

# THE CLIMATE

## WHAT A DIFFERENCE A DEGREE MAKES!

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# THE CLIMATES OF CANADA!

**H**ave you ever thought about how climate affects your life? You might be surprised to realize that climate defines us as Canadians. It influences how we live, how we feel and behave, how we earn a living, and how we play. Our lifestyles are shaped by the weather conditions we expect each season - hot, hazy Toronto summers, cold, dry Edmonton winters. If that weather doesn't come, we are thrown for a loop. A warm winter with little snow can mean drought and financial ruin for farmers. A cool, wet summer? Almost everyone is depressed.

Canada is a land of climatic contrasts and extremes. Our climates have shaped our history and given us a sense of identity. After all, we're the Great White North, eh? Maybe more than any other people, Canadians know that our lives and livelihood depend on climate.

## What is Climate?

Climate and weather are two different things. While a place's CLIMATE decides the sort of temperatures and precipitation (rain and snow) we can expect over the long term, WEATHER refers to the day to day changes to these conditions. Climate, then, is what we can expect. Weather is what we get - including the surprises! We buy clothes because of the climate, we wear clothes because of the weather.

## Our Climate Affects:

**...HOW WE WORK:** Agriculture, forestry, transportation, industry, business, and insurance are all influenced by climate.



For example, the Prairie climate favours wheat crops, so Canada is one of the world's most important bread baskets. Potatoes grow well in the Maritimes and fruit trees and grapes thrive in B.C.'s Okanagan Valley and Ontario's Niagara Peninsula. Our strong forestry industry, based on exports of pulp, paper and lumber products, is shaped by the kind of trees our climate supports.

Fishing, shipping and hydro-electric power are also influenced by climatic conditions such as the timing of ice thaws in major waterways. Water temperatures influence fish migration patterns.

**...HOW WE BUILD:** Dams, ditches, buildings and bridges, communication towers, transmission lines, indoor and underground shopping malls, oil and gas pipe lines - our built environment is adapted to our climate.

**...HOW WE PLAY:** We excel at winter sports like skiing, hockey, skating and curling. We're avid boaters in the summer. We have indoor ice rinks, tennis courts and swimming pools.

**...HOW WE DRESS:** Look in your closet and you'll probably find swimsuits and parkas, shorts and sweaters, boots and sandals: different clothes for different seasons.

**Fact:** Twice as many Canadians own boats as snowmobiles. There are more golfers than downhill skiers in Canada; six times as many golf courses as ski resorts. We import almost one quarter of a million umbrellas each year and nearly a quarter of our homes have air conditioning (almost half of those are in Ontario).

**Did You Know?**  
Even our culture is influenced by climate! Ever see the movies "Gone With The Wind" or "The Big Chill"? Have you read "Barometer Rising" or "Who Has Seen The Wind"? Or heard the musical groups Air Supply, Weather Report or Donna Summer? How about those catchy tunes "Raindrops Keep Fallin' On My Head" or "Baby, It's Cold Outside"?

**...HOW WE FEEL:** In cold weather, we crave sweets and starchy foods. We gain weight, sleep more and feel lethargic. We get headaches from Chinook winds. Come summer, we shake off our lethargy, lose weight and feel happier.

**...HOW WE SPEND MONEY:** Add up the costs of climate! One third of our energy goes to heat and cool our homes and offices. We spend millions repairing roads damaged by frost and on snow removal. Don't forget the cost of clothes and food. A cold snap in Florida means oranges cost more. Cool, wet summers boost the price of fresh fruits and vegetables.





## Something to Celebrate!

Ask a European about Canada, and you'll hear about the land of perpetual ice and snow. While it's true we are a northern country, our summers are without rival.

Our climate is a mix of most of the climates in the Western Hemisphere. Canada has the cold and snow of Siberia; the storms of the United States; the summer heat and humidity of the Caribbean; the aridity of the American southwest; the moistness of Ireland; the winds and fog of Britain; and the temperateness of the Mediterranean countries. In fact, of the world's major climates, only the desert and the equatorial rainy types are missing.

Canadians can celebrate this diversity, as well as our ability to adapt to climate extremes.

## From Sea to Sea to Sea!

Why do we have so much diversity in our climate? Our country is huge, stretching across five and one-half time zones, covering more than one-quarter of the Western Hemisphere. Vancouver is closer to Mexico City than to Halifax. St. John's is nearer Moscow than the Beaufort Sea.

The kind of climate we have is determined by our location in relation to the sun, the shape of the land, the amount of surface water (lakes and oceans) in the area, and whether we live in the country or the city.

