



Ocean Literacy Essential Principle 3

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Essential Principle 3



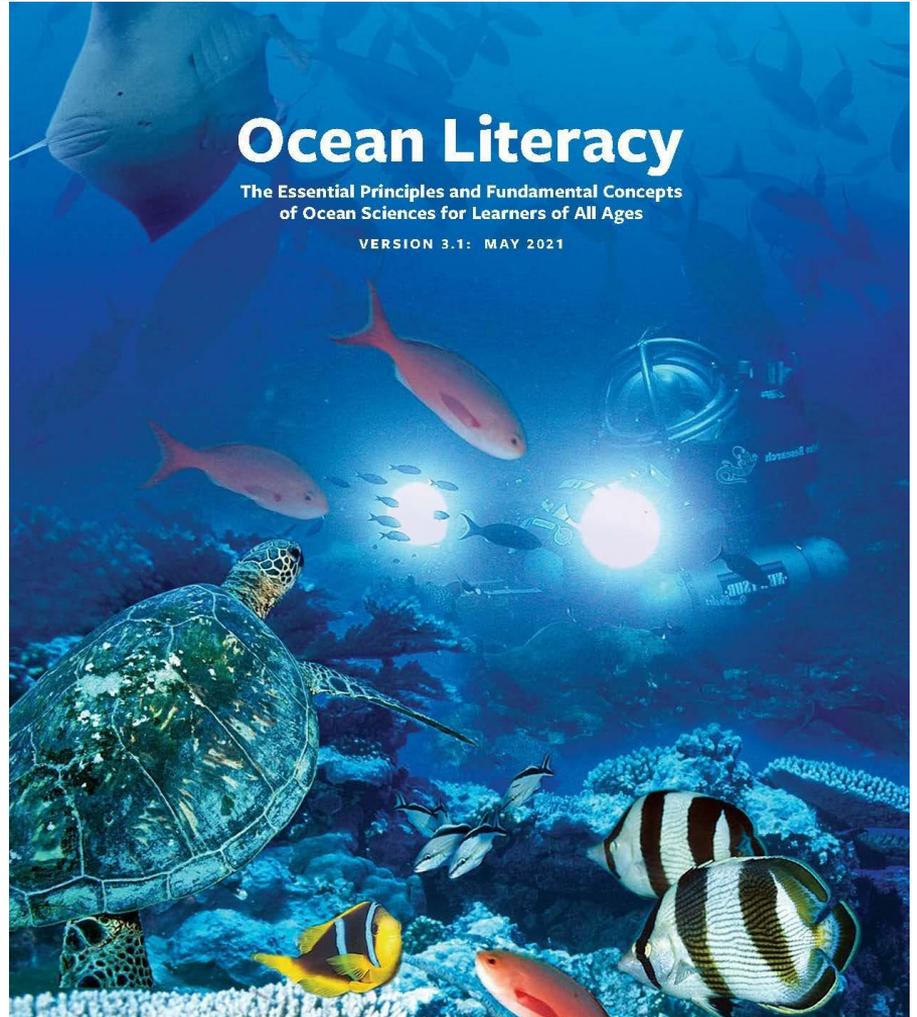
Using the OL Framework with Your Learners

1. **Look at the Guide** to determine the Essential Principles and Fundamental Concepts you want &/or need to address with your learners.
2. Then **look at the Scope and Sequence** for that principle for your grade level, and locate the concepts you decided to focus on.
3. Finally, **choose an activity** that addresses one or more of those concepts, following the flow shown in the scope and sequence.

