Climate Note

Complete your own note using p. 56-61 in Making Connections 3rd Ed.

Overview

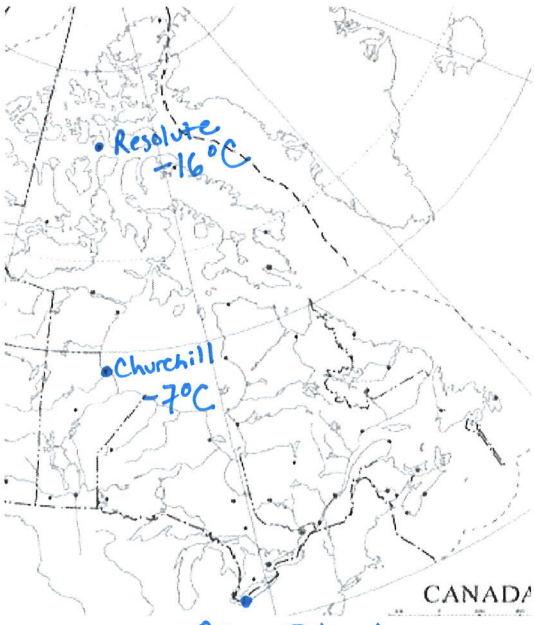
- Climate refers to long-term patterns of weather.
- It's important to understand that:
  - Canada is a very large country, which means there is a lot of room for widely varying climates.
  - Northern parts of Canada have different climates than Southern parts.
  - Coastal areas have very different climates conditions than inland areas.

Factors That Determine Climate

- Six major factors determine the climate that exists in any particular location:
  - Latitude
  - Ocean Currents
  - Winds, air masses, and jet streams
  - Elevation
  - Relief
  - Near Water

Latitude

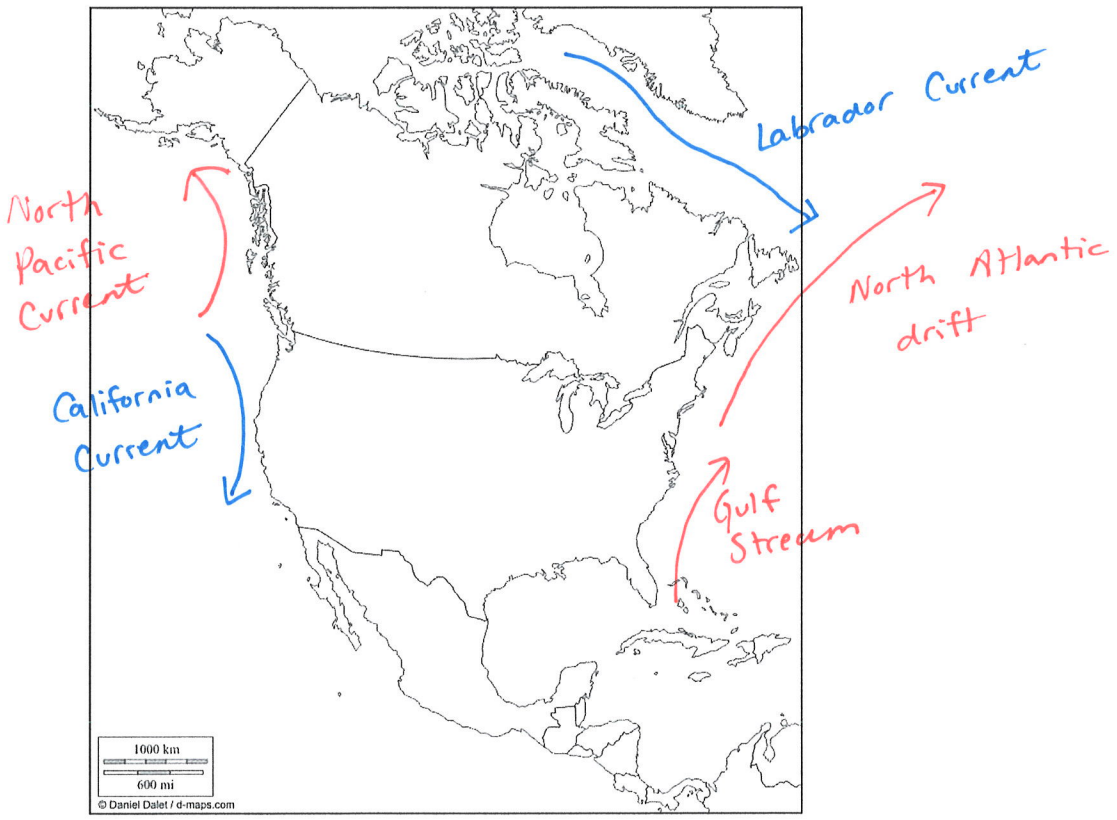
- The farther you are from the equator, the less direct sunlight you receive. Therefore, the farther you go north, the cooler it gets.
- Label Pelee Island, Churchill, and Resolute on this map. Add labels for their annual average temperatures.



