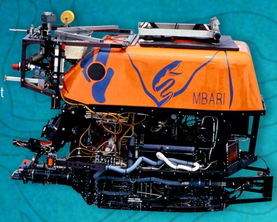
M B A R I

20 Significant Achievements of the First 20 Years

1987

◄ Two decades of science and engineering teamwork, as envisioned by founder David Packard

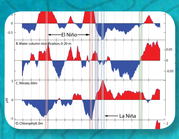


► *Ventana*'s more than 3,000 research dives, making it the most successful scientific remotely operated vehicle (ROV)

► The "Live Link" program that lets Monterey Bay Aquarium visitors observe ROV dives in Monterey Bay

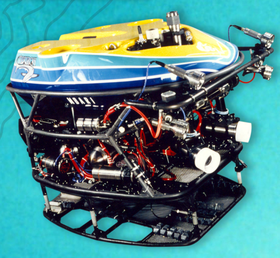
1990

◄ Discoveries of deep-sea biomass and biodiversity using an ROV, showing that gelatinous animals make up about a third of the biomass in some marine food webs



◄ The Monterey Bay time series, a 19-year record of physical, chemical, and biological ocean phenomena

◄ The Video Annotation and Reference System (VARS), software for annotating video and managing the annotations, frame grabs, and related data in an easily accessible database

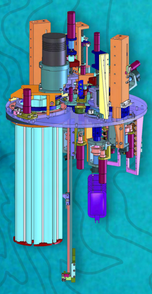


▲ The design and construction of *Tiburon*, a state-of-the-art, all-electric remotely operated vehicle

1995

▼ Experiments showing the effects of carbon dioxide sequestration and acidification in the deep sea

▼ Development of the Environmental Sample Processor (ESP), a device that allows underwater detection of microscopic marine organisms using their genetic material

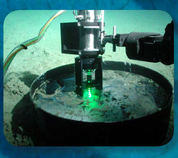


◄ Documentation of the diversity and importance of marine microbes

◄ Discovery of proteorhodopsin, a pigment that allows marine bacteria to create energy from sunlight without chlorophyll

◄ The In Situ Ultraviolet Spectrophotometer (ISUS), a sensor that detects chemical elements in seawater without using reagents

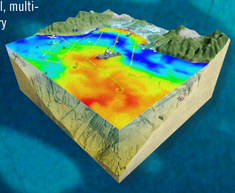
2000



◄ The first deep-sea laser Raman spectrometer, a "point and shoot" method for studying the chemistry of materials in the deep sea

► The Monterey Ocean Observing System (MOOS), MBARI's innovative observatory that provides power and communications from a mooring at the surface to instruments on the seafloor 3,500 meters below

► The multi-institutional, multi-platform, interdisciplinary Autonomous Ocean Sampling Network (AOSN) experiments in Monterey Bay that improved adaptive sampling, data fusion, and model prediction



◄ The Land Ocean Biogeochemical Observatory (LOBO), a network of low-cost moorings that monitor circulation and chemical cycles in Elkhorn Slough

2005

▲ Discovery that the discarded feeding nets of giant larvaceans are an important source of organic carbon for the deep seafloor

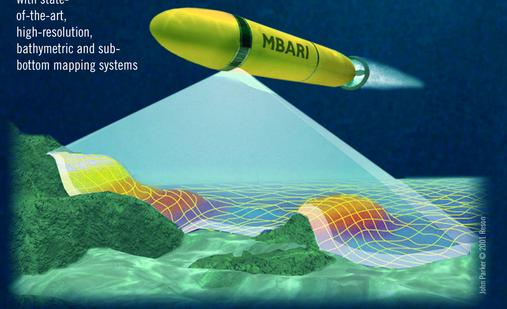
▲ Discovery of the bone-eating worms in the genus *Osedax* with dwarf parasitic males and symbiotic bacteria

◄ The Monterey Accelerated Research System (MARS), a deep-sea cabled observatory and science and engineering test bed

2007

CELEBRATING 20 YEARS 1987-2007

► The *D. Allan B.*, an autonomous underwater vehicle (AUV) equipped with state-of-the-art, high-resolution, bathymetric and sub-bottom mapping systems



The Monterey Bay Aquarium Research Institute, a private nonprofit oceanographic center, was established in 1987 by David Packard with the goal of developing state-of-the-art equipment, instrumentation, systems, and methods of scientific research in the deep waters of the ocean.

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For more about these 20 achievements, see http://www.mbari.org/twenty