

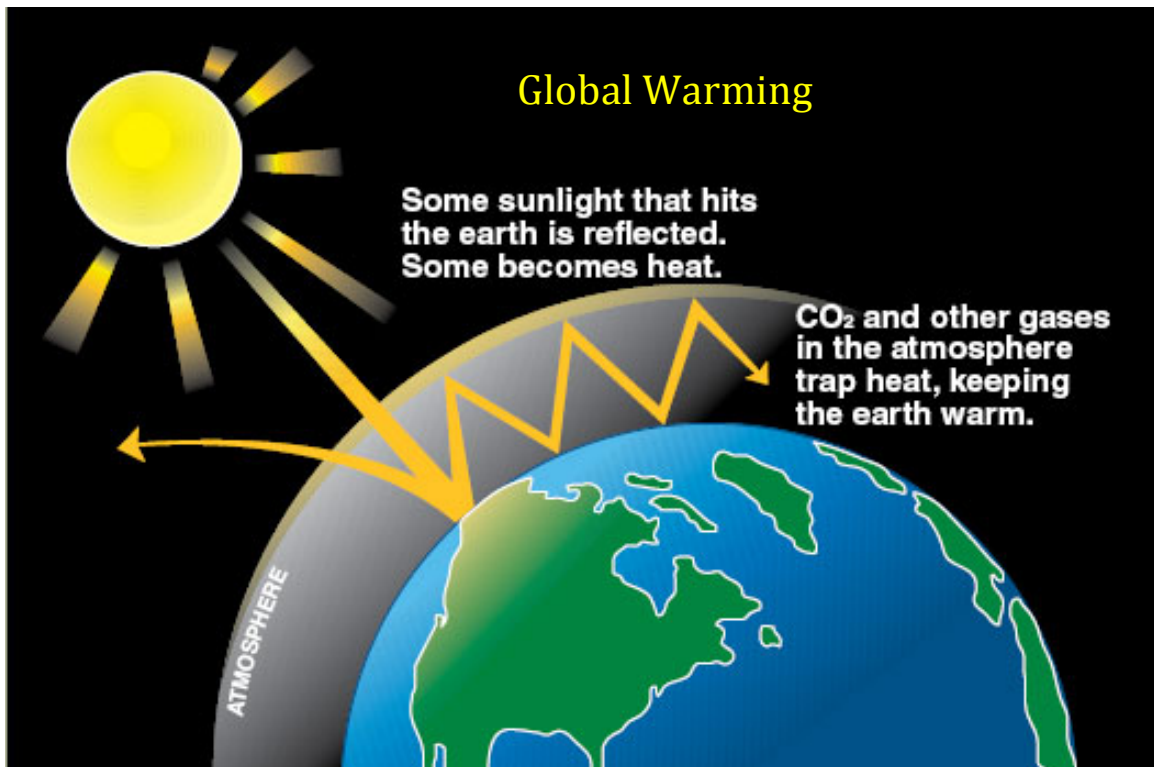
In this text we will continue to discover how we affect the Earth.

You will:

- read ***Melting Away*** by Glen Phelan, which tells what global warming is and what is making it happen.
- learn new vocabulary
- practice using a new verb tense called present perfect when speaking and writing
- write about how we can protect the earth

1. Think about what you know

Look at the picture and read the dialogue about **global warming**. Write 2-3 sentences telling what you think global warming is and if you think **global warming** is a good or bad for our Earth.



Teen 1: Hey, dude. Where ya goin'?

Teen 2: Gotta go to the library to return a book. How 'bout you?

Teen 1: Me, too. We have to research global warming. We were reading some stuff about it in class. Man, it's pretty interesting.

Teen 2: Yeah?

Teen 1: Yeah. We were reading this article in class. The article said that Earth is getting warmer.

Teen 2: So what's wrong with that? I like hot weather!

Teen 1: That's not the point! It said that ocean water is warmer, and that's bad news.