Pelee Island
9°C

Ocean Currents

- An ocean current moving away from the equator is relatively warmer than the surrounding water. An ocean current flowing toward the equator is cooler.
- On this map of Canada draw the North Pacific current, California current, Labrador current, Gulf Stream, and North Atlantic Drift (using red & blue arrows).



Textbook Questions

p. 61 #1, 3

1. Weather is daily precipitation, temperature, etc. Climate is long-term trends in weather.

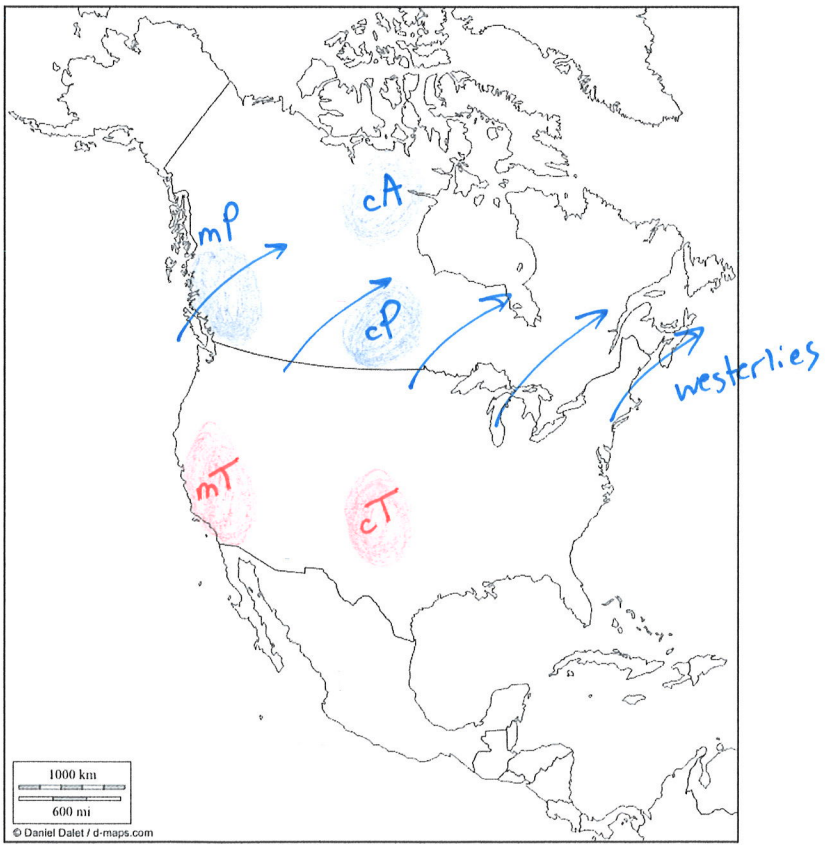
3. a) When the cold Labrador current meets the warm Gulf stream we get fog because cold air passes over warmer water

b) The Titanic crashed into icebergs brought down from Greenland by the Labrador current. April 1912

