



Automatic signal detection using higher order statistics

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Due to the continuously increasing amount of digital data of permanent and temporary networks the use of automatic methods for event identification and discrimination is almost unavoidable. Many methods are based on the comparison between the short-(STA) and the long-term average (LTA) of the signal to determine the *characteristic function* (CF) on which the detector is applied. Because of the almost continuous stream of triggers in large seismological networks single detections must be associated to seismic events, at first, which is achieved by a grid search method in the case of the EGELADOS-network.

Generally, the mean value or the standard deviation (1. and 2. central moment) are used for determining the CF, but also higher order statistics such as scewness and kurtosis (3. and 4. central moment) can be used for generating the CF.

In this study the pros and cons of the different central moments for signal identification and phase picking are discussed. Therefore, continuous data of the EGELADOS-network is used for comparing the automatically generated triggers and identified phases with manually determined events and first breaks.

This quantitative investigation serves as the basis for the further automatic event identification and discrimination within the EGELADOS-network and the possible application in an early-warning system.