

# CLIMATE CHANGE AND ASTHMA

7<sup>th</sup> Grade Gifted Science Classes  
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# WHAT IS CLIMATE CHANGE?

- ✘ “Climate change is a long term change in earth’s climate, especially a change due an increase in the average atmospheric temperature” (dictionary.com)
- ✘ Climate includes patterns of temperature, precipitation, humidity, wind, and seasons
- ✘ Climate change affects more than just a change in the weather; it refers to seasonal changes over a long period of time
- ✘ Climate patterns play a big role in shaping natural ecosystem
- ✘ Climate can affect many features of where and how plants and animals live, including food and water availability and health
- ✘ Temporary changes in climate are frequent and normal, but longer-term changes may indicate a changing climate.



# WHAT ARE THE EFFECTS OF CLIMATE CHANGE?

- × Glaciers have shrunken
- × ice on rivers and lakes is breaking up earlier
- × Plant and animal ranges have shifted
- × An increase in heart-related deaths and illnesses
- × Sea level is rising due to thermal expansion
- × Sea levels have risen between 4 to 8 inches in the past 100 years
- × An increase in storm activity
- × Change in the patterns of rain and snow
- × Melting permafrost in tundra regions
- × Change in weather and vegetation patterns
- × May eventually cause some species to become endangered or extinct
- × Melting ice may lead to changes in ocean circulation
- × Sea surface temperatures are rising
- × Higher rate of evaporation and more drought are occurring in some areas in the world
- × Sea water is becoming more acidic due to the increase in CO2 levels
- × Crops are failing
- × An increase in the number of intense hurricanes since the 1970's



# WHAT IS ASTHMA?

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- ✘ A respiratory condition marked by spasms in the bronchi of the lungs causing difficulty in breathing. Asthma is chronic(long) term disease that inflames and narrows the airways. Asthma causes recurring periods of wheezing, chest tightness, shortness of breath and coughing. Asthma is more likely if someone in your family has it. This disease has no cure even when you feel fine you still have it inside of you. The disease could flare up at anytime



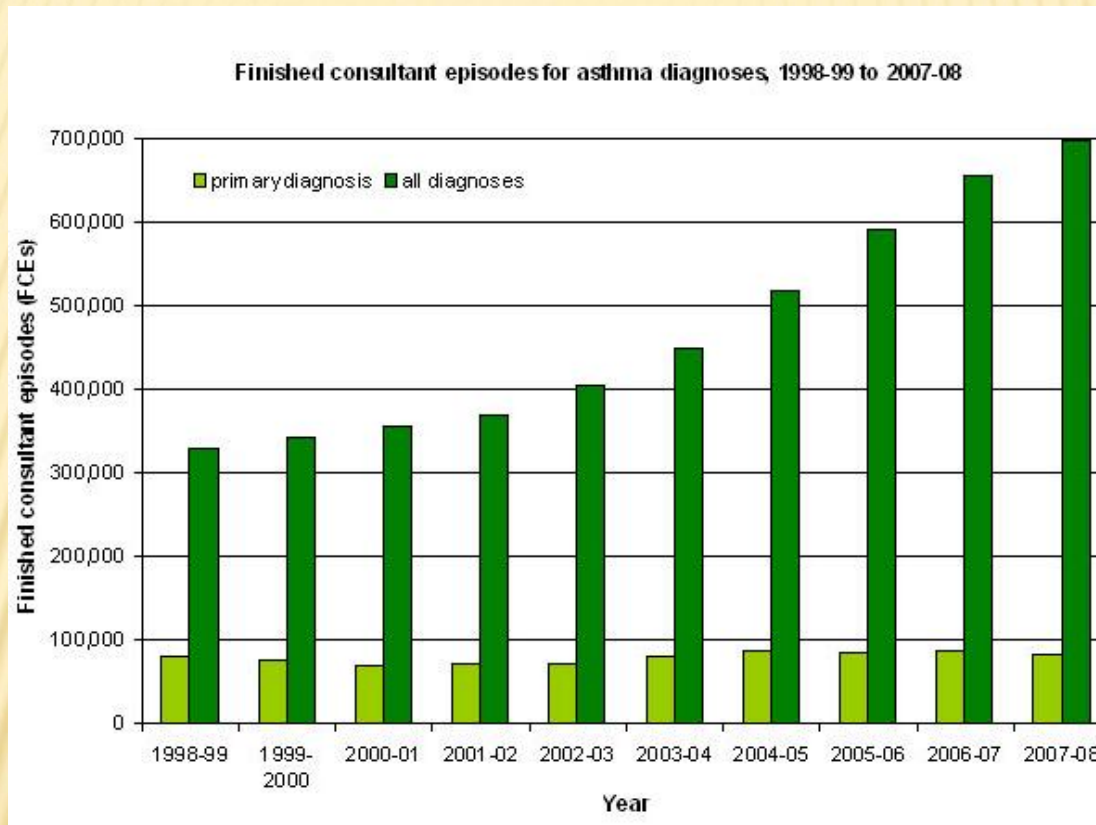
# WHO GETS ASTHMA?

