ID: **O1.3-536** Type: **Oral**

# of Bathymetric Effects on Long Range Acoustic Propagation Using Two and Three Dimensional Transmission Loss Models in Signals Generated by Airgun Arrays

Friday, 23 June 2023 11:55 (15 minutes)

Currently, ocean acoustic models codes provide accurate predictions of sound propagation for various realistic scenarios. However, for long range propagation of signals generated by airgun arrays, some issues remain unsolved. Most implementations apply to isotropic sources but airgun arrays are strongly directional. When modelling their source level, this directionality must be correctly coupled to the computed acoustic field. Typical two-dimensional implementations don't account for the variability of the coupling of source energy to the sound channel due to bathymetric features in the survey area, nor diffraction effects which often constitute a significant concern. Sound pulses from airgun arrays generate low frequency signals that under favourable conditions are received at the CTBT hydroacoustic stations with high signal to noise ratio. The International Monitoring System (IMS) provides useful data to evaluate acoustic propagation and source level models when comparing predictions with registered signals. Initial results presented at the SnT2021 as a work in progress are deepened here through spectral and time based analyses of airgun shots recorded by the IMS during oil and gas surveys in Argentina Basin North. A 3-D model, instead of a 2-D one, is used for evaluating its capability of capturing bathymetric effects in the near field. Additional techniques to account for the far field directionality are discussed.

E-mail

juanrst@hotmail.com

Promotional text

This work is a scientific application of CTBT data to improve the long range propagation modelling of signals from impulsive acoustic sources such as airgun arrays used in off-shore seismic surveys.

Oral preference format

in-person

Primary authors: Mr PRARIO, Igor (Argentinian Navy Research Office (ARA) & UNIDEF (CONICET)); Mr GONZALEZ, Juan Domingo (Argentinian Navy Research Office (ARA) & UNIDEF (CONICET)); Mr LAVIA, Edmundo (Argentinian Navy Research Office (ARA) & UNIDEF (CONICET)); Mr MARQUES ROJO, Rui (Argentinian Navy Research Office (ARA) & UNIDEF (CONICET)); Mr BOS, Patricio (Argentinian Navy Research Office (ARA) & UNIDEF (CONICET)); Ms BLANC, Silvia (Argentinian Navy Research Office (ARA) & UNIDEF (CONICET))

Presenter: Mr GONZALEZ, Juan Domingo (Argentinian Navy Research Office (ARA) & UNIDEF (CONICET))

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