

Earthquake activity 6: **Earthquakes in Canada**

Description: A student research activity that explores the **Earthquakes Canada** website to answer questions about Canadian and local earthquakes. For senior elementary and secondary school students, the sophistication of the students' answers should reflect their grade in school.

Materials: access to internet
student worksheet (2 pages)

Teacher instructions:

This is an on-line research activity for senior elementary and secondary school students, using the information provided by Natural Resources Canada's Earthquakes Canada website, <http://earthquakescanada.nrcan.gc.ca>. Students will answer the questions on the accompanying student worksheet. The sophistication of their answers should reflect their grade in school.

Answers:

This website is continually updated. Answers to most questions will vary depending on the date and your local community.

1.
 - a. An earthquake signal will have a sudden increase in amplitude and the left, or "leading" edge of each "burst" is very square. On the right, the amplitude of the signal level begins to fall off as the earthquake energy dissipates gradually over time.
 - b. Other vibrations, in addition to earthquakes, recorded by seismographs include the passage of trains and ships, as well as explosions and even strong winds. Network system noise is also recorded.
2. Answer will vary, but since this is a Canada wide list, not all of the selected stations will have vibrations and the vibrations may not have been caused by an earthquake.
3.
 - a. Most earthquakes are distributed around the outer part of the continent – the west coast and mountains, the Arctic Islands, and southeastern Canada (Maritimes, southern Quebec).
 - b. Most common: off the coast of British Columbia
 - c. Least common: Central Canada – the Canadian Shield and the Prairies.
4.
 - a. The most recent earthquake reported in Canada is indicated by the yellow dot on the map and is at the top of the list.
 - b. Although the epicentre is outside of Canada, ground vibrations were recorded in Canada.
5. Answers will vary: some students will choose the most recent (yellow dot) in their seismic zone, while others may pick the closest to their community. Student living in seismic zones should zoom into the map as much as possible. Students in locations far from major seismic zones will have to use earthquakes at greater distances.
6. Answers will vary depending on the location of your community. A "significant" earthquake may be considered to refer to a high magnitude earthquake, an earthquake associated with significant damages, or an earthquake of considerable scientific interest. These are indicated or inferred in the web text for each seismic zone

Earthquakes in Canada

Name: _____

Earthquakes occur in most parts of Canada, although they are most common in certain specific regions. Explore the many features of the **Earthquakes Canada** website <http://earthquakescanada.nrcan.gc.ca> to learn about earthquakes in Canada, and, more specifically, earthquakes near your community.

Answer the following questions.

1. In the index in the left margin, select < Stations and Data > and then click on < How we record earthquakes > followed by < Interpreting Seismograms > in the text. Read it.
 - a. Describe an earthquake signal .
 - b. What other vibrations, in addition to earthquakes, can be recorded by seismographs?
2. Return to < Stations and Data > in left margin. Click on < View Seismograms > (This page allows you to view ground vibrations on seismograms recorded at selected stations of the Canadian National Seismograph Network. Scroll to the bottom of the page to see them. Some stations may have recorded shaking within the last hour)
 - a. Look at the record for five stations. Have any of them recorded ground vibrations in the last hour?
 - b. Do some of the signals look like earthquake vibrations?
3. In the index in the left margin, select < Historic Events > and choose "Map of earthquakes in Canada". Observe the distribution of seismic events.
 - a. Describe the distribution of events.
 - b. Where are earthquakes most common?
 - c. Where are earthquakes least common?
4. In the index in the left margin, select < EqCan home > to view a map and a list of earthquakes that have happened during the last 30 days in Canada. Scroll down to "In Canada" and click on < The map and list of recent earthquakes >. The earthquakes shown on the map are also listed below the map at the bottom of the page.
 - a. Where, when, and what magnitude was the most recent earthquake recorded in Canada?

b. Where, when, and what magnitude was the largest magnitude earthquake recorded in Canada in the last 30 days?

c. Why are some earthquakes with epicentres outside of Canada shown on the Canadian map?

5. By clicking within the blue rectangular outlines on the earthquake map, you can zoom into a specific region. Zoom as far as possible into your region. *(Note: Not all parts of Canada are in major seismic zones. If your community does not lie within a specific seismic zone, it may be difficult to find a nearby earthquake and you will have to consider ones further afield.)*

a. Where, when, and what magnitude was the most recent earthquake recorded close to your community in the last 30 days?

Immediately above the map, you have the option to change the time period of the map from the last 30 days to 1 year duration.

b. Where, when, and what magnitude was the largest earthquake recorded close to your community in the last year?

6. In the index in the left margin, select < General Information > and then click on < Earthquake Zones in Canada > in the text.

a. In which, if any, seismic zone does your community lie?

b. Describe your local seismic zone.

c. Have 'significant' earthquakes occurred in your zone? Give an example.

d. What is the likely cause of earthquakes in your seismic zone?