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- ✘ Asthma is more common in females than males.(11% compared to 9%). Asthma is more common in males ages 0-14, but for ages 15+ asthma is more common for females.
- ✘ Asthma often starts during childhood. There is more than 75 million people have asthma, and about 7 million of those people are children. A third of all children under one years old will experience episodes of wheezing and coughing. Most children will not have this trouble after the age of three. A lot of children will “grow out” of asthma by their teenage years. It may get back to them later in life, though. But, adults seem to keep asthma with them.



# ASTHMA DIAGNOSES



# AIR QUALITY

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A measurement of the pollutants in the air, a description of healthiness and safety of the atmosphere

There are two ways to collect data. One of the two ways is continuous monitoring. The way this works is, air is continuously measured and the data is instantly sent to a central data base.

The other way is non-continuous monitoring. This works by data being collected over a specific time period. The data is sent to a laboratory for measurement and analysis.



# AIR QUALITY CHART

Air Quality Index (AQI) Values	Levels of Health Concern	Colors
0 to 50	Good	Green
51 to 100	Moderate	Yellow
101 to 150	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple
301 to 500	Hazardous	Maroon





# OZONE CODES

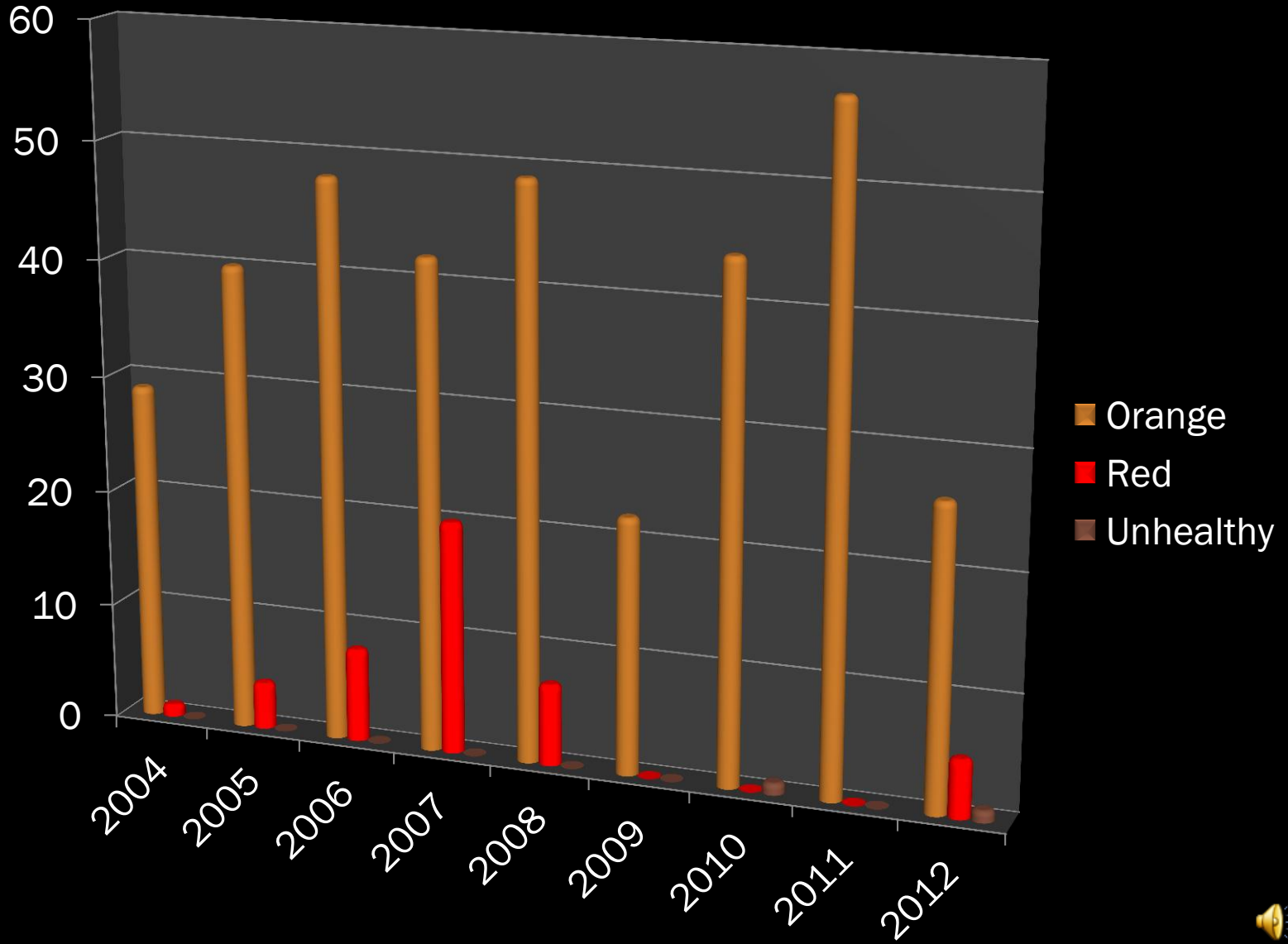
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- ✘ Code Purple – Can cause serious and lasting damage to lungs but code purples are very rare.
- ✘ Code Red – Can be considered as unhealthy for everyone.
- ✘ Code Yellow – Can be considered as moderate or mild
- ✘ Code Orange – Air pollution levels are predicted to become unhealthy for sensitive groups



