Principle 3: Grades 3-5

Principle 3:
The ocean is a major influence on weather and climate.

Nearly all the water on Earth is stored in the ocean. The ocean, which covers over 70% of Earth's surface, controls the weather by dominating Earth's energy and water systems.

Weather

A.
The ocean absorbs and holds much of the solar energy that reaches Earth.

A.1.
The ocean absorbs and holds more heat than the land.

A.2.
The ocean moderates coastal weather because the temperature of air masses over the ocean fluctuates less than the temperature of air masses over the land.

See Principle 6: B3

A.3.
The uneven heating of Earth causes convection currents, the movement of air and ocean water, from one place to another.

A.4.
Ocean currents move heat throughout ocean basins, which in turn, affects Earth's weather.

A.5.
Warm ocean water warms the air. The warm air rises, creating a low pressure area. Winds are set in motion as air moves from high pressure to low pressure areas.

See Principle 1: B6

A.6.
The ocean provides the energy for wind, which can produce severe weather, such as hurricanes and cyclones.

See Principle 6: B4

Water Cycle

B.
The ocean is an integral part of the water cycle. Solar energy absorbed by the ocean drives the water cycle.

B.1.
Solar energy warms water in the ocean and causes it to evaporate. Most water in the air comes from the ocean.

B.2.
Water in the air eventually cools, condenses into clouds, and returns to the ocean or the land as precipitation.

B.3.
Most of the freshwater on Earth comes from water that evaporated from the tropical ocean.

See Principle 1: A1

B.4.
Most of the water on land returns to the ocean through river runoff.

See Principle 1: B1
See Principle 6: A3