**Principle 3:**
**Grades 6-8**

**The ocean is a major influence on weather and climate.**

- **Weather and Climate**
  - A. The ocean moderates global weather and climate by absorbing most of the solar radiation reaching Earth.
  - A.1. Heat exchange between the ocean and the atmosphere drives the water cycle and oceanic and atmospheric circulation.
  - A.2. The ocean dominates the water cycle.
  - A.3. Ocean currents move heat throughout the ocean basins.
  - A.4. The ocean loses heat through evaporation. The lost heat is released back to the atmosphere when the evaporated water vapor condenses and forms rain. The released heat drives atmospheric circulation.
  - A.5. Most rain that falls on land evaporated from the tropical ocean.

- **Global Climate Change**
  - B. Changes in the ocean/atmosphere system can result in changes to the climate.
  - B.1. The global climate is influenced by the amount of carbon dioxide in the atmosphere. The more carbon dioxide in the atmosphere, the more the climate warms.
  - B.2. The ocean absorbs about 50% of all carbon dioxide added to the atmosphere.
  - B.3. Some of the carbon dioxide absorbed by the ocean is used by phytoplankton and other photosynthetic organisms in the process of photosynthesis. About half of the world’s photosynthesis (primary production) occurs in the sunlit layers of the ocean.
  - B.4. Absorbing carbon dioxide can decrease the ocean’s pH, making the water more acidic. This can have consequences for many organisms in the ocean.
  - B.5. Humans are changing the climate by continuing to release large amounts of carbon dioxide and methane into the atmosphere.

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See Principle 6: A4
See Principle 1: C
See Principle 2: A9
See Principle 6: C
See Principle 7: A3
See Principle 5: A2
See Principle 6: D13