# ALERT DAYS IN GEORGIA

ALERT  
DAYS



# HOW CAN CLIMATE CHANGE EFFECTS ASTHMA AND ALLERGIES?

- ✘ Climate Change increases temperatures in the atmosphere. Increasing temperatures grow ragweed, flowers with pollen, and mold spores. When these plants' seeds enter the air, it makes the air thick and hard to breathe.



# HOW CAN CLIMATE CHANGE EFFECTS ASTHMA AND ALLERGIES?

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- ❖ Climate change can lead to several respiratory disease (one of them of course being Asthma)
- ❖ More than 5 million people in the state of California have been diagnosed with Asthma; California being home to the world's worst air pollution and high climate change
- ❖ Researchers have found that climate change may increase visits to the emergency room by Asthma victims in the next decade
- ❖ Climate also will affect the air quality which is very important to an Asthma patient



# HOW CAN CLIMATE CHANGE EFFECTS ASTHMA AND ALLERGIES?

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- ✘ Climate experts are particularly confident that climate change will bring increasingly frequent and severe heat waves and extreme weather events, as well as a rise in sea levels. These changes have the potential to affect human health in several direct and indirect ways, some of them severe.



# HOW CAN CLIMATE CHANGE EFFECTS ASTHMA AND ALLERGIES?

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- ✘ Climate change makes outdoor allergen cycles longer, extending the misery for allergy and asthma sufferers.
- ✘ Climate change threatens asthmatics in other ways. Higher temperatures increase other greenhouse gases, such as ozone, sulfur dioxide and nitric oxide. Smog caused by minute particles from smoke stack emissions and diesel exhaust particles from trucks, cars, and lawn mowers pose added dangers for the elderly and those with fragile respiratory illnesses like chronic obstructive pulmonary disease and cystic fibrosis, as well as asthmatics.



