

# The Open Sonar Project: A common platform for hydrographic education

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Although current hydrographic survey technology and practices produce incredible products, the complexity and cost of the systems required constrain the opportunities available to learn the basics of ocean mapping. The Open Sonar Project (OSP) establishes an environment where learning the basics of hydrographic survey system configuration, data acquisition, data processing, and data visualization are *not* constrained by high costs and complex setups and instead are available at low cost in an open-source format.

Initially conceived as a senior design project as part of the requirements of the Bachelor of Science in Geomatics Engineering at the University of New Brunswick, the OSP consists of a singlebeam sonar system, uncrewed surface vessel, and an online educational platform. Each element uses low-cost hardware and open-source software created for the project. The education platform contains lessons to allow any user – even one with no hydrographic experience – to construct a fully functioning uncrewed singlebeam survey platform and gain a working knowledge of the basics of hydrographic surveying.

The OSP has been implemented and tested alongside more complex survey systems at an intensive high-school level STEM camp and will in the future be used in coursework at the university level. Beyond formal education, it provides a partial solution to the need for increased awareness of and education in hydrography with the rise of crowdsourced bathymetry. It can also be used as a low-stakes research platform for developing autonomy or cloud data sharing and processing from uncrewed vessels.

The OSP is designed for collaboration. In its current form, it intentionally uses basic hardware to facilitate teaching those with no prior hydrographic knowledge and to improve accessibility. However, the modular and open-source philosophy will allow it to grow, adapt, and incorporate more advanced concepts and technologies over time.