



# How the Amount of Salt Water Could Change

1. Circle the word **TRUE** if the statement is TRUE or Circle the word **FALSE** if it is FALSE.

- a) The Great Lakes are salt lakes because they flow to the ocean.  
**TRUE**                      **FALSE**
- b) All the ice at the North Pole melts every summer.  
**TRUE**                      **FALSE**
- c) The South Pole is located on the continent of Antarctica.  
**TRUE**                      **FALSE**
- d) Sea level is rising about 1.5 meters (4.9 feet) each year.  
**TRUE**                      **FALSE**
- e) Rising global temperature is increasing the size of most salt lakes.  
**TRUE**                      **FALSE**
- f) Rising sea levels will be more of a problem for some countries than others.  
**TRUE**                      **FALSE**

2. Use the words or groups of words in the list to answer each question. Use each word only once. Some words will not be used.

North Pole	South Pole	Greenland	polar ice cap
glacier	fresh	salt	Antarctica

- a) Most fresh water is frozen in Earth's two \_\_\_\_\_ s.
- b) \_\_\_\_\_ is a large island near the North Pole.
- c) \_\_\_\_\_ is a continent covered in ice.
- d) Most of Earth's \_\_\_\_\_ water is in the ocean.
- e) A permanent mass of ice slowly moving down a mountainside is called a \_\_\_\_\_.



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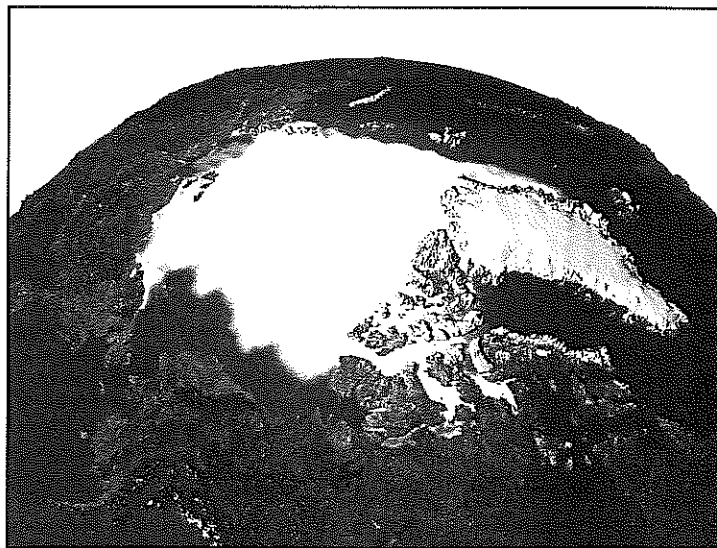
**A**s you learned earlier, salt water is located in the ocean and in inland lakes that have no outlet to the ocean. You also saw that there is much more salt water in the ocean than in the lakes. First we will look at the coming change in the amount of ocean water.

About two-thirds of Earth's fresh water is frozen in the **polar ice caps**. About 90% of this ice is around the South Pole, and 10% is near the North Pole. A much smaller amount of water is frozen in **glaciers** on high mountains in many parts of the world. The pictures show that the ice cap at the North Pole is getting smaller.

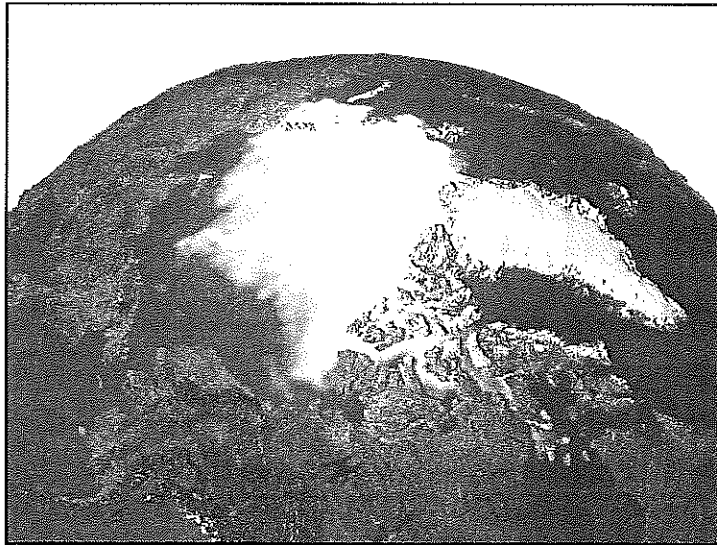
As Earth becomes warmer, these ice caps slowly melt and most of the water eventually finds its way to the ocean. Once in the ocean, the fresh water soon mixes with the salt water, and the amount of ocean salt water increases. You might think the ocean will become less salty,

but the difference is very small. Remember, most of the ocean is over two miles deep, and melting ice only adds about 1.5 mm to the depth each year.

An **ice sheet** is a thick layer of ice covering a large area of land. One of Earth's two ice sheets covers the continent of **Antarctica** at the South Pole, and the



Arctic Ice Sheet - 1979



Arctic Ice Sheet - 2003



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other covers the large island of **Greenland** near the North Pole. These ice sheets are miles thick and hold most of the frozen fresh water stored in the polar ice caps. Most of the remainder of the polar ice is in floating sea ice.



Identify the *two* land masses that are the location of most of Earth's ice.

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If all the ice covering Greenland melted, sea level would rise 7 meters (23 feet). If all the ice covering Antarctica melted, sea level would rise 70 meters (230 feet). There is no chance of such large sea level changes anytime soon. It would take thousands of years for that much ice to melt. One important thing these numbers show is what an enormous amount of water is stored in Earth's ice sheets.

Most substances, including water, expand when they become warmer. As global temperatures rise, the ocean water gets warmer and expands slightly, adding to the sea level increase.

As mentioned earlier, water levels in most inland salt lakes will decrease as Earth becomes warmer. Some salt lakes may even disappear. The **Aral Sea** in central Asia was once the second largest salt lake in the world. Since 1960 the Aral Sea has lost 75% of its surface area and become five times as salty. It is not only increased evaporation that is causing salt lakes to shrink. Some of these lakes have less water running into them because people have taken more and more water from the rivers running into the lakes. Most of this diverted water is used to grow crops. As human population continues to increase, more and more water will be needed to grow more crops to feed more people.



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1. Put a check mark (✓) next to the answer that is most correct.

a) Which of these bodies of water is shrinking?

- A the Aral Sea
- B Lake Superior
- C The Arctic Ocean
- D the Mediterranean Sea

b) Where is the South Pole located?

- A Iceland
- B Antarctica
- C Greenland
- D The Arctic Ocean

2. Draw a line from each word or words on the left to its meaning on the right

1	ice sheet	a large island near the North Pole	A
2	Aral Sea	a thick layer of ice covering a large area of land	B
3	Greenland	a permanent ice field slowly moving down a mountainside	C
4	glacier	the location of most of Earth's ice	D
5	Antarctica	a salt lake in Asia	E



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3. Answer the questions in complete sentences.

a) Compare the amount of ice at the South Pole to the amount of ice at the North Pole.

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b) Explain why increase in human population will cause some salt lakes to shrink.

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## Extensions & Applications

a) Describe how increasing global temperature will affect ocean level and explain why the level will be affected this way.

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b) Describe how increasing global temperature will affect the levels of salt lakes and explain why the levels will be affected this way.

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