ID: Type: **Poster**

Application of Optimal Filtering to Take into Account the Influence of Baric and Temperature Fluctuations of the Seismic Instrument and the Environment

This paper is devoted to the use of the optimal filtering technique for the correction of seismic signal records, where there may also be some noise associated with both fluctuations in atmospheric pressure and temperature. It is not possible to record seismic true information about the movement of the soil by modern seismic instruments due to the considerable sensitivity of these instruments to fluctuations of atmospheric pressure and temperature both of the surrounding space and within the instruments themselves. Consideration of changing the internal temperature of seismic instruments is a very difficult task too, since uneven heating of the internal volume caused by local heat sources, which may be electronic components, for example, operational amplifiers, resistors and inductances that are part of electronics any modern device, must be taken into account. The effect of this kind of noise of non-seismic origin on the instruments increases with the expansion of its frequency response for longer periods. In the course of research, we have demonstrated that the use of optimal filters for the correction of long-period channels records of seismic instruments can significantly improve the signal-to- noise ratio, which will allow the detection of seismic signals masked by similar types of noise.

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Track Classification: Theme 3. Verification Technologies and Technique Application