

The True North Strong and Free



Figure 1: Big Rock Glacial Erratic in Okotoks, Alberta
Source: [The City of Okotoks, Alberta](#)

Background Information

Canada, the true North strong and free, has a remarkable range of landscapes which Canadians and people from all over the world can visit and appreciate. How were these landscapes created, and how do they affect where Canadians live and work?

Using the following sources of information, in this lesson students will learn about the many land and water features found throughout Canada's provinces and territories, and determine how these features can be used for economic gain. Students can use these sources of information to complete the True North Strong and Free assignment.

Review the following Web links for background information about the various land and water features found in Canada. All links were last accessed August 5, 2016:

- River Classification: http://www.sswm.info/sites/default/files/reference_attachments/IMMOR%202006%20Classification%20Rivers.pdf
- Deltas: <http://nationalgeographic.org/encyclopedia/delta/>
- Moraines: <http://nationalgeographic.org/encyclopedia/moraine/>
- Glacial Erratics: <https://nsidc.org/cryosphere/glaciers/gallery/erratics.html>
- Sand Dunes: <http://coastalcare.org/educate/sand-dunes/>
- Spits: <https://www.britannica.com/science/spit-coastal-feature>
- Sea Arch: <http://www.landforms.eu/shetland/arches.htm>
- Drumlins: http://www.bbc.co.uk/schools/gcsebitesize/geography/glacial_landscapes/glacial_deposition_landforms_rev1.shtml
- Rock Flour: <http://banffandbeyond.com/when-do-the-rocky-mountain-lakes-thaw-and-get-their-beautiful-turquoise-colour/>
- Esker: <http://www.landforms.eu/cairngorms/esker.htm>

Lesson Contents

GIS lessons are assembled for teachers as a collection of resources that are needed to facilitate learning a specific topic or issue using mapping and spatial data. This lesson contains the following resources:

- **Lesson Overview (this document)**
Contains the background information about the given topic, along with the **associated curriculum connections**, skills learned and materials required to complete the lesson.
- **Lesson Plan**
Outlines the suggested workflow for using the contents of a lesson. This workflow is the same across all of Esri Canada Education's lessons. To download the lesson plan document, visit: <http://esri.ca/en/content/lesson-plan>
- **Presentation**
A Story Map in ArcGIS Online for the teacher to introduce the GIS skills that will be studied. To view the Story Map, visit: <http://arcg.is/2a2CfVt>
- **Tutorial(s)**
Hands-on documents referenced below including step-by-step instructions for learning GIS skills.
- **Assignment**
A student activity intended to be the final part of a lesson. Students can complete the assignment by applying the GIS skills relevant to the lesson outcomes.
- **Data**
The data required for this assignment can be found in ArcGIS Online. There are two datasets: 'CanadaNaturalRegions_Web' and 'Canada's Ecology', both published by EsriCanadaEducation.

Learning Outcomes

By completing this lesson, students will gain the following curriculum-focused knowledge:

1. **Identify and locate the major landscapes of Canada.**
(Newfoundland Grade 11 World Geography; Ontario Grade 9 Geography; Nova Scotia Grade 8 Social Studies; Prince Edward Island Grade 8 Social Studies; New Brunswick Grade 8 Social Studies; British Columbia Grade 8 Science, 10 Science; Saskatchewan Grade 8 Science; Alberta Grade 9 Science; Yukon Grade 9 Science; Nunavut Grade 9 Science; Northwest Territories Grade 9 Science; Quebec Grade 11 Science; Manitoba Grade 10 Social Studies)
2. **Explain the creation of and characteristics of these landscapes.**
(Newfoundland Grade 11 World Geography; Ontario Grade 9 Geography; Nova Scotia Grade 8 Social Studies; Prince Edward Island Grade 8 Social Studies; New Brunswick Grade 8 Social Studies; British Columbia Grade 8 Science, 10 Science; Saskatchewan Grade 8 Science; Alberta Grade 9 Science; Yukon Grade 9 Science; Nunavut Grade 9 Science; Northwest Territories Grade 9 Science; Quebec Grade 11 Science; Manitoba Grade 10 Social Studies)
3. **Analyze the effects of selected geographic factors on Canadian identity.**
(Newfoundland Grade 11 World Geography; Ontario Grade 9 Geography; Nova Scotia Grade 8 Social Studies; Prince Edward Island Grade 8 Social Studies; New Brunswick Grade 8 Social Studies; British Columbia Grade 8 Science, 10 Science; Saskatchewan Grade 8 Science; Alberta Grade 9 Science; Yukon Grade 9 Science; Nunavut Grade 9 Science; Northwest Territories Grade 9 Science; Manitoba Grade 10 Social Studies)

Skills

Students will become comfortable with performing the following GIS skills in this lesson:

- Creating and Symbolizing Features
- Adding Information to Features
- Measuring Features
- Performing analysis in ArcGIS Online using geoprocessing tools.

Topics and Themes

- Physical Geography
- Glacial Effects
- Economic Strategies.

Grade Range

- 8 – 11.

Geographic Scope

- Canada.

Time Required

The following time is required to complete this lesson:

- [Presentation: GIS Skills](#): 10 -15 minutes
- Tutorials to be completed in class or for homework:
 - [Introduction to ArcGIS Online](#) (Parts B – F): 60-75 minutes
 - [Video: Creating and Saving Features in ArcGIS Online](#): 5 minutes
 - [Tutorial: Perform Analysis \(Buffer\)](#): 5 minutes
 - [Tutorial: Data Enrichment](#): 10 minutes
 - [Tutorial: Change Style](#): 5 minutes
 - [Tutorial: Measure](#): 2 minutes
- Assignment to be completed in class or for homework: 60 minutes.

Note: For a complete learning experience, it is highly recommended that students complete the tutorials associated with this lesson. However, if the tutorials have already been taught, students can use them as a point of reference to complete the assignment.

Materials Required

The following technology is required:

- ArcGIS Online (arcgis.com) subscription account
- Internet browser (e.g. Mozilla Firefox, Google Chrome, Apple Safari)
- Device (laptop, desktop, netbook, tablet).

Production Date

The Education and Research Group at Esri Canada makes every effort to present accurate and reliable information. The Web sites and URLs used in this lesson are from sources that were current at the time of production but are subject to change without notice to Esri Canada.

- Production Date: August 2016

© 2016 Esri Canada. All rights reserved. Trademarks provided under license from Environmental Systems Research Institute Inc. Other product and company names mentioned herein may be trademarks or registered trademarks of their respective owners. Errors and omissions excepted. This work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](#).

