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# of T Waves Associated with Mid-Ocean Ridge Seismicity Recorded by Hydroacoustic Networks: Manual Versus Automatic Approaches

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Land based networks deficit the low-magnitude seismic events associated with magmatic and tectonic processes at mid-ocean ridges due to expeditious attenuation of seismic waves in the solid Earth. However, low frequency T waves generated by such events travel over very long distances in the sound fixing and ranging (SOFAR) channel with little attenuation and can be monitored by regional underwater hydrophone networks. Hydroacoustic data recorded by autonomous hydrophones of OHASISBIO temporary network along with three permanent hydroacoustic stations of IMS-CTBTO at Diego Garcia, Cape Leeuwin and Crozet in the Indian Ocean, is analysed to detect magmatic and/or tectonic seismicity. Such T wave signals are commonly manually picked to determine the location and origin time of seismic events. In this way, we have scrutinized several seismic swarms in the Indian ocean over the last 12 years. However, this process is cumbersome and its efficiency differs from one user to another. To overcome this difficulty, we have started to develop an automatic underwater acoustic signal processing algorithm. In a preliminary step, we tested a supervised learning method by training the model on subsets of manually processed T wave catalogs. The next step is to apply the algorithm to extended catalogs and to evaluate the completeness of the detections.

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Promotional text

This study will be useful to detect numerous seismic events occurring along the mid-ocean ridges in an efficient way to characterize geodynamic processes in the ocean.

Oral preference format

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