

# HYDROACOUSTIC COMPLEX FOR THERMOMETRY OF MESOSCALE OCEANOLOGICAL PROCESSES

**V.V. Razzhivin, A.A. Tagiltsev, V.V. Bezrevetnykh, M.S. Lebedev,  
E.A. Voitenko, A.A. Golov, Y.N. Morgunov**

The work is devoted to the practical application of hydroacoustic methods for remote measurement of temperature parameters of the marine environment on routes of considerable length (from hundreds to thousands of kilometers), covering sections of the shelf, continental slope and the area of the deep underwater sound channel. The low-frequency hydroacoustic complex developed for the implementation of these methods is based on synchronized radiation and reception of phase-shifted signals with the determination of distance and time of sound travel along it for the subsequent calculation of the speed of sound and the associated desired parameter - the average temperature on the acoustic path. The article provides information on the physical and methodological prerequisites for the technical implementation of a full-scale experiment carried out in the Sea of Japan in 2022. The technical solutions of the elements of the complex are given, the sensitivity and error of the used method of acoustic thermometry are assessed. The developed technical solutions are aimed at increasing the range and resolution of the hydroacoustic complex, which determines its applicability for monitoring mesoscale processes in the marine or ocean basin, as well as a tool for assessing climate change.

**Keywords:** hydroacoustic, pseudorandom signals, piezoelectric sound source, acoustic tomography, temperature monitoring, sea media temperature

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## About the authors

**RAZZHIVIN Vasilii Valentinovich**, Researcher of the laboratory 6/2 – Acoustic tomography

Pacific Oceanological Institute, Far Eastern Branch Russian Academy of Sciences

**Scientific interests:** hydroacoustic, underwater navigation, underwater communications, acoustic tomography

**Phone:** +7(4232)311-400

**E-mail:** rvs@poi.dvo.ru

<https://orcid.org/0000-0002-1192-6322>

**TAGILTSEV Aleksandr Anatol'evich**, Senior researcher, head of the laboratory 6/2 – Acoustic tomography

Pacific Oceanological Institute, Far Eastern Branch Russian Academy of Sciences

**Scientific interests:** hydroacoustic, piezoelectric sources, sound speed register, underwater navigation.

**Phone:** +7(4232)311-400. **E-mail:** atagiltsev@poi.dvo.ru

<https://orcid.org/0000-0001-9207-4418>

**BEZOTVETNYKH Vladimir Victorovich**, Senior researcher of the laboratory 6/2 – Acoustic tomography

Pacific Oceanological Institute, Far Eastern Branch Russian Academy of Sciences

**Scientific interests:** hydroacoustic, underwater navigation, underwater communications, acoustic tomography, FPGA, STM32

**Phone:** +7(4232)311-400. **E-mail:** vovan20@yandex.ru

**LEBEDEV Mikhail Sergeevich**, Researcher of the laboratory 6/1 – Ocean Research Equipment Development

Pacific Oceanological Institute, Far Eastern Branch Russian Academy of Sciences

**Scientific interests:** hydroacoustic, digital signal processing, underwater navigation, underwater communications, acoustic tomography

**Phone:** +7(4232)311-400

**E-mail:** lebedevms@poi.dvo.ru

<https://orcid.org/0000-0002-6859-2001>

**VOITENKO Evgenii Anatol'evich**, Researcher of the laboratory 6/2 – Acoustic tomography

Pacific Oceanological Institute, Far Eastern Branch Russian Academy of Sciences

**Scientific interests:** hydroacoustic, digital signal processing, underwater navigation, underwater communications, acoustic tomography

**Phone:** +7(4232)311-400

**E-mail:** evgeni@poi.dvo.ru

<https://orcid.org/0000-0003-2476-7241>

**GOLOV Aleksandr Aleksandrovich**, Senior researcher of the laboratory 6/2 – Acoustic tomography

Pacific Oceanological Institute, Far Eastern Branch Russian Academy of Sciences

**Scientific interests:** hydroacoustic, digital signal processing, underwater navigation, underwater communications, acoustic tomography

**Phone:** +7(4232)311-400

**E-mail:** golov\_alexander@inbox.ru

<https://orcid.org/0000-0002-7160-0076>

**MORGUNOV Yury Nikolaevich**, Senior researcher, head of the laboratory 6/2 – Acoustic tomography

Pacific Oceanological Institute, Far Eastern Branch Russian Academy of Sciences

**Scientific interests:** hydroacoustic, acoustic tomography, underwater navigation, underwater communications.

**Phone:** +7(4232)311-400

**E-mail:** morgunov@poi.dvo.ru

<https://orcid.org/0000-0002-1961-1915>