The sun, whose average temperature is 5000 degrees celsius, gives us our heat and light. The Earth's tilt and motion determines how much sunlight and heat a particular place or latitude will receive. Some places, like Windsor, Ontario, receive more intense heat. Others, like Yellowknife, N.W.T. receive less.

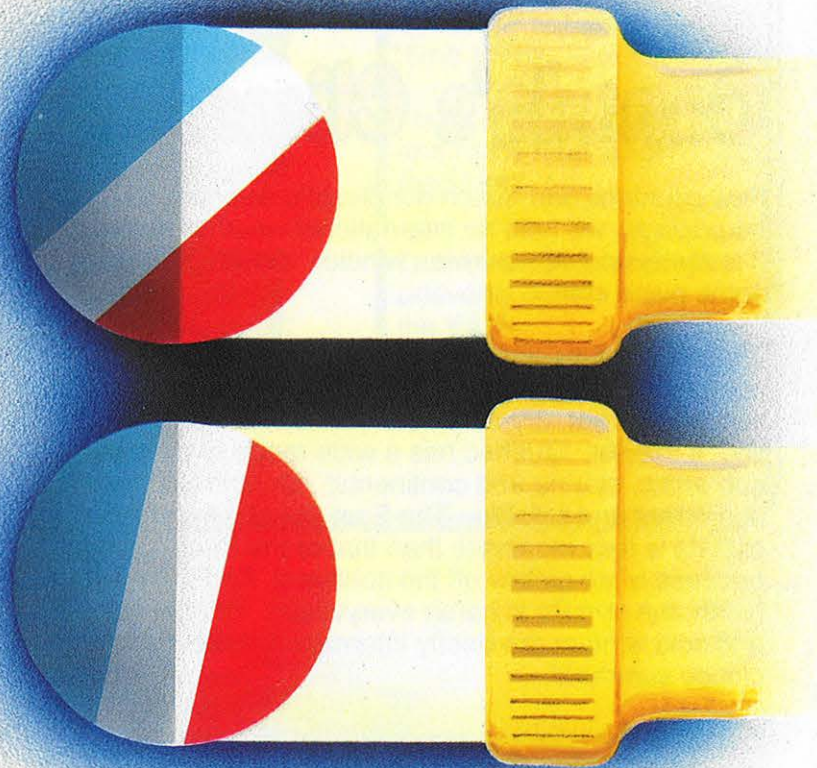
## Did You Know?

Our climate has sparked some remarkable Canadian inventions: the snowblower, snowplough, frozen fish, insulation, underground shopping malls, winter fuels and lubricants, the kerosene foghorn and all-weather asphalt. By the way, Canadians did not invent ice-hockey. We invented basketball instead.

## Check it Out!

Want to see why some places on Earth are hotter than others? Shine a flashlight onto a ball. Think of the flashlight as the sun and the ball as the Earth.

Now, tilt the ball away from the light. Rotate the ball. Can you see how the sun's rays are distributed unequally over the Earth's surface? Sometimes, the light hits a spot directly. Other times, the light is less intense.



## Land, Sea and Air

If the sun was the only thing affecting climate, this unequal distribution of the sun's heat might mean that some places - like Canada - would never be warm. Fortunately for us, Earth's atmosphere makes up for this unequal heating by moving heat from warmer areas - like the tropics - to colder ones - like the poles.

Here's how it works. Land and water absorb the sun's heat and release it back into the atmosphere. Warm air rises over the hotter areas. The heavier, cooler air from colder regions moves in to replace it. The air currents caused by this movement help distribute the heat more evenly.



The amount of heat that is absorbed and released into the atmosphere depends on the shape of the land, the kind of soil and vegetation, and the amount of surface water in the area. Buildings and paved surfaces also absorb and retain heat, influencing local climates.

Water heats up more slowly than land, but it holds its heat longer. That's one of the reasons why Victoria, B.C.'s climate is more moderate than Estevan, Saskatchewan's.

Mountains, valleys and plains also influence climate. Mountains can block some air currents, while plains are open to invasion by cold winds in winter and hot air in summer. Valleys can trap heavier, colder air streams.

## Canada's Climates

Few countries can match our climatic diversity. But surprisingly, we hold no international weather records. It is always colder, snowier, windier, wetter or hotter some place else.

The pleasant maritime climate of the West coast contrasts sharply with the sometimes long, hard winters and hot, dry summers on the Prairies, and in B.C.'s Interior. Quebec has a wide range of climates: sub-arctic, marine and continental. Ontario's climate is consistent and reliable. The East Coast's maritime climate is less moderate than that of the Pacific Coast because of an airflow off the continent. And in the North, the climate is harsh everywhere. Long, dark and cold winters are briefly interrupted by cool and cloudy summers.