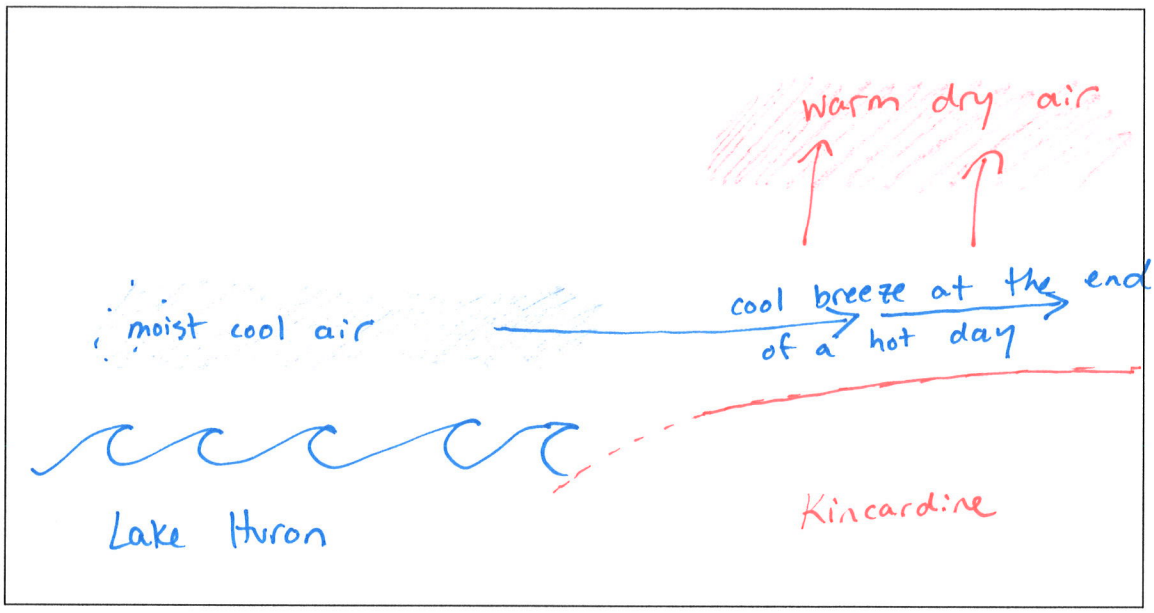
Air Masses and Winds

- An air mass is a large volume of air that takes on the climatic conditions of the area in which it forms.
- Air masses forming over oceans will contain moist air while air masses forming far from the ocean will have very dry air.
- See Fig. 3-3. When we label air masses, we label the moisture:
  - m = maritime (moist)
  - c = continental (dry)

  We also label the temperature of air masses:
  - T = Tropical (hot)
  - P = Polar (cool)
  - A = Arctic (very cold.)
- *Use Fig. 3-3 to colour four blue and three pink air masses onto this map of North America. Label each with the correct notation (eg. mP, cA, etc.)*
- *Use Fig. 3-4 to draw the westerlies (wind belt) over Canada.*



- Hot air rises and cool air moves sideways to fill the space. This is what makes wind!
- *Draw a diagram with your teacher to show the most common wind pattern in the Kincardine area.*



Study Questions

- Have you ever watched a snowstorm coming over the Environment Canada radar? From which direction does it always come? Explain this using one of the concepts on this worksheet. Always comes from the west b/c of westerlies.

- Examine Fig. 3-3 to determine the answers to these questions.
  - Which city should have moister air masses: Victoria or Winnipeg? Why? Ocean
  - Which city should be warmer: Cartwright or Winnipeg? Why? Latitude
  - Which city should be warmer: Victoria or Winnipeg? Why? currents
  - State two reasons that Halifax should be warmer than Cartwright. Gulf Stream + Latitude
  - Where in North America would you expect to find a desert? Why? Centre of US where there are cT air masses (hot + dry)
  - Where in North America would you expect to find the most lush forests and ecosystems? Why?
    Florida b/c Tropical, latitude, moist, Gulf Stream

Also do: Textbook Question: p. 61 #2

→ It's important to understand maritime + continental climate in order to understand Canada b/c we are a huge country with many maritime regions but also large continental regions.