Teen 2: Why? My uncle says that people are making a big fuss about global warming, but it's no big deal.

Teen 1: I don't know about that. You can't fake thermometer readings, and we know that ocean water is warmer than it was a few years ago.

Teen 2: But how's that such a bad thing? A warm beach sounds great to me!

Teen 1: Warmer water in the oceans means hurricanes pick up more energy as they travel over water.

Teen 2: So?

Teen 1: That means they hit land harder, like with Hurricane Katrina in the U.S. or that cyclone in Asia last year!

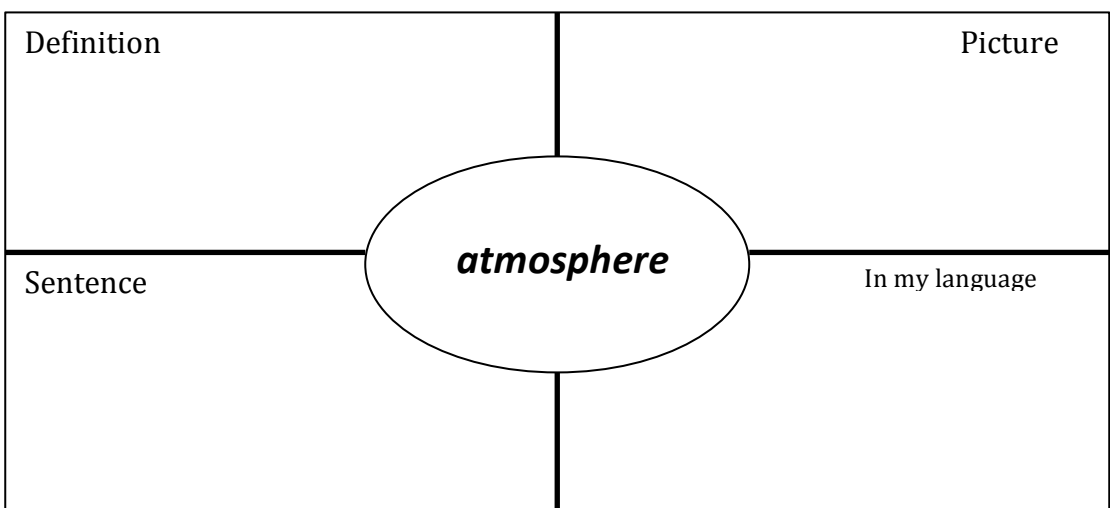
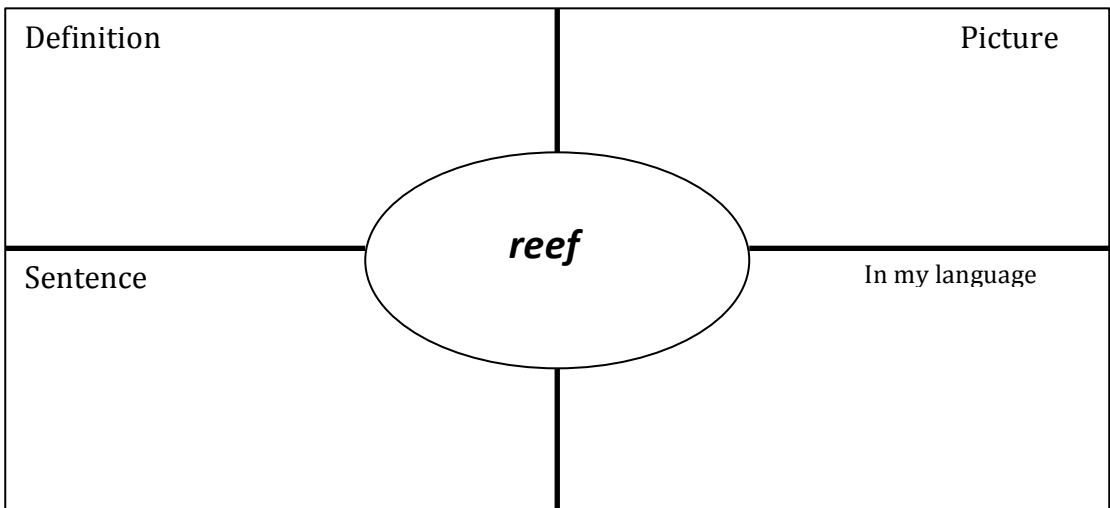
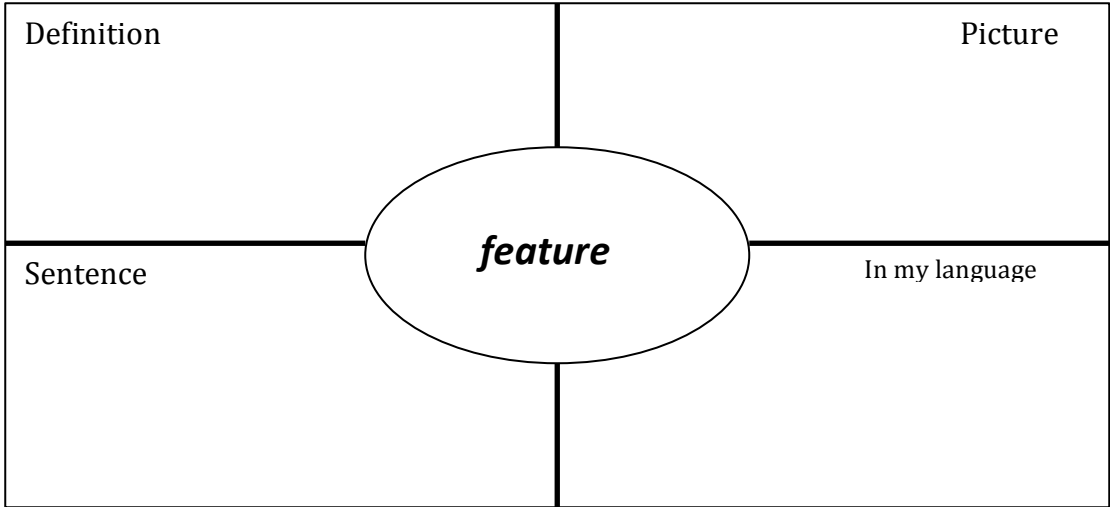
Teen 2: Man, that's weird. I guess I see your point. How can I find out more?

