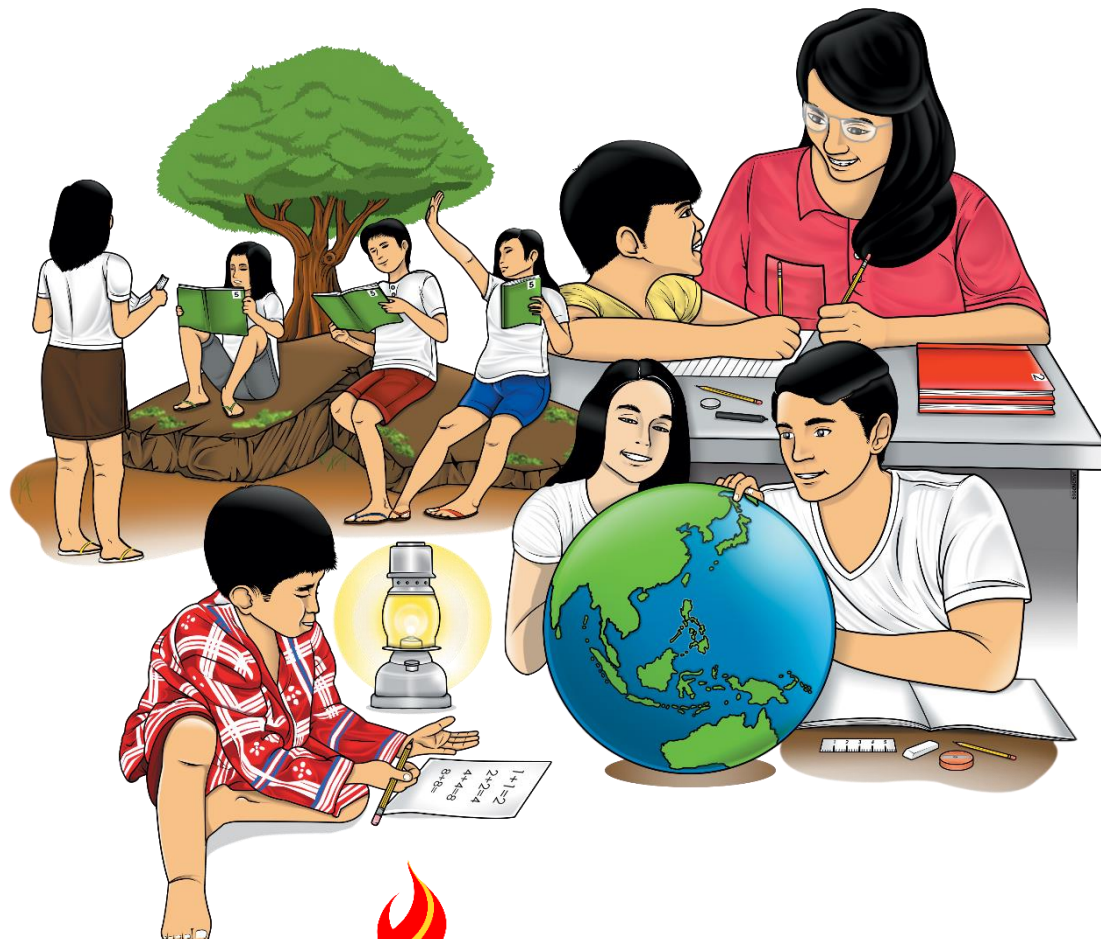


# Science

## Quarter 4 – Module 3: Weather Disturbances



**Science– Grade 5**  
**Alternative Delivery Mode**  
**Quarter 4 – Module 3: Weather Disturbances**  
**First Edition, 2020**

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**5**

# **Science**

## **Quarter 4 – Module 3: Weather Disturbances**

## **Introductory Message**

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.



## ***What I Need to Know***

This module was designed and written with you in mind. It is here to help you describe different weather disturbances. The scope of this module permits it to be used in many different learning situations. The language used recognizes the diverse vocabulary level of students. The lessons are arranged to follow the standard sequence of the course. But the order in which you read them can be changed to correspond with the textbook you are now using.

This module will help you characterize weather disturbances in the Philippines and describe their effects on daily life. It is divided into two lessons, namely:

- **Lesson 1** – Weather Disturbances
- **Lesson 2** – Effects of Weather Disturbances on Daily Life

After going through this module, you are expected to:

- describe the different weather disturbances in the Philippines; and
- describe the effects of weather disturbances on daily life.



