

# Canadian Geography 2202

## Unit 1 – Lesson 8

### Climate

#### Canada's Ecozones

- Landforms, **climate**, natural vegetation, soils, wildlife, and human activity define Canada's geographic regions. All these features are like pieces of a puzzle that fit together to form Canada's unique ecosystems, called *ecozones*.
- Climate is a key factor in determining the nature of an ecozone.
- Canada's weather patterns and the daily weather in your local community are connected to a global system of climate that is constantly changing.
- This system is made up of different parts: the atmosphere, the circulation of water in the oceans, and differences in landforms from place to place on the surface of the Earth.

#### Factors Influencing climate

- Remember J. BLOWER
  - J : Jet Stream
  - B: Bodies of Water
  - L: Latitude
  - O: Ocean Currents
  - W: Winds and air Masses
  - E: Elevation
  - R: Relief

See the chart on page 78 and write a brief description in your notebooks of each factor. Use the outline chart as an example:

#### Climate Regions of Canada

Arctic

Subarctic

Pacific

Mountain

Prairie

Lower Lakes

Atlantic

## Canada's Climate Systems

**Weather** – the day-to-day conditions in the atmosphere.

What would these conditions include?

**Climate** – the weather patterns of a particular region averaged over a long period of time.

Do all areas of Canada have the same climate? Why?

What factors influence the climate across Canada?

### Factors affecting Canada's Climate

**1. Latitude** – the distance north or south of the equator.

Canada is a northern country – closer to the north pole than the equator.

- An increase in latitude generally means a decrease in temperature.

(Further from the equator – colder)

- A decrease in latitude generally means an increase in temperature.

(Closer to the equator – warmer)

**Q.** Why does it get colder as latitude increases and warmer as latitude decreases?

**A.** At low latitudes the sun's rays strike the earth at a direct angle, are more intense and heat a small area, it is warmer. At high latitudes, because of the **curve of the earth**, radiation strikes the earth at an indirect angle, is spread over a larger area, is less intense, and it is colder.

**2. Ocean currents** – the movement of large quantities of ocean water.

**North Pacific Current** – brings warm water / air to coast of British Columbia.

**Labrador Current** – brings cold water / air to Newfoundland & Labrador.

**Gulf Stream** – brings warm water / air to Atlantic Canada.

### 3. Wind and Air Masses

**Air mass** – A huge body of air with the same temperature and moisture conditions throughout.

**Wind** – air moving from one place to another.

**High pressure** – cold air sinking. (cold air is heavier)

**Low pressure** – warm air rising. (warm air is lighter)

Air always **moves from high** pressure areas **to low** pressure areas.

**Warm** air masses originate near the equator.

**Cold** air masses originate in the **north or south**. (poles)

**Prevailing wind** – predictable winds that blow in a set pattern

In Canada the most predominant wind is the **Westerlies**.

**Front** – the leading edge of an air mass.

**Warm front** – the leading edge of a warm air mass.

**Cold front** – the leading edge of a cold air mass.

When air pressure is low, skies are often cloudy and precipitation occurs.

When a cold and a warm air mass collide, warm air rises up over the cold air resulting in precipitation and storms.

**4. Polar jet stream** – a fast-moving body of air at high altitudes that steers weather systems and storms from west to east. (300-500 km/h at an altitude of 8000 – 15000 m)

- Forms an ever-changing boundary between cold air masses from the north and warm air masses from the south.
- The clash of different air masses along the Polar jet stream front produces severe weather, including violent thunderstorms and tornadoes.

**5. Elevation** – the height above sea level.

**Temperature decreases as elevation increases.**

**Mountains can cause precipitation**

**Windward** - side of a mountain from which the wind is blowing.

**Leeward** - side of a mountain that is sheltered from the wind.

Places on **windward** side = **more** rain. (Vancouver)

Places on **leeward** side = **less** rain. (Kelowna)

**Orographic precipitation** – mountains force moisture laden air to rise and cool and drop the moisture as precipitation.

**6. Large Bodies of Water**

**Water heats up and cools down more slowly than land.**

Bodies of water have a **moderating effect** on temperature. Places close by will have **less extreme** temperatures.

In summer the ocean is cooler than the land, winds from the ocean cools the land. In winter the water keeps the heat longer, and winds from the ocean warm the land.

Places inland will have **more extreme** temperatures.

In summer the land is warm, meaning warm temperatures. In winter the land is cold, resulting in colder temperatures. No ocean winds are nearby to moderate the temperature.

**Maritime Climate** - located **close** to the ocean  
has **moderate** temperatures

has **cooler** summers and **warmer** winters  
receives **more** precipitation

**Continental Climate** - located **away** from the ocean  
has **extreme** temperatures  
has **warmer** summers and **colder** winters  
receives **less** precipitation

How does climate influence human activity?

Types of sports activity (skiing, hockey, baseball)

Closing of business or schools (snow storms)

Snow clearing

Materials homes built out of

Types of clothing used

Leisure activity (snowmobiling)

Types of natural disasters(hurricanes, tornadoes)

Home heating (demand for wood, oil electricity)

Economic activity (farming, forestry)

How does human activity influence climate?

Pollution – acid rain

Pollution – global warming