Teen 1: For starters, hang out with me at the library and help me with this research. The more we find out about what's really happening on the planet, the better. And you might want to share this stuff with your uncle, too!

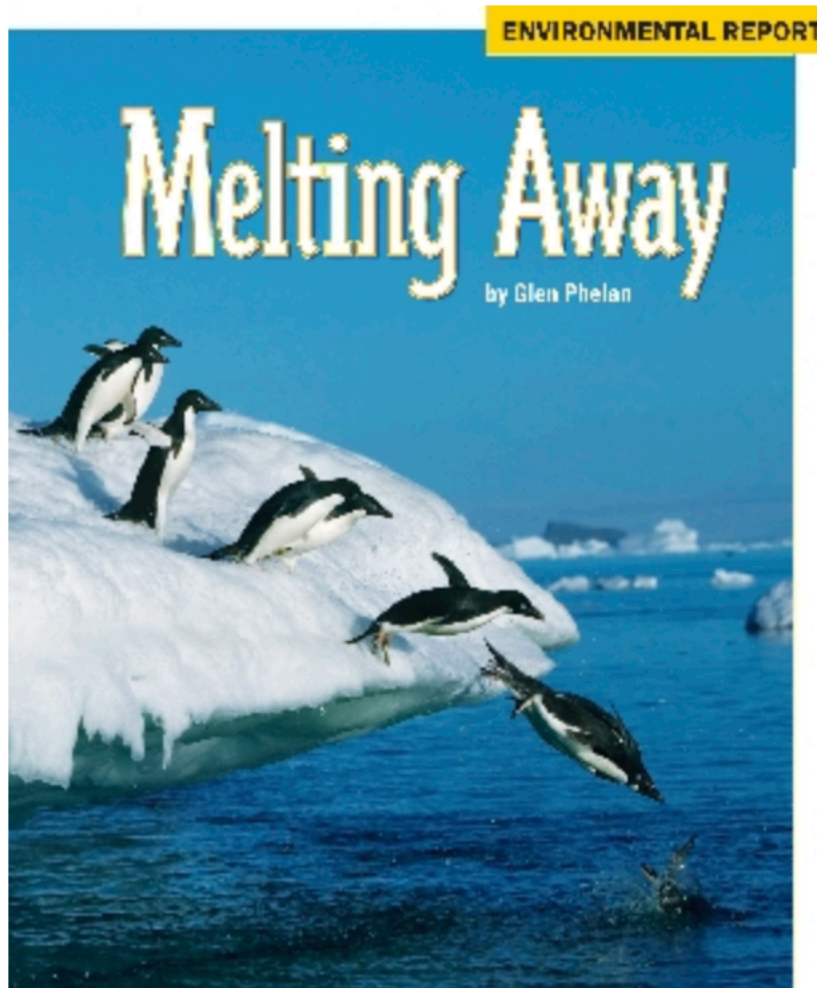
2. Vocabulary

Use the text, a dictionary, or computer to complete each word.

Definition		Picture
<i>melt</i>		
Sentence		In my language
Definition		Picture
<i>glacier</i>		
Sentence		In my language
Definition		Picture
<i>temperature</i>		
Sentence		In my language



3. Read *Melting Away*



Ice at Work

Ice sheets form when more snow falls in winter than can **melt** in summer. The snow never completely melts, so, year after year, the snow piles up, and huge mounds cover the land. The bottom layers of snow slowly turn into ice.

When the ice grows heavy enough, it starts to move downhill. That's when a sheet of ice becomes a **glacier**. People often describe glaciers as "rivers of ice." Some glaciers were once more than a mile thick. Only the highest mountains poked through the giant ice sheets.

This has been happening at Glacier National Park for millions of years. Glaciers have slowly moved across the land, changing the landscape. They plowed away the soil, ground down mountains, and carved out valleys.

Glaciers don't last forever, though. If the weather heats up, they melt. That happened at Glacier National Park about 10,000 years ago. And it is happening again today.

Today, twenty-six glaciers cover parts of the park. Those glaciers are still changing the land.



Melting snow and ice formed this lake in Glacier National Park.

The park's glaciers, however, are in danger of melting away. Take Grinnell Glacier, for instance. It's the most famous one in the park.

The glacier has melted a lot throughout the years. It is much smaller now than it was in 1938. Water from the glacier has formed a new lake in the park.

At this rate, the once mighty Grinnell Glacier could soon vanish completely. So could the park's twenty-five other glaciers.

Turning Up the Heat

Why is Grinnell Glacier *wasting away*? It's simple: The park is getting warmer. Since 1910, the average summer temperature there has risen more than three degrees Fahrenheit (F).

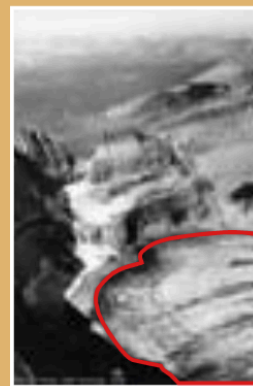
The park isn't the only place that's warming up. Most scientists agree that the rest of Earth is slowly warming up, too.

The rising surface **temperature** is called global warming. Since 1850, Earth has warmed by about one degree Fahrenheit. Some places, such as Glacier National Park, have warmed up more, and some have warmed up less.

