

Crosswalk of OOI Data to Augment Concepts from *The Essentials of Oceanography* (Trujillo & Thurman, 12th Ed., 2017)

We have highlighted below the sections and topics from the 14 different chapters in *The Essentials of Oceanography* (Trujillo & Thurman, 12th Ed., 2017) that OOI data can augment.

We have also included which array from OOI contains relevant data to the topic.

As of May 2017, Data Explorations have been developed to augment Chapters 2, 5, and 13 due to support from the National Science Foundation (OCE-1550207 and OCE-1649637).

1. *Introduction to planet "Earth"*
 - a. Observations (Cabled Array)
2. *Plate tectonics and the ocean floor -*
 - a. Seafloor spreading, features of boundaries and ocean basins, & seamounts (Cabled Array)
3. *Marine provinces -*
 - a. Echo sounding (all OOI arrays)
 - b. Continental slope and shelf (Coastal arrays)
 - c. Hydrothermal vents, & fracture zones (Cabled Array)
4. *Marine sediments*
5. *Water and seawater -*
 - a. Salinity and pH variations, and carbonate buffering system (all OOI arrays)
 - b. Salinity, temperature, and density variations with depth (Coastal & Global arrays)
6. *Air-sea interaction -*
 - a. Temperature and pressure variations in atmosphere, and winds (Coastal arrays & Global Southern Ocean, Irminger Sea, and Argentine Basin)
 - b. Movement of the atmosphere (all OOI arrays)
 - c. Tropical cyclones (Coastal Pioneer)
7. *Ocean circulation -*
 - a. Surface current measurements (all OOI arrays), deep current measurements/circulation (Cabled Array, Global Station Papa & Irminger Sea)
 - b. Ocean surface circulation (Coastal & Global arrays)
 - c. Upwelling and downwelling (Coastal Endurance and Global Irminger Sea)
 - d. Atlantic Ocean (Global Irminger Sea & Argentine Basin, and Coastal Pioneer) and Pacific Ocean circulation (Global Station Papa & Southern Ocean, Coastal Endurance, and Cabled Array)
 - e. Origin of thermohaline circulation (Global Irminger Sea)



8. *Waves and water dynamics* -
 - a. Waves and wave development (Coastal and Global arrays)
 - b. Deep-water waves (Global arrays) and shallow-water waves (Coastal arrays)
9. *Tides* -
 - a. Monthly tidal cycle and diurnal tidal pattern (all OOI arrays)
 - b. Other tide considerations (Coastal arrays)
10. *Beaches, shoreline processes, and the coastal ocean* -
 - a. Characteristics of coastal waters (Coastal arrays)
11. *Marine pollution*
12. *Marine life and the marine environment* -
 - a. Temperature, salinity, dissolved gases, and pressure (all OOI arrays)
13. *Biological productivity and energy transfer* -
 - a. Primary production measurements, light transmission, comparing regional productivity and flow of nutrients (Coastal & Global arrays)
 - b. Productivity in polar regions (Global Station Papa, Southern Ocean & Irminger Sea)
 - c. Productivity in temperate regions (Coastal arrays)
14. *Animals of the pelagic environment* -
 - a. Mobility: lungers vs. cruisers (Cabled Array & Coastal Endurance)
 - b. Mammalian characteristics and other adaptations (Cabled Array & Coastal arrays)
15. *Animals of the Benthic Environment* -
 - a. Deep-sea hydrothermal vent bio-communities (Cabled Array)
16. *The oceans and climate change* -
 - a. Increasing ocean temperatures (Global Irminger Sea)