

Weather and Sky

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About **Weather and Sky**

DeltaScienceModules, THIRD EDITION

Students explore *Weather and Sky* with twelve hands-on activities and the Delta Science Reader. Students first learn what weather is and build a weather vocabulary of words and symbols. Using their senses and several weather tools, students observe and measure four main weather factors: temperature, wind, clouds, and precipitation. They record data on a weather calendar, which helps them recognize daily and seasonal weather changes and patterns. They also find out how weather affects everyday life. Next, students compare the daytime sky and the nighttime sky. They trace shadows to discover that the Sun changes position in the sky through the course of a day, and they model how Earth's rotation causes day and night. Daytime observations reveal that the Moon also appears to move across the sky. Finally, by keeping Moon Journals, students conclude that the Moon's apparent shape and position in the sky change in a pattern that repeats about once a month.

In the Delta Science Reader *Weather and Sky*, students learn about weather and explore the sky. They learn what weather is and how we observe, measure, and record its main features. They read about the four seasons and how seasonal weather changes affect living things. Students' attention then turns to the sky and what we see in the sky during the day and at night. Students make a connection between their new weather knowledge and the world beyond school when they read about what a meteorologist does. Finally, they extend their learning with an introduction to Moon phases.

Overview Chart for Hands-on Activities

Hands-on Activity	Student Objectives
1 Observing Weather <i>page 13</i>	<ul style="list-style-type: none"> • observe, describe, and record the weather using words and pictures • discuss how weather affects everyday life • conclude that weather changes from day to day • discover that weather varies from place to place
2 What Can We See in the Sky? <i>page 21</i>	<ul style="list-style-type: none"> • compare the daytime sky and the nighttime sky • recognize that the Sun is a star • discuss the Sun's role as the main source of heat and light for Earth • discover that, unlike the Sun, the Moon can be seen both during the day and at night
3 The Sun Warms Earth <i>page 29</i>	<ul style="list-style-type: none"> • use a thermometer to measure and compare air temperature indoors and outdoors • measure and record the outdoor air temperature for 4 days • discuss the role of the Sun in heating Earth's land, water, and air • conclude from water temperature measurements that the Sun is the source of heat for Earth
4 Wind <i>page 43</i>	<ul style="list-style-type: none"> • discuss wind as moving air • use a wind vane to determine wind direction • observe the effects of wind as it moves objects • rate wind speed by applying a simple wind scale to their observations
5 Clouds <i>page 55</i>	<ul style="list-style-type: none"> • learn how clouds form • observe and describe clouds • find out about the three main types of clouds • relate cloud shapes to the kind of weather they bring
6 Rain and Snow <i>page 65</i>	<ul style="list-style-type: none"> • learn how tiny water droplets become raindrops in clouds • discover that precipitation can fall as rain, snow, sleet, or hail • use a rain gauge to measure rainfall • discuss severe storms and how to stay safe in severe weather
7 Seasons <i>page 75</i>	<ul style="list-style-type: none"> • define <i>season</i> and name the four seasons • discuss and illustrate weather in each season • conclude that the changing seasons form a predictable pattern
8 Living Things and Seasons <i>page 83</i>	<ul style="list-style-type: none"> • explain how people's activities and clothing choices are affected by the seasons • explore how plants and animals are affected by seasonal changes in light, temperature, and precipitation
9 Sunshine and Shadows <i>page 93</i>	<ul style="list-style-type: none"> • observe and describe a shadow • identify the three things needed to produce a shadow • record how a shadow's position and shape change as the direction of the light changes
10 The Sun Rises and Sets <i>page 103</i>	<ul style="list-style-type: none"> • discuss what is meant by sunrise and sunset • model the rotation of Earth and identify rotation as the cause of sunrise and sunset • infer from shadow changes that the Sun appears to move across the sky
11 The Moon Rises and Sets <i>page 111</i>	<ul style="list-style-type: none"> • observe and record the changing position of the Moon • discover that the Moon appears to move across the sky just as the Sun does • learn what causes moonrise and moonset
12 Moon Phases <i>page 119</i>	<ul style="list-style-type: none"> • observe and record the changing shape of the Moon daily for 4 weeks • review the record of their observations to look for a pattern • identify the pattern of the Moon's changing shape and infer that this pattern repeats every 4 weeks
Assessment <i>page 131</i>	

Process Skills	Vocabulary	Delta Science Reader
observe; compare; collect, record, display, or interpret data; communicate	air, observe, record, weather	pages 2–5, 14
classify, compare	Earth, Moon, planet, star, Sun	pages 9–13
observe; measure; use numbers; collect, record, display, or interpret data; compare	degree, temperature, thermometer	pages 2–5
observe; collect, record, display, or interpret data; compare; classify; communicate	wind, wind sock, wind vane	pages 2–5
observe; collect, record, display, or interpret data; compare; classify; communicate	cloud, water vapor	pages 2–5
observe; measure; use numbers; collect, record, display, or interpret data; compare	hail, rain, rain gauge, sleet, snow	pages 2–5
compare, infer, classify, communicate	fall, season, spring, summer, winter	pages 6–8
compare, infer, classify, communicate, predict		pages 6–8
observe; compare; collect, record, display, or interpret data; infer	shadow	pages 9–10
compare, predict, make and use models, infer	sunrise, sunset	pages 9–10
compare; collect, record, display, or interpret data; infer; make and use models		pages 12–13
collect, record, display, or interpret data; compare; infer	full Moon, new Moon, phases	pages 12–13, 15