Ocean Literacy Guide:

The Essential Principles & Fundamental Concepts of Ocean Sciences

<http://www.marine-ed.org/ocean-literacy/guide>

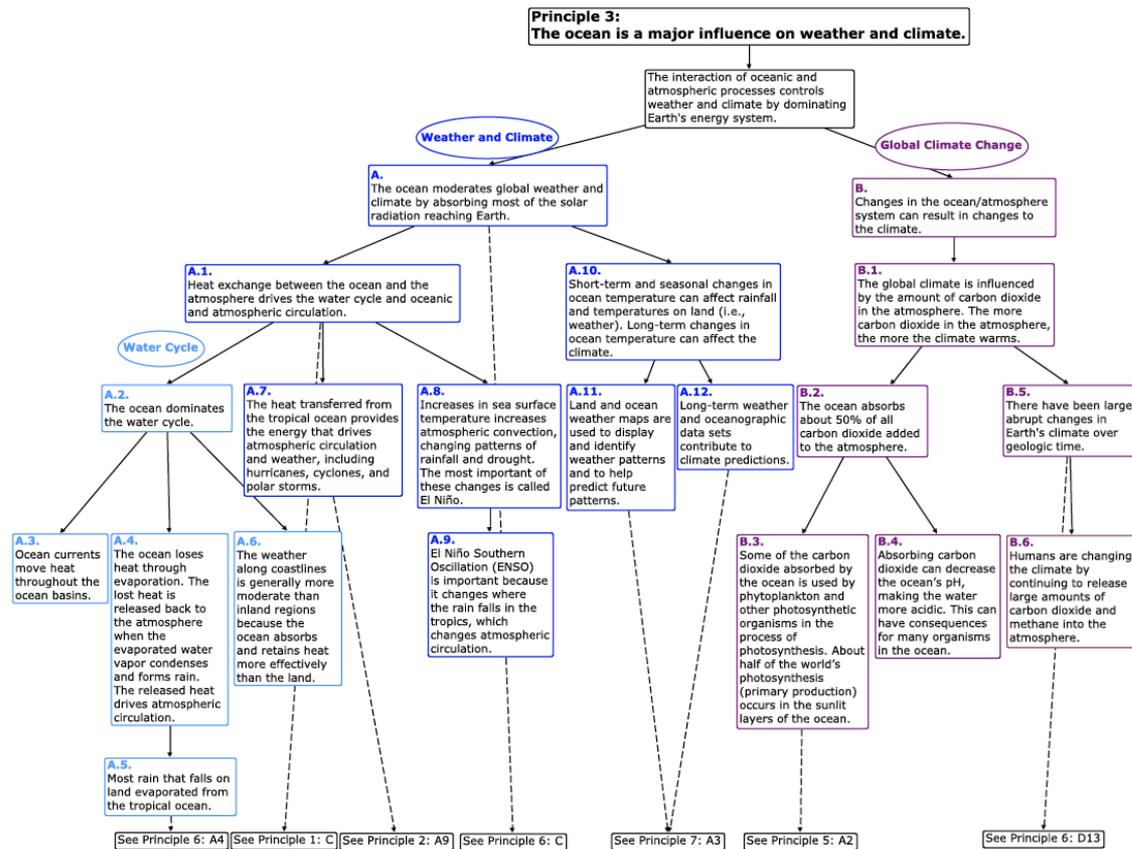


EP 3: The ocean is a major influence on weather and climate.

- a. The **interaction of oceanic and atmospheric processes controls weather and climate** by dominating Earth's energy, water and carbon systems.
- b. The **ocean moderates global weather and climate** by absorbing most of the solar radiation reaching Earth. **Heat exchange between the ocean and atmosphere drives the water cycle** and oceanic and atmospheric circulation.
- c. **Heat exchange between the ocean and atmosphere can result in dramatic global and regional water phenomena**, impacting patterns of rain and drought. Significant examples include the El Niño Southern Oscillation and La Niña, which causes important changes in global weather patterns **because they alter the sea surface temperature patterns** in the Pacific.
- d. **Condensation of water that evaporated from warm seas provides the energy for hurricanes** and cyclones. Most rain that falls on land originally evaporated from the tropical ocean.

EP3 continued...