Canada's climates are unpredictable. Cool summers may follow warm winters, or the reverse may hold true. Late freezes, droughts, unexpected hailstorms and

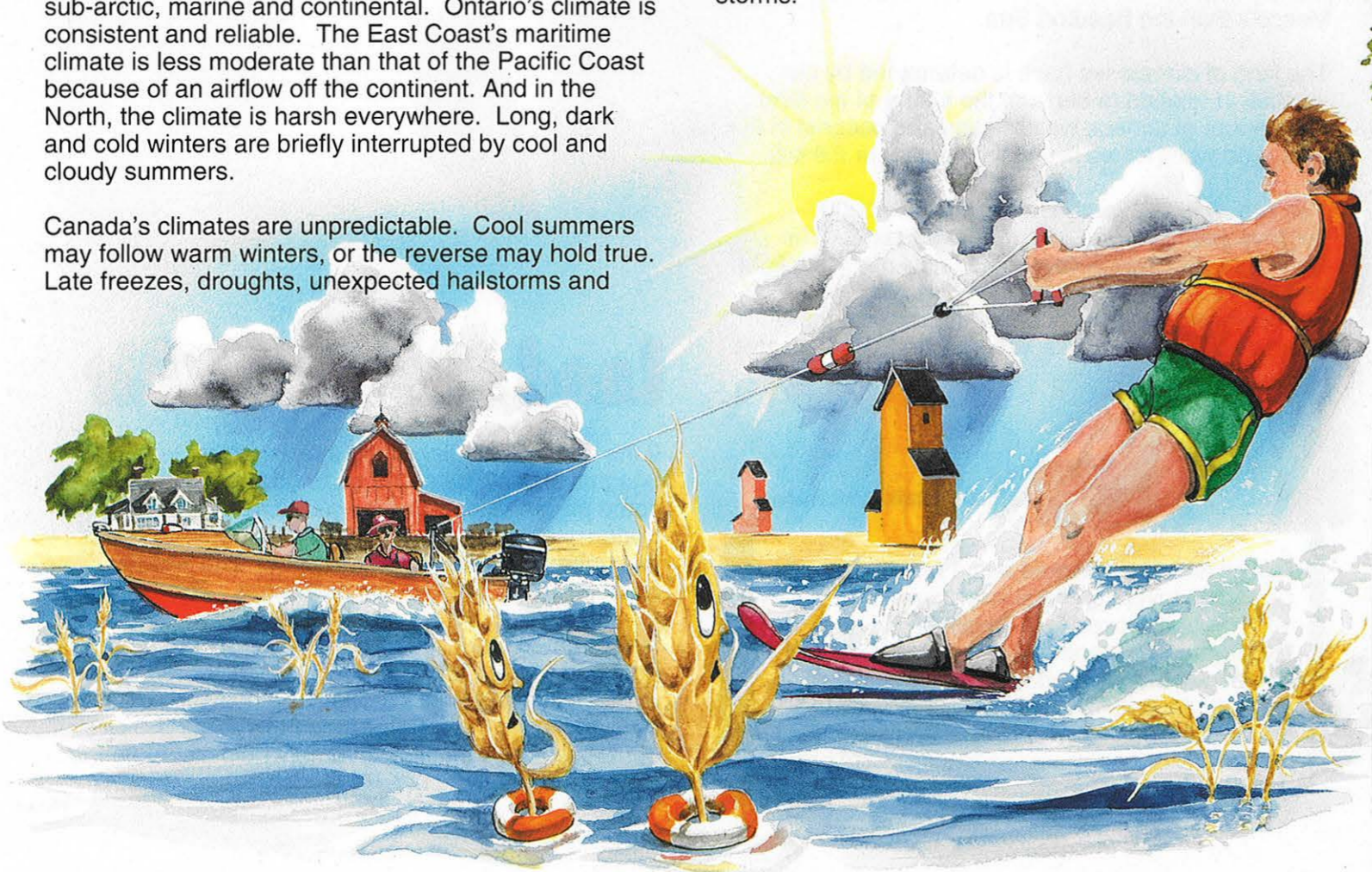
August snowfalls in Alberta keep Canadians on their toes. But we have learned to make the best of things. When more than 380 mm of rain fell on Parkman, Saskatchewan, two brothers went water-skiing on their wheat field! Can you imagine?

## Changing by Degrees

Climates change, and these changes usually occur naturally. Over the past three billion years, Canada has been covered at times by glaciers, lush rain forests, freshwater lakes and saltwater seas.

But increased concentrations of greenhouse gases in our atmosphere as a result of human activity will change our climate much faster than any natural change. And this fast pace is cause for serious concern. While we have always been good at adapting to our climate, rapid climate change or GLOBAL WARMING could really be a serious challenge.

