



S-Wave velocity structure in Oued Fodda city (Northern Algeria) by ambient vibrations data inversion

Abdelouahab Issaadi (1,2), Khalissa Layadi (1), Abdelkrim Yelles-Chaouche (1), Juan José Galiana-Merino (2), and Fethi Semmane (1)

(1) Centre de Recherche en Astronomie, Astrophysique et Géophysique (CRAAG), Algiers, Algeria, (2) University Institute of Physics Applied to Sciences and Technologies, University of Alicante, Alicante, Spain

The city of Oued Fodda is located in north-central Algeria in the margins of the Middle-Chelif basin. This region has suffered several destructive earthquakes. The strongest was the 1980 El-Asnam earthquake ($M_s 7.3$). The causative fault of this earthquake is located about 1 Km north of the city of Oued-Fodda. It is well known that a good knowledge of the soil characteristics in a city may lead to better evaluate the seismic risk and therefore help to minimize damages in the future. For this purpose, we used ambient vibration data and the Horizontal-to-Vertical Spectral Ratio method (HVSr) to estimate the soil fundamental frequencies (f_0) and the corresponding amplitudes (A_0). A measurement campaign was carried out in the city of Oued Fodda with a set of 102 measurement points. From the calculated HVSr curves, we divided the study area into 8 different zones. The Rayleigh wave ellipticity curves were then inverted for each of the eight zones to characterize the S-wave velocity structures in Oued Fodda city.