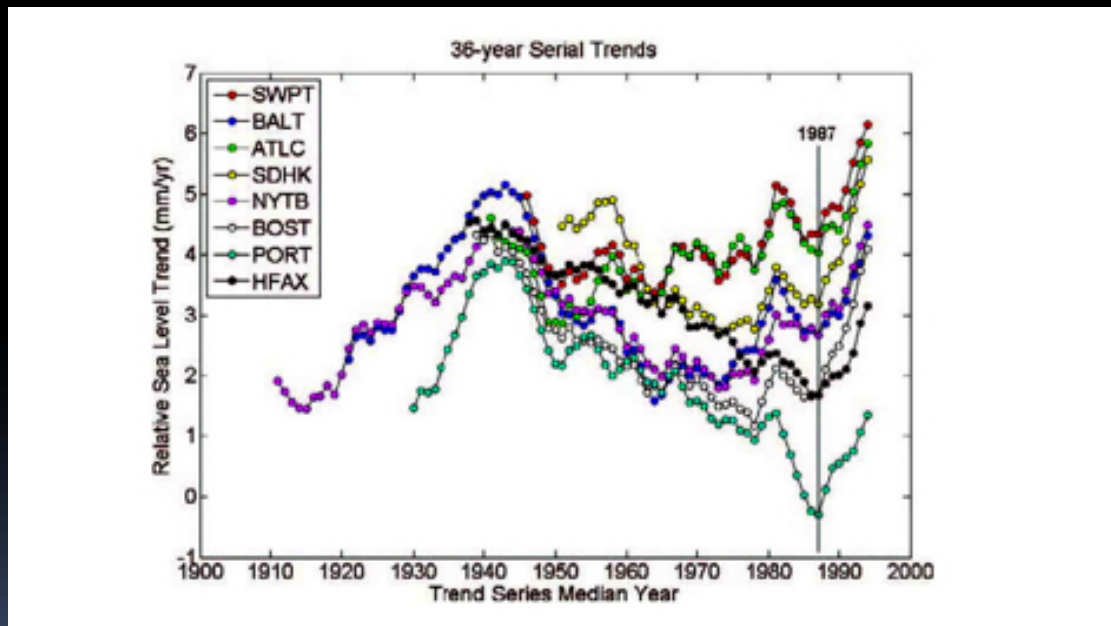
## HOW WILL IT AFFECT NEW JERSEY'S SHORELINES?

Presented by



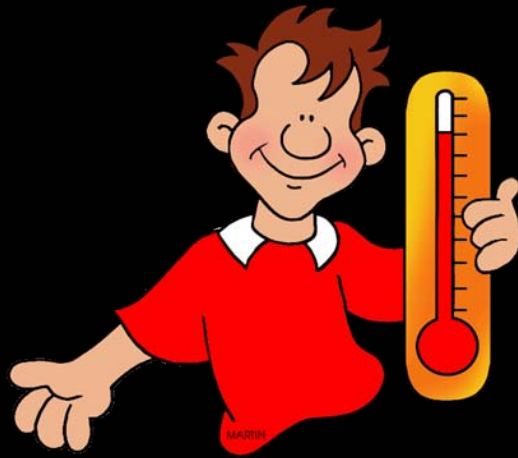
# What is Sea Level Rise (SLR)?

- The mean rise in sea level



The rate at which sea level is rising increased abruptly beginning in 1987 at all 8 stations along the northeastern U.S. coast: SWPT = Norfolk; BALT = Baltimore; ATLC = Atlantic City; SDHK = Sandy Hook, NJ; NYTB = New York; BOST = Boston; PORT = Portland, ME; HFAX = Halifax, Nova Scotia. Credit: John Boon/VIMS

# Basic Principles of SLR



# A Warming Climate Contributes to SLR:

- Warmer atmospheric temperatures are melting glaciers and ice sheets
- Greenland and Antarctica are losing ice mass, too
- This melting increases the volume of water in the ocean
- Also increases the overall temperature of ocean water
- As seawater heats up, water molecules expand causing a rise in mean sea level



