



# **The Changing Forms of** **Water**

**Photo Credits:** Cover: Frank Cezus/Getty Images; 2 Corbis; 3 Corbis; 4 Scenics of America/PhotoLink/Photodisc/Getty Images; 5 Corbis; 6 Elmer Frederick Fischer/Corbis; 7 PhotoLink/Photodisc/Getty Images; 8 Don Farrall/Photodisc/Getty Images; 9 Corbis; 10 Edmond Van Hoorick/Photodisc/Getty Images; 11 Scenics of America/PhotoLink/Photodisc/Getty Images; 12 Eastcott Momatuik/Getty Images; 13 Loren Rye/Alamy; 13 David R. Frazier/Photo Researchers, Inc.; 14 Travel Ink/Getty Images.

If you have received these materials as examination copies free of charge, Harcourt School Publishers retains title to the materials and they may not be resold. Resale of examination copies is strictly prohibited and is illegal.

Possession of this publication in print format does not entitle users to convert this publication, or any portion of it, into electronic format.



# The Changing Forms of Water

Copyright © by Harcourt, Inc.

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the publisher.

Requests for permission to make copies of any part of the work should be addressed to School Permissions and Copyrights, Harcourt, Inc., 6277 Sea Harbor Drive, Orlando, Florida 32887-6777. Fax: 407-345-2418.

HARCOURT and the Harcourt Logo are trademarks of Harcourt, Inc., registered in the United States of America and/or other jurisdictions.

Printed in Mexico

ISBN 978-0-15-362215-1

ISBN 0-15-362215-6

1 2 3 4 5 6 7 8 9 10 050 16 15 14 13 12 11 10 09 08 07

 **Harcourt**  
SCHOOL PUBLISHERS

Visit *The Learning Site!*  
[www.harcourtschool.com](http://www.harcourtschool.com)

# Water, Water Everywhere!


Water comes in three states. It can be a liquid, a solid, or a gas. When it is a solid, it is ice. When it is a gas, it is water vapor.

Where can you find water? There is water in oceans, lakes, and rivers. You drink water and use it for washing. Water is inside your body and under the ground. It falls from the sky as rain.



Icicles are made of water. When water is cooled enough, it becomes ice.





■ If this water becomes cold enough, it will change to ice. If it becomes hot enough, it will change to water vapor.

■ Temperature changes can make water change forms. When water gets cold enough, it becomes ice. This is what happens in your freezer when you make ice cubes. In winter, you can see ice covering lakes and tree branches.

■ When water is warm enough, it turns into a gas. This is called *water vapor*. You cannot see water vapor. In nature, water is found as a solid, a liquid, and a gas.