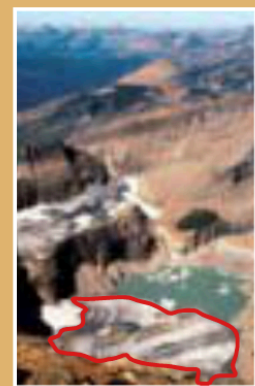
wasting away- disappearing

Grinnell Glacier 1938–2006

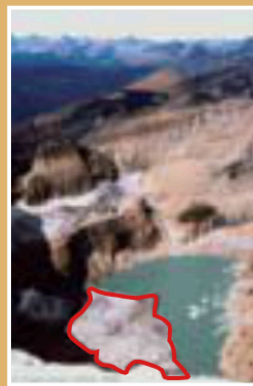
The red lines show the glacier getting smaller.



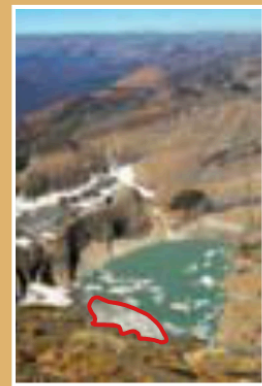
1938



1981



1998



2006

The Meltdown

If the warming continues, glaciers in Glacier National Park will continue to melt. Of course, other **features** of the area will still be there, but the glaciers will be gone.

The melting glaciers could push wildlife out of the area. Grizzly bears are one example. They often move into the park's meadows to eat berries and other favorite snack foods.

Huge avalanches make the meadows. An avalanche happens when lots of snow suddenly crashes down a mountainside.

The crashing snow tears down trees, giving berry bushes a place to grow. Without avalanches, there will be fewer berries. That means fewer bears. And bears are just one of the many animals affected by global warming.



Avalanche

The warming trend could affect many plants and animals because it is happening very fast. Some plants and animals might have to find new homes. Others might die out, or become extinct. To survive, they will all have to find ways to *beat the heat*.

Grizzly bear feeding grounds in national parks are becoming smaller due to the effects of global warming.



beat the heat-stay cool in warm weather

Worldwide Warming

One degree may seem small, but it is causing big changes worldwide. In the Antarctic and Arctic, sea ice is melting. The meltdown forms clouds that can make more snowfall than usual. More snow can harm wildlife.

Penguins in Antarctica are having a hard time finding a place to lay eggs. They normally lay eggs on dry ground in the spring. But more snow is falling now. The penguins have to lay their eggs in the snow. When the snow melts, the water rots many of the eggs. That's causing the number of penguins to drop, or get smaller.



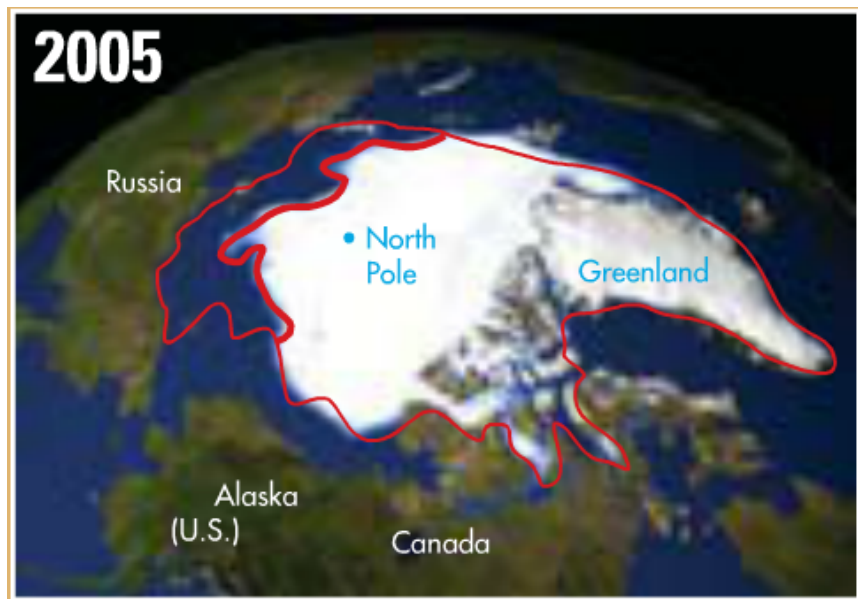
Because of global warming, some penguins cannot find dry places to lay eggs.

