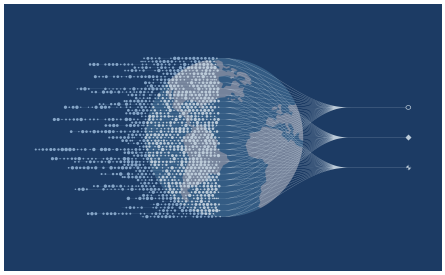

ID: **O1.3-278** Type: **Oral**

CTBT IMS: a window into a century of global soundscapes (1920-2020)

Sound energy density between 50 and 100 Hz in the northeast Pacific Ocean increased roughly in proportion with global shipping tonnage in the second half of the 20th century, consistent with expectation for ambient sound dominated by contributions from distant shipping. Increases were larger in the frequency range 10-40 Hz than can be explained by increased tonnage alone, with largest increases in the 32 and 40 Hz decidecade bands. We constructed a global sound energy budget using a theoretical model that estimates the contributions from ships and baleen whales to the total. We calibrated the energy budget using measurements from six hydroacoustic stations from the Comprehensive Nuclear-Test-Ban Treaty International Monitoring System (IMS), supplemented by measurements in the northeast Pacific and northwest Atlantic Oceans. The IMS and sound energy model, combined with known or estimated changes in the number of sound sources, provide a window through which we can view a century of past soundscapes between 1920 and 2020, analyse the sources responsible for global sound energy and thus investigate the causes of the larger than expected increases at 32 and 40 Hz.

E-mail

michael.ainslie@jasco.com

In-person or online preference

Primary author: AINSLIE, Michael (JASCO Applied Sciences)

Co-authors: Mr MACGILLIVRAY, Alexander (JASCO Applied Sciences); Dr HALVORSEN, Michele (JASCO Applied Sciences); Dr HARRIS, Peter (National Physical Laboratory (NPL)); Prof. TYACK, Peter (University of St Andrews); Dr ANDREW, Rex (Institute of Electrical and Electronics Engineers (IEEE)); ROBINSON, Stephen (National Physical Laboratory (NPL))

Presenter: AINSLIE, Michael (JASCO Applied Sciences)

Session Classification: O1.3 The Oceans and their Properties

Track Classification: Theme 1. The Earth as a Complex System: T1.3 The Oceans and their Properties