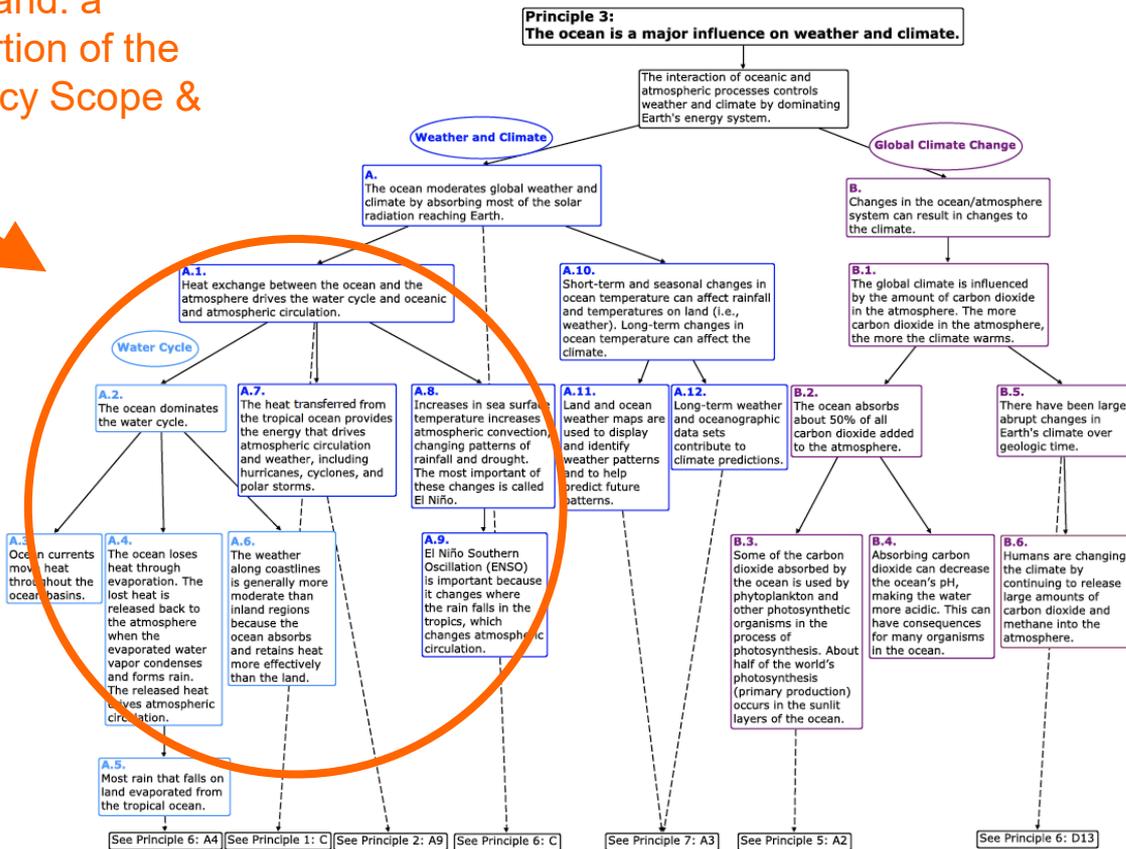
- e. The ocean dominates Earth's carbon cycle. **Half the primary productivity on Earth takes place in the sunlit layers of the ocean** and the ocean absorbs roughly half of all carbon dioxide added to the atmosphere.
- f. **The ocean has** had, and will continue to have, a **significant influence on climate change by absorbing, storing, and moving heat, carbon and water**. Changes in the ocean's circulation have produced large, abrupt changes in climate during the last 50,000 years.
- g. **Changes in the ocean-atmosphere system can result in changes to the climate** that in turn, cause further changes to the ocean and atmosphere. These interactions have dramatic physical, chemical, biological, economic, and social consequences.