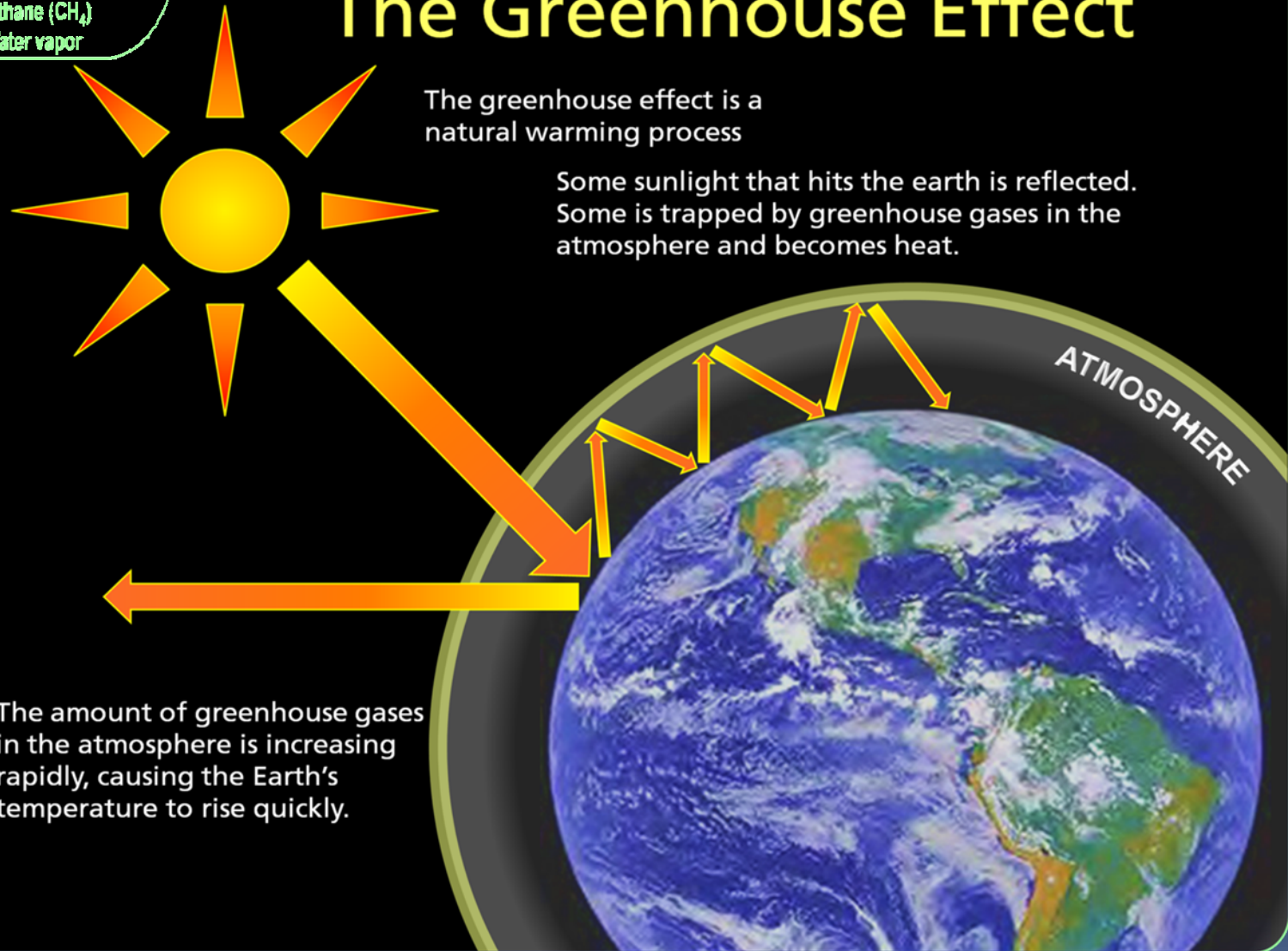
## Greenhouse Gases (GHGs)

- Carbon dioxide ( $\text{CO}_2$ )
- Nitrous oxide ( $\text{N}_2\text{O}$ )
- Methane ( $\text{CH}_4$ )
- Water vapor