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

Overview Chart for Delta Science Reader

Weather and Sky

Selections	Vocabulary	Related Activity
Think About...		
What Is Weather? <i>page 2</i>	cloudy, observe, rainy, snowy, sunny, weather, windy	Activities 1, 3, 4, 5, 6
What Are Seasons? <i>page 6</i>	season	Activities 7, 8
What Can We See in the Sky in the Daytime? <i>page 9</i>	Earth, Moon, Sun	Activities 2, 5, 9, 10, 11
What Can We See in the Sky at Night? <i>page 12</i>		Activities 2, 11, 12
People in Science		
<ul style="list-style-type: none"> • A Meteorologist <i>page 14</i> 		Activity 1
Did You Know?		
<ul style="list-style-type: none"> • About Moon Phases <i>page 15</i> 	phases	Activity 12

See pages 139–148 for teaching suggestions for the Delta Science Reader.

MATERIALS LIST

Weather and Sky

Quantity	Description	Quantity	Description
3	adhesive dots, assorted colors, p/32*	1	Teacher's Guide
1	adhesive dots, yellow, p/8*	8	Delta Science Readers
2	batteries, D-cell*	1	Big Book
10	calendar sheets*		TEACHER-PROVIDED ITEMS
1	cards, Moon Phases, set/5	–	assorted clothing and equipment for different seasons
1	chalk, assorted colors, p/12*	32	crayons or colored pencils, boxes
16	chalk, blue, large*	1	fan, electric
16	chalk, red, large*	1	globe
16	chalk, yellow, large*	24	ice cubes
1	compass	–	magazines, old
4	cotton balls, p/100*	–	paper, chart, or poster board
1	cotton swabs, p/100*	–	paper, scrap
1	crayons, red, p/32*	1	paper towels, roll
1	cups, foam, p/25	32	pencils
1	flashlight	1	ruler or meter stick
1	glue, 4 oz*	32	scissors, blunt-tip
2	glue sticks, p/12*	1	stapler, heavy-duty
1	map, U.S. outline, laminated	1	timer or clock
1	marker, black, permanent*	–	water, tap
1	markers, erasable, set/8*	1	weather page, national, newspaper or Internet
1	Moon Journal		
1	paper, construction, assorted colors, p/50*		
32	paper, construction, blue*		
1	paper, shelf, white*		
2	pitchers, 2-qt		
1	poster, Clouds		
1	posters, Seasons, set/4		
1	poster, Wind Scale		
1	rain gauge		
1	tape, masking*		
1	thermometer, demonstration†		
16	thermometers, dual-scale		
1	thermometer, indoor/outdoor, wall		
1	wind vane		

* = consumable item

† = in separate box

ACTIVITY SUMMARY

In this Delta Science Module, students make observations of weather and the sky, from wind, rain, and clouds to the Sun, Moon, and stars.

ACTIVITY 1 Students observe and describe daily weather and discuss how weather affects everyday life. They begin to record daily observations of weather on a class calendar.

ACTIVITY 2 Students compare elements of the day and night skies. They identify and draw both natural and human-made objects found in the sky. Some students are surprised to discover that the Moon can be seen both during the day and at night.

ACTIVITY 3 Students explore thermometers as weather tools and then use one to measure and record changes in air temperature over a few days. They also investigate changes in water temperature due to heating by the Sun.

ACTIVITY 4 Students explore wind vanes as weather tools and then use one to determine wind direction. They also rate the strength of wind by observing its effects on objects outdoors.

ACTIVITY 5 Students learn how clouds form, observe clouds and record cloud cover for a few days, and make models of the three main cloud types.

ACTIVITY 6 Students learn how water cycles from Earth to clouds by evaporation and condensation and then falls to Earth as precipitation. Students explore rain gauges as weather tools and then use one to measure rainfall over several days. They also learn how to stay safe during severe storms.

ACTIVITY 7 Students discuss how weather varies in the four seasons and act out weather for each season. They also identify the repeating pattern of the four seasons.

ACTIVITY 8 Students discuss how people's activities are affected by seasonal weather and create class posters to illustrate seasonal activities. They then explore how animals and plants adapt to the changing seasons.

ACTIVITY 9 Students go outdoors on a sunny day and explore their shadows. They identify what is needed to produce a shadow. Then they observe and record their shadows changing position throughout the day.

ACTIVITY 10 Students reflect on the changing positions of their shadows in Activity 9 and interpret these changes as evidence of the Sun rising and setting. They model how Earth's rotation causes sunrise and sunset.

ACTIVITY 11 Students observe and record the movement of the Moon across the sky during the day. They learn that the Moon rises and sets just as the Sun does and model how Earth's rotation makes this happen.

ACTIVITY 12 Students observe and record changes in the Moon's shape over 4 weeks. Then they review their Moon Journals to discover the regular pattern of changes, called phases.