Proceedings of Coastal Zone 09
Boston, Massachusetts
July 19 to 23, 2009

USING SIMULATION TO DESIGN MARINE ACOUSTIC MONITORING SYSTEMS

David C. Mountain and David Anderson, Boston University

The design of cost-effective marine acoustic monitoring systems can be difficult due to the complexity of underwater sound propagation. Individual hydrophones have a limited detection range that depends on receiver sensitivity, sound-source levels, bathymetry, and sound-speed profiles. In order to optimally deploy hydrophones for monitoring purposes, it will be important to have both a clear mission for the hydrophone system and a good understanding of local acoustics.

We believe that numerical simulation can be an effective decision aid for the design of acoustic monitoring systems. We will show how a software tool, the ESME Workbench, which was originally designed to predict the impact of intense sounds on marine mammals, can also be used to predict the performance of acoustic monitoring systems. The ESME Workbench allows the user to download site-specific environmental data such as bathymetry and sound-speed profiles from public websites and to use these data to predict sound propagation in a wide range of scenarios.

Funding provided by ONR

David C. Mountain and David Anderson
Boston University Department of Biomedical Engineering
44 Cummington St.
Boston, MA 02215