**MAIN IDEA AND DETAILS** What is water like in each of its states?

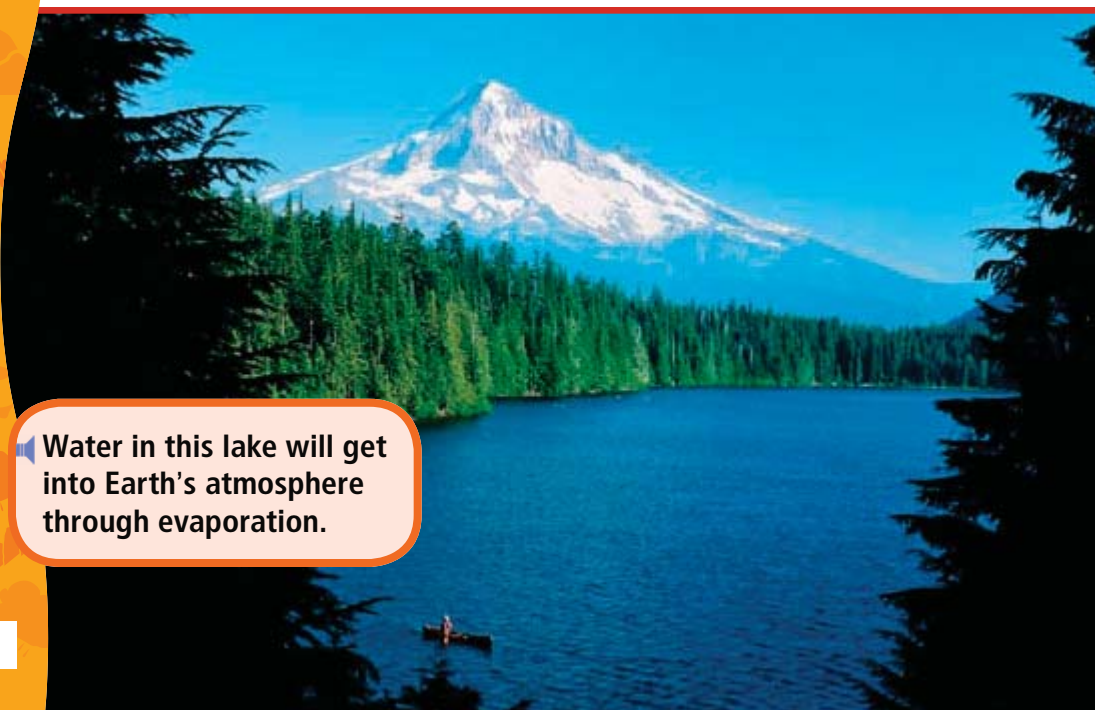
# Evaporation

🔊 The air around Earth is its **atmosphere**. We cannot see the air, but it takes up space around us. The atmosphere is made of gases. We take in a gas called oxygen. Water is in our atmosphere, as a gas. So how does water get into the atmosphere?

🔊 First, liquid water gets warm. Then, it changes into water vapor. That process is called **evaporation**. In nature, water from lakes, rivers, and ocean evaporates into the atmosphere. Like the other parts of the atmosphere, you can't see water vapor.

## ***Fast Fact***

🔊 You feel cool when you put water on your skin. That is because of evaporation. As water evaporates, it absorbs heat and makes you feel cool!



🔊 Water in this lake will get into Earth's atmosphere through evaporation.



Water vapor can make a warm day feel like a hot and sticky day.

You cannot see water vapor, but you sure can feel it! Summer days can be very hot. Some days feel hot and moist. On those wet, sticky, hot days, there is more water than usual in the atmosphere. That means a lot of water evaporated from lakes, rivers, or oceans.

Water on Earth evaporates when it is warmed. Hot days can warm a lake, a river, or an ocean. Some of the water evaporates. It becomes water vapor in the atmosphere.



**SEQUENCE** What happens to water to start evaporation?

# Condensation


What happens to water vapor in the atmosphere? It rises. As it rises, it cools down. When water vapor cools, it turns back into a liquid. This is called **condensation**.

What happens when you take a warm bath or shower? Because the water is warm, it evaporates quickly. The air in the room is cooler, so it makes the water vapor cool and condense. Steam fills the room. The steam is condensation.

You can see condensation. In nature, condensation is seen as dew, fog, and clouds.

Fog is condensation. Thick fog can leave your clothes and hair as wet as rain can!





Clouds are made of water vapor that has condensed around dust in the atmosphere.

After water evaporates, it rises and cools. It combines with dust in the atmosphere. Together they form droplets of water.

When water condenses on objects on land, we see dew. When water vapor condenses in the air close to Earth's surface, it turns into fog. If water vapor is high above Earth's surface, condensation makes clouds.



**MAIN IDEA AND DETAILS** What happens if condensation forms in the air high above Earth's surface?



# Let It Rain!

Water condenses into clouds. What happens when the clouds become filled with water? The water falls to Earth. Rain, snow, sleet, and hail are all forms of **precipitation**. They are all forms of water that falls to Earth.

There is activity inside clouds. Different clouds make different types of precipitation. Part of what affects the type of precipitation is temperature.



Snowflakes are made of ice crystals.



Thunderclouds that make lightning can also make hail.

■ The water droplets in a cloud bounce against each other. Some combine to form larger drops. Soon, the cloud is filled with water. If the cloud is cold enough, the drops freeze.

■ Once the drops are large enough, they fall to Earth. Some fall as snowflakes. Some fall as rain. Some rain starts as snowflakes. It melts into rain as it falls. When it doesn't melt completely, sleet falls. Hail is balls of ice. Hail usually forms during storms.

### ***Fast Fact***

■ Look closely! All snowflakes have six arms. All snowflakes are made of two halves that are just alike. Even cooler, you'll never see two snowflakes that look the same!



