ACOUSTICS2008/1328
A simulation study of shallow water tomography for coastal monitoring

Olivier Carrière[a], Jean-Pierre Hermand[a] and Yann Stephan[b]
[a]Université libre de Bruxelles (U.L.B.) - Environmental hydroacoustics lab, av. Franklin D. Roosevelt 50, CP 194/5, 1050 Bruxelles, Belgium
[b]SHOM, 13 rue du Chatellier, CS 92803, 29228 Brest cedex 2, France

Developing operational oceanographic models for coastal environment is an exciting challenge for the next decades. The typical sparsity of assimilated *in-situ* observations often creates biases in the model predictions reducing the overall accuracy of the forecasting. In such a highly dynamic environment, acoustic tomography can be a good candidate to provide synoptic measurements over wide areas while a range-dependent inversion scheme allows to achieve a reasonable spatial resolution. In this work, we present simulation results of a Kalman-based assimilation of ocean-acoustic data for a basic model of the Ushant front west off Britanny. In a first part, a single vertical slice tomography experiment is simulated for a static front model to study in which way the modal propagation of a multifrequency acoustic signal is affected by the characteristics of the front (position, intensity). In a second part, the problem of assimilating full-field acoustic data into a dynamic model and tracking of the range-dependent sound-speed field is addressed.