Submission code: WKDMN7BJ6V

See this and other abstracts on our website: https://home.sbgf.org.br/Pages/resumos.php

Focal depth estimation for South Atlantic earthquakes through teleseismic P-wave and water-column reverberations

Maria Rayla Dos Santos (Universidade Federal do Rio Grande do Norte), Aderson Nascimento (Federal University of Rio Grande do Norte), George Sand Leão Araújo de França (IAG/USP)

Focal depth estimation for South Atlantic earthquakes through teleseismic P-wave and water-column reverberations

Please, do not insert author names in your submission PDF file

Introduction

Mid-oceanic ridges are an essential part of the dynamics of global tectonics, having their sections connected by transform faults. In this context, analysing earthquake parameters provides an understanding of movement, deformation and the rupture process. The focal depth (Z) is a key factor in characterising the oceanic lithosphere, but obtaining these estimations is challenging due to an instrument-limited global distribution at teleseismic distances. Depth phases (e.g., pP, sP, sS, etc) can be used for earthquake depth estimation, but these applications are limited by depth range, low signal-to-noise ratio and rupture duration.

Method and/or Theory

Here, we applied the methodology described by Huang et al. (2015), based on water reverberations using stacked seismograms and a grid search approach for simultaneous calculation of Z and the sea floor depth (H).

Results and Conclusions

Tests demonstrated a good performance of this methodology with synthetics and South-Equatorial Atlantic earthquakes under different conditions, including a variable number of stacked seismograms from different arrays. The results highlight the fundamental role of radiation patterns in effectively determining focal depth.