



# Unit 1: Water Systems on Earth's Surface





Grade 8 Science

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## How do YOU use water???

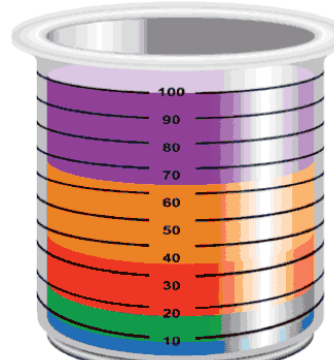

House Hold Use


Personal Use


Recreational Activities

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## How we use water in our houses!!



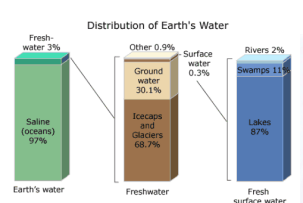
Activity	Percentage
Showers and baths	35%
Toilet flushing	30%
Laundry	20%
Kitchen and drinking	10%
Cleaning	5%

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## Water Distribution

Only 3% of the Earth's water is fresh water!  
 2/3 of this water is frozen in ice sheets

You do the math: Only 1% of the fresh water on the Earth's surface is available



Category	Percentage
Earth's water (Saline/oceans)	97%
Freshwater (Other)	0.9%
Freshwater (Ground water)	30.1%
Freshwater (Icecaps and Glaciers)	68.7%
Fresh surface water (liquid) (Surface water)	0.3%
Fresh surface water (liquid) (Rivers)	2%
Fresh surface water (liquid) (Swamps)	11%
Fresh surface water (liquid) (Lakes)	87%



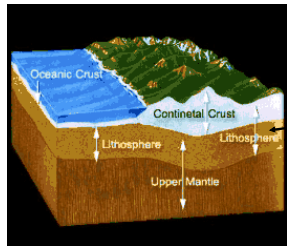
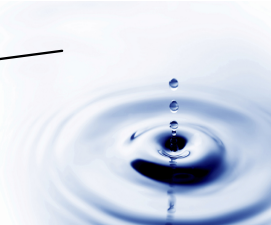
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## Important Definitions:

**Lithosphere:** the solid rocky ground of the Earth's crust

**Atmosphere:** the environment surrounding the Earth

**Hydrosphere:** ALL water on Earth. Including that in the lithosphere and the atmosphere

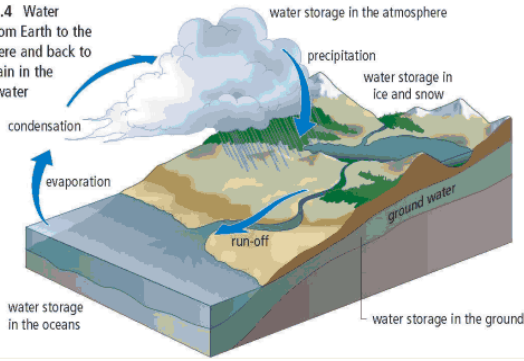



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## How do we not run out of water?

# THE WATER CYCLE!!

Figure 1.4 Water moves from Earth to the atmosphere and back to Earth again in the endless water cycle.



Labels in diagram: evaporation, condensation, precipitation, water storage in the atmosphere, water storage in ice and snow, run-off, ground water, water storage in the ground, water storage in the oceans.

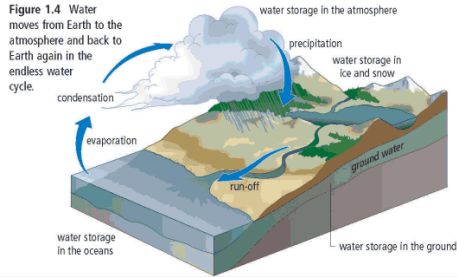
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The Water Cycle Continued!

The water cycle is the constant cycling of water through the processes of **evaporation** and **condensation**.

Water is constantly Changing Form  
(gas ←-----→ liquid)

Driven by the sun's energy!!



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Using your notes and pages 8 & 9 of your textbook complete # 6, 7 and 8 on page 13



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Ocean Water vs. Fresh Water

There are three major differences between ocean water and fresh water, which are:

- 1) **Salinity**: the amount of salt dissolved in a specific amount of water  
\*Salt comes from dissolved solids in the ground and volcanoes!
- 2) **Density**: the amount of mass of a substance in a certain unit volume (how tightly packed together the material is in a substance)
- 3) **Freezing Point**: the temperature at which a liquid freezes

	Fresh Water	Salt Water
Salinity	Less salt	More salt
Density	Less dense	More dense
Freezing point	Higher (0°C)	Lower (-1.9°C)

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Sources of Fresh Water:

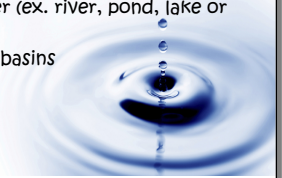
**Ground water**: precipitation that falls on land and sinks out of sight, it sinks through pores in rocks until it reaches bedrock where it pools. Drilling these pools makes wells!

**Glaciers**: a moving mass of compressed snow and ice found in areas where it is so cold the snow remains all year.

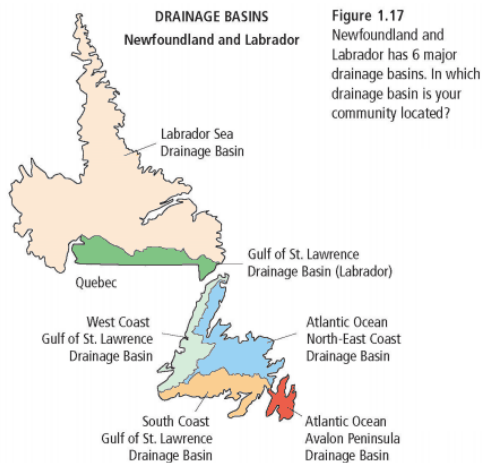
- Glaciers are reservoirs - they store fresh water
- They release the water during the hot summer months

**Drainage Basins**: a.k.a watershed is an area of land from which water drains into a body of water (ex. river, pond, lake or ocean)

- There are many small drainage basins within a larger basin



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More on Glaciers!!

Glaciers give us information about the Earth's past!

The Ice Age: Earth has had at least 7! The most recent was 120 000 years ago - 11 000 years ago!

The last glacier covered from the Arctic to as far south as the great lakes!

During a glacier, the environment is a lot colder. During the last glacier a lot of plants and animals went extinct!

In the last 100 years the average surface temperature has increased by 0.50C, making the world's glaciers melt at a quicker pace than ever before.



Figure 1.14 During the last ice age, glaciers in North America covered an area three times as large as they do today. Northern sections of the Yukon and Alaska remained free of glaciers because they were too dry.

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What does all this mean???

Ocean waters may rise and cause flooding!



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