ID: Type: **Oral**

-Dimensional Global Scale Underwater Sound Propagation Modeling

A three-dimensional (3D) parabolic-equation (PE) model has been created to simulate global scale underwater sound propagation. This 3D PE model utilizes a map project to transfer the surface of the Earth to a Cartesian plane, which enables an efficient solution marching algorithm. This model also incorporates a data-assimilated global ocean model, the HYbrid Coordinate Ocean Model (HYCOM), and a high precision bathymetric database. Comparisons with a vertical-mode horizontal-PE model will be shown to demonstrate the need of the 3D PE model in the case where the mode coupling effect is strong due to rapid environmental variations. An example of low-frequency sound propagation across the Atlantic Ocean will also be shown and compared with a real-world data collected during the Shallow Water 2006 Experiment. Future research plans on analyzing the CTBTO hydroacoustic monitoring data will be discussed.

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Track Classification: 1. Technological advancements in marine engineering pertinent to the sustainability and improvement of the hydroacoustic component of CTBT's International Monitoring System (IMS)