Airborne laser hydrography in Australia


Abstract

The Australian laser airborne depth sounder WRELADS II was developed to demonstrate the feasibility of using airborne laser techniques for hydrographic survey. This paper describes the system, the experimental program used for its evaluation, and some results obtained by it. Development of the system over a five-year period involved 550 h of airborne evaluation, including the collection of data during 22 sorties over a calibrated test range. Analysis of these data has permitted development of an empirical depth bias model. It is shown that the system meets the requirements of the Royal Australian Navy Hydrographic Service for depth accuracy and provides an adequate data yield.

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Estimation of a mean sea surface reference in the wrelads airborne depth sounder
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Airborne Hydrography (AHAB) is a provider of airborne laser survey systems for hydrographic and topographic surveys. AHAB serves international survey companies and governmental organizations around the world, with hydrographic and topographic software. Airborne laser hydrography is an emerging technology which has the potential of performing large amounts of bathymetric surveys rapidly and inexpensively. The accuracy, applicability, and economics of laser bathymetric surveying are discussed. The characteristics of a scanning laser bathymetric system being developed under direction of the United States' Defense Mapping Agency are presented. The Laser Airborne Depth Sounder is a self-contained hydrographic surveying system that includes comprehensive data acquisition, data analysis, and system support facilities. The system consists of the airborne laser, navigation and data acquisition equipment mounted in a DASH 8 aircraft and a ground-based data analysis and support system. A purpose-designed Nd:YAG infra-red laser, operating at 990 pulses per second (990 Hz), is mounted in an aircraft. Its output is frequency doubled to produce visible green light with a wavelength of 532 nanometres in one megawatt, five nanosecond duration pulse.