## ***What I Know***

**Directions:** Analyze each question carefully and choose the letter of the **BEST** answer. Write your answers in your Science notebook.

1. It refers to the disruption of the stable condition of the atmosphere.
  - A. Flash floods
  - B. Landslides
  - C. Storm surge
  - D. Weather disturbance
  
2. A convection current is the \_\_\_\_ of the warm air and the sinking of the cold air.
  - A. decreasing
  - B. increasing
  - C. rising
  - D. sinking
  
3. What can we observe during a typhoon?
  - A. Heavy rains and strong winds.
  - B. The sun becomes visible, and the sky becomes clearer.
  - C. The air is dry and cold since most of the warm air rises already.
  - D. All of the above.
  
4. It is an intense tropical cyclone with a maximum speed exceeding 118 kph.
  - A. Tropical depression
  - B. Tropical disturbance
  - C. Tropical storm
  - D. Typhoon
  
5. Why do pilots and captains need to know the weather? It will help them decide \_\_\_\_\_.
  - A. How much fare to ask.
  - B. What color code to use.
  - C. Whether to travel or not.
  - D. How many passengers to carry.
  
6. The government agency that warns the people of an approaching typhoon.
  - A. DENR
  - B. DEPED
  - C. PAGASA
  - D. PHIVOLCS

7. Typhoon signals are raised according to \_\_\_\_\_?
- A. strength of the wind
  - B. strength and speed of the wind
  - C. speed of the wind
  - D. none of the above
8. Why do PAGASA issue weather bulletin and warnings?
- A. To give people time to prepare.
  - B. To give people to go and watch a movie.
  - C. To give people time for swimming.
  - D. To give people time to party.
9. The strength of the tropical cyclone depends on the \_\_\_\_\_.
- A. minimum speed of winds near the center
  - B. maximum speed of wind near the center
  - C. the cloudiness near the center
  - D. none of the above
10. Which of the following things is NOT necessary to keep before the typhoon season?
- A. flashlight and extra batteries
  - B. first aid kits and essential medicines
  - C. chocolates and candies
  - D. potable water and canned goods

## Lesson

# 1

# Weather Disturbances

Because we are surrounded by bodies of water, we are prone to weather disturbances. Our nearness to the Pacific Ocean, which lies on the eastern side of our country, is the most significant contributor to weather disturbances in our country. With that, our country is mostly visited by tropical cyclones.



## *What's In*

**Weather** is the condition of the atmosphere for a short period. It has different factors; when these factors change and affect the condition of the atmosphere, weather disturbances may occur.

**Directions:** Arrange the following jumbled words to identify the factors that affect the weather. Write your answers in your science notebook.

1. PAMRTEUETER
2. DHIYUITM
3. DNWI
4. CNPTOIRIEPAIT
5. CLSUNDOIES
6. CPMSHAEORIT ESREPRUS



## *What's New*

Weather influences human activities. Look at the illustration. Can you tell the kind of weather by just looking at the picture? Does this kind of weather condition remain all year round? Why or why not?





(Illustrated by Elpidio S. Palacio and Jose Marie E. Baculi)



## What is It

A temperature difference between the air and the surface creates a swirling mass of winds known as a **weather disturbance**. A weather disturbance is a term used to describe a change in atmospheric conditions or weather patterns. Although weather disturbances are temporary, their impact on plants, animals, livelihood, and the ecosystem is evident. Weather disturbances are common in the Philippines due to its nearness to the equator that causes wind convergence.

A **tropical cyclone** is a weather disturbance characterized by a big mass of wind and rain whirling around a center of low pressure called the **“eye”**. Tropical cyclones have different names around the world depending on where they are. In the Atlantic/Eastern Pacific Oceans, they are known as **hurricanes**, while in the Western Pacific, they are called **typhoons**. In the Indian Ocean, they are recognized as **cyclones**.

Tropical cyclones form when warm air moves over the surface of the ocean, creating a massive amount of water vapor. As it rises, the water vapor is cooled. Clouds are formed when water vapor condenses. Heat is released into the atmosphere as it does. So, this heat warms the atmosphere, causing the air to become lighter and continue to rise into the atmosphere. As the warmed air rises, it is replaced by moist air rising from below. The subsequent heat release generates strong winds, which fuel the storm.

Tropical cyclones weaken as they reach land, not because a mountain or a building blocks them, but because the loss of their source of heat, which is warm air from the ocean, reduces their wind speed.

Weather disturbances are also known as natural disasters because they can cause havoc on roads, power lines, and buildings.