See p.35 of your copy of the Handbook



S&S P3A strand: a particular portion of the Ocean Literacy Scope & Sequence



See p.35 of your copy of the Handbook

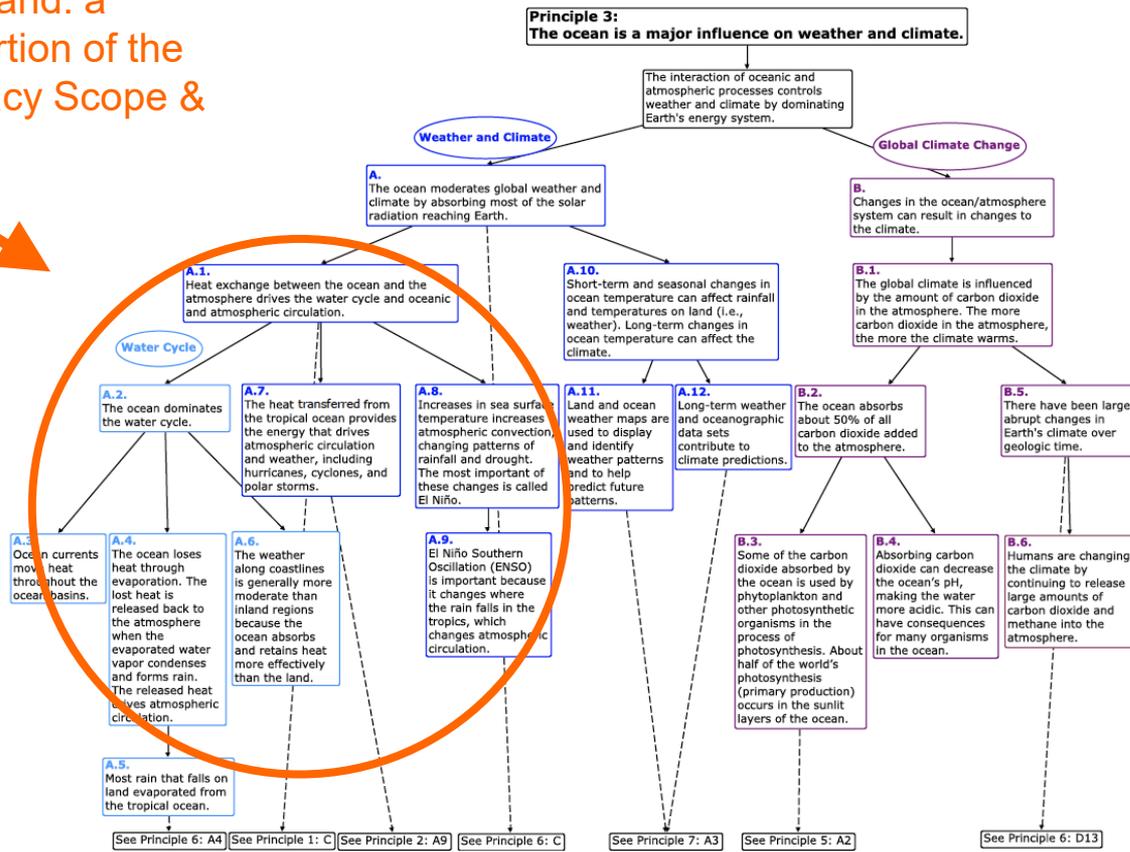




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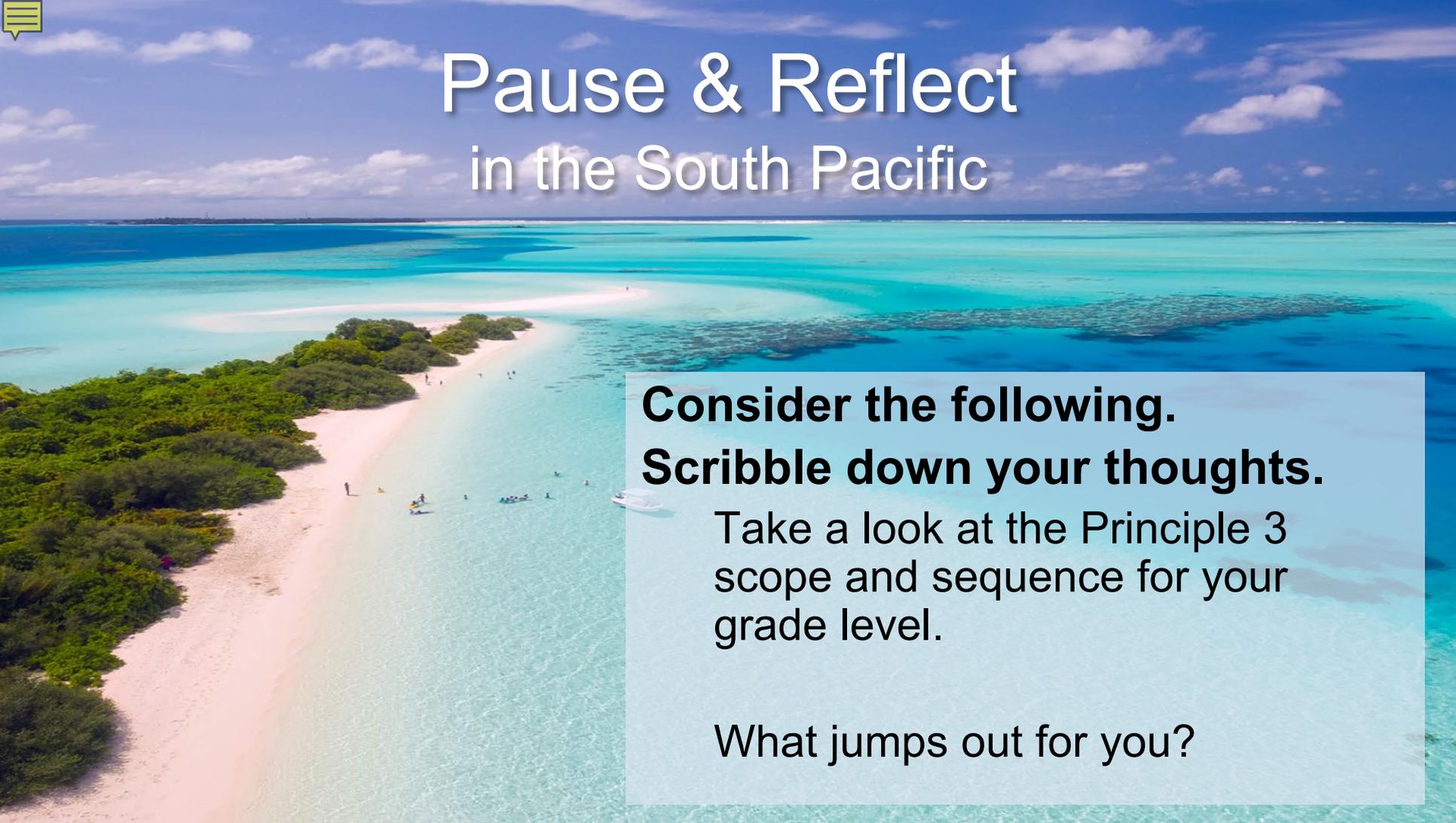
Activity

S&S P3A strand: a particular portion of the Ocean Literacy Scope & Sequence



See p.35 of your copy of the Handbook



An aerial photograph of a tropical beach. The water is a vibrant turquoise color, transitioning to a deeper blue further out. A white sandbar runs diagonally across the frame, separating a shallow lagoon from the open ocean. The beach is lined with lush green vegetation. Several people are visible on the sandbar and in the shallow water. A small white boat is anchored near the sandbar. The sky is a clear, bright blue with a few wispy white clouds.

Pause & Reflect in the South Pacific

**Consider the following.
Scribble down your thoughts.**

Take a look at the Principle 3
scope and sequence for your
grade level.

What jumps out for you?



Back-up Slides

**Principle 1:
Grades 3-5**

Strand Topic

Properties of Ocean Water

Major concept of this strand

97% of all water on Earth is salt water in the ocean.

