

T3.3-P04. Application of a Wavelet Transform as Pre-filtration Unit for Strong Noisy Seismic Records

One of significant current tasks in seismology is the improvement of the automated processing of seismic records on a time scale as close to reality. The use of wavelet transform allows to simultaneously run any necessary filtering and easily detect a different phase of the input signal that are not visible on the original seismograms, especially in case of strong noise. The entire process of filtering and analysis can be represented as three-dimensional graphic images, which greatly simplifies an interpretation of seismograms. Since this method does not require large computational effort there is a possibility of its realization in the form of real-time algorithms. Specific requirements are presented for registration and processing of poor and strong noisy seismic signals. These signals can be received from mobile stations or seismic stations installed in the "wrong" places, such as the territory of industrial plants or settlements (it simplifies and reduces the cost of installation and operation, but significantly impairs the quality of the seismic signals due to high noise level). In this case pre-filtering is indispensable. Unfortunately, widely used methods for filtration such as the STA / LTA, LPF, HPF, etc. do not lead to satisfactory results.

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