Chapter 14 Section 3 Name_____
Recent Climate Change

Topics	Notes, Diagrams, Drawings
Recent global and climate change	**Global warming:** rise in Earth's average surface temperatures during the past 100 years • Greatest warming: Northern hemisphere • Some areas of the Southern hemisphere: steady • Part of Antarctica: cooled
Human impact on climate change	The Intergovernmental Panel on Climate Change (IPCC), an international organization that studies global warming, concluded **that most of this temperature increase is due to human activities** • Increasing greenhouses gases through burning fossil fuels and large-scale cutting and burning of forests
Greenhouse effect	• Earth's natural heating process • Helps keep temperatures on Earth livable • Greenhouses gases (carbon dioxide, methane, water vapor) absorb and trap thermal energy
Fossils fuels and greenhouse effect	• Fossil fuels: oil, coal, and gas produced by the decay of ancient organisms over millions of years • Carbon dioxide: a greenhouse gas, which is released in the atmosphere when fossils fuels are burned
Deforestation	• Large-scale cutting and/or burning of forests • Forest land is often cleared for agricultural and developmental purposes • Carbon dioxide can no longer be taken up by trees when they are cut down and when the trees are burnt they add CO_2 to the atmosphere
Human population	• 2015: more than 7,000,000,000 people on Earth • 2050: 9,000,000,000 estimated • By 2030, 2/3 of people will live in urban areas

Topics	Notes, Diagrams, Drawings
	• Large areas of forests are already being cleared for for expanding cities • Greenhouse gases and pollutants will continue being added to the atmosphere
Oceans and global warming	• Acidification • Ice Cap Melt • Rising Sea Levels • Weakened Ocean Conveyor Belt
Acidification of the ocean	• The ocean contains 50 times as much CO_2 as the atmosphere. • As fossil fuels are burned, more CO_2 enters the ocean and causes the water to be more acidic. • The increased acidity weakens animals' shells. • Destruction of Coral Reefs, one of the most biodiverse ecosystems. • Since the Industrial Revolution the ocean has become 30 percent more acidic.
Ice cap melt	• Greenland's ice sheets are melting. • Western Antarctica's ice sheets are melting at alarming rates. • Arctic sea ice reflects light, in contrast the sea water absorbs light. With less reflection and more absorbing it will add additional warming. • Ice melt will cause sea levels to rise.
Rising sea levels	• Warm water expands • Rising sea levels caused by warm temperatures and melting ice caps • Predicted to rise 1 to 4 feet globally. • Devastate coral reefs, islands, and low-lying coastal areas. • Many highly populated cities will be affected.

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Weakening of the global conveyer belt	• Ocean currents move by water density. • With increased precipitation and increased ice cap melt, a layer of fresh water on the surface of the oceans weakens current. • Disruption of climates in Europe, Canada, Iceland
How has the Earth's Climate changed in the past century?	• Disruption of precipitation • Disruption of growing seasons • Rise of global temps 1.0^{o} F
Disruption of precipitation	• Northern areas are projected to become wetter, especially in the winter and spring. Southern areas, especially in the West, are projected to become drier. • Heavy precipitation events will likely be more frequent. Heavy downpours that currently occur about once every 20 years are projected to occur about every four to 15 years by 2100, depending on location • More hurricanes due to warmer water • Heavy snow storms during the winters
Disruption of growing seasons	• Growing seasons have become longer. • The shift in seasons may already be causing the lifecycles of pollinators, like bees and hummingbirds, to be out of synch with flowering plants and trees. This mismatch can limit the ability of both pollinators and plants to survive and reproduce, which would reduce food availability throughout the food chain. • If plants do not get pollinated, they cannot bear fruit.
Rise of global temperatures 1.0 ^{o}F	• Temperatures have risen approximately 1.5^{o}F • Melting of ice caps and permafrost. • As Permafrost melts, it releases more CO2 and methane into the atmosphere speeding up the warming process. • Sea levels have risen between 4 - 10 inches.

Topics	Notes, Diagrams, Drawings
Reduction of greenhouse gases	Alternative sources of energy • Solar energy • Wind energy • Hybrid vehicles • Green building, energy efficient building • Conserving fuel • Recycling • Planting trees in deforested areas