

Oceanography Video Series Information - [The Endless Voyage](#)

Oceanography 101

Each video combines on-location footage with computer graphics in a way that is both engaging and informative. Individual case studies focus on polar and tropical extremes, an ongoing coastal project, and life at a major research institution. Learners will also hear from leading scientists and academicians whose work has helped define the field of oceanography. Click on the lesson title to access the video. Click on the (transcript) text for a transcript of the video. Here is an outline with learning outcomes for the entire video series: [endless-voyage_course-outline.pdf](#)

[Lesson 1 - The Water Planet](#) ([Transcript](#))

From the Big Bang theory to the formation of planet Earth through the origins of life, scientists summarize the profound influence of water on our planet and introduce the science of oceanography.

[Lesson 2 - First Steps](#) ([Transcript](#))

The evolution of oceanography and the technology that has driven it are investigated, from the early cartographers through the remarkable voyages lead by individuals who had little more to guide them than a sense of adventure.

[Lesson 3 - Making the Pieces Fit](#) ([Transcript](#))

In 1965, John Tuzo Wilson supplied the final piece of the puzzle necessary to the development of the plate tectonics paradigm, which had its roots in Wegener's 1912 theory of continental drift.

[Lesson 4 - World in Motion](#) ([Transcript](#))

Though many questions remain unanswered, the evidence for plate tectonics is found virtually everywhere it is sought and continues to mount today. Polar wandering and the characteristics of plate boundaries, hot spots, and earthquakes continue the study of plate tectonics.

[Lesson 5 - Over the Edge](#) ([Transcript](#))

Bathymetry is the study of the topography of the ocean floor. This lesson examines the sea floor from the continental margins to the abyssal plain, trenches, and hydrothermal vents with their newly-discovered biota. New technology and techniques continue to expand access to seabed studies.

[Lesson 6 - The Ocean's Memory](#) [\(Transcript\)](#)

This lesson examines marine sediments, which provide an important record of an ocean basin's history. The study of marine sediments employs the same techniques devised by terrestrial geologists, and is of commercial and scientific interest across many disciplines.

[Lesson 7 - It's in the Water](#) [\(Transcript\)](#)

The chemistry of water and its unique physical properties and behavior are studied, as well as the temperature, density, and salinity of the ocean's water. Also considered is the profound impact of the ocean on global temperatures.

[Lesson 8 - Beneath the Surface](#) [\(Transcript\)](#)

The ocean is a dynamic structure. This lesson explores the stratification, movement, and surface conditions of that structure as well as how light and sound are affected by the ocean environment.

[Lesson 9 - Going to Extremes](#) [\(Transcript\)](#)

Through a comparative study of the polar and tropic oceans, students are given the opportunity to integrate and apply the facts and principles presented to this point in the course.

[Lesson 10 - Something in the Air](#) [\(Transcript\)](#)

The interaction of the ocean, the atmosphere, and the land form an inseparable system. The atmospheric composition, properties, and circulation of this system as well as the Coriolis effect, wind patterns, and air masses are studied in this lesson.

[Lesson 11 - Going with the Flow](#) [\(Transcript\)](#)

Surface currents transfer water and heat from tropical to polar regions and influence weather, climate, and biological activity in the upper-water region. Using the El Niño phenomenon for illustration, the effects of surface currents on climate are studied.

[Lesson 12 - Deep Connections](#) [\(Transcript\)](#)

Like wind-powered surface currents, the density-driven thermohaline circulation plays a major role in global heat transfer and in distributing dissolved gases and nutrients. Chemical tracers are just one method used to study these deep water currents.

[Lesson 13 - Surf's Up](#) [\(Transcript\)](#)

Starting with the disturbing forces that initiate movement of energy through the water, the formation and propagation of both surface and internal waves are studied in this lesson.

[Lesson 14 - Look Out Below](#) [\(Transcript\)](#)

Tsunami, seiches, storm surge, and seismic sea waves are very large, potentially destructive waves that can be triggered by earthquakes, volcanic activity, cyclones, and tidal effects. These waves and long-term sea level change are this lesson's focus.

[Lesson 15 - Ebb and Flow](#) [\(Transcript\)](#)

This lesson examines tides and the forces that generate them. The equilibrium theory and the dynamic theory of tides are presented.

[Lesson 16 - On the Coast](#) [\(Transcript\)](#)

A look at the features of coasts and the forces that shape them, including the characteristics of coasts. Coral reefs, estuaries, lagoons, and wetlands are examined.

[Lesson 17 - Due West](#) [\(Transcript\)](#)

The impact of human activity on coastal areas is examined through studies of four areas along the California coast. Using these studies, harbor and beach creation and maintenance, erosion, water pollution, and wetlands preservation are investigated.

[Lesson 18 - Building Blocks](#) [\(Transcript\)](#)

A scientific definition of life is offered and evolution of life in the marine environment is examined. The theory of evolution by natural selection is presented and biogeochemical cycles are examined.

[Lesson 19 - Water World](#) [\(Transcript\)](#)

The history of biological classification is presented, and the six kingdoms into which taxonomists currently divide all life are reviewed. The environmental factors and processes that affect marine life are discussed.

[Lesson 20 - Food for Thought](#) [\(Transcript\)](#)

Primary productivity in the marine environment is accomplished mainly by plankton. The types of plankton, their distribution, and

productivity are presented along with methods for measuring primary productivity and factors that limit productivity.

[Lesson 21 - Survivors](#) ([Transcript](#))

A study of the oxygen revolution, the origins of life, and evolution and classification of the invertebrates from least complexity of body form and function to greatest complexity.

[Lesson 22 - Life Goes On](#) ([Transcript](#))

Continuing where the previous lesson left off, the marine vertebrates, their feeding, defense, and the ways in which the marine environment has shaped their evolution are examined. In addition to fish, the marine reptiles, birds, and mammals are considered.

[Lesson 23 - Living Together](#) ([Transcript](#))

In order to explain the distribution and abundance of organisms, their biological interrelationships and physical limiting factors must be understood. Various marine communities such as those of the rocky intertidal, sandy shores, estuaries, hydrothermal vents, and the bathypelagic zone are explored in this lesson.

[Lesson 24 - Treasure Trove](#) ([Transcript](#))

This lesson surveys the major physical, biological, energy, and nonextractive resources of the oceans and details their economic worth, means of extraction, distribution, abundance, present status, and future prospects.

[Lesson 25 - Dirty Water](#) ([Transcript](#))

In excessive amounts, even natural materials can be problematic, and sometimes cleanup can be more damaging than the polluting event. This lesson examines pollution and pollutants on both a local and global level.

[Lesson 26 - Hands On](#) ([Transcript](#))

A look at some of the factors, beyond the search for empirical truth, that motivate oceanographers. Concentrating on global oceanographic initiatives, the study guide and text readings encourage students to review, synthesize, and integrate some of the larger ideas from the course.