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A New Acoustic-Seismic Association Method Based on Knowledge

The infrasonic-seismic associated events are very important in the International Data Centre (IDC) bulletins, but about 85% automatically associated infrasonic-seismic events are false events at present. A new infrasound signal association method based on the seismic seed events from Standard Event Lists (SELs) or Late Event Bulletin (LEB) together with the background knowledge is proposed. The knowledge including the ground-truth events around the seismic-seed, the relationship between the infrasound transmission distance with the magnitude, the station distribution while some infrasound stations have the same location with the seismic station. The reliable infrasound stations for the association can be found by the mentioned experience, together with the transmission time and frequency attenuation rulers, the PMCC results and the signal characters,the detected infrasound signal can be right associated with the seed. The experimental results show that the method has a good performance in infrasonic-seismic association, can remarkably reduce the amount of false association.

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