

Abstract Details**Title**

Vs30 estimation using ambient vibrations and seismic refraction experiments - Application to the lower Tagus Valley (Portugal) - 15:00

Speaker

P. Teves-Costa

Session

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Abstract

The town of Lisbon has been affected by several strong earthquakes in the past originated either offshore or inland. The main inland seismogenic zone is the Lower Tagus Valley (LTV) region oriented NNE-SSW and reaching the northern part of Lisbon at its southern end. It is composed by a system of faults mainly oriented according to the valley trend, but the identification of the particular seismogenic structures able to produce large earthquakes are still under debate. The strongest reported event was the January 31st, 1531 earthquake ($M_w = 7.0$) that produced large damage in the southern part of the valley, in particular in Lisbon. In recent years the seismic activity in the LTV is characterised by several small earthquakes. The last strong earthquake occurred on April 23rd, 1909 ($M_w = 6.1$) and destroyed several small towns located in the valley. Due to the concentration of economic and industrial facilities and population density, this region presents high seismic risk in the Portuguese context. Besides, this region can be also affected by large offshore earthquakes, as the 1755 earthquake which source is located southern of Portugal mainland, in the Atlantic Ocean, about 250 km far from Lisbon.

In order to estimate soil ground motion associated to different seismic sources, a map of Vs30 is need. We present here a methodology to estimate Vs30 based on ambient vibrations surveys (single-station and arrays measurements), seismic refraction experiments and geologic and geotechnical information.

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