PAGASA's classification of tropical cyclones based on the strength of the associated winds as of May 1, 2015 are presented in Table 1.

**Table 1: Classification of Tropical Cyclones**

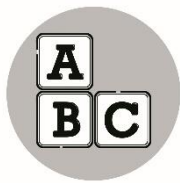
<b>Kinds of Cyclones</b>	<b>Description</b>
Tropical Depression (TD)	<ul style="list-style-type: none"> <li>- a tropical cyclone with maximum sustained winds of up to 61 kilometers per hour (kph) or less than 33 nautical miles per hour (knots)</li> <li>- a weak low pressure with a definite surface circulation</li> <li>- most common in the equatorial region or the intertropical convergence zone (ITCZ)</li> </ul>
Tropical Storm (TS)	<ul style="list-style-type: none"> <li>- a tropical cyclone with a maximum wind speed of 62 to 88 kph or 34 - 47 knots.</li> <li>- when a tropical depression intensifies, it becomes a tropical storm</li> </ul>
Severe Tropical Storm (STS)	<ul style="list-style-type: none"> <li>- a tropical cyclone with a maximum wind speed of 89 to 117 kph or 48 - 63 knots.</li> <li>- more organized and more circular</li> </ul>
Typhoon (TY)	<ul style="list-style-type: none"> <li>- a tropical cyclone with a maximum wind speed of 118 to 220 kph or 64 - 120 knots.</li> <li>- most of the time, accompanied by heavy rains and strong winds</li> </ul>
Super Typhoon (STY)	<ul style="list-style-type: none"> <li>- a tropical cyclone with maximum wind speed exceeding 220 kph or more than 120 knots.</li> <li>- the strongest tropical cyclone classification created in 2015 after the devastation of Super Typhoon Yolanda (Haiyan).</li> <li>- areas that are hit by this kind face a large amount of destruction</li> </ul>

The occurrence of tropical cyclone affects the environment. Hence, the Philippine Atmospheric, Geophysical and Astronomical Services Administration (**PAGASA**) closely observe any change in the atmosphere. The agency gives people regular updates on the weather condition. Typhoon signals to warn people of the coming typhoon through their regular weather bulletins. Wind speed is expressed in kilometers per hour (kph) and is measured using an ***anemometer***.

Table 2 shows the range of the wind speeds given for each signal number of the typhoon entering the Philippine Area of Responsibility (PAR) based PAGASA.

**Table 2: Types and description of different public storm warning signal (PSWS)**

<b>PSWS</b>	<b>LEAD TIME (hrs)</b>	<b>WINDS (kph)</b>	<b>IMPACTS OF THE WIND</b>
1	36	30 – 60	No damage to very light damage
2	24	61 – 120	Light to moderate damage
3	18	121 – 170	Moderate to heavy damage.
4	12	171 – 220	Heavy to very heavy damage.
5	12	More than 220	Very heavy to widespread damage.



## ***What's More***

### **Activity 1. Motion of Wind**

#### **Materials:**

Stick

Basin with water

Talcum/baby powder

#### **Procedure:**

1. Get a basin and fill it with water.
2. Sprinkle some baby/talcum powder on the water.
3. Place a stick at the center of the basin, then move it counterclockwise.
4. Remove the stick. Observe what happens?

#### **Guide Questions:**

1. What did you observe?
2. How did the water move?
3. How did you relate this with the motion of wind in a tropical cyclone?
4. Compare the central part and the surrounding area.

## Activity 2. Interpret Weather Report

**Directions:** Read and understand the weather report. Write your answers to the guide questions in your science notebook.

Tropical depression *Coring* is now over Itbayat, Batanes at 10:00 a.m. today, September 12. *Coring* was estimated to have maximum winds of 50 kph near the center. It is expected to move west-northwest at 20 kph in the general direction of Aurora, Quezon.

### Guide Questions:

1. What weather disturbance is mentioned in the report?
2. What is the maximum wind speed of the tropical depression?
3. Do you think this is a strong weather disturbance? Why or why not?
4. Predict its effect if it reaches your place with winds of 50 kph.

