

Weather Watching

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About **Weather Watching**

DeltaScienceModules, THIRD EDITION

Students explore *Weather Watching* with twelve hands-on activities and the Delta Science Reader. Teach your students how to observe, describe, and measure aspects of weather using key science vocabulary, weather instruments, and, most important, scientific understanding. After brainstorming why weather changes from day to day, season to season, and place to place, students investigate temperature and wind strength. They construct rain gauges, lightning rods, and wind socks. They find out which cloud formations predict which weather patterns. They explore the causal conditions for such phenomena as rainbows, thunderstorms, and snowflakes. They even model tornadoes, track hurricanes, and interpret weather maps.

In the Delta Science Reader *Weather Watching*, students explore what weather is and what causes it to change. They read about the water cycle and various weather tools, such as the thermometer, barometer, wind vane, rain gauge, and anemometer. The book explains how weather changes according to the seasons. Tornadoes, hurricanes, blizzards, and thunderstorms are also discussed. In a biographical sketch, students meet Ben Franklin, and they also find out about the work of a meteorologist. Students also explore how weather satellites collect weather data from space.

Overview Chart for Hands-on Activities

Hands-on Activity	Student Objectives
1 What Is Weather? <i>page 13</i>	<ul style="list-style-type: none"> • observe and describe the weather • discuss how weather affects everyday life • conclude that weather changes from day to day • discuss seasonal weather changes • discover that weather varies from place to place
2 Measuring Temperature <i>page 21</i>	<ul style="list-style-type: none"> • discuss the function of a thermometer • use a thermometer to measure and compare differences in water temperature • measure and compare indoor and outdoor air temperatures
3 Temperature Changes <i>page 29</i>	<ul style="list-style-type: none"> • measure and record outdoor air temperature at three different times of day for five days • discuss the role of the Sun in heating Earth • conclude that changes in air temperature are caused by changes in the amount of sunlight that reaches Earth
4 Wind Direction <i>page 37</i>	<ul style="list-style-type: none"> • discuss the phenomenon of wind • make a wind sock and use it to determine wind direction • note that wind direction can change during the day and from one day to the next
5 Wind Strength <i>page 45</i>	<ul style="list-style-type: none"> • discuss their experiences with windy weather • observe the effects of wind on objects outdoors • rate wind strength by applying the Beaufort scale to their observations • note that wind strength can change throughout the day and from one day to the next
6 Clouds <i>page 51</i>	<ul style="list-style-type: none"> • learn how clouds form • observe and classify clouds • discover that clouds can be used to predict weather
7 Precipitation <i>page 61</i>	<ul style="list-style-type: none"> • discuss the benefits of rain • discover where rain comes from • make a rain gauge and use it to measure rainfall • discover how snow forms • make paper snowflakes and discuss the characteristics of real snowflakes
8 Thunder and Lightning <i>page 69</i>	<ul style="list-style-type: none"> • discover what causes lightning • model lightning by generating static electricity • discover what causes thunder • learn how to estimate the distance of a storm • discuss ways to stay safe during a lightning storm
9 Tornadoes <i>page 77</i>	<ul style="list-style-type: none"> • learn how tornadoes form • model a tornado by creating a vortex in two bottles of water • explore some characteristics of tornadoes • discuss ways to stay safe during a tornado
10 Hurricanes <i>page 87</i>	<ul style="list-style-type: none"> • compare and contrast hurricanes and tornadoes • learn how hurricanes form • discuss how scientists monitor hurricanes • track the path of Hurricane Andrew on a chart • discuss ways to stay safe during a hurricane
11 Rainbows <i>page 101</i>	<ul style="list-style-type: none"> • discuss the conditions in which rainbows appear • observe that water bends light • conclude that sunlight is made up of different colors • make a rainbow by spraying water in sunlight
12 Weather Maps <i>page 109</i>	<ul style="list-style-type: none"> • examine the weather page from their local paper and discuss the kinds of information it provides • learn that symbols are simple pictures used to represent something • make a weather map, using some common weather symbols
Assessment <i>page 117</i>	<ul style="list-style-type: none"> • See page 117.

Weather Watching

Process Skills	Vocabulary	Delta Science Reader
observe, communicate, infer	atmosphere, fall, seasons, spring, summer, weather, winter	pages 2–3, 8–9, 10
communicate, make and use models, measure, compare	Celsius, degree, Fahrenheit, temperature, thermometer	pages 6–7
measure; collect, record, display, or interpret data; communicate; infer		pages 8–9, 10
communicate, make and use models, infer	wind, wind sock	pages 6–7
communicate, observe, use numbers, infer	Beaufort scale	pages 6–7
observe, classify, infer	cirrus, cloud, cumulus, fog, nimbus, stratus, water vapor	pages 4–5, 15
communicate, define based on observations, make and use models	precipitation, rain gauge	pages 4–5, 6–7
make and use models; collect, record, display or interpret data; communicate	electricity, lightning, thunder	pages 12, 13
define based on observations, make and use models, observe, compare, communicate	funnel cloud, tornado, waterspout	page 11
compare, define based on observations, communicate, make and use models	eye, hurricane, wall	pages 11, 15
communicate, observe, define based on observations, make and use models	rainbow	
compare, communicate, make and use models	forecast, meteorologist, symbol	pages 14, 15

See the following page for the Delta Science Reader Overview Chart.

