

Delineation of Nuclear test event from Earthquake based on teleseismic data of PS26 station.

Idé Alpha Djibrilla

Haute Autorité Nigérienne à l'Energie Atomique (HANEA)



INTRODUCTION AND MAIN RESULTS

The PS26 station in Niger, established in 2005, provides high-quality data for the IMS verification system. This study aims to demonstrate PS26's contribution by comparing its data with other stations to differentiate regional vs Teleseismic quality data from nuclear tests and natural seismic event like earthquake.



Idé Alpha Djibrilla

P2.2-350



Introduction

- PS26 is an array seismic station with sensors located in a granite layer. The quality of the data it once produced, due to its distance allows good events characterization. We conducted comparative analyses of its data with regional stations linked to natural earthquake events in Haiti on 2021 and nuclear tests made by DPRK on 2017.



Map showing the location of ps26 stations schema and example of a single site from the array.

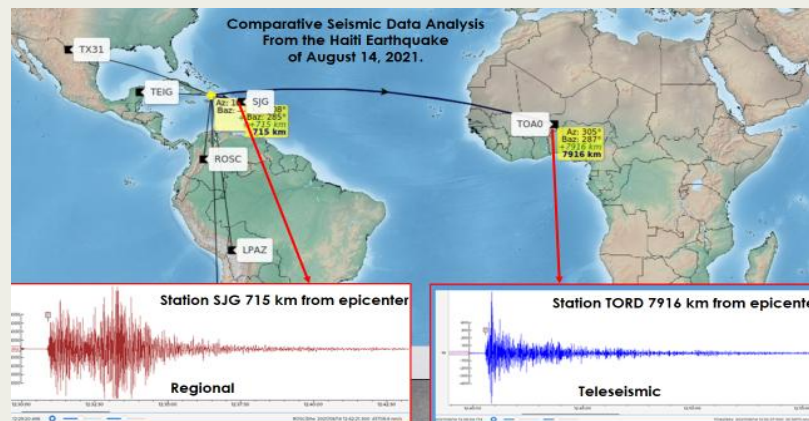
- The effect of the distance from the epicenter of waveform recorded from ps26 facilitates a good differentiation of the phases of the waves but also the very nature of the events.

Methods/Data

Approach to seismic data analysis strategy for seismic event characterization.

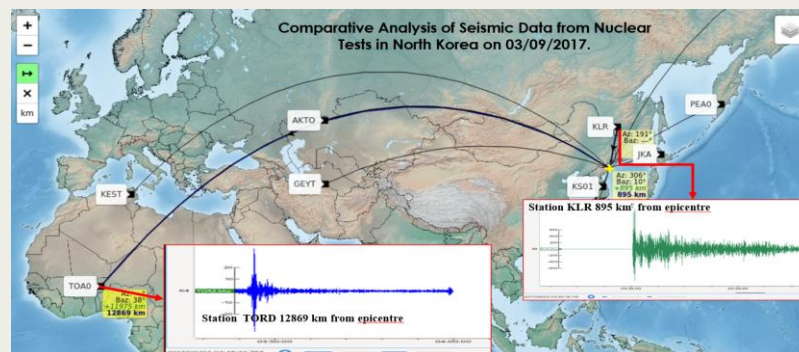
- Regional data were selected in this work relating to the earthquake and the nuclear test to be compared with those of the PS26 station in order to highlight in both possible cases the quality of the data of the PS26 station for a good characterization of the seismic events.

Comparative Seismic Data Analysis From the Haitia Earthquake of August 14, 2021.



- On Regional seismic data waves of all phases are quite energetic even coherent noise interferes with the deterministic data.

Comparative Analysis of Seismic Data from Nuclear Tests in North Korea on 03/09/2017.

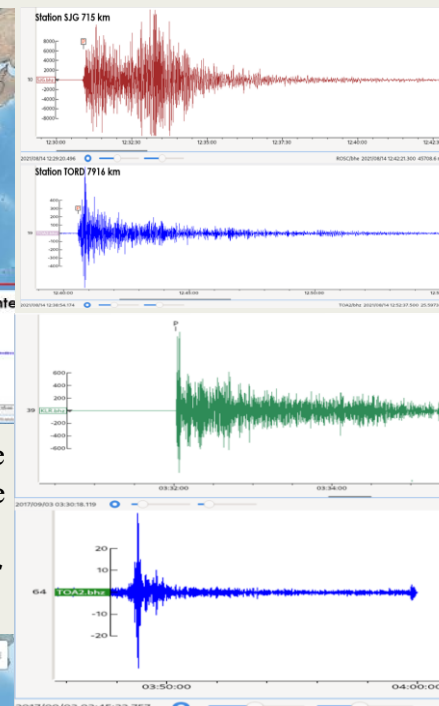


- On teleseismic waves that arrive thousands of km away at stations with lower noise levels.

Results

- It can be seen that all phases of seismic waves have a significant energy level. The noise level is still significant due to the regional proximity to the epicenter.

- The thousands of kilometers reduce the evanescent waves on the seismogram at the level of TORD station. The morphological Teleseismic seismogram of TORD station demonstrates the good attenuation of random noise, easier to differentiate the different waves phases.



Conclusions

- The TORD as an array seismic station, this combined with the geological position of the sensors in a granite layer provide easy analyses of differentiation of seismic events. The analyses of all the waveforms of different events show the crucial role that the PS 26 station can play in the characterization of events.