

Embracing Ocean Exploration

THE PAST SEVERAL DECADES of ocean research have brought to light a host of truly paradigm-overturning discoveries that are distributed among all oceanography disciplines. They range in scale and subject matter from the geology and geophysics of entire crustal plate systems to ecosystems inhabited by microscopic organisms thriving in chemically exotic and high-temperature environments beneath the seafloor.

The pace of oceanographic discovery has been greatly affected by the advent of new technologies. One of the most dramatic of these advances is the now virtually universal use of high-resolution, digital swath sonar bathymetric mapping systems. A wide variety of other computer-enabled technologies have even made it possible to detect and measure large-scale plate motions. Equally important, new sensors enable acquisition of long-time-series data that form the basis for quantitative study of global ocean processes and their environmental and societal impacts.

Somewhat paradoxically, although the rate of ocean discovery is accelerating, the ocean remains largely unknown. In 2000, a distinguished panel of ocean scientists and leaders, appointed by the President of the United States, met to address that fact, and the outcome was a recommendation to establish a national ocean exploration program. It was to be visionary and interdisciplinary, and to have as its goal systematic exploration of the global ocean both from aerial and time-domain perspec-

tives. A basic difference between ongoing ocean research and this new activity was that the new program would be guided by broadly stated hypotheses and would thus be a relatively “high-risk” endeavor. Exploration and discovery, then, would serve as a catalyst for follow-on, more in-depth research.

Enthusiastically embracing this founding rationale, in 2001 the US National Oceanic and Atmospheric Administration (NOAA) allocated several million dollars to establish an ocean exploration program. In that year, and continuing to the present, this program sponsors an annual national grant-funding process that has dramatically confirmed the value of a dedicated ocean exploration enterprise. The articles contained in this issue are emblematic of exemplary ocean exploration projects and expeditions undertaken during the last several years. Their subjects encompass not only the full breadth of oceanographic science, they also include a glimpse into the exciting, rapidly emerging field of marine archaeology.

Ocean exploration, innovatively communicated to the public through sustained education and outreach, will help create a society in which citizens make informed decisions about ocean issues because they understand the importance of the ocean to all life on Earth and because they are, in turn, informed and inspired by discoveries that reveal the wonders and mysteries of the ocean.



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