Arctic Sea Ice Coverage

Rising temperatures have affected the huge sheets of ice surrounding the North Pole. These images show how.



In 1979, ice covered much of the Arctic throughout the year.



By 2005, large amounts of ice had melted. The outside red line shows where solid ice used to be. Now there is only ocean water. Many scientists say the ice in the area will continue to melt.

Trouble in the Tropics

Earth's warmer areas are also affected by rising temperatures. Tiny animals called coral polyps build huge **reefs** in warm ocean water. Reefs come in many different colors. Fish dart around the reefs, and a lot of other ocean animals call coral reefs home. But many coral reefs are in trouble.

Because of global warming, ocean water is heating up. If the water near a reef gets too warm, the polyps die. Then the once colorful reef turns white. When a reef dies, fish have to find new homes, or they will die, too.



A live reef



A dead reef

What's Happening?

No one is sure what is causing the worldwide warm-up. Most scientists blame some gases in Earth's **atmosphere**. They point to one gas in particular—carbon dioxide.

Most people depend on oil, coal, and natural gas. These fuels help run cars, heat homes, and power factories. But they also give off carbon dioxide. Carbon dioxide heats the atmosphere and makes Earth warmer.

Over time, cars and factories have changed the atmosphere. Today, the air has about 30 percent more carbon dioxide than in the days before cars and factories. Other heat-trapping gases have also skyrocketed, or increased.

Each year, people cut down a lot of trees for paper and wood, and this is a problem because forests actually help lower carbon dioxide levels. Trees use carbon dioxide to make their own food.

When people cut down forests, more carbon dioxide hangs around in the atmosphere. That drives temperatures even higher.

People also produce a lot of trash, and most of it gets dumped into landfills. These are areas filled with trash and then covered with dirt.

As trash sits in landfills, it makes methane gas. The methane rises into the air and traps heat. More trash means more methane, and more methane means a warmer Earth.

The message, scientists say, is clear. People need to change their ways—beginning now, not next year. The future of Earth is at stake.



Methane gas from landfills can make Earth warmer.

Global Warnings

Most scientists say Earth is heating up. That means changes all over the world. This map shows you a bit of what's happening.

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Virgin Islands

Warmer weather is causing problems for sea turtles. Many more females are hatching than males. Scientists don't know how that will affect sea turtle populations.



Argentina

Rising temperatures and water shortages have sparked massive wildfires in recent years.



Hudson Bay

Winter ice melts two to three weeks earlier than before. That makes it harder for polar bears to find food.



Kenya and Tanzania

Malaria, a deadly disease, is spreading. It's carried by mosquitoes. And they love warmer weather.

