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ambient noise at hydroacoustic stations for passive ocean sensing

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Conventional acoustic remote sensing techniques typically rely on controlled active sources which can be problematic to deploy and operate over the long term - especially if multiple sources are required to fully illuminate the ocean region of interest - or may not even be available at very low frequencies (~10 Hz). Conversely, receiver arrays are becoming increasingly autonomous, and capable of long term deployment thus enabling passive acoustics for ocean remote sensing applications by taking advantage of the ubiquitous ocean ambient noise. The archived ambient noise recordings made at the hydroacoustic stations of the Comprehensive Nuclear-Test-Ban Treaty (CTBTO) International Monitoring System (IMS), over decades at some locations, provide a unique platform for the scientific community to test this fully passive acoustic approach for ocean remote sensing. This presentation will present proof of concept of passive ocean remote methods using these hydroacoustic data such as passive acoustic thermometry to estimate deep ocean temperature variations and internal tides using coherent processing of low-frequency ambient noise. Challenges and opportunities for Ocean basin and global-scale passive ocean sensing will be discussed.

Promotional text

The archived ambient noise recordings made at the IMS hydroacoustic sessionsTreaty, over decades at some locations, provide a unique platform for the scientific community to investigate ocean remote sensing using passive acoustic.

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