## Lesson

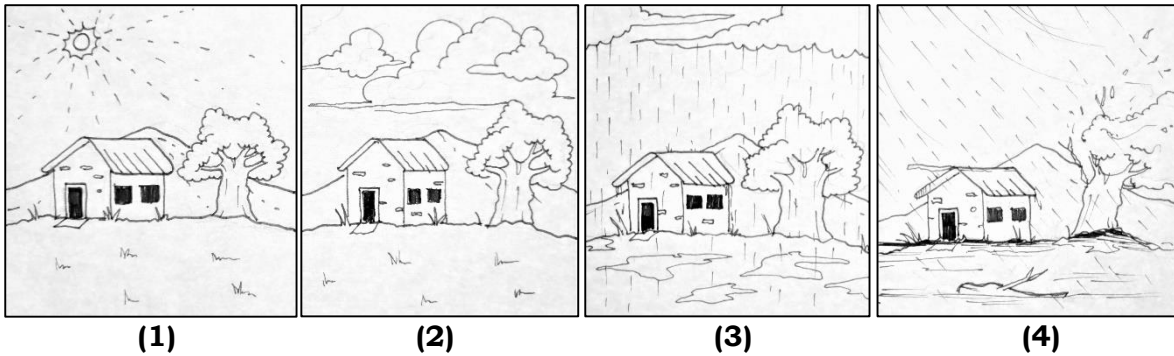
# 2

# Effects of Weather Disturbances to Daily Life



## What's In

**Directions:** Study the following illustrations. Do what is asked and answer the following questions. Write your answers in your science notebook.



*(Illustrated by Elpidio S. Palacio)*

1. Identify the weather conditions presented in the illustrations by choosing your answers from the box below.

Sunny Day	Cloudy Day	Rainy Day	Stormy Day
-----------	------------	-----------	------------

2. In which illustration/s it is best to go hiking, camping, field trips, and going to the beach? Why?
3. In which illustration/s it is best stay at home to avoid getting cough, flu and being sick? Why?



## ***What's New***

Typhoons have disastrous effects. This unforeseen event may destroy properties, infrastructures, agricultural lands and even cause death to all living things.

**Directions:** Study the picture below. Answer the guide questions in your science notebook.



*(Illustrated by Kristina C. Aguirre and Jose Marie E. Baculi)*

1. What do you observe in the picture?
2. What do you think happened in the place?
3. What do you think will the people living in the house feel?
4. What do you think will they be able to do in that condition?



## ***What is It***

We observe weather conditions for many reasons. We do outdoor activities only if the weather is fine. Playing basketball or other outdoor sports, attending festivals and going on excursions are done during fair weather.

In school, we enjoy playing outdoors in fine weather. Field trips, hiking and camping, are also done when the weather is fine.

We also like to be forewarned about weather conditions early enough to be prepared for it. If the forecast says there will be rain showers, then we bring our

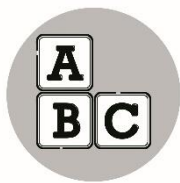
umbrellas or raincoats. We may put off making long trips because it is dangerous to travel during rainy weather.

In case of rainy or stormy weather, we are advised to stay home and take necessary precautions. We should protect ourselves during bad weather so that we will not get sick. We should also wear clothes suited to the kind of weather condition to protect ourselves.

Ship captains and pilots must know the weather to be warned of coming storms, strong winds, thick clouds, fog, tropical depression or even typhoon that can be dangerous to travel. Farmers need to be informed of weather disturbances so that they can care for their crops. Merchants and vendors like to know the weather so that they can prepare the goods they will sell.

Good weather service is very important. In the Philippines, we have the Philippine Atmospheric, Geophysical and Astronomical Services Administration or PAGASA, that informs us of the weather conditions and gives daily weather reports.

The Philippines is located in the typhoon belt, where several typhoons pass each year. In addition to typhoons, the southwest monsoon brings heavy rains that cause floods and rough seas, especially in July, August, and September. Knowing the weather forecasts can minimize the loss of lives and properties due to weather disturbances; it can also help the industries. This is because man can prepare for the bad weather. Millions of pesos worth of properties and farm crops and people's lives are lost to flood and strong typhoons. These damages make many people suffer.



## ***What's More***

**Directions:** Perform the following activities properly. Answer the guide questions in your science notebook.

### **Activity 1. Relating Weather to Daily Life**

**Directions:** Categorize the identified activities as to when it is best to be done, on Sunny or Rainy/Stormy Weather.

Walking in the park

Going to the beach

Suspending travel

Wearing thick and warm clothes

Going camping

Wearing raincoat

Cancelling picnic

Playing *patintero* or outdoor games

<u>Sunny Weather</u>	<u>Rainy/Stormy Weather</u>

**Guide Questions:**

1. Describe the community activities during sunny and stormy weather.
2. Are the activities done during sunny weather can also be done during rainy/stormy weather? Why?