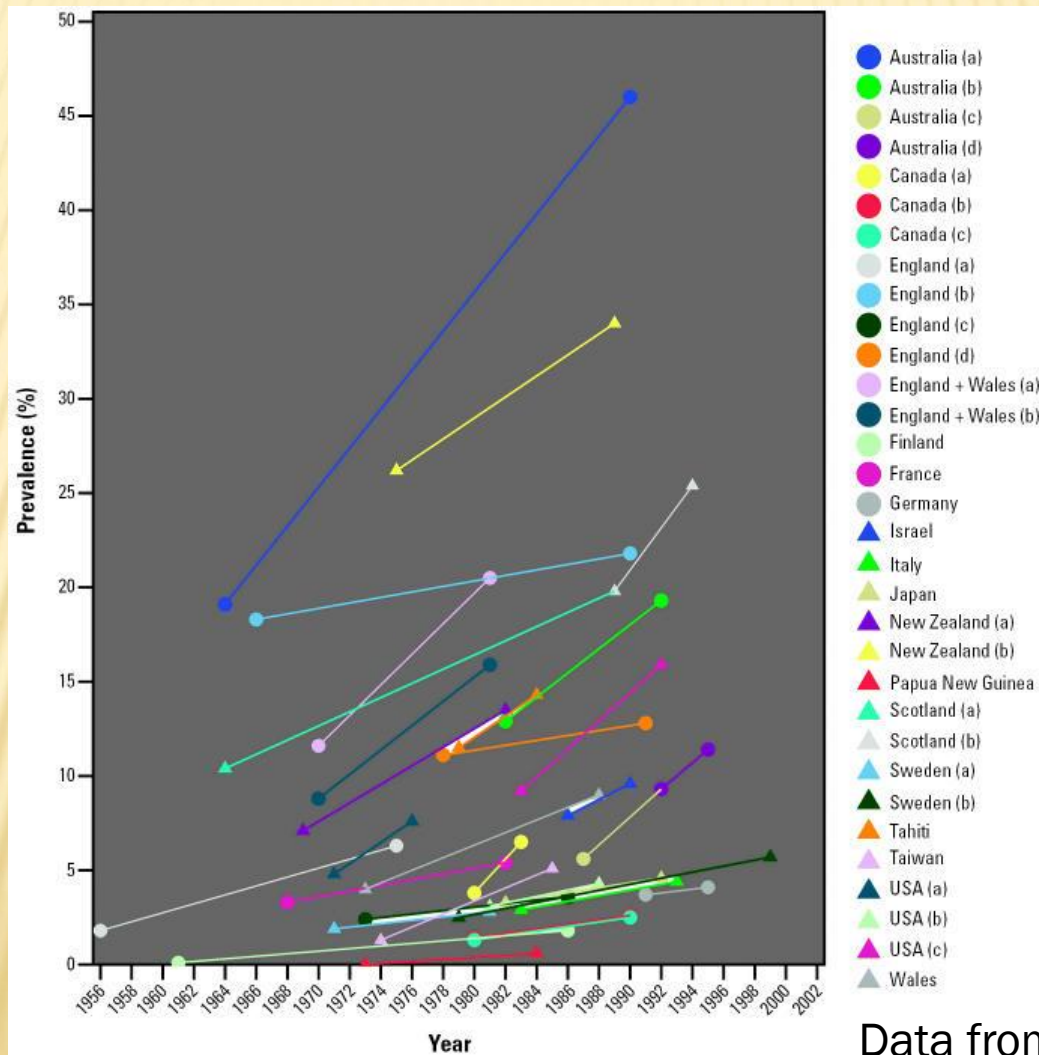
# IS THE GLOBAL RISE OF ASTHMA AN EARLY IMPACT OF CLIMATE CHANGE?

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- ✘ The increase in asthma incidence, prevalence, and morbidity over recent decades presents a significant challenge to public health.
- ✘ Although asthma patterns vary throughout the world, considerable increases in both the prevalence of asthma and its severity have occurred globally over recent decades ([Bach 2002](#); [Isolauri et al. 2004](#); [Pearce et al. 2000](#)).



# GLOBAL TRENDS OF ASTHMA



Data from [Pearce et al. \(2000\)](#).



# CONCLUSIONS

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- ✘ Our purpose was to determine if climate change is affecting the cases of asthma. We believed that climate change was causing an increase in the number of asthma cases.
- ✘ In looking at the research, and the cases over the past twenty years, it appears that our conclusion is correct.

