



Range-dependent acoustic tomography: modeling an upwelling filament using an asymmetric Gaussian function

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Abstract: Acoustic tomography in range-dependent waveguides using source-array pair represents an inverse problem with many potential solutions. The present problem is to model an upwelling filament which is a localized up rise of cold water and introducing a high degree of range dependence. In this study a parameterization scheme with a reduced number of parameters is proposed in order to represent the spatial evolution of the filament using an asymmetric Gaussian function parameterized by two variances, an amplitude coefficient and a mean value. Using a real data example of the filament of the California current system, this modelling scheme is tested on semi-synthetic data. The results indicate that such an approach can be considered for an efficient modelling of a complex oceanographic feature.

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