2 ideas that support bigger ideas in this strand

A.1.
Only 3% of all water on Earth is fresh water stored in lakes, rivers, underground aquifers, glaciers, and other places.

A.4.
Salinity and temperature vary throughout the ocean.

Supporting ideas on properties of ocean water discussed in further detail

A.2.
Most of all the fresh water in the world is stored in ice caps and glaciers.

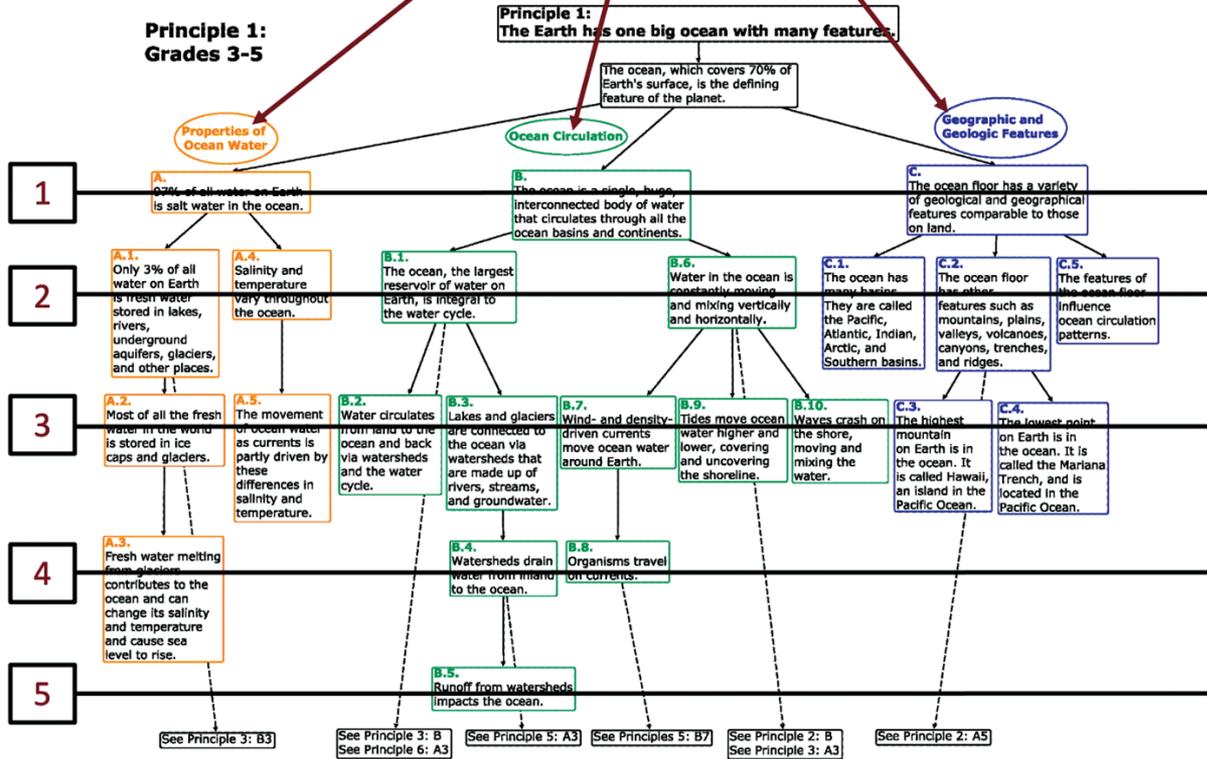
A.5.
The movement of ocean water as currents is partly driven by these differences in salinity and temperature.

A.3.
Fresh water melting from glaciers contributes to the ocean and can change its salinity and temperature and cause sea level to rise.

See Principle 3: B3

For Grades 3-5, concept A2 in Principle 1 is connected to concept B3 in Principle 3

Strand A → Strand B → Strand C



Dashed lines lead to cross-referenced concept statements in other essential principles.