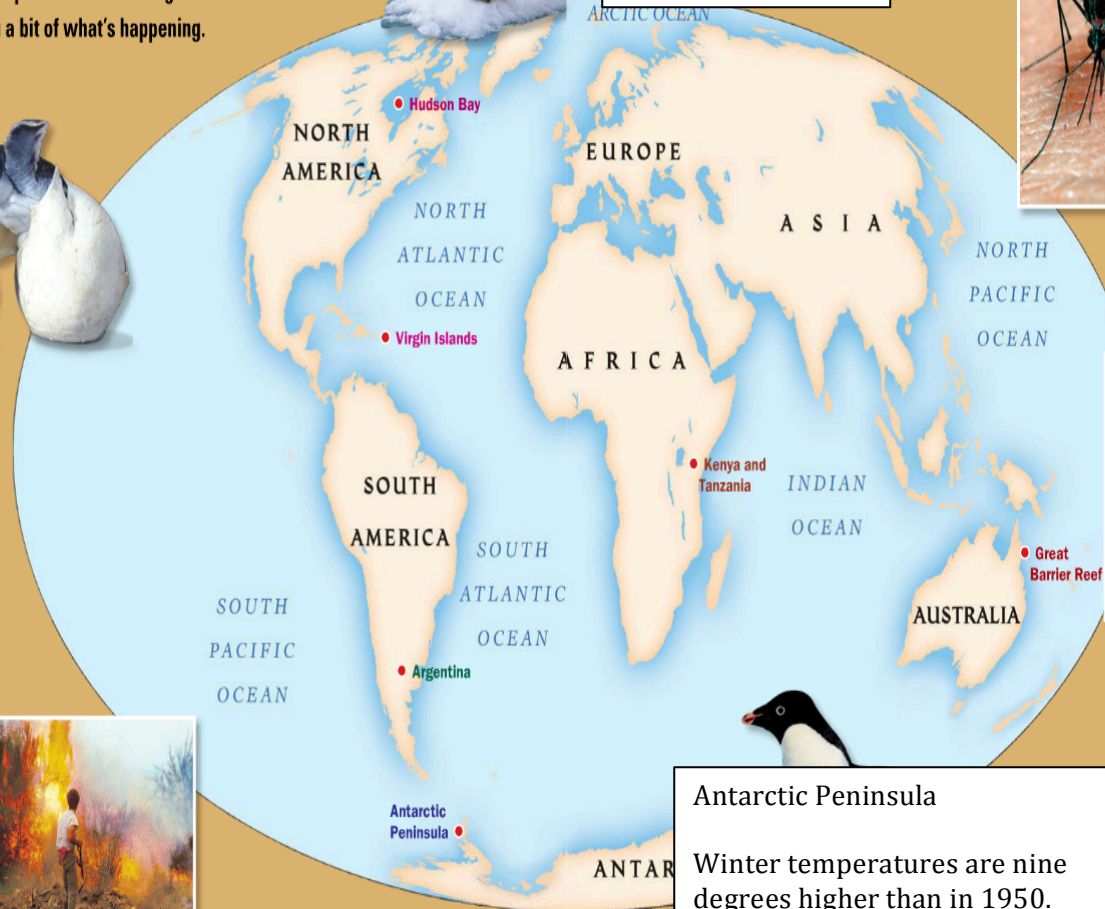


Great Barrier Reef

Ocean water is slowly growing warmer. The heat is hurting and even killing big pieces of the world's largest coral reef.

Antarctic Peninsula

Winter temperatures are nine degrees higher than in 1950. Sea ice has shrunk by one fifth. These changes make it much tougher for Adélie penguins to survive. Bird populations are sinking.



Take notes on causes and effects of global warming. Add the missing details.

	Cause	Effect
Ice at Work	ice grows heavy _____ _____	moves downhill and becomes a glacier glaciers melt
Turning Up the Heat	average summer temperature has risen	_____ _____
The Meltdown	_____ _____ it gets too warm and there are no more avalanches	meadows with bushes and berries for bears to eat are formed _____ _____
Worldwide Warming	sea ice is melting _____ _____	meltdown forms clouds that can make more snowfall penguins have to lay their eggs in the snow

Trouble in the Tropics	ocean water is heating up	<hr/> <hr/>
What's Happening?	oil, coal, and natural gas give off carbon dioxide <hr/> <hr/> trash sits in landfills, makes methane gas. and traps heat	<hr/> <hr/> more carbon dioxide hangs around in the atmosphere the earth is getting warmer

4. Grammar

Use Verbs in the Present Perfect Tense

If you know **when an action happened in the past**, use a **past tense** verb.