**SEQUENCE** How does precipitation form?

# The Water Cycle

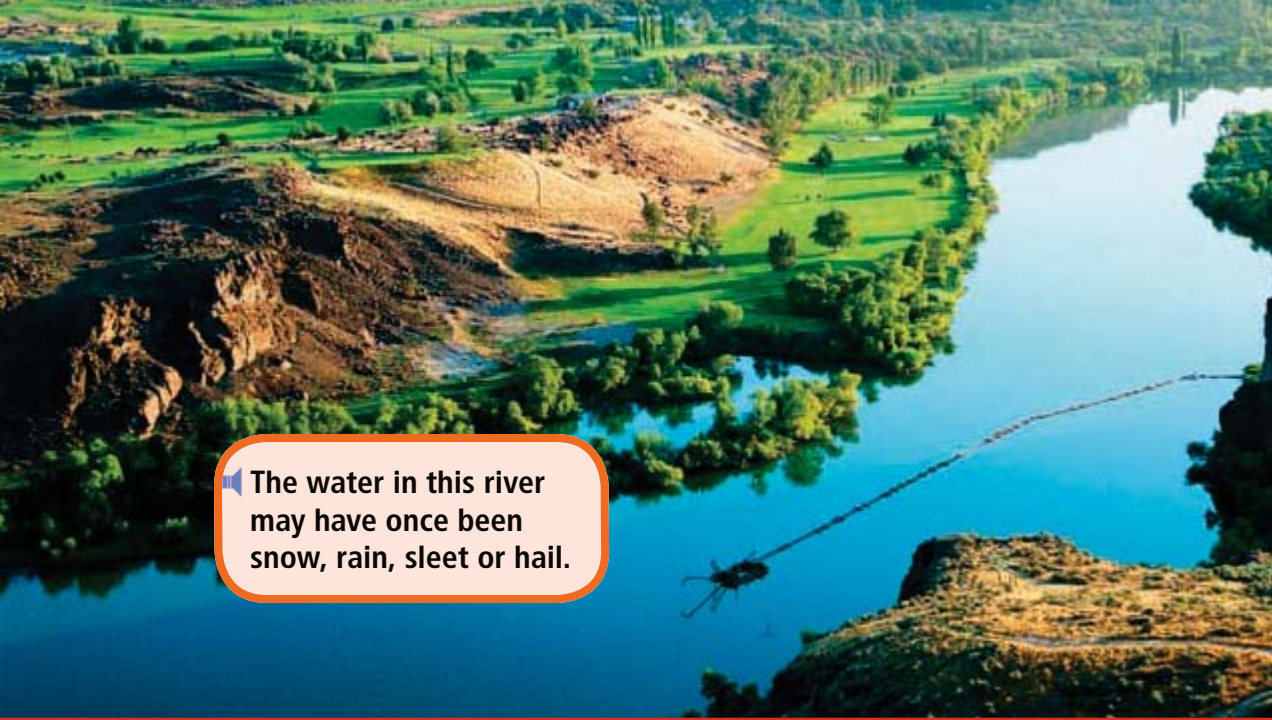
Water moves from Earth's surface when it evaporates. Then, it condenses. After it condenses, it falls back to Earth as rain, snow, sleet, or hail. So, water moves from Earth's surface and returns again. This is called the **water cycle**.

The water cycle keeps water moving around Earth's atmosphere. The same water is always here. It may be rain, sleet, hail, or snow. It may be in the ocean, a river, or a stream. It may be water vapor. Water always exists in some form in the atmosphere.



Where did this rain come from? It came from Earth! Water on Earth evaporates and condenses to make rain.





🔊 The water in this river may have once been snow, rain, sleet or hail.

🔊 Suppose you go swimming in a lake and find it is deeper than usual. Where did the extra water come from? It came from precipitation.

🔊 A few days later, the lake is not as deep. What happened to the water? It evaporated into the air. Eventually, the water will condense. Then, it will fall back to Earth as precipitation.

🔊 So the next time you get hit by a raindrop, remember that it could be the same water you swam in this summer!



**SEQUENCE** Describe the water cycle.

### ***Fast Fact***

🔊 Salt water in oceans make up more than 97 percent of Earth's water. However, we use fresh water from rivers, lakes, and elsewhere for most of our needs.

# Water and Weather

🔊 Does the water cycle shape weather? Yes, it does! Each stage of the water cycle affects the weather you are having. The weather also affects the water cycle. For example, temperature has a big effect on the water cycle. Let's see how.

🔊 You already know that precipitation is an important part of weather. If it is raining, you will need an umbrella! When it is cold, snow may fall. During storms, you may even see hail.

🔊 Temperature affects condensation. You know that water vapor cools as it rises. The longer it rises, the cooler it gets. Different types of clouds form at different temperatures. Each cloud brings a different kind of weather.

🔊 Cumulonimbus clouds are tall and dark. They mean storms.






