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(5) abstract title	CONTRIBUTIONS TO PASSIVE ACOUSTIC OCEANIC TOMOGRAPHY – INVERSION ALGORITHMS BASED ON THE MARINE MAMMALS VACALIZES
(6) abstract	Acoustic tomography is a way to produce a fast, accurate and cheap monitoring of water mass. This monitoring requires an inversion procedure. Large scales deep water and small scales shallow water configurations were successfully studied and associated with matched delay, matched field and matched impulse response inversion processings. Accurate estimates of acoustic properties demand the emission of powerful and recurrent signals in the adapted bandwidth and in agreement with the scale of the monitoring. But we would rather not send these hard active sounds through the water column if mammal species health is considered. A recent solution has emerged in the community to tackle this problem with the passive tomography processing. Passive tomography processing consists in estimating acoustic properties by using opportunity sources present in the channel at the time of interest such as marine mammals sounds. This paper aims at presenting algorithms to estimate delay, magnitude of acoustic paths when the channel is excited by an unknown transient signal such as marine mammals vocalizes. Under the assumption of a acoustic ray propagation, the received signal due to an emission is the sum of attenuated and delayed replicas of it. A Time Frequency scheme for time and magnitude of arrival measurements is briefly reviewed and its performances are analysed with its application to real data from an experiment performed in the Laurentian Channel (Quebec) during the summer 2003. We first use the intercepted signal emitted by a seismic sparker, and then marine mammals vocalizes, as opportunity sources. As a result, a need for temporal high resolution is enhanced. A processor based on local analysis is developed. This processor is applied with success on true marine mammals vocalises where multipaths structure is estimated and compared with simulated impulse responses of underwater channel between marine mammal and receiver.
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