Should rapid climate change occur, Canada's coastal areas might flood. Our key industries may be severely affected. Overall, we could experience such catastrophes as severe water and energy shortages, drought, flooding, mudslides, avalanches and intense storms.



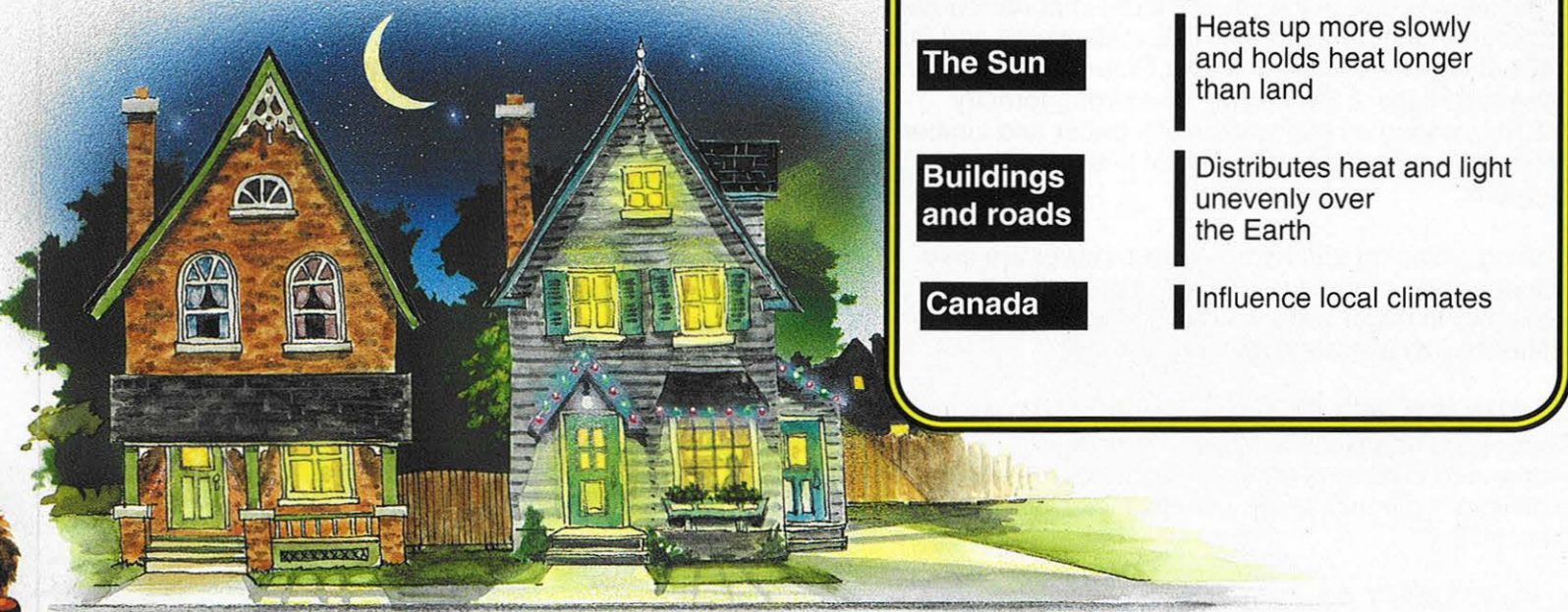
## Want to Help?

This rapid climate change or GLOBAL WARMING would affect every one of us. But there is a lot we can do to help.

If burning fossil fuels produces greenhouse gases that contribute to global warming, we should find ways to use these fuels more efficiently.

Here are TWO SIMPLE THINGS YOU CAN DO TO HELP SLOW GLOBAL WARMING:

1. Turn off unnecessary lights and appliances.
2. Walk, ride your bike or take the bus. Leave the car at home.



## Cross Over!

Match up the most appropriate answers.

Water

Frozen fish, snowblower, all-weather asphalt

Quebec

Expected temperature and moisture conditions

Canadian Inventions

Wide range of climates

Climate is

Stretches across 5 1/2 time zones

The Sun

Heats up more slowly and holds heat longer than land

Buildings and roads

Distributes heat and light unevenly over the Earth

Canada

Influence local climates

## Environmental Citizenship

*Learning more about Canada's climate*

Environmental Citizenship is an initiative of Canada's Green Plan. Its goal is a society where individuals and groups have the knowledge and understanding that will lead to responsible environmental action.

This fact sheet is one of a series of *Environmental Citizenship "Snapshots"* on atmospheric change. The objective of the series is to provide bias-balanced information and practical suggestions for taking action.

For more information, write or call the Environment Canada office nearest you, or:

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