



Site effects inferred from HVSR methodology in Praia da Vitória city (Portugal)

João Fontiela (1,4), José Borges (1), Mourad Bezzeghoud (1), Philippe Rosset (2), Francisco Rodrigues (3,4)

(1) Dep. of Physics, ECT, Institute of Earth Sciences, University of Évora, Portugal (jfontiela@uevora.pt), (4) CITA_A, University of Azores, Portugal, (2) ICES, International Centre for Earth Simulation Foundation, Geneva, Switzerland, (3) Agricultural Science Department, University of Azores, Portugal

Terceira island (Azores) have experienced several strong earthquakes, especially on the eastern and south-eastern part of the island with maximum MM intensity of VIII in 1800, 1801 and 1912 and IX in 1614 and 1841. Seismicity of the eastern part of the island is largely dominated by the tectonic of the NW-SE Lajes graben where are located Praia da Vitória and other settlements.

Praia da Vitória is settled partially over pyroclastic material (pumice and ignimbrite) deposited around 20'000 years ago and forming part of the Upper Terceira Group. Its thickness is 15m on the north but in Praia da Vitória has less than one meter. It is sited on by basaltic flow of the upper Basaltic Terceira Group (2,000y BP) and a thick andesitic lava flow. A narrow band with sand dunes and beach crossed this deposits along Praia da Vitória and behind it appear a flat area with 7-10m of round cobbles that is interpreted as an old boulders' beach. Thickness of these different deposits are tricky to estimate in urban areas since very few outcrops are present.

In order to assess site amplification of seismic waves due to the soil conditions, we perform horizontal-to-vertical spectral ratio (HVSR) method from broad band ambient noise measurements in 51 different sites within Praia da Vitória. The first results show that the frequencies of the study area are variable, lying between 0.6-12 Hz.

ACKNOWLEDGMENTS: João Fontiela is supported by grant M3.1.2/F/060/2011 provided by the Regional Science Fund of the Azores Regional Government. This study was partially funded by the Institute of Earth Sciences, Portugal, under the contract with the FCT, ICT-UID/GEO/04683/2013 (Portugal).