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Integrated scheme of rapid environmental assessment for shallow water acoustics

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Predicting sound propagation in shallow or very shallow water environments requires that the frequency-dependent acoustic properties be assessed for all components of the waveguide, i.e., the water column, sea bottom and sea surface interface. During the Maritime Rapid Environmental Assessment MREA/BP'07 sea trial in April-May 2007, south of Elba Island in the Mediterranean Sea, an integrated MREA scheme has been implemented to provide a full 4D (3D+T) environmental picture that is directly exploitable by acoustic propagation models. Based on a joint multi-disciplinary effort, several standard and advanced techniques of environmental characterization covering the fields of underwater acoustics, physical oceanography and geophysics have been combined within a coherent scheme of data acquisition, processing and assimilation. The paper presents the whole architecture of the implemented scheme. Based on a preliminary analysis of MREA/BP'07 data, advantages and drawbacks of the approach will be discussed. Ways ahead for further improvement and perspectives are finally drawn.