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A review of the Brazilian technical evolution on marine seismic acquisition

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Introduction

In the last two decades, the technology (equipment, techniques, software) used in the acquisition of maritime seismic data in Brazil has undergone major transformations, which have occurred constantly and gradually, also driven by technological innovations brought from related areas, always meeting the environmental restrictions established by the competent agencies.

This evolution in the marine seismic acquisition resulted in less environmental impact, better data quality and more imaging problems solved over the years. It is expected that these improvements will continue to occur in the coming years, following the technological innovations, the digital transformation and the energy transition in course, expanding the knowledge and the area of contribution of the professionals working in Exploration Geophysics.

This work is a complement to a paper published in the bulletin nº 126 of the Brazilian Geophysical Society, for the second quarter of 2023 and to a presentation that we showed at the SBGF Onshore Basin Exploration and Production Workshop, in June 2022.

Method

In this article we make a brief record of the evolution that has occurred in more than 20 years of activities in marine seismic acquisition in Brazil, with emphasis on the transformation that has taken place in the following aspects:

- Equipment.
- Seismic quality.
- Acquisition geometries.
- More usual parameters.
- Health, Safety and Environment (HSE) and
- Forms of Hiring.

Results and Conclusions

We recall the most recent experiences with Ocean Bottom Nodes (OBN) and Permanent Reservoir Monitoring Systems (PRM) and present an alternative form of contracting for marine 3D surveys, which is intended to be applied soon.

We discuss about the innovations that are expected to be transforming the marine seismic acquisition in the next years and, to conclude, we present a list of lessons learned, as a reference to help us to better plan our future activities to acquire seismic data for different objectives, in different scenarios and on different steps of the E&P cycle.