



Relative location method in hydroacoustics and application to several examples including a seismic survey for which ground truth is available.

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The IMS hydroacoustic network of the CTBTO is very sparse by design due to the excellent propagation characteristics of acoustic waves in the oceans. Often only two stations consisting of hydrophone triplets are available to locate an event thousands of kilometres away from either station. The error ellipses for such configurations are inherently very large and the locations imprecise. In case we have multiple events at approximately the same place and recorded at the same stations, a method similar to the seismic relative location methods can be devised to estimate relative locations with a higher degree of confidence. We present such a method and evaluate its accuracy thanks to a ground truth data set of air gun shots (Brouwer et al., 2017). In addition to the relative location work, we evaluate the accuracy of the hydroacoustic velocity models used in standard processing at the IDC, and the accuracy of the angular measurements and their variability with time at the triplets given the redundancy of ground truth data available within a short time frame.

Brouwer, A., Le Bras R., Bittner, P. and Wang, H. Exploiting recent plentiful detections at H03 and H11. CTBTO SnT Conference, Vienna, Austria, June 26-30, 2017. SnT2017, DOI: 10.13140/RG.2.2.17252.88968