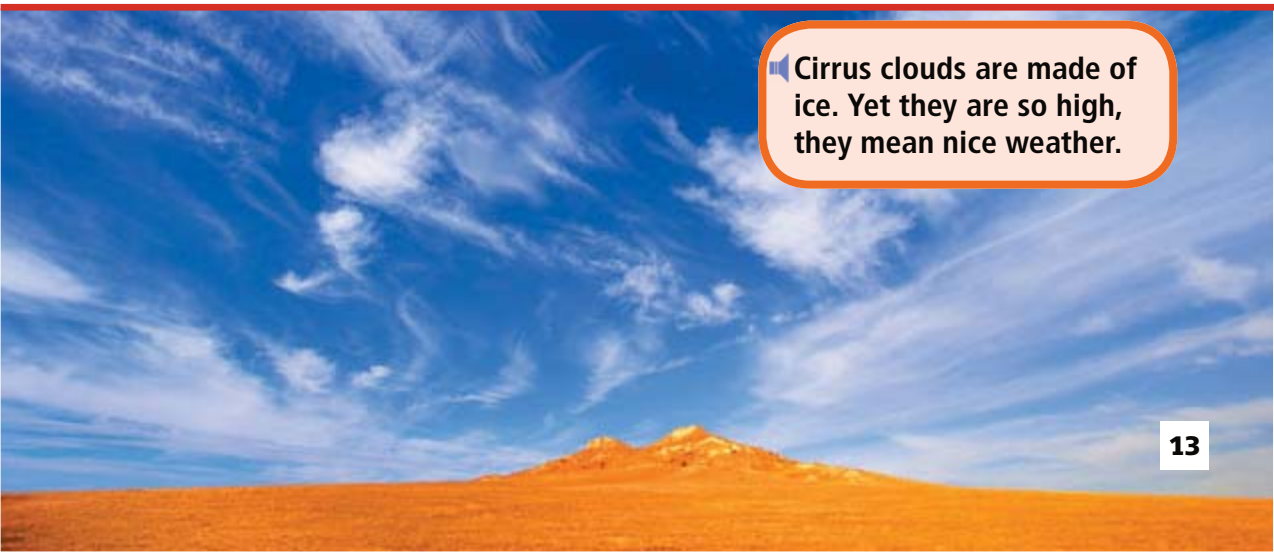
Temperature affects evaporation, too. As long as the water is warmer than the air, water will evaporate. If ice is warmed, it will turn to water before it evaporates. If water is warmed, it evaporates into water vapor. When water vapor rises, it condenses. Too much water vapor makes the day feel sticky and hot.



**COMPARE AND CONTRAST** Compare the weather on a day with a lot of condensation to one with little condensation.



Stratus clouds cover the sky with gray. They often mean rain.



Cirrus clouds are made of ice. Yet they are so high, they mean nice weather.

# Water and Earth

🔊 Oceans and mountains can affect the water cycle. A lot of water evaporates from the surface of the oceans. Suppose a storm forms over the ocean. The water vapor can become part of the storm clouds. The water is later dropped as precipitation from the storm.

🔊 Mountains can affect precipitation. When moist air moves toward a mountain the air rises and cools. Water vapor condenses and forms clouds. As the air rises precipitation falls. When the air passes over the top of the mountain it is drier. Less precipitation will fall.



**COMPARE AND CONTRAST** Compare how oceans and mountains affect precipitation.



# Summary






Water is everywhere on Earth. It is in the air you breathe. It is in lakes, oceans, and rivers. It is underground, and it is above ground as water vapor and clouds.

The water cycle keeps water moving on Earth. The air around Earth is its atmosphere. Water from Earth evaporates when it is warmed. Then, it cools and condenses. Finally, it falls to the ground as precipitation. The water cycle plays an important part in the weather. Earth's features can change the water cycle. But the water cycle changes Earth's features, too.





More plants may grow on the wet side of this mountain. More animals may choose to live there.



## **Glossary**

-  **atmosphere** (AT•muhs•feer) The air around Earth (4, 5, 6, 7, 10)
-  **condensation** (kahn•duhn•SAY•shuhn) The process by which water vapor changes into liquid water (6, 7, 8, 9, 10, 11, 12, 13, 14, 15)
-  **evaporation** (ee•vap•uh•RAY•shuhn) The process by which liquid water changes into water vapor (4, 5, 6, 7, 10, 11, 13, 14, 15)
-  **precipitation** (pree•sip•uh•TAY•shuhn) Rain, snow, sleet, or hail (8, 9, 11, 12, 14, 15)
-  **water cycle** (WAW•ter SY•kuhl) The movement of water from Earth's land, through rivers toward the ocean, into the air, and back again (10, 11, 12, 14, 15)

## **Think and Write**

-  **1.** Explain how water moves through the water cycle.
-  **2. SEQUENCE** What makes water evaporate? How does the water vapor condense?
-  **3. COMPARE AND CONTRAST** Compare and contrast fog and clouds.
-  **4. Narrative Writing** The water cycle is like a trip. Suppose water drops could tell us about the water cycle. Write a postcard from one water drop to another.

## **Hands-On Activity**

Model the water cycle! Put ice in a plastic container and cover it with plastic. Place the container in the sun. Explain each stage of the water cycle that you see.

## **School-Home Connection**

With the help of a family member, watch a pot of water boil. Explain each stage of the water cycle as you watch. **CAUTION:** Do not touch the stove, pot, or hot water.



**GRADE 3**

OL Book 9

**WORD COUNT**

1 100

**GENRE**

Expository Nonfiction

**LEVEL**

See TG or go Online



Harcourt Leveled  
Readers Online Database  
[www.eharcourtschool.com](http://www.eharcourtschool.com)

ISBN 978-0-15-362215-1

ISBN 0-15-362215-6



9

780153 622151

9 0000 >