

ACOUSTICS2008/3584

Acoustic data fusion devoted to underwater vegetation mapping

C. Noel^a, C. Viala^a, M. Coquet^a, B. Zerr^b and T. Perrot^c
^aSEMANTIC TS, 39 ch buge, 83110 Sanary, France
^bDGA/GESMA, BP42, 29240 BREST ARMEES, France
^cCEVA, Presqu'île de Pen Lan BP3, 22710 PLEUBIAN, France
noel@semantic-ts.fr

This paper presents research tasks conducted by SEMANTIC TS, in collaboration with GESMA, aimed to develop a mapping method for underwater vegetation lying on seabed.

First stage is to develop a method for detecting and characterizing vegetation on the seabed using the acoustic response from a conventional single beam echo sounder. This new method is then operated simultaneously with multibeam sonar producing micro-relief information and side scan sonar providing gray scale levels associated with bottom reflectivity. Then fusion of these three data is processed.

We show efficiency of these multisensor data fusion concept to get very precise seabed vegetation mapping in a way reducing truth control (video and diving investigations). Sensors and method accuracy allow obtaining, like in biomedical field, real 3D scan pictures of seabed vegetation.

This study is first applied to posidonia and cymodocea, which play a key role in Mediterranean's ecosystem. Then, extension of the method is investigated to address laminaria which may significantly affect the performance of acoustic and optical sensors used for sea-mines detection and this paper presents results of data fusion mapping on an Atlantic sea area covered by luminaria, studied and well known by the CEVA.

Number of words in abstract: 193

Keywords:

Technical area: Underwater Acoustics (UW) - ECUA

Session: UW08 - Acoustic data fusion

PACS #1: 43.30.Sf Acoustical detection of marine life; passive and active

PACS #2: 43.30.Pc Ocean parameter estimation by acoustical methods; remote sensing; imaging, inversion, acoustic tomography

PACS #3: 43.60.Pt Signal processing techniques for acoustic inverse problems

Presentation: Oral presentation preferred

Special facility: Overhead projector

Best student paper competition: no

Send notice to: Noel Claire (noel@semantic-ts.fr)