

Classification of volcano events observed by multiple seismic stations

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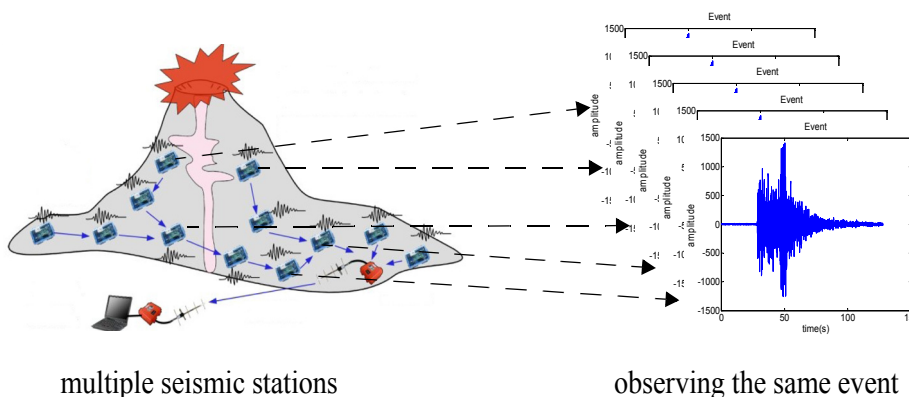
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Keywords: Volcanos, seismology, spectrogram, combined classifiers

Purpose: The goal of this research is to estimate the type of seismic events (e.g. earthquake, long term tremor, icequake) from multiple seismic stations on the same volcano. This may support better predictions of volcano eruptions. In this particular study it is investigated how the signals should be represented and how classification results over different stations should be combined.

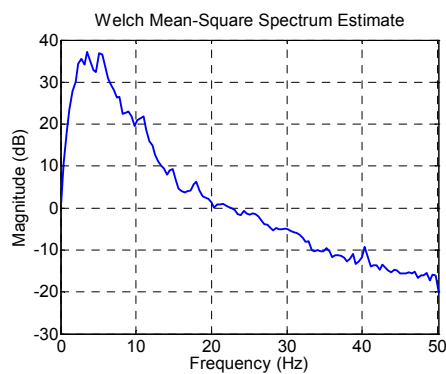
Approach: We used an automatic event detector for events of about 2 minutes. The were represented by spectra as well as by spectrograms. For every station a different classifier was trained. It was studied whether these classifiers are station dependent and to what extend combining classifiers for observations made by different stations of the same event is worthwhile.

Results: It was found that spectrograms are somewhat better than spectra. So scarifying some spectral bandwidth for time information is worthwhile. Classifiers trained for one station can be applied to signals obtained by other stations and combining improved the single station classifications. Combining all classifiers of all stations applied just to the signals of that particular station yields the best classification performance.

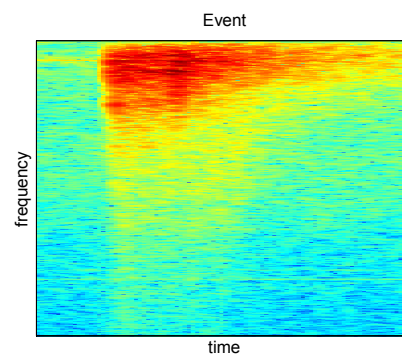


multiple seismic stations

observing the same event



spectrum



spectrogram