**Activity 2. Effect of Weather on Air and Water Transportation**

**Directions:** Answer the following questions. Write your answers in your science notebook.

1. What weather condition favors safe air and water transportation services?
2. Why is it not good to travel by air and water when there is tropical cyclone?
3. What actions do the air and water transportation services take when the weather is not good? Why?
4. Do air and water transportation services depend on weather conditions?



***What I Have Learned***

**Directions:** Fill in the blanks with words from the discussion on weather disturbances. Use the words in the word box to answer. Write your answers in your science notebook.

tropical cyclone	weather disturbances	water
equator	bad	good

Although weather disturbances are temporary, their impact on plants, animals, livelihood, and the ecosystem is evident. 1. \_\_\_\_\_ are common in the Philippines due to the country's nearness to the 2. \_\_\_\_\_, which causes wind convergence. 3. \_\_\_\_\_ is one type of weather disturbance. Tropical cyclones have different names around the world depending on where they are.

In the Atlantic/Eastern Pacific Oceans, they are known as hurricanes, while in the Western Pacific, they are identified as typhoons. In the Indian Ocean, they are



recognized as cyclones. Tropical cyclones form when warm air moves over the ocean's surface, creating a massive amount of 4.\_\_\_\_\_.

Tropical cyclones weaken as they reach land, not because a mountain or a building blocks them, but because the loss of their source of heat, which is warm air from the ocean, reduces their wind speed.

When the weather is 5.\_\_\_\_\_, air and water transportation services are not stopped. But when there is weather disturbance, these services are temporarily suspended.



## What I Can Do

**Directions:** Draw a happy face ( 😊 ) if the activity would help lessen the effects of storm and a sad face ( 😞 ) if not. Write your answers in your science notebook.

1.



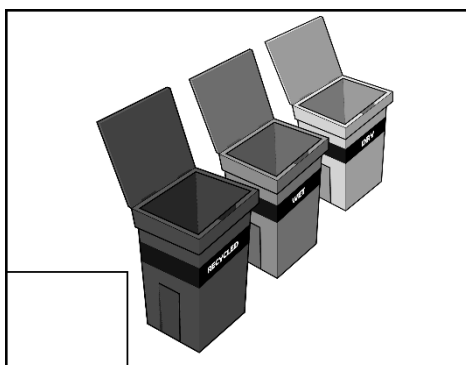
*Illustrated by Jose Marie E. Baculi*

2.



*Illustrated by Jose Marie E. Baculi*

3.



*Illustrated by Reyson Joe G. Cañedo*

4.

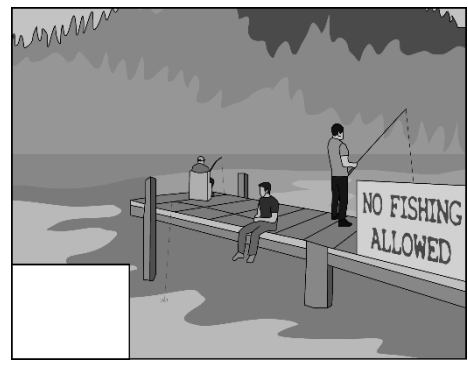


*Illustrated by Reyson Joe G. Cañedo*



5.

*Illustrated by Jose Marie E. Baculi*



6.

*Illustrated by Jose Marie E. Baculi*



## Assessment

**I. Directions:** Answer the following questions. Write your answers in your science notebook.

1. What is a weather disturbance?
2. What is a tropical cyclone?
3. What are the classifications of a tropical cyclone? Describe each.

**II.** As a student, give at least three (3) activities that can be done during good and bad weather. Write your answers in your science notebook.

Good Weather	Bad Weather
1.	1.
2.	2.
3.	3.



## Additional Activities

Weather in our country constantly changes from day to day or by the hour. For example, you may wake up with fair weather, but it rains towards the middle of the day. List three ways to make sure of your safety in these changing weather patterns? Write your answers in your science notebook.



# Answer Key

**Lesson 1**  
**What's New**  
Possible Answers:

- Yes. It is a sunny weather.
- No. Because the weather is the day-to-day state of the atmosphere, and it's short-term and not permanent and may change every time.

**Lesson 1**  
**What's In**

1. TEMPERATURE
2. HUMIDITY
3. WIND
4. PRECIPITATION
5. CLOUDINESS
6. ATMOSPHERIC PRESSURE

**What I Know**

1. d
2. c
3. a
4. d
5. c
6. c
7. c
8. a
9. b
10. c

**What's More**  
**Activity 2**  
Possible Answers:

1. Tropical depression Coring
2. 50 kph
3. No, tropical depression Coring is not so strong. It has a storm warning Signal No. 1.
4. If tropical depression Coring reaches our place, it will bring intermittent rains and winds with a maximum speed of 30 to 60 kph. Water and air travel may not be safe.