Overview Chart for Delta Science Reader

Weather Watching

Selections	Vocabulary	Related Activity
Think About . . .		
Watching the Weather <i>pages 2–3</i>	atmosphere, weather	activity 1
What Is the Water Cycle? <i>pages 4–5</i>	cloud, condense, evaporate, precipitation, water cycle, water vapor	activities 6, 7
Weather Tools <i>pages 6–7</i>	air pressure, anemometer, barometer, forecast, rain gauge, temperature, thermometer, wine vane	activities 2, 4, 5, 7
Weather and the Seasons <i>pages 8–9</i>	season	activities 1, 3
Why Do We Have Seasons? <i>page 10</i>	axis, orbit	activities 1, 3
Stormy Weather <i>pages 11–12</i>	blizzard, hurricane, lightning, thunder, thunderstorm, tornado	activities 8, 9, 10
People in Science		
<ul style="list-style-type: none"> • Ben Franklin <i>page 13</i> • Meteorologists <i>page 14</i> 	front, meteorologist, weather map, weather satellite	activity 8 activity 12
Did You Know?		
<ul style="list-style-type: none"> • How Weather Satellites Work <i>page 15</i> 		activities 10, 12

See pages 127–135 for teaching suggestions for the Delta Science Reader.

MATERIALS LIST

Weather Watching

Quantity	Description	Quantity	Description
1	aluminum foil	1	Teacher's Guide
16	bags, plastic*	8	Delta Science Readers
33	balloons*		
1	Beaufort Wind Scale		TEACHER-PROVIDED ITEMS
16	bottles, plastic, 1-liter†	1	clock, with second hand
16	cardboard, corrugated, 13 cm × 13 cm*	–	clothing/accessories
1	chart, Temperature Graph*	1	container, 2-liter
1	chart, Weather Symbols	–	crayons
1	Cloud Chart	1	desk lamp, adjustable (optional)
1	compass	1	duct tape
4	cotton balls, p/100*	1	fan, electric
1	cotton swabs, p/72*	1	food coloring
32	cups, foam	1	funnel
16	dowels, wooden, 1-meter†	1	garden hose
1	glue, 4 oz*	1	globe
1	Hurricane Safety Tips	1	hammer, small
1	Hurricane Tracking Chart	8	lamps, desk, with 100 watt bulbs
16	jars, clear plastic†	8	markers
8	jars, glass	–	matches*
1	Lightning Safety Tips	–	newspaper (weather page)
1	map, United States outline, laminated	1	overhead projector
2	maps, United States outline, p/32*	–	paper, scrap*
1	markers, erasable, assorted colors, p/4	–	paper towels*
32	paper, construction, blue*	8	paper, white*
33	rulers	1	pencil, grease
1	Snowflake Pattern	32	pencils, assorted
1	soil, potting, 4 qt	–	pencils, colored
1	string, 75 m*	–	pictures, hurricanes
1	tape, masking*	–	pictures, tornadoes
1	thermometer, cardboard, dual-scale†	1	pin
32	thermometers, dual-scale	33	scissors
1	thumbtacks, p/100	–	tape, transparent*
1	top (spinning toy)	–	water, tap, cold*
1	Tornado Safety Tips	–	water, tap, warm*
1	transparency, Hurricane Tracking Chart		
16	trays, foam		
1	wire cutters		
1	wire, 15 m*		

* = consumable item

† = in separate box

ACTIVITY SUMMARY

Children are natural-born weather watchers. This Delta Science Module teaches them how to measure and record their observations. It also explains what causes some common—and not-so-common—weather phenomena.

ACTIVITY 1 Students observe and describe the weather and discuss how weather affects everyday life. They conclude that weather changes from day to day and from season to season, and varies from place to place.

ACTIVITY 2 Students learn how to use a thermometer. They discuss the function of a thermometer, then use it to measure and compare differences in water and air temperatures.

ACTIVITY 3 Students measure, record, and graph changes in air temperature that occur over 5 days. They also learn about the role of the Sun in heating the earth.

ACTIVITY 4 Students make a wind sock and use it to determine wind direction. They learn what causes wind and note changes in wind direction during the day and from one day to the next.

ACTIVITY 5 Teaches students how to rate wind strength using the Beaufort scale. Students discuss their experiences with windy weather, then observe the effects of wind on objects outdoors.

ACTIVITY 6 Students learn how clouds form. They discuss the different types of clouds, then classify clouds they observe outdoors. They also discover that clouds can be used to predict weather.

ACTIVITY 7 Students learn how the water in the clouds falls to Earth as precipitation. In the first part of the activity, students discuss the benefits of rain and learn where rain comes

from. They then make a rain gauge and use it to measure rainfall over 5 days. In the second part of the activity, students discover how snow forms. In the course of making paper snowflakes, they learn some facts about real snowflakes.

ACTIVITY 8 This activity teaches students the origins of thunder and lightning. They discover what causes lightning, then model lightning by generating static electricity with a balloon and an aluminum foil “lightning rod.” Afterward, they discover what causes thunder, and learn how to estimate the distance of a storm. They also learn, among other safety tips, that a lightning storm is the perfect excuse for not taking a bath.

ACTIVITY 9 Students reproduce a tornado in the classroom using two bottles and some water and food coloring. This activity also teaches them how tornadoes form, how they move, and what to do if one heads their way.

ACTIVITY 10 Students learn how hurricanes form and monitor the progress of a real hurricane—Hurricane Andrew—on a hurricane tracking chart. In the process, they use some of the same techniques scientists use to monitor hurricanes.

ACTIVITY 11 Students discuss the conditions in which rainbows appear. They observe the refractive quality of water and conclude that sunlight is made up of different colors. Then they make a rainbow in the school yard by spraying water in sunlight.

ACTIVITY 12 Students learn to interpret and make their own weather maps. They examine the weather page from their local paper and discuss the kinds of information it provides. Then they make their own weather maps, using some common weather symbols.