Environmental Acoustic Recording System

The Environmental Acoustic Recording System (EARS) is an autonomous, battery-powered, full-ocean-depth, acoustic recording system that satisfies a Navy data collection requirement for omnidirectional ocean acoustic ambient noise.

The system consists of an almost common recording package that is routinely deployed in both deep- and shallow-water configurations. Small differences in system digital sampling techniques account for the current variations in the recording package.

The origin of the system dates to a 1995 Scripps Institution of Oceanography prototype. Since receiving this technology from Scripps, Naval Oceanographic Office (NAVOCEANO) engineers have made significant improvements to the baseline hardware. EARS technology has matured beyond the prototype phase and has been under formal configuration control management since November 2000. Worldwide EARS deployments have been ongoing since 1996, with close to two terabytes of data having been collected to date. These data are currently being processed for inclusion in the NAVOCEANO Data Warehouse.

The current EARS baseline configuration has been certified for full-ocean-depth deployments of up to a two-year duration. The baseline recording package consists of two principle variants. One variant uses a simple technique for the collection of low-frequency sound; the other uses a scheme by which higher frequency sound can be recorded without sacrificing recording life. A multichannel capability is also part of the current baseline system.

For deep-water deployments, a standard mooring configuration is used. The deep-water mooring array consists of the EARS recording package, an acoustic release, glass-ball floatation, Kevlar cable and an anchor. The actual depth of deployment for the recording package can be adjusted by varying the lengths of the cable segments. For shallow-water deployments, the recording package is contained within a bottom-lying, trawl-resistant mount.

The use of EARS technology has expanded beyond its primary function as a general ambient noise data collection package. EARS technology has been used in support of Navy site-specific acoustic data collection and has been deployed by the research and development community in support of underwater acoustic experimentation programs. Several universities are currently looking at EARS as a key technology for developing acoustic marine mammal monitoring programs.

Recent advances in low-power digital electronics have made multiyear deployments a possibility. A multiyear-certified EARS system has been proposed, and plans for such a system are currently under evaluation. Other advances in recording technology will allow increased system bandwidth with no reduction in recording life.

An EARS buoy is 24 inches long, 8.5 inches in diameter, weighs 92 pounds and is typically powered by 228 alkaline D-cells. To learn more about NAVOCEANO's EARS contact 228.689.8087.

For more information, please contact NAVOCEANO Public Affairs at 228.688.5649 or visit https://www.navo.navy.mil.

Rev. 1/04