

The Future of the Oceans

Humanity's relationship with the seas is a historical constant—as humanity's need for transportation, food, commerce, and energy evolved, so too did the development of technology, vessels, and other tools to satisfy those needs. With significant advancements in technology in the late twentieth and early twenty-first centuries, humanity continues to learn more about the world on and under the surface of the earth's oceans. Such technology has made available a wide range of information about the landscape of the ocean floor, changes in ocean temperature, and as-yet untapped natural resources. This prevalence of information has prompted a renewed interest in how oceans can play a major role in the economy and way of life in the United States.

A number of questions have arisen with regard to the exploration and development of the ocean's resources. For some, there are questions about exactly how many heretofore undiscovered energy deposits there are within US boundaries. For others, there is a concern about which states will stand to benefit economically from offshore energy exploration and extraction operations. Still others are concerned about the impacts of such operations on the ecosystems beneath the ocean's surface and within the valleys, mountains, and canyons on the ocean floor.

Changing Technology

The technology of the twenty-first century continues to make it possible to explore regions once considered impossible to reach. During the second half of the twentieth century, much of humanity's technological focus was directed outward into space. In the twenty-first century, however, the focus has changed, as technological breakthroughs have enabled humanity to map and study the vast depths of the world's oceans. Researchers have at their fingertips a wide array of hardware and software that can help map the ocean floor, study currents and oceanic temperatures, and analyze other surface and subsurface phenomena. Geographic information systems (GIS) technology, for example, makes it possible to create digitized, three-dimensional models of the mountains, gorges, and other formations on the ocean floor. Meanwhile, hardware placed aboard ships, airplanes, and weather satellites is increasingly making it possible to study ocean temperatures and currents.

This technology is proving increasingly valuable to those who use the oceans for economic development. GIS, for example, enables petroleum companies to conduct exploratory drilling operations in optimal grids and within legal ocean boundaries. Shipboard and aerial radar is being used to create models of ocean currents, an undertaking critical for construction of offshore rigs and even hydroelectric turbines (a field that, although relatively new, continues to develop at a rapid pace). The continuing development and application of such technologies makes oceans, once a