

# Understanding Your Place in the Geoscape



## Overview

This Geoscape lesson contains three activities that investigate the importance of the Geoscape and explore how it influences people's lives, including the use of land, water and resources in the Greater Toronto Area (GTA). Using an enhanced satellite image and digital elevation model students will brainstorm ideas about the importance of the Geoscape by discussing how it influences people's lives. Using an on-line RADARSAT image from the Canadian Centre for Remote Sensing, students will explore land-use in the City of Toronto and discover how such images are interpreted. Students will also search through current newspapers to find stories, advertisements and maps that relate to the Geoscape.

At the end of this lesson, students will be able to:

- Explain the importance of the Geoscape to everyday life
- Understand how various elements of the Geoscape influence land-use
- Describe a variety of land-uses
- Use satellite imagery to identify specific land-uses

## ***Specific Curriculum Expectations***

<b>Grade</b>	<b>Strand</b>	<b>Expectations</b>
7	Geography	<ul style="list-style-type: none"><li>• Produce a report on current environmental events in the news (e.g., place: discovery of a new resource; environment: depletion of fish stocks)</li></ul>
8	Geography	<ul style="list-style-type: none"><li>• Identify and describe types of land-use (e.g., residential, recreational, institutional, commercial, industrial, agricultural; for transportation, communication, utilities; open spaces)</li><li>• Locate relevant information from a variety of sources (e.g., statistics, interviews, field studies, original maps and diagrams, survey maps, illustrations, print materials, videos, CD-ROMs, Internet)</li></ul>
9	Geography of Canada	<ul style="list-style-type: none"><li>• Distinguish between the characteristics of urban and rural environments (e.g., population density, land use, forms of settlement, development patterns)</li><li>• Select and use appropriate technology (e.g., computer-generated maps, graphs, airphotos, digital maps) to present geographic information</li></ul>

### ***Duration***

- 80 to 120 minutes

### ***Lesson Instructions***

#### **Activity 1**

- Explain the definition of the term **Geoscape**. A Geoscape is the three-dimensional relationship between the **geology** below the surface and the present **landscape** that we live in. Geologic processes of the past and present provide the materials, shape and texture of today's land surface. A solid understanding of our Geoscape is vital in evaluating the wise use and management of our land and water resources.
- Project the **Overhead** *The GTA from Space* and explain that the picture is an enhanced image of the GTA that was taken from space via satellite. This image has been placed over a digital elevation model that uses data to illustrate the three-dimensional topographic surface of the region. The topographic features such as the Niagara Escarpment, the Oak Ridges Moraine and river valleys are visible. This has then been overlain by land-use information to give a complete picture of the present-day landscape.
- Challenge the students to brainstorm ideas about the importance of the Geoscape, by discussing how it influences people's lives in terms of land-use, water and resources. Use the overhead to identify the characteristics of urban and rural environments.
- Ask students to predict where urban development will occur as the population of the GTA continues to grow.

#### **Activity 2**

- Divide students into pairs
- Distribute a local weekend newspaper to each pair of students
- Instruct students to use the newspaper to hunt for three stories, advertisements and/or maps that relate to the Geoscape (e.g., land for recreation, land for new developments, flooding, erosion, cottage country, vacation spots, land-use conflicts, issues that relate to the local environment, golf courses, watercourses, resource extraction, maps, transportation, natural hazards, oil spills, waterfront development, etc.)
- Instruct students to summarize the results of their research using the information and example provided by the **Worksheets** *Geoscape in the News*, *Example News Article from the Toronto Star*, and *Example Summary of News Article from the Toronto Star*.

## ***Lesson Instructions***

*(continued)*

### **Activity 3**

- Instruct students to visit the Canadian Centre for Remote Sensing Web site to take a tour of the City of Toronto using images from RADARSAT ([www.ccrs.nrcan.gc.ca/ccrs/learn/tour/24/24ont\\_e.html](http://www.ccrs.nrcan.gc.ca/ccrs/learn/tour/24/24ont_e.html))
- Instruct students to read the on-line information and complete the **Worksheets** *Exploring Radar Images of Toronto*, *Radar Image of Toronto* and *Radar Interpretation Key*.

Note: Although out of the scope of this activity, this Web site by the Canadian Centre for Remote Sensing has similar RADARSAT tours for Ottawa, Kanata, Nepean, Essex County, the Niagara Peninsula, Peterborough and Lake Nipigon.

## ***Materials Required***

<b>Download lesson materials from the Geoscape Toronto Web site at - <a href="http://www.toronto.geoscape.nrcan.gc.ca">www.toronto.geoscape.nrcan.gc.ca</a></b> (PDF format)	<b>Materials and equipment from the classroom</b>
<b>Activity 1</b>	
<b>Overheads</b> <ul style="list-style-type: none"><li>• <i>The GTA from Space</i></li></ul>	<ul style="list-style-type: none"><li>• overhead projector</li></ul>
<b>Activity 2</b>	
<b>Worksheets</b> (photocopy one per pair) <ul style="list-style-type: none"><li>• <i>Geoscape in the News</i></li><li>• <i>Example News Article from the Toronto Star</i></li><li>• <i>Example Summary of News Article from the Toronto Star</i></li></ul>	<ul style="list-style-type: none"><li>• local daily newspaper (one per pair) <i>weekend papers offer a greater number of stories from which to conduct this research</i></li></ul>
<b>Activity 3</b>	
<b>Worksheets</b> (photocopy a class set) <ul style="list-style-type: none"><li>• <i>Exploring Radar Images of Toronto</i></li><li>• <i>Radar Image of Toronto</i></li><li>• <i>Radar Interpretation Key</i></li></ul>	<ul style="list-style-type: none"><li>• computer lab</li></ul>

## ***Glossary of Terms***

The activities in this lesson introduce a number of new geologic terms. Teachers may wish to review the use of a glossary and discuss the meaning of the following terms with the students before commencing the activities. Definitions are provided in the **Glossary of Geologic Terms** found on the Geoscape Toronto Web site at [www.toronto.geoscape.nrcan.gc.ca](http://www.toronto.geoscape.nrcan.gc.ca)

New vocabulary in this lesson falls into one category as follows:

**Cartography and Remote Sensing:** digital elevation model, landform, topography, radar, RADARSAT