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Underwater acoustics — Measurement of underwater ambient sound

Acoustique sous-marine — Mesurage du son ambiant sous-marin

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Foreword

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This document was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 3, *Underwater acoustics*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document describes a procedure for the measurement and analysis of underwater ambient sound. The development of this document made use of resources previously developed by the UK National Physical Laboratory[20], the US-funded project ADEON[1)] and by the EU-funded Interreg programme JOMOPANS[2)].

1) (University of New Hampshire online) Atlantic Deepwater Ecosystem Observatory Network (ADEON): An Integrated System for Long-Term Monitoring of Ecological and Human Factors on the Outer Continental Shelf **(**https://adeon.unh.edu/standards**)**

2) Joint Monitoring Programme for Ambient Noise North Sea (JOMOPANS) (https://northsearegion.eu/jomopans/)

Underwater acoustics — Measurement of underwater ambient sound

1 Scope

This document provides requirements and recommendations for measuring and reporting ambient sound in water, as characterized by sound pressure and selected quantities that can be derived from sound pressure. "Ambient sound" implies sound from any source except sources of self-noise.

The scope includes equipment performance, calibration and deployment, digital data acquisition and data processing. Data processing is the process of converting raw data into a form and context necessary to be interpreted by people and computers. The scope includes data analysis and reporting of recordings of duration one day or longer.

Five data processing stages are considered: raw digital acquisition data[3], sound pressure time series, sound pressure level time series, sound pressure spectra and their statistics.

The scope excludes measurement of particle motion.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 80000-1, *Quantities and units — Part 1: General*

ISO 80000-2, *Quantities and units — Part 2: Mathematics*

ISO 80000-3, *Quantities and units — Part 3: Space and time*

ISO 80000-8, *Quantities and units — Part 8: Acoustics*

IEC 80000-13, *Quantities and units — Part 13: Information science and technology*

ISO 18405, *Underwater acoustics — Terminology*

IEC 60565-1, *Underwater acoustics — Hydrophones — Calibration of hydrophones — Part 1: Procedures for free-field calibration of hydrophones*

IEC 60565-2, *Underwater acoustics — Hydrophones — Calibration of hydrophones — Part 2: Procedures for low frequency pressure calibration*

BIPM 2019, *9th (2019) edition*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in BIPM 2019, ISO 80000-1, ISO 80000-2, ISO 80000-3, ISO 80000-8, IEC 80000-13, ISO 18405 and the following apply.

3) The word data is generally used as a collective noun in this document; the plural form is reserved for cases where the constructive relationship to individual observations or measurements is to be emphasized.