GC2024-SG015

Advantages and Disadvantages of Distributed Acoustic Sensing Technology for Geophysics Tasks

Valentin V. Gravirov[1,2] , Konstantin V. Kislov[2]

[1] O.Yu. Schmidt Institute of Physics of the Earth, Russian Academy of Sciences
[2] Institute of Earthquake Prediction Theory and Mathematical Geophysics, Russian Academy of Sciences

vvg@ifz.ru

Distributed Acoustic Sensing (DAS) is experiencing exponential growth in its application and development today [1]. DAS technology is based on the use of Rayleigh scattering in fiber optic cables to obtain data on strain distributed along the length of the cable. In DAS, the cable is both a sensing element and a data transmission line. Today, DAS is used in volcanology, seismic microzonation, geophysics, etc. [2]. However, despite the significant advantages, this technology also has disadvantages that must be taken into account when using this technology. For example, one of the significant problems of this technology is that for each virtual sensor (channel) a large amount of work is required to determine its position, orientation, transfer function and intrinsic noise, etc.

Reference

[1] *Kislov K.V. et al.* Nauka i Tekhnologicheskie razrabotki (Science and Technological Developments). 2023. vol. 102.no. 4. P. 4-37. [in Russian]. DOI: 10.21455/std2023.4-1

[2] *Dmitrienko M.V. et al.* Nauka i Tekhnologicheskie razrabotki (Science and Technological Developments). 2023. vol. 102.no. 4. Z. 64-74. [in Russian]. DOI: 10.21455/std2023.4-4