Elevation

- When you travel from Sea level to the top of a mountain, it gets colder. Why? At a higher elevation, there is less pressure. As a result, the air expands and cools.
- For every 100m of elevation, air cools by 1°C.
- Cooler air cannot hold as much moisture, so condensation eventually starts to happen.
- On a warm summer day in Vancouver at sea level, the temperature might be 26°C. At the top of a nearby mountain, at 1400m, the temperature might be 14°C.

Study Question

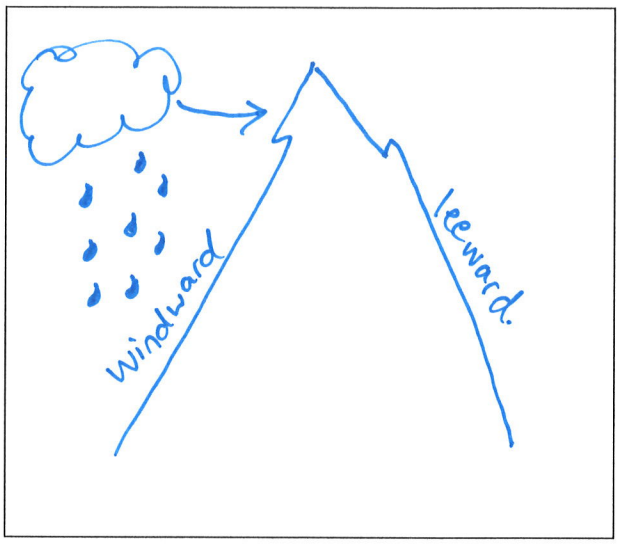
- Explain why going up a tall mountain can be like travelling a considerable distance northward.

The farther you travel north, the cooler it is. this is similar to travelling up a mountain side into cooler air.

Relief

- Relief means the shape of the surface of the land.
- Windward means the side of a hill facing the wind.
- Leeward means the side opposite, away from the wind.

- *Draw a mountain with wind hitting one side, then label the windward and leeward sides.*



- Places on the windward side get substantially more rain and snow than places on the leeward side.
- Leeward can also be called the rain shadow.
- *On which side of your mountain would the rain fall? Add it to the drawing.*

Study Question

- *Examine Fig. 3-5. Which city would have more precipitation?*
  - *Tofino or Victoria?*
  - *Vancouver or Kelowna?*
  - *Revelstoke or Golden?*
  - *Kelowna or Calgary?*

Text Question p. 61 # 4.

4 a) I would prefer to live on the windward side of the Rockies b/c 1) I like rain, 2) It would be warmer (ocean moderation), and 3) it is more scenic.

b) The temperature will warm as air drops on the leeward side of the mountain.

c) There will be little precipitation on the leeward slope.

d) Victoria, Kelowna, + Calgary will be dryer and warmer/colder than cities on the windward side.

Near Water

- Definition: Maritime climate means climate areas near an ocean. The annual temperature range is small and precipitation is high.
- Definition: Continental climate means climate in areas far from an ocean. The annual temperature range is large and precipitation is low.
- In maritime regions, winter temperatures are relatively mild, while summers never get too hot. Eg. Vancouver has an annual temperature range of 14.4°C. This city gets 1189 mm of precipitation per year.
- Continental climates are quite different because land heats and cools much more quickly than water, so extreme temperatures are the norm. Eg. Regina has an annual temperature range of 31.3°C but it only gets 390 mm of precipitation per year.
- The areas near the Great Lakes are far from an ocean, however the lakes are so large that they provide a partial maritime influence. So in Kincardine, Lake Huron modifies temperatures somewhat and provides a source of precipitation so long as it is not frozen. The official term for the climate in our area is modified continental.

Textbook Qs: p. 61 #5a.

5a) I would give my climate a B. I like the snowy winters for skiing and the warm summers for swimming and gardening. However, our warm season is a bit too short.