**What's More**  
**Activity 1**  
Possible Answers:

1. The talcum/baby powder sinks.
2. The water moved in a counter-clockwise direction.
3. The water moved in a counter-clockwise direction with an "eye" in its center.
4. The central part of the water is calm and has slight movement, while the outer bands are strong.

**Lesson 2 What's In**  
Possible Answers:

1.
 

(1) Sunny Day	(2) Cloudy Day	(3) Rainy Day	(4) Stormy Day

*Illustrated by Elydio S. Palacio Jr.*

2. Illustration number 1. This illustration presents a sunny day which means that the road is dry, and it is the best day to go hiking, camping and go on field trips and to the beach.
3. Illustrations number 3 and 4. These illustrations show rainy and stormy day sequentially. It is the best day to stay at home to avoid getting cough, flu and being sick.

<p><b>What I Have Learned</b></p> <ol style="list-style-type: none"> <li>1. weather disturbances</li> <li>2. equator</li> <li>3. tropical cyclone</li> <li>4. water vapor</li> <li>5. good</li> </ol>	<p><b>What I Can Do</b></p> <ol style="list-style-type: none"> <li>1. 😊</li> <li>2. 😊</li> <li>3. 😊</li> <li>4. 😊</li> <li>5. 😊</li> <li>6. 😊</li> </ol>
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**Lesson 2**  
**What's More**  
**Activity 2**

(Possible answers):

1. Fine weather condition favors safe air and water transportation services.
2. It is not good to travel by air and water when there is tropical cyclone because of the strong gusts of wind that may blow aircrafts and may create big waves and sink boats and ships.
3. Air and water transport services cancel all travels to lower the risk of damage to lives and properties.
4. Yes, air and water transport services depend on weather conditions to ensure safe travels.

**Lesson 2**  
**What's More**  
**Activity 1**

<p><b>Sunny Weather</b></p> <p>Going camping Going to the beach Playing <i>patintero</i> or outdoor game Walking in the park</p>	<p><b>Rainy/Stormy Weather</b></p> <p>Suspending travel Wearing raincoat Wearing thick and warm clothes Cancelling picnic</p>
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**Guide Questions**  
(Possible answers):

1. During sunny weather, outdoor activities can be done like playing outside the house, drying clothes outside, travelling and many others. When it is stormy weather, most people just stay inside the house. It is not safe to do some activities outside.
2. No, activities done during sunny weather cannot be done during a stormy weather because of strong winds and heavy rains that may cause accidents or damages.

**Lesson 2**  
**What's New**

**Possible Answers:**

1. The picture shows floods among houses, trees, and the surrounding area.
2. The place is devastated by the typhoon.
3. People living in the houses feel scared, worried and sad.
4. They could evacuate to a safe place or climb into their roof and wait for the rescue to help them.

<b>Kinds of Cyclones</b>	<b>Description</b>	- a tropical cyclone with maximum sustained winds of up to 61 kilometers per hour (kph) or less than 33 nautical miles per hour (knots)
	Tropical Depression (TD)	- a weak low pressure with a definite surface circulation most common in the equatorial region or the intertropical convergence zone (ITCZ)
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3. These are the 5 kinds of cyclones and descriptions (you may have at least one of these)

**Assessment**  
I. (Possible Answers)

1. Weather disturbance is the change in atmospheric conditions or weather patterns.
2. A Tropical cyclone a big mass of wind and rain whirling around a center of low pressure called "eye".
3. These are the 5 kinds of cyclones and descriptions (you may have at least one of these)

**Assessment**  
II. (Possible Answers)

<b>Good Weather</b>	1. Sailing 2. Playing outdoor games 3. Walking in the park
<b>Bad Weather</b>	1. Reading books 2. Playing indoor games 3. Watching movies

- Additional Activities**  
(Possible Answers)
- Be alert. Listen to the news in the radio or TV on the weather conditions
  - Have ready emergency supplies for at least 3 days with ready-to-eat foods, safe drinking water, important family documents, and first-aid kit, etc.
  - Charge up electrical devices such as phones, power banks, flashlights.
  - Secure your home, ex. nail loose boards and roof materials
  - Avoid using the phone, except for serious emergencies.

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