

# The Blue Planet

## Chapter 1

**W**ater is the cornerstone of life on planet Earth. It is the only planet in our Solar System that contains large quantities of water. Looking down from space Earth looks like a giant blue marble with white wispy clouds obscuring part of the surface.

### **The oceans**

The oceans cover 71 % of the Earth and contain 97.5 % of the water on the planet. The remaining 2.5% of the water is found in ice caps, ground water, freshwater lakes, rivers, water vapor in the atmosphere and moisture in the soil. Most of the fresh water is locked in ice caps and only 1% is available for plants and animals living on land.

### **Water cycle**

The water cycle is a continuous cycle fed by the oceans. The sun shining on the surface of the ocean warms the water. The surface water turns into vapor that rises above the oceans forming clouds in the atmosphere.

### **Continental rainfall**

Wind currents over the ocean blow the clouds toward land. Reaching the coastline, the clouds are forced upward over coastal mountain ranges.

The clouds cool and condense dropping part of the moisture in the clouds as rain. The rain produces a temperate rain forest.

The Olympic National Park in northwestern Washington annually receives over 3.5 meters of rain on the windward side of the park.

### **Cascade Range, Washington**

The Cascade Range forms the next barrier where mountain peaks are between 3000 and 4000 m tall. The clouds are forced over the mountains by winds blowing eastward. The moisture in the clouds condenses as the clouds move upward. They produce large amounts of rain and snow on the western slopes of the mountains.

Paradise area on Mount Rainier received a record 28.5 m of snow in 1971-1972. Recent years with warming temperatures the snowfall has decreased. In 2016-2017 the snowfall for the Paradise had fallen to 17.8 meters.



Earth pictured from space NASA

Name \_\_\_\_\_

Date \_\_\_\_\_

# The Oceans Pretest

## Quiz 1

### Fill in the blanks using words from the Word Bank

1. \_\_\_\_\_ are drifting animals that spend their time hunting and eating other plankton in the oceans.
2. Currents in the Indian Ocean flow in \_\_\_\_\_ directions each year.
3. \_\_\_\_\_ net fishing is a method for catching fish used by humpback whales.
4. \_\_\_\_\_ are areas where mud and sand are exposed during low tide and covered during high tide.
5. Most coral \_\_\_\_\_ have clear bodies and their skeletons are white like human bones.
6. Scientists returning to the \_\_\_\_\_ after 25 years discovered that fresh lava covered the entire site.
7. Leafy sea dragons give the illusion of pieces of floating \_\_\_\_\_ as they move slowly through the water.
8. The crust-forming species of coralline algae deposit sheets of limestone on the outer surface of a \_\_\_\_\_.
9. Giant squid and colossal squid have the largest \_\_\_\_\_ in the Animal Kingdom.
10. Natural \_\_\_\_\_ have been used in households for thousands of years.

### Word Bank

Rose Garden	bubble	sponges	two	coral reef
zooplankton	eyes	polyps	seaweed	tidal flats

# Sunlit-Twilight-Midnight

## Activity 1

### Introduction

The oceans are often divided into three zones based on the amount of light that penetrates the water.

- ◆ The upper layer is the **sunlit zone** where plants can conduct photosynthesis.
- ◆ The middle layer is the **twilight zone** where light penetrates but is too dark for photosynthesis by plants.
- ◆ The deepest layer is the **midnight zone** that is dark and reaches to the ocean floor.

In this activity, you are studying the amount of light that penetrates the water after blue food coloring is added.



Sunlight

Twilight

Midnight

### Materials

- ◆ Three clear glasses
- ◆ Blue food coloring
- ◆ Stirring spoon
- ◆ Fresh water
- ◆ Paper with printed letters

### Directions

1. Copy the chart on the next page with the printed letters.
2. Cut the chart into three sections.
3. Tape one section of the chart on each glass
4. Fill each of the three glasses with water to within 4 cm of the top.
5. Look through the water of the first glass and read the letters.
6. Place one drop of food coloring in the glass and see if you can still read the letters on the chart.
7. Keep adding drops of food coloring until the letters are blurred.

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