EXAMPLE	Last month, scientists attended a global warming conference.
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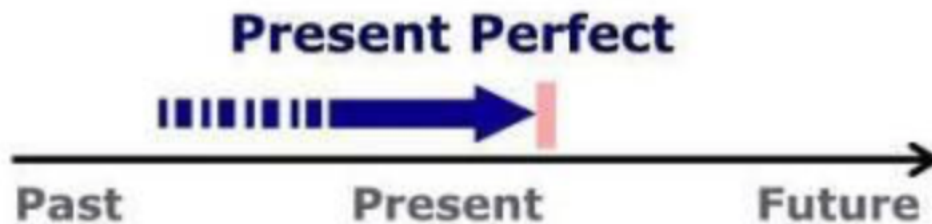
This happened **last month**, so we know when it happened.

If you're **not sure exactly when** a past action happened, use a verb in the **present perfect tense**.



EXAMPLE	They <u>have</u> attended many conferences.
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You can also use the **present perfect tense** to show that *an action* **started in the past and may still be going on.**



EXAMPLES	Scientists have studied the temperature of ocean water for a long time. (And they are probably still studying it.)
	The temperature has increased over time. (And it is probably still increasing.)

To form the **present perfect**,

- use the helping verb **have** or **has**
- plus the **past participle** of the main verb. For regular verbs, the past participle ends in **-ed**.

The past tense and the **past participle** will be the same for regular verbs.

Verb	Past Tense	Past Participle
melt	melted	melted
increase	increased	increased
study	studied	studied

Let's look at a few more verbs in the past participle.

Verb	Past Tense	Past Participle
want	wanted	wanted
play	played	played
need	needed	needed
talk	talked	talked
change	changed	changed

Review: Choose *past tense* or *present perfect tense*.

When we know when something happened in the past use

When we don't know when something happened in the past use _____

When something started in the past but is still happening use

Practice Together

Say each sentence. Choose the correct form of the verb.

1. Melting glaciers (added/have added) more water into Earth's oceans over the years.

(Do we know when this happened? Is it still happening? **No, so we need the present perfect tense**)

2. Last year, this glacier (melted/has melted) a lot.

(Do we know when this happened? Is it still happening? **Yes last year, so we need the past tense**)

3. During my vacation, we (traveled/have traveled) far by ship to study the glacier.

(Do we know when this happened? Is it still happening?) **Yes during my vacation, so we need the past tense**)

Try It!

Underline the correct verb to complete each sentence. Read the new sentence aloud.

4. I (wanted/have wanted) to take a trip like this for a long time.

5. Yesterday, I (watched/have watched) some ice fall.

6. My friend (tried/has tried) very hard today to take pictures of it, and she is still trying.

What If an Action Happened, but You're Not Sure When?

Use the Present Perfect Tense to Tell About It

Underline the correct verb to complete each sentence. Read the new sentence aloud.

1. This company (cleared / has cleared) forests for fifty years now.
2. Last summer, it (cleared / has cleared) this forest.
3. In April, our group (replanted / has replanted) the trees.
4. So far, some birds (returned / have returned).

What If a Past Action Is Still Going On?

Then Use the Present Perfect Tense.

5. Some waste _____ pollution. (cause)
6. The government _____ laws to control it. (pass)
7. People _____ Earth by recycling. (protect)
8. Some kids _____ trash into toys. (turn)

5. Writing

Think about all you have learned about global warming. Write a CER about one thing people can do to stop global warming. Use information from the text to help you write.

CER: CLaim-Evidence-Reasoning

Topic: (What is the question you are trying to answer?)

Claim: (What is your response?)

Evidence: (What text evidence is there to support your response?)

Detail 1	Detail 2
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-----	-----
-----	-----
-----	-----

Reasoning: (How does your evidence connect to your response?
Why is what you say true?)

6. Practice Reading and Speaking

Practice reading the text and what you wrote. Then read it to a parent or sibling. Check each when you are done.

	✓ To myself	✓ To someone else
I can tell what I know about the picture and the information from the dialogue.		
I can read a page of <i>Melting Away</i> out loud.		
I can read sentences using past and present perfect verbs.		
I can read my CER telling how we can stop global warming.		