# The Greenhouse Effect

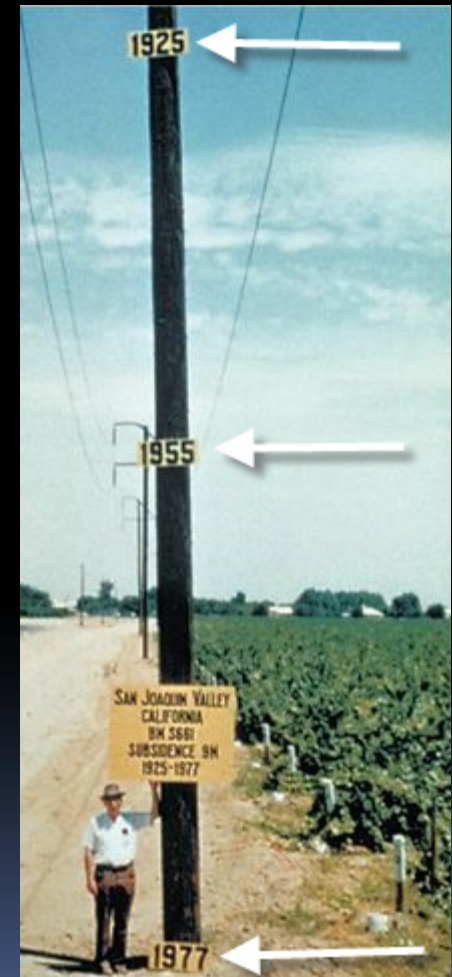
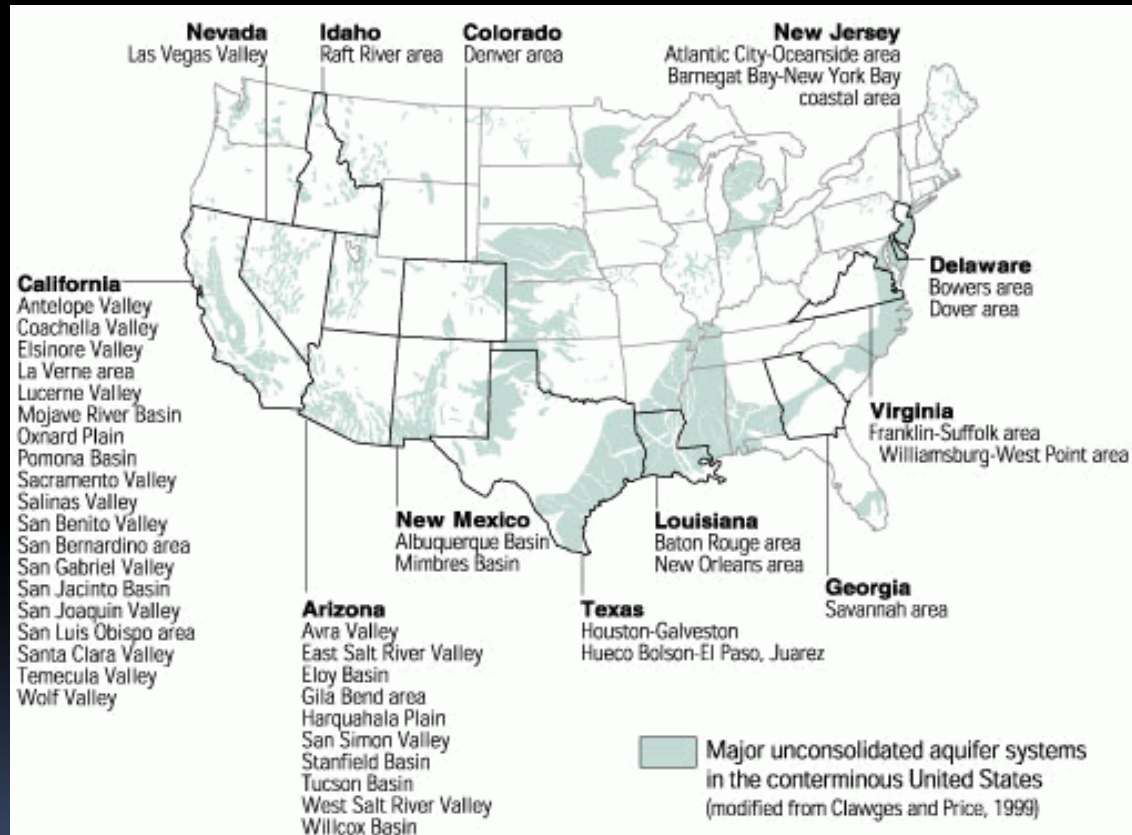
The greenhouse effect is a natural warming process

Some sunlight that hits the earth is reflected. Some is trapped by greenhouse gases in the atmosphere and becomes heat.



The amount of greenhouse gases in the atmosphere is increasing rapidly, causing the Earth's temperature to rise quickly.

# Land is subsiding, too!





# What Does This Mean for New Jersey?

- Loss of natural habitat
- Loss human habitat
- Loss of economy
- Loss of culture and way of life
- Migration to other areas
- Adaptation to a changing environment



# Citations

- <http://oceanworld.tamu.edu/students/coral/coral3.htm>
- Training.FEMA.gov
- <http://ga.water.usgs.gov/edu/earthgwlandsubside.html>
- <http://epa.gov/climatestudents/index.html>
- <http://news.nationalgeographic.com/news/2012/06/120625-sea-level-rise-east-coast-us-science-nature-climate-change/>
- <http://phys.org/news/2012-10-sea-level-northeast-coast.html>
- <http://sealevel.climatecentral.org/news/rising-seas-a-real-threat-to-new-jersey/>
- <http://www.epa.gov/climatechange/>
- [http://maps.risingsea.net/New\\_Jersey.html](http://maps.risingsea.net/New_Jersey.html)
- [http://co2.cms.udel.edu/SeaLevel\\_DE.htm](http://co2.cms.udel.edu/SeaLevel_DE.htm)
- <http://nsidc.org/cryosphere/seaice/>
- <http://www.soest.hawaii.edu/coasts/sealevel/>
- [http://www.cmar.csiro.au/sealevel/sl\\_drives\\_short.html](http://www.cmar.csiro.au/sealevel/sl_drives_short.html)



# Interactive Websites

- <http://epa.gov/climatestudents/expeditions/index.html> -- students take a virtual trip around the world to learn about the effects of climate change and SLR
- <http://sealevel.climatecentral.org/maps/about-surging-seas-map/> -- examine areas at risk of flooding with every foot of SLR
- <http://njfloodmapper.org/>