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3.4-O1. A NEW VERIFICATION TOOL OF NUCLEAR EXPLOSIONS USING AMBIENT NOISE

Various types of vibration sources are always producing the so-called Ambient Vibrations on the Earth ground (also called ambient noise). Each vibration source is divided into high or low noise model as a function of frequency. The main goal of this study was to recognize two new applications of ambient noise as a verification tool of nuclear explosions. These applications are: A) Identifying the branded vibration phase of the nuclear explosion, which is based on the idea that each event has a specific vibration signature in the seismic record. Signature of nuclear explosion can be identified through cross-correlation of the ambient noise before and after the event and compared it with that of the moderate earthquakes, nuclear and chemical explosions. B) 3D-imaging velocity structure of the On Site Inspection (OSI) area using small circle configuration of seismic microtremor array. This method is called Ambient Noise Tomography (ANT) and its application to the data of narrow seismic arrays has led to the development of small-scale seismic image of the spatial shallow velocity variations at unprecedented resolution. These new applications of ambient noise seem to be fast, simple, very cheap, and highly efficient a verification tool of nuclear explosions for CTBT.

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