



## **A study of the tsunami induced seismic signal recorded at broadband stations**

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Tsunamis, which are often caused by an earthquake, a landslide, an exploding volcano are series of gigantic waves that occur in the ocean or other large bodies of water and formed when a large amount of water is rapidly displaced. They cause sea level changes leading to tilt of islands and coastal areas. Therefore tsunamis generate dispersive signals recorded on seismographs in coastal locations around the ocean where the earthquake occurs. They induce long-period (larger than 1000 s) signals on the horizontal components of the seismogram, which totally differ from seismic surface waves. Even though signal onset times are consistent with the direct tsunami wave. We report here on observations of different tsunamis at broadband seismic stations located on islands and continental shores of corresponding areas. Regarding the direction of the tsunami's propagation, records of different island stations are checked and filtered in order to detect the tsunami induced signal. The period content of the tsunami induced seismic signal as well as its amplitude and speed are also analyzed at each station. The differences in the tsunami speed calculated at various stations show a direct relation to the water depth along the path of tsunami's propagation, even though the amplitudes of the tsunami induced signals weaken with distance to the coast. The direction of the maximum amplitude of the tsunami induced signal is also computed and reveals that its direction is not related to the directivity effect of the tsunami. This study significantly confirms the ability of the seismic broadband stations for tsunami detection.